CONSERVATOIRE
BOTANIQUE
VILLE de GENEVE

DUPLICATA DE LA BIBLIOTHEQUE
DU CONSERVATOIRE BOTANIQUE DE GENEVE
VENDU EN 1922
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.

VOL. I.

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

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DUPLICATA DE LA BIBLIOTHEQUE

DU CONSERVATOIRE BOTANIQUE DE GENÈVE.
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, whether 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 unmarred 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 Nepal, 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-
cilar 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 coroll lanceolate, and bidentate.

Sans. बन्दकेली, Vuna-kelee, सुर्वा-ज्याया, 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.

1. P. dichotomum. R.
Shrubby, dichotomous. Leaves cordate.
Thalia cannaformis. Linn. sp. pl. ed. Willd. 1. 16.
Arundastrum. Tonchat seytam. Rumph. 4. p. 92. t. 7.
Donax Arundastrum. Lourier. Cochin-ch. 15.
Sans. वला, Vula, गोदुमिका Godumika, भुद्रा, Bhudra, Bhudrādāsī, Bhudroudnee, प्रजाखिका, Shurakasthika, कुलाणीनी, Kulyanīnee, बलवला, Bhudra-bula, घाटा, Ghata, पाटी, Patee, वला, Vula-
hwa.
Beng. Moota-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 di-
rection, 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 glu-
maceous, in pairs on the joints of the raceme, each pair embracing
between them a two-flowered pedicel.—Flowers pair’d, on a com-
mon 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 rudi-
ments 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 misap-
propriation of the term, I have enquired of natives of the eastern parts of Bengal,
who assure me, that the plant is named Moota-pata, or Patti-pata, and the mat only
is called Sital-pati." Colebrooke.
Phrynium.

**Monandria Monogynia.**

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 **ovulum** 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, and in search of it, though separated by a callous projection from the base of the middle division of the inner border of the corol.—**Carpel** 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** nuticiform.—**Perisperm** conform to the seed, homy, 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.

A 2
2. *P. virgatum* R.

Stems simple. Leaves bifarious, lanceolate. Spikes terminal filiform compound.

A native of Malabar, from thence sent to the late Dr. Anderson of Madras for the *Cardamom* plant, and by him presented to the Botanic Garden at Calcutta, where it blossoms during the rainy season.

Root a stout, crooked, tough, fibrous, horizontal main body, with numerous, thick, strong fibers therefrom; every part void of odour.

—Stems numerous, erect, 6-8 feet high, slender, jointed, lower joint or two much swelled; invested in the sheaths of the leaves, fistulous; the largest are about as thick as a slender walking cane near the base, and at the top as thick as a common quill.—Leaves bifarious, short-petioled on their sheaths, lanceolate, polished; length from 6 to 18 inches.—Sheaths and petioles smooth and even, except the inside of the petioles, where there are a few long, soft hairs.—Spikes terminal, two or three together, and they are very generally two, or three cleft, very slender, and often near a foot long, jointed, with a two flowered pedicel at each joint.—Flowers pure white, inodorus.—Bractes two or three at each division; and also embracing the two flowered pedicels, size very various, but the shape ensiform, and channelled.—Calyx of three, small, distinct, acute, conic, leaflets.—Corol with a very short tube; exterior border of three, nearly equal, oblong, reflexed segments; within are two which are unequal, and much larger; they form the conspicuous portion of the flower, one is obcordate, the other is obovate; inner segments 3, and smaller, the two longest of them form yellow margined hoods for the anther and stigma.

—Filament inserted between two of the inner segments of the corol, erect. Anther one-celled, ovate.—Germ inferior, hairy, 3-celled, with one ovulum in each, attached to the base of the axis. Style growing to the short tube of the corol, above free, and uncinate. Stigma funnel-form.—Capsule oblong-obovate, size of a field-bean, rugose, when ripe pale yellow, 3-celled, 3-valved. Partitions opposed.—Seed solitary, oblong; a small lobate aril round the umbilicus at the base of the seed. Integuments two; exterior brown, and
Phrymium. MONANDRIA MONOGYNIA.

Glossy, interior membranaceous.—Perisperm conform to the seed, and as in P. capitatum, &c. a brown substance runs up from the base, into the arch of the embryo.—Embryo simple, hooked, with the convexity upwards.

Obs. It is almost needless to observe that this plant has no relation to that which furnishes the Cardamom of Malabar, viz. my Alpinia Cardamomum.

3. P. spicatum. R.

Stemless. Leaves radical, bifarious, oblong. Spikes radical, shorter than the petioles, subcylindric, bifariously imbricated.

Plants of this small species, were sent by Mr. Felix Carey from Pegu, to the Botanic Garden at Calcutta, where they blossom in April and May.

Root perennial, flexuose, creeping horizontally deep in the earth, thick as a ratan; fibres numerous from the main body, and spread in all directions.—Stem none, the sheathing petioles unite from 6 to 12 inches in extent, and resemble one, as in the Curcumas.—Leaves in little radical tufts, of three or four each, sub-bifarious, petioled, linear-oblong; base broad and rounded; apex tapering, and sharp, both surfaces quite smooth; position nearly horizontal; length 6-10 inches, by 2-3 broad.—Petioles, the most exterior of the tuft sheathing, with their upper part round and smooth, those in the centre, (one or two) have no sheath, and are from apex to base round and smooth; general length of the whole from 6 to 12 inches, which is nearly the height of the whole plant, the position of the leaves being nearly horizontal.—Spikes solitary in the centre of the petioles, or lateral from their base, short-peduncled, sub-cylindric, acute, apex elevated but little above the soil, imbricated on opposite sides, with 4-8, alternate, bifarious bractes, or sheaths; each embraces a small spikelet of four or five pairs of sessile, small, nearly white flowers, on the back, or interior side of the spikelet, which expand in succession, beginning with the lower pair. Rachis flexuose, smooth.—Bractes; exterior, or common, one at each joint of the spike, sub-cylindric, sheathing, smooth, and rather obtuse; interior, or proper one
to each pair of flowers.—*Calyx* 3-leaved; *leaflets* lanceolate, smooth.
—*Corol* with a long, very slender, smooth tube. *Border; exterior* of three reflexed, oblong, obtuse segments; within these are two larger, round-obovate, erect, curled portions. *Interior, or nectarium* small, and like the other species unequally 3-lobed.—*Anther* one-celled, attached to the inner border of the corol.—*Germ* inferior, 3-celled, with one *ovulum* in each, attached to the bottom of the cell.—*Style* blended with the tube of the corol, as in the other species described by me.—*Stigma* uncinate, thick, and fleshy.—*Seed vessel* (not seen.)

4. *P. imbricatum.* R.

Stemless. Leaves radical. Spikes simple, petiolar, solitary, short-peduncled; bractes imbricated, truncate, many-toothed.

**Pittuli-pata** the vernacular name in Chittagong, where it is common in its wild state. Flowers in March and April and the seeds ripen in August.

*Root* tuberous, &c. as in other *scitamineous* plants.—*Stem* none.
—*Leaves* radical, long-petioled, from oblong, to broad lanceolar, tapering nearly as much at the base, as at the apex, smooth, entire, finely acuminate; 12-24 inches long, by 4-8 broad.—*Petioles* longer than the leaves, cylindric, smooth, the flower-bearing ones have a hairy joint near the middle, and from the joint up, a slit of between 2 and 3 inches in length opens on one side for the spike, its margins thin, and hairy.—*Spike* solitary, short-peduncled, simple, linear-oblong, 3-4 inches long, imbricated.—*Bractes; exterior* oval, truncate, with the transverse apex many-toothed, smooth, each embracing several small, pale, pink flowers, which expand in succession. *Inner bractes* small, and membranaceous.—*Calyx, corol, and stamen,* as in *P. parvisflorum*.—*Germ* 3-celled, with one *ovulum* in each, attached to the bottom of its cell. *Style,* as in the other species, it grows to, and is blended with the tube of the corol, its apex free, thick, and hooked. *Stigma* gaping obliquely toward the anther.—*Capsule* oblong, size of a large field bean, rugose, 3-celled, 3-valved, opening from the apex.
—*Seeds* solitary, sitting on a partial aril, and attached to the bottom of the cell; external tunic hard, brown, and polished.—*Perisperm* con-
Phrynium.  MONANDRIA MONOGYNA.

form to the seed. — Embryo erect, simple, the apex hooked. Radicle inferior, close to the umbilicus of the seed.

Obs. The simple, short-peduncled, imbricated, linear-oblong spike, bursting from the middle of the petiole, readily points it out.

5. P. parviflorum. R.

Stemless. Leaves radical. Heads of flowers petiolary; bractes acute.

A native of the eastern parts of Bengal. With P. capitatum, it blossoms about the beginning of the rains.

Root tuberous, horizontal, perennial, hairy, in other respects as in P. capitatum, &c. — Leaves long-petioled, elliptically-oval, polished, entire, short, acute-pointed. — Heads of flowers sub-globular, sessile, always bursting from the inner side of the petioles, near, or above their middle, composed of many, imbricated sessile, distichous, compact, simple, or compound spikes. — Bractes; the exterior two are broad-ovate, and common to the whole head; the rest within smaller; all are smooth, and end in a small, rigid, acute point. — Flowers in pairs, small, nearly inconspicuous, yellow. — Calyx, coral, and stamen, as in capitatum. — Germ short pedicelled, smooth, but hairy round the insertion of the calyx, 3-celled, and in this species I have only found one of the cells fertile, in it is one ovulum, attached to the bottom of the cell. In capitatum all the three cells are fertile. Style as in the other species, it grows to the tube of the corol, its apex free and hooked. Stigma infundibuliform.


A native of Chittagong, and of various other parts of India. From the former place it was sent to the Botanic Garden at Calcutta, by Dr. Buchanan in 1797. Flowering time the rainy season, the seeds ripen in the cool season.
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 bracts; when they first expand in the morning rose-colour'd, gradually becoming purple by the evening.—Bractes, calyx of Louriero's Phylloides, 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, subcylindric, of a firm texture, and reddish colour; apices truncate, with scariosum, 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-
Hedychium.

Monandria Monogynia.

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.

HEDYCHIUM. 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. cd. Willd. i. p. 10. König in Retz. obs. 3. 78.

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

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

Goruk-nathha of the Bengalees, also by them called Doolala-cham-pa.

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, everywhere 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 foreward (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 corol.—*Corol* 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 oval, short-clawed; *upper* division broad, orbiculate, banner-like, with the fissure deep, and the lobes roundish; margins waved; towards the base tinged yellow.—*Nectary* (of König and Retzius) two short, 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 corol, ascending; upper side channelled for the style, and inserted into the anther a little above its base. *Anther* linear, sub-erect, two-lobed.—*Germ* obsolescently three-sided, three-celled, with many *ovula* in each, attached to the axis. *Style* slender, in length sufficient to elevate the large, hairy, perforated, glandular, green *stigma* just about the apex of the anther. —*Capsule* oblong, three-celled, three-valved, opening from the apex; inside orange coloured.—*Seeds* many in each cell, invested in their proper, multifid, crimson aril. *Integuments* two.—*Perisperm* and

*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.*
Hedychium. MONANDRIA MONOGYNIA.

vitellus 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 corol 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 threfold, 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 (lateritus,) generally about four in the fascicle, and expanding in succession.—Calyx superior, cylin-dric, length of the tube of the corol; mouth equally three-toothed.—Corol; tube slender, cylindric, 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.

Khassee 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.

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.

Khassee name, Kattia Ram Rait.

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, cylindric; 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.
Hedychium.

MONANDRIA MONOGYNIA.

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, P. (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.

Khasse 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 cylindric, 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.


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

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

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

Sans. चंद्र 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 Joomma (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 beverage. Ed.
Kämpferia. **Monandria Monogynia.**

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.


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
only about half the length of the calyx.—*Calyx* above, one-leaved, as long as the tube of the corol, somewhat gibbous; apex generally two-toothed, and of a dotted, purplish colour.—*Corol. Tube* long, slender, cylindric, nearly erect, obliquely funnel-shaped towards the mouth. *Border* double, both three-parted. *Exterior* divisions drooping, linear, with margins involute, pure white. *Interior* border, the two uppermost divisions erect, lanceolar, acute; colour also white, with the margins slightly tinged with purple; the remaining inferior one is divided into two broad, obcordate, deflected lobes, of a deep purple colour, particularly towards the centre, and base.—*Nectarial filaments* of König as in *K. Galanga.*—*Filament* short, erect, broad, inserted on the base of the uppermost two interior divisions of the corol. *Anther* linear, and enlarged with an ovate, two-forked, coloured, somewhat recurved crest.—*Germ* ovate. *Style* filiform. *Stigma* funnel-shaped.

*Obs.* Woodville observes, at page 362 of his *Medical Botany,* that the roots of *Zedoaria longa,* and *rotunda* are both produced by the same species of plant, and are indiscriminately used in the shops: the former, he says, are brought to us in oblong pieces, about the thickness of the little finger; two or three inches in length, bent, rough, and angular; the latter are roundish, about an inch in diameter, of an ash colour on the outside, and white within. I have never met with any of the roots of this plant that agree with his description of the long sort, and they are too small for the round; so that I must conclude they are the produce of some other plant: at the same time Dr. Woodville’s observations on the same page, give me reason to think my *Curcuma Zedoaria* may be the plant, which yields this round sort of *Zedoaria.*

3. *K. angustifolia.* R.

Leaves radical, linear-lanceolate, waved. Spikes hid in the centre of the leaves. Upper two segments of the inner border of the corol linear, oblong, obtuse.

*Hind.* Kunjan-boora, also Madu-nirbisha.

A native of *Bengal.* Flowering time the rainy season.
Kämpferia. MONANDRIA MONOGYNIA. 17

Root biennial, tuberous, with numerous ramous fibres from every part.—Stems none.—Leaves radical, numerous, sessile, linear-lanceolate, keeled; margins entire, and much waved; striated lengthways with darker and lighter coloured green, smooth in every part; 6-8 inches long, and about one broad.—Spikes hid in the centre of the leaves, bearing from 4 to 6 large, beautiful flowers in succession.—Bractes two or three to each flower; one or two interior embrace the germ laterally, the exterior one is larger, all much pointed, and of nearly the same length.—Calyx superior, one-leaved, half the length of the tube of the corol, opening obliquely, (spathe like,) near the apex, which is a single acute point.—Corol; Tube very long, and slender, elevating the border about two inches above the earth; border double, &c. as in K. rotunda. Nectarial filaments of König, stamens, and pistil as in the last quoted species.

Obs. The root is used as a medicine for cattle, by the people of Bengal.

4. K. pandurata. R.
Leaves petioled, broad-lanceolate, smooth. Spike central. Corol; with the upper segments of the inner border obovate, the inferior one much larger, and panduriform.

Zerumbet claviculatum. Rumph. amb. 5. p. 172. t. 69. f. 1; and I could almost wish to quote Manja-kua, Rheed. mal. 11. p. 19. t. ii. although referred to already by Linneus for Curcuma rotunda, a plant I have never met with, if this be not it.

From Sumatra, this beautiful plant was sent by Dr. Charles Campbell to the Botanic Garden at Calcutta, where it blossoms during the rains; chiefly in August.

Root perennial, tuberous like ginger, but of a tolerably bright yellow colour; from this, straight, slender, fusiform, paler coloured portions descend deep into the soil.—Stems scarcely any; height of the plant about a foot and a half.—Leaves bifarius, petioled, oblong, acute, smooth; deeper green on the upper surface; veins parallel, and pretty conspicuous; length from 6 to 12 inches.—Petioles above
the bifid ligula, deeply channelled, and from 2 to 6 or 8 inches long; the lower portion sheathing, and forming something like a stem.—

*Spike* hid in the centre of the sheaths of the leaves, unilateral, being imbricated on one side, (say the anterior,) with many, sessile, slender, lanceolate, colourless, one-flowered pairs of (*exterior* and *interior*) scales or *bractes*.—*Flowers* pretty large, expanding in succession, and rarely more than one at a time.—*Calyx* superior, membranaceous, irregularly three-toothed.—*Corol*; *Tube* long, and slender. *Border* double; *Exterior* of three, slender, lanceolate, nearly equal, straight, pale pink-coloured segments. *Inner* of three unequal portions; the two superior, or lateral, obovate, the colour and length of the exterior three; the lower, or lip, somewhat panduriform, much broader and longer than the former, and of a much deeper colour.— *Filament* very slender. *Anther* two-lobed, and crowned with an emarginate, recurved helmet.—*Germ* three-celled, each cell containing many *ovula*, attached to the axis. *Stigma* large, with a semilunate opening, which has the straight portion of its margin three-toothed, and the semicircular one even.—*Nectarial* scales long, and slender.


Leaves oval. *Spikes* central, crest of the anthers laciniate.

A native of the peninsula of *Malacca*, and from thence sent, by Major Farquhar, to the Botanic Garden at *Calcutta*, where it blossoms in July. It is an intermediate species, both with respect to size and habit, between *K. Galanga* and *rotunda*, and ought to be placed between them in the system.

*Root* tuberous, as in the other species, and about biennial.—*Stems* very short. I may say scarcely any.—*Leaves* few, bifarious, patent, oval, with a short acute point, smooth on both sides, about 6 inches long, by 4 broad.—*Spikes* central, hid by the short sheaths of the leaves, few flowered; the flowers expand in succession, all pure white except the purple lip.—*Corol* nearly as in *rotunda* and *angustifolia*, the upper two segments of the inner border are obtusely lanceolate,
as in the latter; the lip or nectarium of a deep variegated purple colour, the shape cuneate-obcordate, and divided from the apex nearly half the length into two long emarginate lobes.—Filament short. Anther two-lobed, and crowned with a large, laciniate, erect, white crest.—Germ three-celled, &c. as in the genus.

The following species added by Mr. N. Wallich.

Dried specimens of the following two plants were sent to me from the mountains North-East of Bengal under the Khasee name, Kattia jorung. Flowering time the rainy season.


The Root appears to send a number of simple fibres from its upper part.—Stems simple, slightly ascendent, entirely invested with long, membranaceous, striate, rather loose sheaths; 8 or 10 inches long, like the leaves and bractes, smooth.—Leaves acute at the base, tapering from the middle into a very long linear point; finely striated, from 3 to 4 inches long.—Petioles short, channelled; within their base an oblong, membranaceous slightly hairy, entire ligula.—Spike scarcely longer than the uppermost leaf, few-flowered.—Exterior bractes large, two or three-flowered, imbricating at the back of the spike; interior, two, small, embracing the base of the flowers.—Flow- ers about as large as those of K. Galanga, expanding successively. —Calyx short, cylindric, hairy.—Exterior segments of the corol shorter than the interior; all are lanceolate, acute, spreading. Nectary or inferior segment of the interior border, large, obcordate.—Filament short, linear, expanding above the anther into a lanceolate, acute crest.—Anther two-lobed, linear, scarcely marginated by the base of the filament.—Germ, style, stigma and glands at the base of the tube as in the genus.
7. K. linearis. Wall.


Diffsers from the preceding species in being a slenderer plant. Leaves scarcely one-third of an inch broad, tapering into a filiform point.—Ligula divided to their base into two linear spreading segments, which give the leaves the appearance of being stipuled.—Sheaths close.

Obs. In the structure of their extremely thin and membranaceous flowers these two plants are so much like Kampferia, that I have not considered myself warranted in separating them; though the character of that genus as it now stands differs in the shape of the crest, which in our plants is perfectly entire, and on this account, resembling that of Costus. Their general habit partakes of that of Globba. If future examinations, especially of living specimens, should confirm them as species of Kampferia, the generic character of this genus, as well as of Costus, might perhaps be advantageously modified in respect to the shape of the filament, and the species of the former arranged in the following manner.

* Stemless, with a divided crest. 5.—angustifolia.  
1.—K. Galanga.  
2.—ovalifolia.  
3.—rotunda.  
4.—pandurata.

** Caulescent, with an entire crest. 6.—secunda.  
7.—linearis.


Corolla with both borders three-parted. Anther double, base bicalcarate. Capsule three-celled; Seed numerous, arilled. Embryo simple, and furnished with both perisperm and vitellus.

Sest. 1. Spikes lateral.


Bulbs and palmate tubers pale straw-coloured throughout. Leaves green, petioled, broad-lanceolar, a dark purple cloud down the middle. Flowers shorter than their bractes.
Curcuma. MONANDRIA MONOGYNIA. 21

Sans. सुंदरी, Shutee, गुण्ड्मूली, Gundha-moolee, खड़गौंधिका, Shud-granthhika, कुर्कौरा, Kurvoora, कुकूरा, Kurchoora, and पुलशा, Pulasha. Hind. and Teling, Kuchooro.

Beng. Shuthee, Kuchooro.


Zerumbet. Rumph. amb. 5. p. 168. t. 68.

Amomum Zerumbeth. Kön. in Retz. obs. 3. 55.

Zerumbet, or Cachora of Garcias.

The plants from which the following description was taken, were sent by Dr. F. Buchanan, from Chittagong, where they are indigenous, to the Botanic Garden at Calcutta, in 1798, where they grow freely, and blossom in the month of April. Others have since been procured from thence under the Bengalee name Kuchooro. From that place the native druggists in Calcutta, are chiefly supplied with the root or drug.

Root consists, as in all the other species of this genus, of ovate bulbs, giving support to the parts above ground; from their opposite sides spring the palmate tubers; these two sorts are inwardly of a pale yellow, or straw colour, and possess an agreeable camphoraceous smell, and warm bitterish, spicy taste. From the bulbs chiefly, the proper fibrous roots issue: some of these are thicker than others, penetrate deeper into the soil, and end in an oblong, pearl-coloured, solid tuber; which is more spongy and less fragrant when cut, than the bulbs and palmate tubers.—Stems no other than the united sheaths of the leaves, surrounded by two or three obtuse, smooth, green, faintly striated, appressed scales. Height of the whole plant about three feet, or three and a half.—Leaves from four to six together, sub-bifarious; in general a pretty long, somewhat winged petiole intervenes between each and its stem-forming base. The leaf itself is broad-lanceolar, fine-pointed, and smooth on both sides; constantly a dark purple cloud runs down the centre; veins numerous, fine and parallel; length from 1 to 2 feet.—Scape rises distinct from the leafy stems, and rather before or with them, stout, 5 or 6 inches long, and surrounded with a few, obtuse, lax, green sheaths,
of various length.—*Spike* tufted, 4 or 5 inches long, (so that its apex is elevated nearly a foot above the surface of the earth;) covered with imbricated, oblong, concave bractes, connected by the lower half of their inner margins to the backs of those immediately above, forming as many sacks, or pouches as there are bractes; the lower half of these are broad, shorter, scarcely tinged with red, containing each about three or four, beautiful, yellow, sessile flowers, which expand in succession, and are embraced laterally by their own proper, smaller, short, colourless bractes. The superior half of the large coloured ones, which form the tufts, are generally sterile, and of a deeper crimson, or purple colour, than those which contain flowers.—*Calyx* superior; scarcely one third the length of the corol, irregularly three-toothed, pellucid.—*Corol* funnel-shaped. *Tube* a little curved. *Border* double; *exterior* three-parted, the two lateral segments equal; the third or upper one vaulted and crowned with a subulaté point; colour a very faint yellow. *Interior* three-parted; lower segment, or lip, broad, deep yellow, projecting, recurved, bifid; upper or lateral segments obovate, equal, pale yellow, nearly as long as the lip.—*Filament* short. *Anther* double, the lower end of each lobe terminating in a long, sharp, subulate spur.—*Germ* beneath, hairy, three-celled, with many ovula in each, attached to the inner angle of the cell. *Style* slender at the base, embraced by the two nectarial filaments. *Stigma* two-lobed, crowning the anther.—*Capsule* oval, smooth, of a pale straw-colour, thin and nearly pellucid; three-celled, but without any regular division into valves: when the seeds are ripe the elasticity of the segments of the arils bursts the vertex into various portions, from whence the seeds are soon expelled.—*Seeds* several in each cell, arilled; shape various, but the most prevailing is oblong. *Aril* cut to the very base into several slender, unequal, white, fleshy segments, which are united to the seed round the umbilicus. *Integuments* two; *exterior* spongy, with highly polished slippery, light-brown surface; *interior* membranaceous. *Perisperm* pure white, hard but friable, and occupies the lower half of the seed. *Vitellus* clearer, but less white and of a tougher consistence than the albumen; it forms or occupies the upper half of the seed. *Embryo* nearly as
long as the seed, tending to be clavate, both ends truncate, the upper half lodged in the *vitellus*, and the lower in the *albumen*, or *perisperm*.

**Obs.** The dry root powdered and mixed with the powdered wood of the *Casalpinia Sappan* makes the red powder called *Abeer* by the Hindoos, and *Phag* by the Bengalees. It is copiously thrown about by the natives during the *Hooli*, or Hindoo holidays in the month of March. The root is also used medicinally amongst the natives.

In 1805, I gave some of the sliced and dried bulbous, and palmate tuberous roots of this plant to Sir Joseph Banks, which he gave to Dr. Comb, who found that it was the real *Zedoaria* of our *Materia Medica*, and by the same means ascertained that the root of my *Curcuma Zedoaria*, is *Zedoaria rotunda* of the shops.

2. C. *Zedoaria*. R.

Bulbs small, and, with the long palmate tubers, inwardly yellow. Leaves broad-lanceolar, sessile on their sheaths, sericeous underneath; the whole plant of a uniform green.


*Beng.* Junglee, or *Bun Huldi*, (wild turmeric.)

*Arab.* Jedwar, or Zadwar.

This beautiful species is a native, not only of *Bengal*, (and common in gardens about *Calcutta*,) but is also a native of *China*, and various other parts of *Asia*, and the *Asiatic* islands. Flowering time the hot season, the leaves appear about the same period, or rather after; for it is not uncommon to find the beautiful, large, rosy, tufted spikes rising from the naked earth before a single leaf is to be seen.

**Root** biennial, tuberous, &c. as in the last, and inwardly of a pretty deep yellow colour, approaching to that of *turmeric*.—**Stem** no other than the sheaths of the leaves.—**Leaves** petioled, broad-lanceolar, entire, underneath covered with soft sericeous down, which is
particularly conspicuous when the leaves are dry.—The Scape rises distinct from the leaves during the dry season, and often not only at some distance, but also sometime before them; it is round, as thick as a man's fore finger; length a few inches, and embraced by its own short, proper, green sheaths.—Spike from 6 to 12 inches long, &c. exactly as in the last species.—Bractes and Calyx as in the before-mentioned species.—Corol one-petalled; at the base tubular. Tube short, widening a little; its mouth shut with fine yellow pubescent glands; Throat ample. Border double; exterior of three pale pink-coloured, erect, oblong divisions; the upper one more pointed, and incumbent over the anther and part of the two upper divisions of the inner border. Interior somewhat ringent, three-parted, fleshy, yellow; the lower lobe or lip longest, obovate, entire, projecting with a crown and erect margin, while a broad elevation of a deep yellow colour runs along its middle; upper two divisions obovate, and with the upper segment of the exterior border, forming a complete covering or dome over the anther.—Filament short, inserted between the two upper divisions of the inner border of the corol. Anther two-lobed, each ending in a long, sharp spur at the base.—Germ inferior, &c. as in the last. Style filiform. Stigma three-lobed, with a perforation in the centre.

Obs. The plant when in flower is highly ornamental, few surpassing it in beauty; at the same time it possesses a considerable degree of delicate aromatic fragrance.

Dr. Woodville's observation and quotations, at page 362 of his Medical Botany, induce me to think that the roots of this plant are not only the longer species of the Zedoaria found in the shops; but also the shorter or roundish, their form and size depending on the manner in which they may have been cut for drying: and I have lately learned from Sir J. Banks, that the dried root of this species agrees well with Zedoaria rotunda.

The Hindoos use the roots as a perfume, and also medicinally; they are sold in their shops, under the Arabic name Judwar, or the Bengalee one of Bun Huldi. When fresh as well as when dry, they
are of a pale yellow colour; and possess at all times an agreeable fragrant smell, and warm, bitterish, aromatic taste, whereas the roots of *Kämpferia rotunda* possess little or nothing of these sensible qualities, and are withal too rare in every part of *India*, where I have been, to allow me to think, any quantity of them can ever be collected for exportation.

3. *C. zanthorrhiza*. R.

Bulbs ovate, with both palmate and pendulous tubers deep yellow. Leaves sessile on their green sheaths, broad lanceolar, a permanent purple cloud down the middle.

From *Amboyna*, this remarkable species was brought to the Botanic Garden at *Calcutta*, in the year 1798, and only flowered for the first time in April and May, 1810. It is the only kind I have yet met with, which has its pendulous tubers inwardly of a deep yellow colour, like that of the bulb and palmate tubers. The *sheaths* of the scapes and leaves are green. The *coma* large, and of a deep purple, or crimson colour. *Exterior border of the corol* red. *Leaves* broad-lanceolar, and oblong; there is a narrow purple cloud down the middle of them, which penetrates to the underside; the whole height about four feet.

4. *C. elata*. R.

Bulbs oblong, obovate, and with the numerous, large, incurvate, palmate tubers, inwardly of a pale yellow. Leaves sessile on their sheaths, oblong, villous underneath; the whole of an uniform green.

A native of *Burma*, and from thence introduced by Dr. W. Carey, into the Botanic Garden at *Calcutta*, where it flowers in March and April.

A full description of this species is unnecessary, as it resembles the other species already described, in every respect, except in such as are pointed out in the definition, viz. its immensely large and numerous *bulbs* and *tubers*, which are inwardly of a pale yellow colour; the latter run very near the surface of the ground, and are much
incurved. The pendulous tubers, as in every other species, except C. zanthorrhiza, are inwardly pearl-coloured; every part above ground is of a uniform green, the spikes excepted. The leaves appear when the flowers begin to decay, and are larger than in any other species I have yet seen; being from two to three, or even four feet long, by one broad, and villous underneath; the whole height is about six feet. The spikes are large, with a deep rosy, or even crimson coma. Its external appearance resembles most C. Zedouriu, the roots however differ much, independent of their size. This plant is altogether a larger species than that.

5. C. casia. R.

Bulbs ovate, and with the palmate tubers inwardly bluish. Leaves lanceolar, petioled; a deep ferruginous purple cloud down the middle, which penetrates to the under surface; every other part green.

_Beng._ Neel-kant'ha, or Kala Huldi.

*Tommon-itam,* Rumph. amb. 5. p. 169.

This elegant, strongly marked species is a native of Bengal, where it blossoms in May, while the greatest heat prevails, just before the periodical rains begin: about the same time the leaves begin to appear. In the deep ferruginous purple cloud down the middle of the leaves, it resembles C. Zerumbet, but differs widely in the colour of the root.

_Bulbs ovate._ Palmate tubers many, and generally simple; these and the bulbs are inwardly pale blue, yerging towards grey, (caesius of Willdenow's scale;) in some the blue is pretty deep. Pendulous tubers ovate, oblong, inwardly of a pale watery pearl-colour, and less fragrant than in the former two species. This indeed is the case with all the other species I have examined.—Leaves bifarious, petioled, lanceolar, smooth on both sides, a deep ferruginous cloud runs the whole length of the rib, and penetrates through to the underside; every other part, petioles, and their sheaths, of a clear deep green colour; length about eighteen inches, by five broad. Petioles and their sheaths together, about as long as the leaves, making the
whole height of the plant about four feet.—Spikes lateral, appearing with, or rather before the leaves, about as long as their scapes, together about a foot long. Scales, lower fertile; bractes green, with a ferruginous tinge. Coma deep bright red, tending to crimson.—Corol, exterior border red; inner yellow.

6. C. aeginosa. R.

Bulbs ovate, and with the numerous palmate tubers, inwardly aetherigineous. Leaves petioled, broad-lanceolar, smooth, above the middle a faint ferruginous evanescent cloud on the upper surface only; every other part green.

A very stately species, introduced from Burma by the Rev. Dr. W. Carey, into Bengal, where it blossoms in May, immediately after which the leaves begin to appear. It is distinguished from all our other Curcumas by the internal aetherigineous, or verdigrease-like colour of its ovate bulbs, and its short thick palmate tubers; while the oval pendentous tubers, with which it abounds, are inwardly of a clear pale pearl colour. The comose lateral spike is in this, as it is in the other species. The exterior border of the corol is rose-coloured; the interior deep yellow. The leaves are broad-lanceolar, of a firm texture, and smooth on both sides; length from two to three feet, and from six to nine inches broad. Petioles and their sheathing portions together from two to three feet long; which gives to the whole plant a height of from four to six feet.

7. C. ferruginea. R.

Bulbs and palmate tubers copious, inwardly pale yellow. Sheaths of the scapes, and leaves ferruginous-red, with a faint mark of the same colour on the middle of the upper surface of the leaves.

A native of Bengal. Flowers in April and May. By attending to the pale yellow very fragrant roots, and to the rusty reddish sheaths of the scapes and leaves, this species will be readily known. The leaves, as in most of the others, are broad-lanceolar, (that is, they taper equally toward each end;) including the sheaths and petioles, they
are four feet high, or more; a very faint ferruginous tinge runs down the middle, which is very conspicuous in those that appear first in the season; whereas it is scarcely to be observed in the latter. The flowers are large, few in number, with the exterior border red, and the interior deep yellow. The bractes to the fertile part of the spike ferruginous, those of the coma few, and of a pretty bright crimson colour.

S. C. rubescens. R.

Bulbs ovate-lanceolate, and with the palmate tubers inwardly pearl-coloured. Leaves broad lanceolate, on red winged petioles, above the sheaths; rib red. Scape and scales red. Flowers longer than their bractes.

A native of Bengal. Flowering time the months of April and May, soon after which the leaves appear; and decay about the beginning of the cool season, in November. Every part has a strong, but pleasant aromatic smell when bruised, particularly the root.

Root of several, erect, solid, conical, pale straw or pearl-coloured, powerfully aromatic bulbs, which gave support to the former years foliage, and are strongly marked with the circular scars thereof; from their opposite sides the scapes, and stems of the succeeding year spring, which form similar new bulbs when those of the former year decay; but during their existence, there issues round their lower half, a number of strong fleshy fibres, many of which end in ovate or sub-cylindrical, pale white, slightly aromatic tubers, which also perish with the original parent bulb.—Stems, as in the other species, no other than the united sheaths of the leaves, which like them, decay annually about the month of October, and appear again when the flowers begin to perish in April.—Leaves bifarious, (six or eight of them forming the above-mentioned stems, of about three, or four feet in height, leaves included,) petioled on their sheathing base, broad-lanceolate, cuspidate, smooth, strongly marked with parallel veins; of an uniform dark-green, with the nerves or ribs red, from twelve to twenty-four inches long, by five or six broad.—Petioles, and
sheaths channelled, smooth, and of a deep red colour; a projecting process on the inside marks, in all this natural order, the limit of the sheath, and the beginning of the petiole.—Scape, radical, lateral, cylindrical, about six inches long, invested in several, dark reddish sheaths. —Spike tufted, five or six inches long, erect; Coma less deeply coloured than in Zerumbet.—Bractes, or scales of the spike exactly as in the other species, each embracing four or five flowers, which expand in succession.—Flowers small, bright yellow, rather longer than their bractes, fragrant.—Tube of the corol slender, its mouth completely shut with three villous, yellow glands.—Fruit not seen in a ripe state.

**Obs.** The ovate oblong, pendulous tubers of several species of Curcuma, yield a very beautiful, pure starch, like the Arrow-root, produced from Maranta arundinacea and Tacca pinnatifida, which the natives of the countries where the plants grow, prepare and eat. In Travancore, where some of these species abound, this flour, or starch, forms, I am told, a large part of the diet of the inhabitants. My C. angustifolia is another species which yields the same substance; and I have no doubt but the pendulous tubers of this species yield it also, and equally good.

Since writing the above, I have received from Chittagong, Bhagulpore, and Mirzapore, plants of three other sorts, all employed for the same purpose.

9. C. comosa. R.

Bulbs large, oval, inwardly pale ochraceous. Spikes clavate; fertile bractes of a pale pink colour; coma copious and rosy. Leaves broad-lanceolar; a faint ferruginous cloud above the middle of the earliest ones; every other part green.

A native of Burma. From Rangoon Mr. Felix Carey sent plants to the Botanic Garden at Calcutta, where they thrive well, and blossom in May, at which time it is by far the most beautiful, and the largest of the genus, I have yet seen.

Bulbs very large, oval, inwardly of a pale ochraceous colour. Pal-mate tubers scarcely any. Pendulous tubers lanceolar, and connect-
ed to the bulb by uncommonly long, thick, fibrous cords.—Leaves bifarious, petioled on their sheaths, lanceolar, smooth, and green in every part, except in those which appear first in the season, which have a faint ferruginous cloud on the centre of the upper surface beyond the middle; length two to three feet; the petioles with their sheathing bases measuring about as much more, making the whole height of the plant five or six feet.—Spikes lateral, appearing rather before the leaves, short-scaped, large, clavate. Fertile bractes, of a beautiful pale pink. Barren ones of the coma a deep, lively, rosy red; on account of the beauty and size of this part, I have given it the trivial name comosa.—Corol with the exterior border pink; inner pale yellow.

10. C. leucorrhiza. R.

Bulbs ovate; palmate tubers long and far-spreading, like the former they are inwardly of a pale straw colour. Leaves petioled, broad-lanceolar, smooth, of an uniform green in every part. Spikes few-flowered, with a coma as long as the fertile portion.

A native of the forests of Bahar. From Bhagulpore Mr. John Glass, the surgeon of that station, sent roots to this Garden, under the name Tikor; and observed that the plant is not cultivated, but grows in the jungles, to the southward of that place. The process, he says, for obtaining the starchy substance called Tikor, is as follows. "The root is dug up, and rubbed on a stone, or beat in a mortar, and afterwards rubbed in water with the hand, and strained through a cloth; the fecula having subsided, the water is poured off, and the Tikor, (fecula,) dried for use."

This plant grows freely in the Botanic Garden, and flowers in May. Here the palmate, or horizontal tubers, are particularly straight, and often near a foot long, they run deep in the earth, and far. Their inward colour, as well as that of the bulbs, is a very pale ochraceous yellow, almost white. Pendulous tubers numerous, oblong, inwardly pearl white. Leaves broad-lanceolar, uniformly green, about two feet long; whole height of the plant from three to
four feet. Spikes lateral, the inferior fertile portion not longer than the rosy coma. Flowers the length of the bractes; exterior border slightly tinged with pink; inner yellow. In the structure of the fruit it agrees perfectly with that of C. Zerumbet.

11. C. angustifolia. R.

Bulb oblong, with pale, oblong, pendulous tubers only. Leaves petioled, narrow-lanceolar. Flowers longer than the bractes.

Tikor of the Hindoos.

Found by H. T. Colebrooke, Esq. in the forests from the banks of the Sona to Nagpore, and by him introduced into the Botanic Garden at Calcutta, where it blossoms in July. The leaves make their appearance at the same time with those of the other species, and decay about the beginning of the cool season, in November.

Root, from a fusiform biennial crown issue many fleshy fibres, which end in smooth, oval, succulent tubers.—Stem, consisting of a few pale-coloured, leafless, surrounding sheaths.—Leaves petioled, narrow-lanceolar, most acute, striated with fine parallel veins, smooth on both sides; length from one to three feet, (petiole and sheath included,) which is in fact the whole height of the plant.—Petioles from six to twelve inches long, the lower half or more of which, expands into a sheath to embrace those within; the upper half or proper petioles slender, and channelled.—Spike radical, from four to six inches long, separate from the leaves, crowned with a tuft of oval, lively purple, neuter bractes.—Bractes common below the coloured neuter ones, ovate-cordate, obtuse, expanding recurvedly, each embracing three or four flowers, which open in succession.—Bractes proper boat-shaped, embracing the proper perianth, and germ of each flower.—Flowers large, longer than their bractes, bright yellow, expanding at sun-rise, and decaying at sunset of the same day.—Calyx above, three-toothed, somewhat inflated.—Coroll tube somewhat gibbous, contracted at the mouth, and there shut with short hairs; throat campanulate; exterior border pale-yellow, consisting of one large, vaulted, upper segment,
and two lower, oblong, smaller, concave ones; *inner border* three-parted; lower segment or *lip* with its exterior part sub-orbicular emarginate, or bifid; *upper segments* obovate, cuneate, with the filament, or short antheriferous segment, between them.—*Anther* as in the genus, double, with a spur from the lower end of each lobe. —*Germ* beneath, villous, three-celled, with many seeds in each. *Style* slender, at its insertion are the usual two nectarial bodies. *Stigma* globular, gaping on the anterior side.

*Obs.* From the oval pendulous tubers, Mr. Colebrooke observes, a sort of *Starch* or *Arrow-root-like* *feca* is prepared, which is sold in the markets of Benares, and is eaten by the natives.

**Sect. 2. Spikes central.**


Bulbs small, and with the numerous, long, palmate tubers, inwardly of a deep orange yellow. Leaves long-petioled, broad-lanceolar, of an uniform green.


*Curcuma domestica major. Rumph. amb.* 5. p. 162. t. 67.

*Curcumae of Avicenna.*

*Dar-zard of Garcias.*

*Sans. चूरद्र, Huvidra, चल्ली, Huldee, योला, Peeta, क्रासची, Kanchunee, निझा, Nisha, चरविभित्ती, Vuruvarunine, समिमा, Krimighna, वरविलिया, Yoshitpriya, चरविलियस्थिती, Harivilasinee.*

*Hind. and Beng. Huldee, Huludee, Pit-ras.*

*Heb. כרך, Kurkum.*

*Arab. Urukus-sufr, Urukus-saboghin.*

*Teling. Pampee.*

*Pers. زردچوب, Zerd-chob.*

*Hulud, or Huludee. Mahrat.*

*Is much cultivated about Calcutta, and in all parts of Bengal.*

Koenig's description published by Retzius, is so very exact and complete, that there is nothing left for me to add,
Cultivation.

The ground must be rich, friable, and so high as not to be overflowed during the rainy season, such as the Bengalees about Calcutta call Derga. It is often planted on land where sugar-cane grew the preceding year, and is deemed a meliorating crop. The soil must be well ploughed and cleared of weeds, &c. It is then raised; in April and May, according as the rains begin to fall, into ridges, nine or ten inches high, and eighteen or twenty broad, with interwoven trenches nine or ten inches broad. The cuttings or sets, viz. small portions of the fresh root, are planted on the tops of the ridges, at about eighteen inches, or two feet asunder. One acre requires about 900 such sets, and yields in December and January, about 2000 lb. weight of the fresh root.

13. C. Amada. R.

Bulbs conic, and with the palmate tubers, inwardly pale-yellow. Leaves long-petioled, broad-lanceolate, smooth. Spikes scanty, few-flowered. The whole plant uniformly green.

Amada of the Bengalees, which means mango-ginger, the fresh root possessing the peculiar smell of a green mango. It is used medicinally by the natives. It is a native of Bengal. Flowering time the latter part of the rains.

Root consisting of horizontal, palmate, sessile tubers united to the sides of an ovate-conic bulb of the same colour, which gives existence and support to the leaves, and spike: from its sides and base, long fleshy fibres issue, which penetrate deep into the soil; some of which end in oblong, paler (pendulous) tubers.—Stems no other than the united sheaths of the leaves.—Leaves radical, bifarious, petioled above their sheaths, ventricose, lanceolar, cuspidate, smooth on both sides; length from six to eighteen inches, by three to six broad; they decay about the end of October, and appear again with the first showers of April or May.—The petioles I divide into two portions: the lower or sheathing part from six to twelve inches long; and the upper or
proper petioles, from three to nine; the whole measuring in general, from one to two feet.—Scape central, about six inches long, invested in several alternate sheaths.—Spike shorter than the scape, cylindric, crowned with a tuft of loose, coloured, pale rosy, abortive bractes.—Bractes oblong, imbricated, the lower half of their margins united to the backs of the two next above, forming a pouch, for a fascicle of four or five, rather small, yellow flowers, which expand in succession; these have each a proper bracte, which embrace the tube of the flower only, and may be called an inferior calyx.—Calyx superior, unequally three-toothed.—Corol with a slender tube; its mouth shut with three yellow hairy glands; fassy sub-campanulate. Border double, both three-cleft, &c. as in the other species.—Germ oval, hairy, three-celled, with several seeds in each attached to their central receptacles.

14. C. viridiflora. R.

Bulbs oblong, and with the palmate tubers inwardly of a deep yellow. Leaves long-petioled, broad-lanceolar. The whole plant, (even the spike and coma,) uniformly green.

Tammon Giring seu Giri. Rumph. amb. 5. 169.

A native of Sumatra, and the other eastern islands; from Bencoolen Dr. Charles Campbell sent plants to this garden, where they grow luxuriantly, and blossom in July and August.

Root consisting, like that of the other species, of bulbs, and palmate, pendulous tubers; aromatic, and bitter, and employed by the Malays of Sumatra to dye with.—Leaves petioled, broad-lanceolar, smooth; length from one to three feet; the petioles, and sheaths thereof about as long.—Spike central, large.—Bractes, even those of the coma, uniformly green; the latter only paler.—Flowers small, very pale yellow.


Bulbs conic, with pale-yellow palmate tubers. Leaves short, petioled, oblong. The whole plant uniformly green, except the rosy coma of the spike.
Curcuma.

MONANDRIA MONOYNIA.

It grows in moist places, amongst the Circar mountains.—Flow-
ering time the rainy season.

Root perennial, consisting of conical bulbs enveloped in the re-
mainning sheaths of the leaves, and also of horizontal tubers, as in
ginger, &c. with large fleshy fibres from their base.—Leaves radical,
three or four, petioled, their petioles from eight to twelve inches
long, enveloped in a few sheaths, forming something like a stem; the
leaves themselves are oval, pointed, beautifully veined, smooth,
from eight to twelve inches long, and from five to six broad.—Spikes
rise from the centre of the petioles; their peduncle is of their length,
and involved in its proper sheaths.—Bractes numerous; the inferior
roundish, the superior oblong; the lower half of the base of the two
inner are united to the margins of the next without, forming a sack,
which contains from two to four flowers, each of which has a small-
er wedge-formed membranaceous proper bracte. The coma or supe-
rior bractes large, waved, rose-coloured, and (generally) without
flowers.—Calyx as in the two former species.—Tube of the corol
widening, somewhat campanulate; border double.—Exterior three-
parted; divisions equal, entire. Interior two-lipped; upper lip erect,
three-cleft; under lip entire, roundish, border waved, and a little
notched.—Filament no other than the middle segment of the upper
lip of the interior border of the corol; anther two-lobed, linear, the
under point of each lobe ending in a long sharp spur.—Germ be-
low. Base of the style embraced with the usual two nectarial bodies,
which in this species are larger; stigma large, globular, two-lipped,
somewhat marked.

16. C. reclinata. R.

Bulbs fusiform, with scarcely any palmate tubers, but many straw-
coloured, oval, pendulous ones. Leaves petioled, oblong, reclinate.

Discovered by H. T. Colebrooke, Esq. in the interior parts of
India, where it blossoms during the rains.

Root a bulbous head, from which descend many fleshy fibres,
ending in large, smooth, oval tubers.—Stem none, but the height of
the whole plant (viz. the spike) is about six inches; the leaves, being reclined, add nothing to its height.—Leaves radical; (in the only plant at present in my possession, from which this description is taken), four in number, two on each side of the spike, embracing it closely, with the lower sheathing part of their petioles reclined, oblong, acute; margins slightly waved; smooth on both sides; length, exclusive of the petiole, about nine inches, and about four or five broad.—Petioles, including the sheathing base, from three to four inches long, deeply channelled, and smooth.—Spike from the centre of the leaves, its short scape entirely hid by their sheaths, the rest loosely imbricated, with large, ovate, obtuse, expanded coloured bractes; the superior sterile, and more deeply coloured as in the other species of this family; but here, and in no other that I have yet seen, are the whole deeply coloured.—Flowers small, of a dull dark pink colour, except the lower segment of the inner border, which is tinged with yellow.—Calyx divided, obscurely three-toothed; scarcely half the length of the tube of the corol.—Tub of the corol sub-cylindric; throat campanulate. The corol, stamens, and pistil, as well as the nectarial scales of Koenig, as in the other species, already described.

17. C. petiolata. R.

Bulbs and palmate tubers few and small; inward colour pale yellow; tubers numerous, pendulous on short fusiform fibres. Leaves long petioled, oblong, ovate with the base rounded, (this is the only species, known to me, in which they have this form.) The whole plant uniformly green, except the lilac-coloured coma of the spike.

A native of Pegu, and from thence sent by Mr. F. Carey to the Botanic Garden at Calcutta, where it blossoms in August.

Obs. This species differs conspicuously from all any other Curcuma in the cordate shape of the leaves. The spike is central, as in the other late flowering species, its coma small, and of a lilac colour; the bractes very perfectly united almost to the broad, reni-
form apex, forming uncommonly deep pouches for the small yellow flowers.

**AMOMUM. Schreb. gen. plant. X. 3.**

Corolla with the interior border undulate. Anther double, surmounted with an entire, or lobate crest. Capsule three-celled, three-valved. Seeds many, arilless. Embryo simple, and furnished with both perisperm, and vitellus.


Leaves short-petioled, lanceolar. Spikes half immersed in the earth, loosely imbricated with villous, lanceolate, acute, one-flowered bractes. Lip with the anterior margin three-lobed. Crest three-lobed.

Cardamomum minus. Rumphi. amb. 5. p. 152. t. 65. f. 1.

A native of Sumatra, and other islands to the eastward of the Bay of Bengal, and sent by Dr. Charles Campbell from Bencoolen, to the Botanic Garden at Calcutta, where it blossoms in April.

Root perennial, creeping under the surface of the soil, like that of ginger; but smaller, less fleshy, more ligneous, and white; from which descend, and spread, many fleshy fibres.—Stems about biennial, several rising obliquely to the height of from two to four feet, about as thick as a stout ratan, invested in the smooth, deep green sheaths of the leaves.—Leaves alternate, bifarious, short-petioled on their smooth stem-clasping sheaths; from broad-lanceolate below, to narrow-lanceolate at top, entire and smooth on both sides; point long, and very fine; length from six to twelve inches.—Spike radical, sessile, oblong, appearing amongst the stems, half immersed in the earth; loosely imbricated with one-flowered, lanceolate, acute, villous, nervious, scariose, ash-coloured bractes; when old their brittle tops are often broken off.—Bractes. Besides the exterior one-flowered ones, just mentioned, there is an inner, striated, downy, scariose, two-toothed, tubular one, (which I have sometimes considered an exterior and inferior calyx, and which Koenig sometimes called an involucre,) inserted round the base of the germ.—Flowers
opening in succession, and not very conspicuous.—Calyx, clavate, tubular, downy, three-toothed, length of the tube of the corol.—Tube of the corol, slender, and slightly incurved. Exterior border of three sub-equal pellucid divisions. Lip, or inner border, rather longer than the exterior great border, somewhat three-lobed, with a crenate, curled margin; middle lobe yellow, with two rosy lines leading up to it from the mouth of the tube.—Filament scarcely half so long as the border of the corol, incurved over the mouth of the tube. There is a slender subulate horn on each side of the base of the filament, and nearly its length. Anther double, large, fleshy, with a large, three-lobed, concave crest; the infundibuliform stigma rising through a deep groove between the two polliniferous lobes.—Germ beneath, downy, and crowned with the two nectarial scales, within the base of the tube of the corol; in this species they are short, and truncated.

Obs. The seeds are to the taste agreeably aromatic, and are used by the Malays as a substitute for the true Cardamomum of Malabar.


Amomum angustifolium. Sonneterit it. 2. f. 137.
A native of Madagascar. From the island of Mauritius Captain Tennent brought plants thereof to the Botanic Garden at Calcutta, in 1802; where they grow freely, and blossom at various times of the year. Every part of the plant, when bruised, or wounded, diffuses a strong, but pleasant aromatic smell.

Root perennial, tuberous, horizontal; strong fleshy fibres, together with runners, issue from the crown, or bulb; by these runners the plant soon spreads, and by these it is easily multiplied.—Stems numerous, straight, round, smooth, rising to the height of from six to ten feet.—Leaves alternate, bifarious, sub-sessile on their sheaths, broad-lanceolate, fine-pointed, smooth on both sides; length from twelve to eighteen inches, and from about four to six broad.—
Sheaths embrace about three quarters of the stem, are smooth, and rise in an obtuse process, (ligula,) above the insertion of the leaves. —Scapes from the bulb, or base of the stem, where it unites with the root, rather slender, from six to twelve inches long, and closely imbricated with many, mucronate, smooth, sheathing scales.—Spikes linear-oblong, about the size of a man's thumb, imbricated with similar, but larger scales than those of the scape; the inner more deeply coloured.—Flowers few, pretty large, and possessed of a strong spicy fragrance.—Bractes; proper two to each flower, linear-oblong, inserted round the base of the germ, like an inferior perianth.—Calyx superior, deep blood red, smooth on both sides, slit two thirds on the outside, apex obscurely three-toothed.—Corol. Tube clavate, about as long as the bractes. Exterior border red, consisting of one large, erect, oblong, concave segment, which protects the anther and stigma; and of two inferior, very narrow segments. Lip obovate-cuneate, entire, or slightly three-lobed, yellow, and about as long as the exterior border.—Filament broad, particularly toward the base, where it has a small, coloured hornlet on each side. Anther double, surmounted with a large, three-toothed coronaet.—Germ clavate, obscurely three-sided, three-celled, with many ovula in each, attached to the partitions. Stigma funnel-shaped, somewhat bilabiate. Nectarial bodies of Koenig are here larger, and longer than in the other species.

3. A. aculeatum. R.

Leaves sub-sessile, cordate-lanceolate. Spikes obovate, lax, even with the ground. Lip oval, ventricose. Crest amply three-lobed. Capsules echinate.

A native of the Malay Archipelago. It was raised from seed sent to the Botanic Garden at Calcutta by Mr. W. Roxburgh, in 1802, where the plants blossom in April and May, and ripen their seed in October and November.

Root perennial, tuberous like ginger, with many, thick, fleshy fibres.—Stems a little recurvate, the thickness of a walking cane,
slightly pubescent; from five to ten feet high.—Leaves alternate, biseriate, very short-petioled, cordate-lanceolate, mucronate, smooth, dark green; general length from twelve to eighteen inches, and from three to four inches broad.—Sheaths half stem-clasping, villous on the outside. Ligula short, and of a semi-lunar shape.—Scapes issuing from the base of the stem, under the surface of the ground, where it joins the root, diverging a little way under the surface of the earth, invested in oval, fleshy scales; those next to the spike longer, and more pointed.—Spikes obovate, rising obliquely among, or near the stems, just so much as to elevate its flower-bearing apex above the surface of the earth.—Flowers numerous, and expand in succession; prevailing colour deep orange.—Bracteae, exterior one-flowered, linear-oblong, length of the tube of the corol; inner tubular with two-toothed margin, and inserted round the base of the stem, like an inferior perianth.—Calyx above, tubular, two or three-toothed.—Corol, tube slightly incurved. Exterior border three-parted; segments unequal, erect, oblong, obtuse, the middle one larger, concave and incumbent over the fissure of the inner border, together forming a campanulate tube. Lip, sub-rotund, with crenulate, curled margin, and marked with beautiful crimson spots down the middle, on the inside.—Vitament erect, with a hornlet on each side of its base. Anther two-lobed; lobes linear-oblong, and surmounted with a broad, three-lobed crest.—Germ inferior, three-celled, with many ovula in each, attached to the inner angle. Stigma funnel-shaped.—Capsule the size of a large nutmeg, oval, (not sulcate as in König’s Amomum or Globba crispa, Ratz. obs. 3. p. 59.) but thickly beset with numerous, stout prickles, three-celled, three-valved; valves fleshy (not muciform as in Globba crispa, Rumph. amb. 6. p. 137). Partitions membranaceous.—Seeds, many in each cell, oval, smooth, brown; surrounded with a pith, gelatinous, sweetish-acid pulp or aril, intermixed with fine woolly filaments, and attached to a central receptacle by very slender cords, which are enveloped in the same gelatinous pulp which surrounded the seed.—Perisperm, white, cartilaginous.—Vitellus, nearly spherical, lodged about the middle of the perisperm, and of a
clearer colour, and harder texture. — Embryo sub-cylindric, the inner end, or cotyledon, lodged in the vitellus, which in some seeds it passes entirely through. Radicle pointing directly to the umbilicus.

4. A. maximum. R.


This plant is now growing in the Company's Botanic Garden near Calcutta; it was introduced from the Malay islands by the late Colonel Kyd. Flowering time the hot season; the seeds ripen three or four months afterwards.

Root tuberous, as in ginger, but much larger, and with large, conical bulb-like bases to the oldest stems. — Stems nearly erect, round, and smooth; from six to eight or more feet high, invested in the smooth, long sheaths of the leaves. — Leaves alternate, petioled, lanceolar, and linear-lanceolar, acute, smooth above; villous underneath, with many large parallel veins; from two to three feet long, and about six inches broad; when dry the underside appears to be more closely covered, with most beautiful, soft, sericeous down, than while fresh. — Petioles, the sheathing part long, between each petiole and its leaf there is a short; somewhat triangular portion, with a stipular process, or ligula at the inside of its base. — Spikes radical, short, their flower-bearing apex being only just above the earth; below the flowers it is covered with large, oval, concave scales. — Bractes solitary, one-flowered, lanceolate, membranaceous, rather longer than the tubes of the flowers. — Calyx tubular, a little gibbous, length of the tube of the corol; mouth three-toothed. — Corol; Tube funnel-shaped. Exterior border three-parted, as usual; but here they all converge upward into one helmet over the anther and stigma; as in the Orchidee. Lip entire, expanding, oblong, marked with a yellow stripe down the middle; margins waved, and crenulate. — Filament short, from the mouth of the tube of the corol, opposite to it's interior border, on
each side of its insertion, is a small hornlet. Anther double, or two-lobed, and crowned with a beautiful, broad, semi-lunar crest. Nectarial bodies of König linear, fluted, and truncate.—Germ short-pedicelled, striated, three-celled, with numerous ovula in each, attached to the inner angle, (axis). Style slender. Stigma funnel-shaped, but shut transversely, except during anthesis.—Capsule almost glo- bular, size of a gooseberry, three-celled, three-valved, ornamented with nine, firm, short, ragged (when old, and dry) membranaceous wings.

Obs. The seeds possess a warm, pungent, aromatic taste, not unlike that of Curcumans, but by no means so grateful.

5. A. dealbatum. R.


A stately species, a native of Chittagong, and other countries which form the eastern frontier of Bengal; from the former it has been introduced into the Botanic Garden near Calcutta, where it grows luxuriantly, and flowers freely during the months of March and April; and the seeds ripen in September and October.

Roots perennial, tuberous, crooked, jointed, creeping, like common ginger, with strong, fleshy fibres; inward colour of the tubers pale dull yellow, and when newly cut considerably aromatic.—Stems numerous erect in the centre, and oblique in the circumference of the clump, from three to five feet high.—Leaves sub-bifarious, the lower sessile on their sheaths and oblong, the superior short-petioled and lanceolar; all are very villous, and paler underneath, length from six to twenty-four inches, breadth from three to six.—Sheaths smooth, rising in a bifid ligula above the mouth.—Spikes radical, roundish-ovobvate. Scape short and imbricated with scales, &c.—

Bractes from ovate to lanceolate, obtuse, very perishable, pale, one-flowered. In this species there is no inner bracte, like an interior calyx attached to the base of the germ, so general in this natural or-
der.—*Flowers* numerous, large, white.—*Calyx* superior, rather longer than the tube of the corol, three-cleft, and like the bractes very perishable.—*Corol*; *Tube* short, the three exterior segments of the border form a vault over the anther, they are linear-oblong, and nearly equal. *Lip* broad-oval, emarginate; *margin* curled; white, with a little yellow in the centre.—*Filament* short. *Anther* linear, crowned with an entire, broad, truncate, pure white crest.—*Germ* short-pedicelled, three-celled, &c. as in the genus.—*Capsules* ovate-oblong, size of a nut-meg, nine-winged, three-celled, but I have not observed them separate into valves.—*Seeds* many, shape various, but oval and ovate are most common. *Integuments* besides the aril, or its dried remains, a single, very hard, dark coloured, brittle one.—*Perisperm* conform to the seed, white, and carthaginous.—*Vitellus* lodged in the upper part of the perisperm, of a roundish shape, hard, sub-hyaline.—*Embryo* sub-cylindric, its apex immersed in the vitellus, and its base at the umbilicus.

*Obs.* The seeds of this plant are insipid, whereas those of *Amomum maximum*, which is nearly allied to it, are aromatic, and pass for a sort of Cardamom.

6. *A. subulatum*. R.
Leaves lanceolar, smooth. *Spikes* obovate, echinated with the long subulate points of the bractes, calyx, and upper segment of the exterior border of the corol. *Lip* oblong.

A native of the lower range of mountains which skirt the plains of *Bengal* on the north, where it grows on the borders of the rills of water between the hills. Flowering time in the Botanic Garden near Calcutta, March and April; and the seeds ripen during the rains.

*Root* tuberous, creeping at a small distance under the surface of the soil, &c. as in the genus, and amply furnished with numerous, strong fibres.—*Stems* erect about three or four feet high, and about as thick as the little finger.—*Leaves* alternate, bifarious, sessile on their sheaths, narrow-lanceolar, finely acuminate, deep green, and
smooth on both sides; from twelve to fifteen inches long, by three or four broad. *Sheaths* smooth, margins coloured and rising above the mouth into an emarginate ligula.—*Spikes* radical, compact, a little elevated above the soil, obovate, size of a goose-egg, echinate with the long, subulate, pale yellow points of the bractes, inner calyx and upper segment of the exterior border of the corol.—*Bractes* numerous, the exterior imbricated upward, obovate, dark-red, smooth, long-subulate, pointed, one-flowered; *the inner*, or *inferior* calyx, spathiform, opening on one side.—*Flowers* large, yellow.—*Calyx* superior, three-cleft, segments subulate, and much longer than the tube of the corol.—*Corol*: exterior border of three nearly equal segments, the upper one ends subulate. *Lip* oblong, often emarginate; margins a little curled, deeper yellow than the exterior segments.—*Filament* flat. *Anther* two-lobed and crowned with an entire crest.—*Germ* three-celled, with many *ovula* in each, attached to the thick partitions, a little removed from the *axis*. *Style*, *stigma*, and *nectarial scales* of König as in the genus.

7. *A. aromaticum*. R.

*Beng*. Morung Elachi.

A native of the valleys on the eastern frontier of Bengal, where, as well as in the Botanic Garden near Calcutta, it blossoms during the hot-season, before the periodical rains begin; and the fruit ripens in September; the capsules are then carefully gathered by the natives, and sold to the druggists, who dispose of them for medicinal and other purposes, where such spices are wanted, under the name of *Morung elachi*, or *cardamom*; though the seed vessel of this species differs in form from all hitherto described sorts of this drug; however the seeds are similar in their shape and spicy flavour.

*Root* tuberous, running for a small extent at a small depth under the surface of the soil, &c. as in the order.—*Stems* in tufts, erect, or more or less oblique according to their situation in the tuft, those in the centre being nearly erect, while on the outside they bend out considerably, all are covered with the sheaths of the leaves, general
height two to three feet; duration from one to two years.—Leaves bifarious, lanceolar, acuminate, smooth; from ten to twelve inches long, and from two to four broad.—Spikes radical, imbricated, at first clavate, afterwards becoming roundish as the fruit advances. Scape from one to three inches long, hid under the surface of the earth, and embraced by numerous imbricated, sheathing scales.—Flowers of a middling size, pale yellow.—Bracts; exterior one-flowered, oblong, concave, smooth. Interior, or inferior perianth, tubular, sheathing the germ, and lower half of the proper perianth.—Calyx superior, cylindric, entire, or dentate, villous.—Coroll with a long, slender tube; segments of the exterior border sub-lanceolar, obtuse, the upper one somewhat vaulted over the stamina, and stigma. Lip nearly round, and undivided, tinged with red down the middle; no spur, or projections between it and the base of the filament.—Filament linear, incurved. Anther crowned with a three-lobed crest.—Germ villous, three-celled, with many ovula in each, attached to the axis.—Capsule ovate, size of a large nutmeg, rather fleshy; surface somewhat rugose, three-valved, three-celled.—Seeds several in each cell; oval, and obovate are the most prevailing forms.—Perisperm conform to the seed.—Vitellus nearly round, occupying a considerable portion of the upper part of the perisperm.—Embryo clavate, length of the seed, its apex passing through the centre of the vitellus.

S. A. sericeum. R.


A native of the mountains on the North-East border of Bengal, where it is also called Dooi Kesha. It is a stately plant, with leaves about two feet long, and of the colour and appearance of highly polished silver underneath. The inflorescence a completely compound, sub-globular raceme with the short, villous, branches there-of two or three-flowered, each flower pretty long-pedicelled and imbraced during their early period with villous, oblong, membranaceous bracts, which soon perish; the calyx is more permanent, tu-
cular, villous, and three-toothed.—Flowers large, white, centre of the lip variegated with pink veins on a yellow ground; exterior border of three, nearly equal, oblong, white segments, the upper one ends subulately from an obtuse apex; two large spurs between the base of the lip and that of the rather long filament; anther of two linear lobes, crowned with a very large, curled, semi-lunar crest.—Germ villous, nine-ribbed, three-celled, &c. as in the genus. Capsule long, narrow, ovate-oblong, three-celled, three-valved, surface even and smooth, colour a brownish red, inside deeper and brighter. —Seeds many, obovate, black, and pretty smooth, aril white and fleshy. Embryo simple, erect, length of the seed, and furnished with both perisperm and vitellus.

ZINGIBER.

Corolla with the interior border unilabiate. Anther double, crowned with a single, horn-shaped, curved beak. Capsule three-celled, three-valved. Seeds many, arilled. Embryo simple, and furnished with both perisperm and vitellus.

Sect. i. Spikes radical.


Arab. Zenjabil.

Beng. and Hind. Adraka, or Ada. The dry root Soontha.

Teleng. Allam.


Zingiber majus. Rumph. Amb. 5. p. 156. t. 66. fig. 1.

This plant is universally known, and cultivated over all the warmer parts of Asia; where to be found indigenous I know not. Flowering time the rainy season; but it is very rarely found in that state; nor have I ever met with the seeds.
Root tuberous, biennial.—Stems erect, and oblique, invested in the smooth sheaths of the leaves; generally three or four feet high, and annual.—Leaves sub-sessile on their long, vaginated sheaths, bifarious, linear-lanceolate, very smooth above, and nearly so underneath.—Sheaths smooth, crowned with a bifid stipulary ligula.—Peduncles radical, solitary, a little removed from the stems, from six to twelve inches long, enveloped in a few obtuse sheaths, the uppermost of which sometimes end in tolerably long leaves.—Spikes, oblong, the size of a man's thumb.—Bractes. Exterior imbricated, one-flowered, obovate; smooth, membranaceous-bordered, faintly striated lengthways. Interior solitary, enveloping the germ, perianth, and the greater part of the tube of the corol.—Flowers rather small, when compared with the rest of this natural ord. r.—Calyx superior, one-leaved, opening on one side, apex three-toothed.—Corol, with a double border; exterior of three, nearly equal, oblong segments. Lip three-lobed, and of a dark purple colour. Nectarial filaments of Koenig large, subulate, line-pointed.—Filament short. Anther oblong, double, crowned with a long, curved, tapering, grooved hornlet.—Germ oval, three-chambered, with many ovula in each. Style filiform. Stigma funnel-shaped, ciliate, lodged just under the apex of the hornlet of the anther. This famous plant is too well known to require any further description.


Lampujum. Rumph. Amb. 5. p. 148. tab. 64. fig. 1.
Zinziber spuriun. Köen. in Retz. obs. 3. 69.
Beng. Butch, or mahaburée-butch.
Found wild in the woods about Calcutta. Flowering time the rainy season; the seeds ripen in November and December.
Root biennial, tuberous, as in ginger, externally whitish; interna-

tively pale yellow, and of a bitter aromatic taste.—Stems annual, ob-

lique, about three or four feet high, completely invested in the

sheaths of the leaves.—Leaves bifarious, sessile, broad-lanceolate,

to smooth, waved; veins numerous, slender, parallel; deep-

green above, pale underneath.—Sheaths crowned with a large, broad

membranaceous, emarginate ligula.—Peduncle solitary, a little re-

moved from the stems, erect, from twelve to twenty-four inches

long, enveloped in imbricated sheaths.—Spikes oval, obtuse, or with

a round excavation on their apex, about the size of a goose-egg.—

Bractes (or scales of the spike) the exterior one-flowered, imbric-

ated, broad-obovate, obtuse, with a broad membranaceous border.

Interior (or proper) solitary, one-flowered, enveloping the germ, pe-

rianth, and most of the tube of the corol.—Flowers large, pale, of a

sulphur colour.—Calyx superior, one-leaved, sheathing the lower half

of the tube of the corol.—Corol; exterior border three-parted, &c. as

in the genus. Interior, or lip broad, with the lateral lobes thereof

particularly large; middle division two-parted; they are all beauti-

fully curled, and of a pale yellow colour. Nectarial filaments of König

as in the order.—Filament scarcely any. Anther large, double, with

its long, curved horn projecting over the lip. Stigma funnel-shaped,

fringed with long, distinct hairs.

S. Z. Cassumunar. R.

Straight. Leaves sessile, linear-lanceolate. Spikes radical, strobili-


Sans. गुण ग्याँगः, Vuna Ardrukam.

Hind. and Beng. Bun Ada, (wild ginger.)

Teleng. Karpushpoo, (small turmeric.)

A native of Coromandel, Bengal, and Bahar. Flowering time

July and August, seed ripe in November and December.

Root perennial, tuberous, furnished with long, white, fleshy fi-

bres, and jointed like ginger, but much larger; when fresh of a deep

yellow; possessing a strong, not very agreeable, camphoraceous

smell, and warm, spicy, bitterish taste. Stems annual, erect, round,
from three to five feet high, entirely enveloped in the imbricated sheaths of the leaves.—Leaves bifarious, approximate, sessile on their sheaths, linear-lanceolate, deep green above; villous, and paler underneath, where the nerve also is hairy like the sheaths; length from one to two feet, and about three inches broad.—Sheaths clothed with exceedingly pungent hairs on the outside; their mouths ending in a stipulary process on each side of the insertion of the leaf.—Scapes radical, from six to twelve inches long, invested in several, oblong, downy sheaths.—Spikes oblong, strobiliform, compact, sharp-pointed, closely imbricated with numerous obovate, acuminate, greenish ferruginous (where exposed), villous bractes.—Flowers solitary, (that is, one to each bracte of the spike, and blossoming in succession,) large, every part of a pale, uniform, sulphur colour.—Calyx double; the exterior, smooth, spatheform, three-dentate one, may be considered a bracte; it is inserted round the base of the germ, which, as well as the inner, or proper perianth, it entirely envelopes; when forcibly expanded, oval. Inner or proper perianth, superior, one-leaved, somewhat gibbous, membranaceous, three-toothed, on the outside divided nearly half way down.—Corolla. Tube slender, as long as the scale of the spike, upper division of the exterior border boat-shaped, projecting over the stamen; under two narrower and reflexed under the lip. Lip three-lobed; lateral lobes obliquely obovate, erect; middle lobe nearly round, with the apex emarginate, and the border slightly curled.—Stam. Anther ending in a long, subulate, recurved beak.

Amomum roseum. Corom. pl. 2. N. 126.
Telting. Bamacatchicay.
Is a native of the northern Circars, where it flowers in the rainy season.
Root biennial, horizontal, jointed, and white; with many large fibres.
—Stems several, invested in the sheaths of the leaves, &c. as in the
other scitamineous plants, about two or three feet high, leaves included.—Leaves somewhat petioled, bifarious, lanceolate, acute, tending to one side, smooth, finely veined; about twelve inches long, and from three to four broad.—Spikes remote from the stems just appearing above the ground when in flower, imbricated with lax, lanceolate, reddish, one-flowered bractes.—Flowers solitary, colour a mixture of red and yellow.—Bractes, besides the exterior one already mentioned, there is an interior one for each flower between it and the rachis, which is linear, with an obtuse, notched apex.—Calyx one-leaved, tubular, above, membranaceous; mouth toothed.—Corol; Tube cylin dric, erect, considerably longer than the bractes. Border double. Exterior three-parted; in this plant the two approximated divisions are above, linear, pointed, and recurved, sometimes revolute; the lower division stands single, and is like the superior two, linear and revolute; all are of a bright red colour. Interior, or lip single, broad, obtuse, reflexed over the superior two divisions of the exterior border.—Filament, and anthers as in the other species.—Style rather longer than the horn of the anther. Stigma perforated, and ciliate. Two similarawl-shaped nectarial bodies at the base of the style, are also present here.

Obs. I have not found that the natives make any use of this plant.

3. Z. ligulatum. R.
Leaves approximate, sessile, lanceolate. Spikes lax, more than half hid in the earth, obovate. Bractes cuneiform. Lip sub-hastate.

A native of Hindoosthan. Flowering time in the Botanic Garden the rainy season; the seeds ripen in November and December.

Root jointed, running horizontally at some depth under the surface of the earth, and furnished with long fleshy fibres from the joints; from these joints shoots rise, and by them the plant is readily propagated.—Stems about two feet high, bending considerably to one side.—Leaves alternate, approximate, bifarious, sessile on their sheaths, from cordate below to lanceolate toward the top of the plant, both sides smooth, and marked with parallel veins, the under side paler green,
length from three to twelve inches, and breadth about four.—Sheaths smooth, from the mouth of each rises a remarkably large long strap, or ligula, which by the growth of the plant becomes bifid, and by age scarioso.—Spikes radical, half hid in the earth, oblong, loosely imbricated with cuneiform, pink-coloured, one-flowered, exterior scales or bractes; and the same number of inner colourless, tridentate shorter bractes; or, as they may be called, inferior perianths.—Calyx superior, one-leaved, spathiform, about half the length of the tube of the corol, irregularly tridentate.—Corol. Tube slender, the length of the exterior scales of the spike, incurved. Exterior border of three, nearly equal, linear, acute, smooth, reddish divisions. Lip oblong, obtuse; margins much curled, with two expanding, more or less acute lobes at the very base; colour a pale yellow.—Filament short; below the two-lobed anther, linear, ending above in the usual long, taper, curved, grooved beak.—Germ oval, villous, three-celled, each containing many ovula attached to a central receptacle. Style very slender, and so long as to elevate the funnel-shaped, ciliate stigma to an equal height with the apex of the filament.—Nectarial scales long and slender, embracing the base of the style within the bottom of the tube of the corol.—Capsule ovate, size of a large olive, three-sided, three-celled, three-valved, opening from the apex down the angles; inside of the cells crimson.—Calyx leathery, striated, pale, dull yellowish straw colour.—Seeds many, oval, blackish brown; a little rugose, arilled. Aril white, nearly complete, and ragged at the upper end.—Perisperm conform to the seed, cinereous.—Embryo cylin- dric, central, nearly as long as the perisperm.

6. Z. rubens. R.


A native of the interior of Bengal; from the district of Rungpore Dr. Buchanan sent the plants to the Botanic Garden, where they blossom in August.

Root tuberous, &c. as in the other species. —Stems herbaceous,
somewhat declinate, from two to four feet high.—Leaves alternate, bifarious, sessile on their sheaths, smooth on both sides; general length about twelve inches, and from four to five broad.—Sheaths with a large, membranaceous, stipulary process at the mouth.—Spikes several from the base of the stems, where they join the root, half immersed in the earth, sub-ovovate, fastigate, laxly imbricated with numerous straight, erect, linear-lanceolate, acute, involute, red, slightly villous, exterior bractes. Inner bractes, or inferior perianth the length of the tube, but shorter than the exterior bractes, and irregularly tri-dentate.—Calyx superior, sub-cylindric, membranaceous, pellucid, most slightly villous; mouth, three-toothed.—Corol with a long, slender, cylindric tube; segments of the exterior border linear-lanceolate, acute, red. Lip ovate-oblong, entire, speckled with red and yellow.—Filament scarcely any. Anther of two long lobes crowned with the long, characteristic, curved horn, which is incumbent on and reaches to the apex of the lip.—Nectarial filaments of König oblong, and obtuse.—Germ hairy, three-celled, with many ovula in each, attached to the axis. Stigma funnel-shaped, and ciliate.—Capsule

7. Z. squarrosum. R.


A native of Burma, where it ripens its seeds in December. From Rangoon Mr. F. Carey sent the fresh roots, entire capsules, and ripe seeds to this garden, where the plants from both the seeds and roots, grow freely, and the latter blossomed in August.

Root tuberous, as in ginger, &c.—Stems herbaceous, considerably recurvate, from two to three feet high, entirely hid in the sheaths of the leaves.—Leaves bifarious, sessile, lanceolar, smooth above, slightly villous underneath, cuspidate.—Sheaths with two large conical processes rising from their mouths, one on each side.—Spikes from the base of the stems, three fourths hid in the earth, ovate, laxly imbricated, size of a goose-egg.—Bractes green; the exterior solitary, one-
flowered, linear, concave, long, taper, waved, recurved. Inner, one or two, (generally one), as long as the tube of the corol, with a three-toothed apex.—Flowers pretty large, inodorous.—Calyx superior, &c. as in the other species.—Corol with a slender tube. Exterior border of three, pink-coloured, lanceolate, acute segments. Inner, or lip two-lobed at the base; apex bifid, colour a speckled mixture of purple, red, and yellow. Filament short, anther and beak together nearly as long as the lip.—Germ villous, three-celled, with many ovula in each. Style and stigma as in the genus.—Capsule short-pedicelled, ovate, conic, three-celled, three-valved, opening from the apex, inside of the valves bright scarlet while fresh. (Those sent from Rangoon by Mr. F. Carey, were, when they reached me, perfectly dry, and then measured three inches in length, and one in diameter.)—Seeds many in each cell, arilled, arranged in two rows, and attached to the inner edge of the partitions. Aril complete, fleshy, white.—Perisperm conform to the seed. Vitellus covers every part of the embryo, which is clavate, and nearly as long as the seed.

8. Z. panduratum. R.

Leaves petioled above their sheaths, broad-lanceolar, smooth; ligula large and scarioso. Spikes radical, half immersed in the earth; lax. Bractes lanceolate. Lip panduriform, with oval, emarginate lamina.

This middling sized species is a native of the country about Rangoon. From thence Mr. F. Carey sent seeds to the Botanic Garden in 1808, and in July, 1810, the plants raised from them blossomed abundantly.

Root; numerous, long, fleshy, fibrous fibres, some of which swell into lanceolar tubers, as in Curcuma; no palmate tubers, as in that genus. It possesses but little taste and no fragrance.—Stalks erect, herbaceous, about three feet high.—Leaves bifatious, petioled above their sheaths, broad-lanceolar, acute, smooth on both sides; from six to twelve inches long, by three to four broad.—Sheath smooth above their respective leaves; each ends in a very long, scarioso,
smooth ligula.—Spikes radical, the lower half immersed in the soil, oblong, and rather loosely imbricated with lanceolate, coloured, cou-cave, one-flowered, interior and exterior bractes.—Flowers rather small, exterior border of three, nearly equal, lanceolate, scuminate, pale red segments; inner or lip very pale yellow, panduriform, that is with two, pretty large, rounded lobes at the base, and the lamina nearly oval, retuse, truncate, or emarginate.—Filament broad, and short. Anther double, and crowned with the usual beak.—Germ three-celled, with many ovula in each, attached to the inner angle of the cell. Stigma infundibuliform.

Observation by N. W. The Burman name is Toukta.—Capsule ripening in November and December, ovate, triangular, acute, with flattened sides, smooth, pale, retuse at the base, and surrounded with numerous withered bractes, as large as a walnut.—Valves thick and fleshy, three-cornered, inner surface waved, shining, scarlet; skin leathery; flesh spongy, pallid.—Dissepiment oblong, ventricose, triangular, scarlet, at the bursting of the capsule adhering to the inner angle of one of the valves.—Seeds obovate, horizontal, in each cell about twelve, attached by small white fleshy placen-tas to the sides of the dissepiment, faintly aromatic.—Arillus milk-white, leathery, loosely surrounding the seed, perforated at its top with a small toothed opening.—Integument simple, dark-purple, smooth and shining, porous within and replete with a violet-coloured juice: it enters the umbilicated base of the seed and receives the apex of the radicula.—Albumen white, amygdaloid, conform to the seed and occupying chiefly its lower half, sub-oblit-erate above.—Vitellus white and fleshy, turbinate, constituting almost entirely the upper part of the seed, ending below in a very thin sheath which covers the substance of the embryo.—Embryo cylindric-ventricose, as long as the seed, erect.—Cotyledon sub-cylindric, almost naked.—Radicula thick, somewhat enlarged at its apex, centripetal.

Sect. 2. Spikes terminal.

9. Z. capitatum. R.
Herbaceous, leaves linear lanceolate, stem-clasping. Spike ter-minal, erect, strobiliform, bracte lanceolate.
A native of the forests of Rohilkund, from thence Colonel Thomas Hardwicke sent plants to the Botanic Garden, under the vernacular name Jungle Adruk. Here it flowers during the rains; and the seeds ripen in September and October.

Root composed of many, long peduncled, oval, smooth, pale-coloured, insipid, watery tubers, issuing from the base and sides of the bulb, and palmate tubers, which are of a pale yellow colour, and somewhat spicy taste.—Stems erect, round, enveloped in the sheaths of the leaves, which are often a little hairy; height of the whole plant when in blossom, from two to three feet.—Leaves sub-biflorous, alternate, sessile on their sheaths, narrow-lanceolate, acute, smooth above, a little hairy underneath, about twelve inches long and about two broad.—Spike terminal, sessile on the mouth of the sheaths of the superior leaves, linear-oblong, somewhat strobiliform, many-flowered.—Flowers sessile, large, pure yellow in every part.—Bractes in pairs, one-flowered, permanent; exterior lanceolate, concave, erect, longer than the tube of the corol. Inner ovate, shorter, immediately enveloping the germ, calyx, and nearly the whole of the tube of the corol.—Perianth superior, one-leaved, about half the length of the tube of the corol, membranaceous, white, two or three-toothed.—Corol. Tube cylindric, narrow. Lip with two, oblong, very distinct, expanding, lateral lobes; middle lobe very large, and nearly round. Anther with a very long curved beak.—Stigma (as in most plants of the order), funnel-shaped, with ciliate margins.—Nectarial scales (of König), or hornlet conical.—Capsule oval, three-sided, with the angles rounded, pretty smooth, size of a small olive, three-celled, three-valved; each cell containing several, black, shining seeds, enveloped in a deeply jagged, white aril.—Perisperm conform to the lower half of the seed which it occupies, pure white, cartilaginous. Vitellus above the perisperm, occupying nearly the upper half of the seed.—Embryo vertical, passing through the centre of both perisperm and vitellus, sub-cylindric, both ends obtuse, &c. in every respect so exactly like Z. Cassumunar, that the same drawings and description may well serve for both.
10. *Z. marginatum.* R.

Leaves sessile, lanceolate; ligula large and membranaceous. Spike terminal. Bractes obvolute, with transparent, membranaceous margin. Nectary three-lobed.

11. *Z. elatum.* R.

Leaves bifarious, linear, recurved. Spikes terminal, lanceolar, compactly imbricated with lanceolate, one-flowered bractes.

A native of the interior of Bengal; in the Botanic Garden it blossoms in July and August, and the seeds ripen in September and October.

Root tuberous, as in common ginger, but inwardly yellow; from the tubers proceed the proper roots, many of which end in oblong, paler coloured tubers, as in *Curcuma.*—Stems herbaceous, straight, from four to five feet high, including the spike.—Leaves bifarious, linear, recurved, smooth above; with many adpressed, short, soft, white hairs underneath; from twelve to eighteen inches long, and only one inch broad. Sheaths a little hairy; mouth crowned with a very narrow, membranaceous process.—Spikes terminal, solitary, of a narrow lanceolar shape, six inches long, and three in circumference, every part compactly imbricated with lanceolate, one-flowered bractes, which are an inch and a half long, and a little hairy on the outside.—Bractes; interior, or inferior perianth shorter and broader than the exterior, but like them stiff, and a little hairy.—Calyx superior, white, smooth; mouth unequally toothed, little more than half the length of the bractes.—Corolla exactly as in the other species, only considerably longer; the colour a tolerable bright, lively yellow.—Stamens with a short filament, and very long curved beak crowning the linear two-lobed anther.—Nectaries bodies subulate.—Germ oval, hairy, three-celled, with numerous ovula in each, attached to the axis, Stigma ciliate.—Capsule oval, size of a small olive, three-celled, three-valved.—Seeds numerous, lucid, black, enclosed in a large white ragged aril.—Embryo simple sub-lanceolate, base truncate, embraced by the perisperm; the upper half by the stellatus.
COSTUS. Schreb. gen. No. 4.

Corolla with the interior border of one, campanulate, back-cleft lobe. Filament lanceolate, with the double anther attached far below its apex. Capsule three-valved, three-celled. Seeds numerous, arilled. Embryo simple, and furnished with both perisperm and vitellus.


Leaves sub-sessile, spirally arranged, oblong, cuspidate, villous underneath.

Tjama-Kua. Rheed. mal. 11. p. 15. f. 8.

Tsiana speciosa. Gmel. 9.

Herba spiralis hirsuta. Rumph. amb. 6. p. 143. t. 64. f. 1.

Suns. केम्मूक्, Kemooka.

Hind. and Beng. Keoo.

Banksia speciosa of Dr. König, see Retz. obs. 4. 75.

This is one of the most elegant looking plants of the natural order Scitaminea. It is a native of moist shady places, such as the low banks of water courses, &c. Flowers during the wet season.

Obs. König's description agrees so well with my plant, that I have scarcely any thing to add: the chief differences are,

1st. Mine is generally from three to four feet high, ascending spirally, with the leaves spirally disposed up and round the stem.

2d. In this the spike is at all times erect, and rigid; from about three to six inches long.

3d. There is nothing like a crown to the anthers; and

4th. The stigma consists of two, broad, glutinous lips, which gape wide while the pollen is shedding; between them is evidently seen with the naked eye, the mouth of the perforated style; on the back of the upper lip are seen the two white glands mentioned by König. I impute his not taking notice of the two large lips of the stigma, to his having examined the flowers sometime after they were gathered, when they coalesce.

The fresh roots are almost insipid. The natives make a preserve
of them, which they deem wholesome, and nutritious; the dry root does not at all resemble the Costus arabicus of the shops.

**ALPINIA.** Schreb. gen. No. 5.

Corolla with the interior border unilabiate. Anther double, naked. Capsule berried, three-celled. Seeds few, or many, arilled. Embryo simple, and furnished with both perisperm and vitellus.

**Sect. I. Inflorescence terminal.**


Dr. Charles Campbell, at Bencoolen, sent the roots of these species from thence to the Botanic Garden near Calcutta, where the plants thrive remarkably well, and are in blossom during the latter half of the hot season, April and May. Seeds ripen, though rarely, in November.

Root perennial, tuberous as in ginger, &c. possessing a faint aromatic smell, and strong pungent taste, like a mixture of pepper and ginger, accompanied with some degree of bitterness, and now ascertained to be the real *Galanga major* of the shops.—Stems perennial, or at least more durable than those of herbaceous plants, nearly erect, round, smooth; general length, when in flower, about six or seven feet; and as thick as a slender walking cane. Leaves occupy from the middle of the plant upward; the lower half being inverted in leafless sheaths only; they are short-petioled, bifarious, lanceolar, margins white and somewhat callous, both sur-
faces smooth; length from twelve to twenty-four inches, and from four to six broad.—Sheaths smooth, with a short, rounded, ciliate, stipulary process above the insertion of the leaf.—Panicle terminal, erect, oblong, crowned with numerous, spreading, simple dichotomous branches, each supporting from two to five, or six, pale greenish white, somewhat fragrant flowers.—Involucre of König, in our plants generally two-leaved, lanceolate, first withering, then falling before, or while in blossom.—Bractes concave, solitary at the divisions, and subdivisions of the panicle.—Calyx superior, sub-cylindric, smooth, white, scarcely the length of the tube of the corol, mouth one toothed.—Corol. Exterior border of three, nearly equal, linear, recurved, smooth, pale greenish divisions. Inner border, or lip unguiculate, somewhat ascending, so as nearly to meet the slightly declining anther; oval or ovate oblong, concave, apex divided into two lobes by a pretty deep, straight fissure; margins incurved, curled, minutely laciniate, white, with here and there a small reddish speck, and two recurved fleshy, coloured hornlets at the base of the claw.—Filament rather longer than the claw of the lip. Anther double, apex deeply emarginate, projecting horizontally over the middle of the lip.—Germ beneath, smooth, oval, three-sided, three-celled, with only two ovula in each cell, attached to the middle of the partition. Style filiform. Stigma funnel-shaped, fringed; while the flower is in vigorous blossom erect between the lobes of the anther, afterwards recurved under the anther.—Nectarial bodies (of König) nearly square, fluted.—Germ oblong, smooth, three-celled, with two ovula in each, attached to the axis.—Capsule the size of a small cherry, obovate, smooth, deep orange red, three-celled, but entire, as no separation seems to exist, the thin dry cortex crumbles, or breaks to pieces, without any tendency to separate into valves.—Seed one, rarely two in each cell, much compressed, size of a grain of black pepper. Aril nearly complete, there being only an opening at the apex, thin, rather fibrous, and of a dull white color. Integuments two, or three; exterior, tough, fibrous, polished, of a dark chesnut colour, a little wrinkled, inner hard, dark brown; between the two is a spongy lamina of the same colour,
and I cannot well say to which it most properly belongs.—*Perisperm* white, friable, and very hard.—*Embryo* simple, dull white, (canus,) roundish in the body of the perisperm, and with the narrow, conic radicle, passing through it and pointing to the umbilicus.

*Note by Mr. Colebrooke.* "The root of this plant being ascertained to be the Galanga major of the druggists, conformably with what has been said of it by *Rumphius*, there is no doubt of its being "Kholinjan of the Arabs, termed in Hindee Culinjan. In Sanskrit it is called Culanjana, according to one authority, (the *Rajnishkantu*;) hut Sugandha-vacha, sweet-scented *Acorus*; as also *Mahabharita-vacha*, according to another Indian treatise, (the *Bhava-pracasa.*) "If the first name be genuine Sanskrit, which is however doubtful, "the similar names in other languages, including the European, must "be derived directly, or immediately from it."


Sans. तारुः; Taruka.

Beng. Taruka, or Tara.

This plant is common near Calcutta, in low moist places, among brush wood. Flowering time the beginning of the rainy season.

*Root* tuberous, biennial, or perennial, horizontal, brownish, with many pretty thick fibres, considerably aromatic.—*Stem* erect, slightly compressed, entirely covered with the sheaths of the leaves; from three to six feet high.—*Leaves* alternate, bifarious, petioloed, oblong, ending in a fine twisted point; both sides smooth, and glossy; the under side paler colour; veins numerous, straight, exceedingly fine, going off at an acute angle; generally about a foot long, and four inches broad.

—*Petioles* sheathing with a stipulary rounded process rising above the insertion of the leaf.—*Panicle* terminal, bending slightly to one side.

—*Flowers* numerous, in succession, large, of a beautiful rose colour, inodorous.—*Calyx* superior, gibbous, fleshy, generally two or three-
toothed.—Coral one petalled. Tube short. Border double; the exterior three-parted; divisions nearly equal, outwardly downy, concave, particularly near the ends, pale greenish rose colour; the superior one more remote. Interior border, or lip two-cleft, with two fleshy protuberances near the base; divisions with two-toothed apices and waved margins, colour a beautiful mixture of deep, and pale rose.—Nectary (of König and Retz.) two oblong, compressed, fleshy bodies, embracing the base of the style.—Filament short, broad, much flattened. Anther double, each lobe ending in an obtuse hornlet.—Germ inferior, globular. Style lodged in the grove of the filament. Stigma clubbed, somewhat three-sided, obtuse, with a crescent-like fissure, and ciliate margin.—Capsule globular, inclining to be three-sided, smooth, when ripe black, and friable, not opening by sutures, but crumbling to pieces, crowned with the permanent, withered calyx, and coral, three-celled.

S. A. bracteata. R.

Leaves lanceolar, villous underneath. Raceme terminal, simple; pedicels, one-flowered. Bractes green.

A native of the Eastern parts of Bengal. In the Botanic Garden near Calcutta it flowers in March. This is one of the smallest of our East India Alpinias; this circumstance, and the green bractes, immediately distinguish it from malaccensis, which is not so easily done in a specific definition.

Root biennial, or perhaps, perennial.—Stems erect, about three feet high, entirely invested in the smooth sheaths of the leaves.—Leaves bifarious, petioled, from ovate-oblong below, to lanceolar above, fine-pointed; the upper surface smooth, polished, deep green, villous and paler underneath; length from six to eighteen inches.—Petioles proper about an inch long, and deeply channelled. Sheaths smooth, rising a little above the insertion of the proper petioles on the inside.—Raceme terminal, erect, simple, about a span long, slightly villous; before expansion embraced, by one or two caduceous sheaths.—Pedicels throughout one-flowered, round, short, and villous.—Bractes (or inferior perianth) solitary, one-flowered, more per-
manent than in the other species, and of a dull green colour, hiding the calyx.—Calyx shorter than the bracte, open on the underside, bidentate.—Corol; exterior border of three oval, nearly equal, white segments; lip somewhat three-lobed; lateral lobes large and incurved into a tube round the stamina; exterior narrower, with a bifid apex, colour a beautiful mixture of crimson and yellow, with a paler belt on each side.—Filament short, with two curved spurs at its base. Anther double, linear.—Germ oval, three-celled; with many ovula in each, attached to the inner angle. Stigma funnel-shaped, sub-ciliate.


A most beautiful and stately plant, a native of Chittagong, and from thence sent, by Mr. W. M. Maddern, to the Botanic Garden near Calcutta, where it blossoms in April and May, the very hottest time of the year; and ripens its seed in the rains.

Root perennial.—Stems numerous, (within four years, a single root increased so much, as to produce about fifty,) from six to ten feet in height; those in the centre erect, in the circumference bending out; in two, three, or four years, the stoutest blossom, ripen their seed and decay.—Leaves bifarious, petioled, lanceolate, acute; margins often waved, and slightly fringed with short brown hairs; upper surface smooth; under downy; length from two to three feet, and from three to eight or nine inches broad.—Sheaths smooth, embracing the stems completely, ligula ovate, obtuse, entire, villous. Petioles (I mean the space between the ligula and leaf), about three inches long and channelled.—Racemes terminal, solitary, erect, always simple; from six to twelve inches long. Peduncle round, and villous. Pedicels short, villous, one-flowered, the largest sometimes droop a little from the weight of the flowers.—Involucre of two, or
three, caduceous, boat-shaped leaves embracing the raceme.—*Flowers* very large, a pure smooth shining white, except the inner border, or labium, which is a beautiful mixture of orange and crimson.—*Bracteas*, (or inferior calyx), gibbous, bursting on one side to the base, and partially on the other.—*Calyx* superior, one-leafed, gibbous, length of the bracte, splitting into various portions.—*Corol; exterior border* of three, oblong, obtuse, entire segments, of which the upper is largest. *Inner border or labium*, very large; when expanded, three inches broad, and two and three quarters long, somewhat three-lobed, the two lateral semi-circular and incurved into a tube; the middle one smaller, more projected, curled, and sometimes bifid; from the base on each side an incurved, sharp spur.—*Filament* about as long as the large, broad, deeply bifid, obtuse, two-lobed *anther*.—*Nectary* of König; in most of the other plants of this order, I have found this part to consist of two distinct bodies here it is of one, very thick, and short with its truncated, apex tuberculate.—*Germ* inferior, obovate, hairy, three-celled, with many *ovala* in each, attached to central receptacles. *Style* toward the apex hairy. *Stigma* rising erect through the bifid apex of the anther, funnel-shaped, hairy.—*Capsule* obovate, spheroidal, size of a very large gooseberry, armed with short, sharp, stiff, slender bristles; when ripe nearly dry, and yellow, three-celled, three-valved.—*Seed* numerous, ovate, oval, or obovate, immersed in a large portion of a soft pulpy matter, which in the immature state form distinct arils; on each side, and round the apex a groove. *Integuments* two, brown, and rather thin.—*Perisperm* cartilaginous, cloven at both ends by a brown spongy fissure, but deepest from the apex.—*Vitellus*, the centre of each of the superior limbs of the perisperm, is occupied by a small, thin, oblong body of a clearer colour; and widely distinct from both embryo and perisperm.—*Embryo*, the upper part crescent-shaped, with its horns projecting into the limb of the perisperm, and in some degree into the vitellus. *Radicle* inferior, projecting straight from the convex, or under side of the crescent, with its base to the umbilicus.

*Obs.* This is the most beautiful plant of the whole genus, even
surpassing *A. nutans*, which I believe the Botanical Repository considers a species of *Renealmia*.


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. Poonnag-champa.**


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, sub-sessile 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 stipulary bearded process, rising above the insertion of the leaf.—**Racemes** terminal, compound, variously curved, villous, about a foot long, drooping under the leaves.—**Involucre** 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

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* From this name, which Dr. Roxburgh mentions as the Bengal name, it is natural to suppose this plant to be the *Poonuaga* of the Sanskrit Materia Medica. If so the following Sanskrit Synonyms should stand before the Bengalee name, *Poonuaga, Poornaga, Poortosh, Toonga, Pooman, Patala, Rakta-poooshpa, Padama, Poonnana, Rakta-renoo, Rukta-renoo, Urcona*. It is however doubtful whether this plant is the *Poonuaga*. *ld.*
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 comanulate 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.*


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-
four inches long. *Sheaths* smooth, ending in a rounded ligula, above the insertion of the leaf.—*Racemes* terminal, erect, compound, conical, many-flowered: peduncles a little downy. *Pedicels* alternate, short, villous, two, three, or even four-flowered.—*Bractes* of the pedicels, and pedicelli solitary, oblong, caducous.—*Flowers* numerous, large, drooping.—*Calyx* longer than the tube of the corol, widening from the base; mouth irregularly three-toothed, with the lower fissure deepest, pure white. *Corol.* Tube much recurved, much shorter than the calyx; border double. *Exterior* three-parted; *superior divisions* incumbent, oval, concave, *inferior* two smaller, linear oblong, narrower than the *superior* one; all are obtuse and of a pure glossy white colour. *Lip or inner border*, large, elegantly variegated with crimson and yellow, surrounded with an orange-coloured edging; three-lobed; the two lateral lobes simi-lunar and incurved into a large sub-campanulate tube under the upper segment of the *exterior* border; exterior lobe smaller, curled, and bifid. In this species there are no spurs between its base and the filament, as in most of the other species of this genus.—*Filament* nearly as long as the broad double *anther*, which projects over the middle of the lip.—*Germ* round, villous, three-celled, with many *ovula* in each attached to the partitions near the axis. *Style* filiform, embraced at the base by a single, truncate, *dentate*, glandular body, (nectary of König, Retzius, and Willdenow.) *Stigma* funnel-shaped, ciliate, rising with a curve through the bifid apex of the anther.—*Capsule* berried, size of a large gooseberry, deep orange, or yellow, according to their state of maturity; not opening spontaneously as in *Alpinia nutans*, when dry, wrinkled, and a little hairy.—*Seeds* numerous, angular, arilled. *Aril* complete, but thin, and when perfectly dry scarcely traceable. *Integuments* two; exterior thin, inner dark brown, and spongy.—*Perisperm* cartilaginous, a deep pit at the base, and a deep cleft from the apex down to near the middle. *Vitellus* as in *Alpinia malaccensis*, in the centre of each of the superior lobes of the perisperm, is a somewhat clearer, distinct body, as if a continuation of the horns of the crescent of the embryo, but perfectly distinct, and readily separable from them, and the peri-
Alpinia. Mονανδρία Μονογυνία.

sperm.—Embryo an invested crescent, with the cylindric radicle descending from the convex side through the pit at the base of the perisperm to the umbilicus.

Obs. This is also a very elegant species, and holds a middle rank between nutans and calcarata.


A native of China, and from thence introduced by Captain J. Garnault, into the Botanic Garden near Calcutta in 1799; where it thrives luxuriantly in the common soil of the garden, and blossoms in March, April, and May, but more or less all the year.

Root perennial, horizontal, somewhat woolly, crooked, pale-coloured, stoloniferous, fragrant, enveloped while young in short, alternate sheaths; when old marked with their cicatrices; and furnished with many fleshy fleshy fibres.—Stems oblique, smooth, from two to four feet high.—Leaves alternate, bifarious, short-petioled on their sheaths, narrow-lanceolar, fine-pointed, entire, smooth on both sides; length frequently twelve inches, and the breadth from one to two.—Sheaths of the leaves stem-clasping, smooth, with a stipuliferous process projecting above the insertion of the leaf.—Racemes terminal, solitary, erect, compound.—Flores numerous, large, generally in pairs or more, but expanding at different periods.—Bractes solitary, boat-shaped, white, one-flowered.—Perianth superior, three-toothed, white, smooth.—Corol with double border. Exterior three-cleft; divisions equal, linear, expanding, pellucid, white. Interior, or lip ovate-oblong, large, deeply coloured with dark purple veins on a yellow ground, apex two-lobed, lobes rounded and curled; there are no lateral lobes in this species, nor are the sides much incurved; but two, incurved, sharp, subulate horns project from its two posterior angles and embrace the base of the filament.—Filament single, opposite to the lip of the corol, projecting, &c. as in the genus.—Germ spherical, hairy, three-
celled, with many **ovula** in each, attached to the inner angle of the cells. Stigma funnel-shaped, ciliate.—**Nectarial** scales nearly four-sided, with apices crenulate.

8. **A. spicata.** R.

*Spike* terminal, oblong, compactly imbricated with narrow lanceolate, acute bractes.

A native of **Sumatra**, from thence introduced by Mr. Roxburgh into the **Calcutta** Botanic Garden in 1803. Is the slowest growing and smallest of the genus in this garden. Flowering time the close of the rains.

**Root** as in the other species.—**Stems** arising in an oblique direction to the height of about two feet, when from two to three years old the flowers appear, and after their functions are performed, the stems decay.—**Leaves** bifarious, sessile on their sheaths, broad lanceolar, fine-pointed, surfaces and margins smooth, length from six to twelve inches.—**Sheaths** of the leaves smooth, ending in a long, bifid, or simple ligula.—**Spikes** terminal, strobiliform, compact.—**Bractes**, the exterior imbricate, ensiform-lanceolate, one-flowered, outside slightly villous. **Interior or inferior calyx**, one-leaved, subcylindric, length of the perianth proper, mouth obliquely truncate, outside villous.—**Calyx** superior, like the inner bracte, and of the same length, &c.—**Corol**, exterior border of three, very acute, linear lanceolate segments. **Inner or lip** uncertain, as the only two spikes I have yet seen did not expand sufficiently, to allow me to ascertain its form.—**Filament** short, anther large, of two, long linear lobes with the style sunk between them.—**Germ** oval, very hairy, three-celled, with numerous **ovula** in each, attached to the axis. **Style** slender. **Stigma** large, consisting of two, gaping unequal lobes.

**Sect. 2. Inflorescence radical.**

9. **A. cardamomum.** R.

**Scapes** from the base of the stem, compoundly flexuose, procumbent. **Lip** three-lobed, with calcarate base.
Amomum repens. Roscoe, Willd. and Sonnerat.
Elettaria. Rheed. mal. 11. p. 9. t. 4 and 5.
Cardamomum minus, Pharm. Lond. and Edinburgh.

Sansk. प्रिथ्वीका, Prithweeka, चुनूवाला, Chundruvala, तलाड़ा, Ela, निष्कूट, Nishkooti, बुहुला, Bhoolaa.
Beng. Elachi, Elaim.

Ailum chedy of the Malabars, of the Malabar Coast.
Hil of the Persians.
Kakulah, also Hal, of the Arabs.
Teling. Sana-yallacci.

A native of the mountainous part of the Coast of Malabar.

Root tuberous, with numerous fleshy fibres.—Stems perennial, erect, smooth, joined, enveloped in the spongy sheaths of the leaves; from six to nine feet high.—Leaves bifarious, sub-sessile on their sheaths, lanceolate, fine-pointed, somewhat villous above; and sericeous underneath, entire; length from one to two feet.—Sheaths slightly villous, with a rounded stipulary process rising above the mouth.—Scapes several (three or four) from the base of the stems, resting on the ground, flexuose, jointed, ramous, from one to two feet long. Branches or Racemes alternate, one from each joint of the scape, sub-erect, two or three inches long.—Bractes solitary, oblong, smooth, membranaceous, nerved, sheathing, one to each joint of the scape, which embrace the insertion of the raceme, or branch; and one at each of their joints.—Flowers alternate; short-pedicelled, solitary at each joint of the racemes, opening in succession for a length of time, as the racemes lengthen.—Calyx above, widening to the three-toothed mouth, about three quarters of an inch long, striated with fine nerves, permanent.—Corol withering. Tube slender, as long as the calyx. Border double, exterior of three, oblong, concave, nearly equal, pale greenish white divisions. Inner lip or nectary obovate, much longer than the divisions of the exterior border; margins somewhat curled, with the apex slightly three-lobed, marked chiefly in the centre, with purple violet stripes; at each side of its insertion and close by the
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 Scitaminece.—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 chedy (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 ut-

* It is undoubtedly corrupted from सौंप, 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 usually collected in this way, until the seventh year, when it is usual to cut it down, and from the trunk others 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 30,000 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. punicea. 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.—
Sheaths smooth on both sides, rising into a short, ciliate ligula, above the insertion of the short, semi-cylindric, proper petioles.—
Spikes radical, half immersed in the earth, sub-cylindric, pretty compactly imbricated with from oblong to lanceolate, coloured, smooth, one-flowered bractes.—Flowers large, colour a bright red, like the finest carmine.—Bractes interior, or inferior perianth, tubular, length of the tube of the corol; with an unequally two, or three-toothed mouth.

—Perianth proper superior, tubular, length of the tube of the corol; mouth generally bifid.—Corol with long, slender tube hid within the bracteae, and perianths.—Exterior border of three, small, paler coloured, lanceolate segments. Lip highly coloured, large, entire, horizontal, sub-parabolic, the lower part broad, and encarved round the stamina; lamina linear, with entirely rounded, or slightly marginate apex.—Filament short, base spurless. Anther double, apex bifid, and naked.—Germ three-celled, with numerous ovula in each, attached to their respective receptacles, a little removed from the axis. Base of the Style embraced by two subulate nectaries. Stigma a lamellate, ciliated gape.

11. A. Cardamomum medium. R.

A native of the hilly countries in the vicinity of Silhet, where the plant is called Do-Keswa. It blossoms about the beginning of the rains, in June, and the fruits ripen in September, when they are gathered, and sold to the dealers in drugs.

Leaves petioled above their sheaths, linear-lanceolar, downy underneath, from two to three feet long, by two to four inches broad.—Sheaths villous, rising in an obtuse ligula above the insertion of the leaf.—Spikes radical, oblong, laxly imbricated, rising but little above the earth; lower part, or scape hid in the soil, and clothed with shorter scariose bracteae.—Flowers numerous, large, red, fragrant.—Bractes exterior, one under each flower, lanceolate, ribbed, smooth,
yellowish pink, *interior*, or *inferior perianth* tubular, length of the proper perianth.— *Calyx* superior, length of the tube of the corol, tubular, with three-toothed, coloured apex.— *Corol*; *Tube* cylindric, long and slender; *segments* of the border linear-oblong, obtuse. *Lip* with pretty broad cordate base, from thence tapering to its entire obtuse point, much longer than the segment of the exterior border; margins curled.— *Filament*, *anther*, *germ*, *style*, *stigma*, and *nectarial bodies*, as in the genus.— *Capsules* pretty long-pedicelled, ovate-oblong, while fresh above an inch and a half long, and nearly one in diameter, somewhat three-lobed, each angle marked with a larger vertical wing, and two smaller on the flatter sides, between the large ones, three-celled.— *Seeds* numerous, obovate, with a groove on one side. *Integuments* two; *exterior* soft, while fresh it may be called the succulent aril; *interior* white and rugose.— *Perisperm* conform to the seed, white, and friable, perforated by a spongy, brown substance above the embryo.— *Vitellus* somewhat hyaline, rising on each side of the perforation like two horns.— *Embryo* subclavate, its small end lodged at the umbilicus.

*Obs.* The form of the Capsule, which resembles that of Gærtner's Zinziber Ensal, and the acrid, aromatic taste of the seeds, induce to conclude that this is the plant which produces the *Cardamomum medium* of the writers on *Materia medica*.

12. *A. linguiforme*. R.

*Spikes* radical, linear, rather open. *Lip* linguiform, bifid; *base* broad, and spurless; *sides* incurved.

A native of the interior parts of Bengal, where it blossoms during the rains.

*Root* perennial, throwing off numerous suckers, which run both above, and under the surface of the earth, by which this species is soon multiplied.— *Stems* many, erect, or nearly so, as thick as a man's forefinger, smooth, from four to six feet high.— *Leaves* bifarious, sessile on their *sheaths*, lanceolate, smooth on both sides; length, from twelve to twenty-four inches, by from four to five broad. *Sheaths* smooth, rising little above the insertion of the leaf.— *Spikes* radical, solitary, the apex only rising above the soil, laxly imbricated with oblong, obtuse smooth,
exterior, and interior, one-flowered, green bractes; besides the interior, proper, tubular, thin, colourless bractes or inferior calyx.—Calyx superior, tubular, length of the tube of the corol; mouth three-toothed, split quite down on one side; colour from the middle upwards deep red.—Corol: exterior border of three, sub-lanceolate, obtuse, red segments. Lip sub-linguiform, the base broad, and axis incurved, forming an envelope for the stamen, from thence projecting almost horizontally, into a long linear, bifid lamina, with curled margins; colour yellow, with a little red down the centre.—Stamen as in the genus.—Germ hairy, three-celled; ocula many, attached to one fleshy receptacle in the inner angle. Style embraced at the base by the nectaral bodies, which are in this species bidentate. Stigma large, and red.


Corolla with the interior border two-lobed, or none. Filament very long, base tubular, and winged with a cruciform lip. Anther double, with an appendix, or naked. Capsule one-celled, three-valved. Seeds many attached to three parietal receptacles. Embryo simple, and furnished with both perisperm and vitellus.


Lompujum silvestre minus. Rumph. amb. 5. 150. t. 64. f. 2.

A native of the Moluccas, and from thence introduced into the Botanic Garden near Calcutta by bits of the root found amongst the earth in which nutmeg and other plants were brought from Amboyna. Flowering time, in Bengal, the rainy reason.

Root perennial, consisting of many, small, oblong, fleshy tubers, united to the base of the stems.—Stems annual, about twelve or eighteen inches high, somewhat recurved, enveloped in the sheaths of the leaves, the whole as thick as a rattan, and a little compressed.—

Leaves bifarious, sessile on their half stem-clasping sheaths, broadly-lanceolate, acute, smooth above, somewhat villous and whitish underneath, margins waved; length from one to six inches, the lower being very small, and cordate.—Sheaths half stem-clasping, smooth, with semi-lunate, projecting, bearded mouths, rising above the insertion of the leaves.—Spikes terminal, sessile, solitary, strobiliform, oblong.—Bractes numerous, ovate-cordate, the lower half, or more, and sometimes even the whole, have each a single, small, brownish, sessile, pointed, ovate bulb in the axil; the superior are smaller and generally embrace a single flower each.—Flowers slender, bright-yellow, and fragrant.—Calyx superior, somewhat gibbous, three-toothed.—Corolla one-petalled. Tube long, and very slender. Border double; exterior three-parted, nearly equal, oblong, concave, and reflexed; inner of two lobes, which are longer by one third than those of the exterior border, cuneate, and of a deeper yellow, reflected over the anterior two divisions of the outer border. Lip elevated on a continuation of the tube, a little above the former, consisting of two cuneate, reflected segments, united at the middle only. The upper end continued into a very long, slender, incurved, grooved filament. Anther double, with two horns from each side.—Germ beneath, round, tubercled, one-celled, ovula parietal. Style slender, as long as the tube of the corol and filament, and lodged in a groove therein. Stigma funnel-shaped.—Pericarp; I have not found it come to maturity. The little bulbs found in the axils of the lower bractes of the spike, readily vegetate, and thus the plant is abundantly propagated.

2. G. bulbifera. R.
Stems bulbiferous. Leaves oblong. Racemes terminal, erect, shorter than the leaves, bulbiferous.
Teling. Conda pooshpoo.
A native of the northern Circars.

3. G. orixensis. R.
Is a native of the moist vallies in the northern Circars, and flowers during the rainy season.

Roots biennial.—Stems annual, bending obliquely to one side, as in the case with most plants of the natural order, about two or three feet long; lower part enveloped in a few simple sheaths, above with the sheathing petioles of the leaves.—Leaves alternate, bifarious, very short-petioled, oblong, ending in a tapering filiform point, entire, smooth, finely veined; from eight to ten inches long, and from two to four broad.—Petioles short. Sheaths opening on the side opposite to the leaf.—Panicles terminal, erect, oblong, thin, rigid.—Flowers sessile, small, deep orange yellow.—Bractes solitary, one-flowered, oval, falling.—Calyx one-leaved, mouth three-toothed.—Corol; Tube a little curved, widening gradually to the mouth, twice the length of the calyx. Border double; exterior three-parted; upper division largest, sub-erect, concave; the other two inferior, and ovate. Interior of two, smaller, opposite, ovate lobes.—Filament very long, much curved, base tubular, and ornamented with a large, orange-coloured, two-lobed lip, or apron. Anther at the extremity of the filament, naked, double, or two-lobed.—Style embraced at the base by the two subulate bodies (nectaries of König); above the tube of the corol, it takes a curved direction like the filament, but is shorter, so that the curve is less; its end passes between the lobes of the anther. Stigma clubbed, half immersed between the lobes of the anther.—Capsule sub-globular, watery, fleshy, one-celled.—Seeds many.

4. G. Hura. R.


Hura siamensium. Kön. in Retz. obs. 3. 49.*
Nat. of the peninsula of Malacca.

5. G. pendula. R.

Leaves lanceolate. Racemes terminal, compound, much longer than the leaves, pendulous. Anther bicalcarate.

* G. versicolor, Smith Exot. Bot. ii. 116. tab. 117. a, b, c.—N. W.
Found by Mr. William Roxburgh, on the Island of Pulu-Pinang. Flowering time the rainy season.

Root fibrous. — Leaves lanceolate, smooth, fine-pointed. Sheaths a little hairy on the outside. — Racemes terminal, solitary, compound, very long, pendulous. — Pedicels remote, diverging, generally three-flowered. — Bractes caducous; those of the pedicels solitary, oblong, ciliate; those of the flowers oval, ciliate. — Calyx campanulate, three-toothed. — Corol; Tube ascending, long and slender; Border double. Exterior three-parted, of these the upper one is concave; the other two obliquely obovate, expanding, and flat. Interior border of two, opposite, lanceolate, expanding lobes. — Filament very long, curved; base tubular and winged, with a bifid, cuneiform, yellow lip or apron, above it is grooved for the reception of the style. Anther two-lobed; each lobe bending in a long curved spur. — Germ beneath, oval. Style filiform. Stigma funnel-shaped, mouth ciliate. — I have not seen the fruit.

6. G. Careyana. R.

Leaves ovate-lanceolate, villous underneath. Racemes terminal, compound, bulbiferous. — Corol with the two segments of the inner border as long as the lip. Anther naked, suborbicular.

From Pegue this pretty little plant was introduced by Mr. F. Carey into the Botanic Garden near Calcutta, where it flowers in August.

Root tuberous, about biennial, perishing at one end, and shooting forth at the other. This may be considered the general habit of all the species. — Stems numerous, oblong, as thick as a slender ratan, about eighteen inches high, and invested in the sheaths of the leaves. — Leaves sessile on their sheaths, alternate, bifarious, from broad-lanceolate to ovate-oblong, very finely acuminate, villous underneath; about six inches long, by two broad. — Sheaths villous on the outside, scarcely ending in any ligula, but rising a little on each side. — Racemes terminal, erect, composed of little, alternate fascicles, of about three flowers each, supported on very short, common pedicels; each of the lowermost of them produces a small, obovate bulb, and
two or three more between the racemes and the leaves. Flowers numerous, small, of a deep orange-colour. — Bracteae concave, acute, one to each fascicle; and a smaller coloured one to each flower; all caducous. — Calyx superior, tubular, three-toothed, coloured. — Corol; Exterior border of three, nearly equal, oval lobes; Interior of two linear lobes, which are as long as the lip; soon after expansion they are reflected back over the exterior border, but become involute before the flower drops. Lip a little elevated above the five segments of the exterior border, bifid at both ends. — Filament long, incurved, &c. as in the genus. Anther broad, ovate, or nearly round, with its two polliniferous cells within, projecting at the sides a little beyond its periphery, but without any other kind of appendage, as in most of the other species. — Germ round, rugose, one-celled, containing many ovula, attached to three parietal receptacles. Style length of the corol and filament, biliform, taking a more direct course to the anther than the groove of the filament. Stigma funnel-shaped, ciliate. — Capsule globular, size of a large marrow-fat pea, warty, one-celled, three-valved. — Seeds several, attached to the middle of the valves of the capsule, round-ovate, resting on a large spongy pedicel. — Integuments two; exterior firm, light brown, a little villous; interior membranaceous. — Perisperm conform to the seed, hard, and friable, even while fresh. Vitellus in small quantity, clear, lining the inside of the upper part of the cavity of the perisperm so as to embrace the upper half of the elevate embryo.

7. G. subulata. R.+

Panicles radical. Filament with a subulate wing on each side near the base; anthers semi-lunar, winged.

Found wild in the forests of Chittagong by Mr. W. Roxburgh, and by him introduced into the Botanic Garden near Calcutta, in 1801; where it blossoms in April, May, and June, during which period the new foliage also appears above the ground. There is a constant suc-

* G. racemosa. Sm. Exot. Bot. ii. 115. t. 117. seems to come very near to this species and to G. orixensis. — N. W.

cession of flowers from the extremities of the lengthening branches of the panicle, for nearly two months, which renders this lovely plant one of the most charming of the whole natural order that I have yet met with. The specific name is taken from the shape of the wings of the filament.

Root perennial, composed of numerous, diverging, fleshy fibres, some fusiform, some columnar.—Stems annual, bending a little to one side; from one to two feet high.—Leaves alternate, bifarious, sessile on their sheaths, lanceolate, with a long, withered, filiform point; villous on both sides; length from six to nine inches, and about one and a half broad. Sheaths smooth, keeled; ligula, or stipulary process truncate.—Scapes radical, from three to four inches long, often several arise from the same cluster of roots, erect, enveloped in three or four alternate, smooth, short sheaths.—Panicle erect, about a foot high, including the scape, and expanding nearly as much, the whole a very lively blueish purple. Ramifications alternate, long, simple, diverging, bearing in succession numerous, alternate, sessile, small, lovely purple and yellow flowers.—Bractes solitary, light purple, smooth; those of the ramifications oblong; those of the flowers cordate.—

Flowers solitary, sessile in the axils of their proper bractes.—Calyx superior, clavate, smooth, light purple; mouth three-toothed, permanent, with the lower half of the tube of the corol.—Corol; Tube long and very slender; the lower half, which is inclosed in the tube of the calyx, projecting horizontally; the upper half erect; at the angle, which those portions of the tube make with each other, and which is nearly a right one, the flower drops, leaving the lower half to wither. Border single and three-parted; upper division erect, pressing on the back of the base of the filament, oblong, boat-shaped; lower two divisions obliquely cordate, and reflexed, all the three are of a light purple colour. Lip cuneate, deeply two-parted, much larger than the divisions of the exterior border, deep orange yellow, forming a pretty contrast with the lively purple of every other part of the panicle.—Filament very long and very slender, on the first day much incurved, afterwards revolute, finely grooved on the underside for the reception of the style; near the base are two, very long, slender, flat,
subulate, diverging, recurved wings. In my other six species with terminal inflorescence, these are entirely wanting, but the inner two-lobed border is present. Anther double, and enlarged at the sides with two, broad, reniform wings.—Germ beneath oval, with nine longitudinal ridges, a transverse section exhibits one cell only, with numerous seeds, affixed to three parietal receptacles. Style most slender. Stigma funnel-shaped.—Capsule globular, purple, size of a small cherry, six-ridged, one-celled, three-valved, opening spontaneously from the apex. Receptacle a longitudinal ridge on the inside of each valve.—Seeds many, minute, oblong, villous, connected by a large, white, spongy membrane to the parietal receptacles.

8. G. spathulata. R.

Panicles radical. Filaments with a spatulate wing on each side near the base; anthers simi-lunar, winged.

This second, beautiful species, with large azure coloured, radical inflorescence, is a native of the vallies on the north and eastern boundaries of the province of Silhet, and from thence was introduced by Mr. M. R. Smith into the Botanic Garden near Calcutta, where it flowers in April, at which time the foliage begins to appear. At the beginning of the cold season it perishes down to the root.

Panicles radical, erect, oblong, from eight to twelve inches high, composed of many, diverging, simple, lengthening branches, every part, bracte included, of a pretty, light azure colour.—Bractes oval, and oblong, concave, a larger one under each branch of the panicle, and one to each flower.—Flowers numerous, produced in a continued succession for several weeks on the same panicle.—Perianth superior, widening to its three-toothed mouth.—Corol; Tube long, slender, curved, and villous. Border three-lobed; lobes nearly equal and equally arranged, shape oblong, and concave. Lip as in G. subulata, but less divided; yellow, as in that species.—Filament long, slender, recurved, &c. as in the genus; near the base, instead of an inner border to the corol, there is a spatulate, diverging wing on each side. From its shape the specific name is taken, and readily distinguishes this species from subulate, which it very exactly
Hedychium.

Monandria Monogynia

resembles when in flower. Anther with a similiar wing on each side.—Germ one-celled, containing many ovula, attached to three parietal receptacles.*

The following plant, which was omitted through an oversight in its proper place, viz. next after Hedychium coronarium, is here inserted at the end of the natural order of Scitamineae.

Hedychium flavum. R.

Leaves broad-lanceolar. Spikes terminal, imbricated. Bractes about four-flowered; interior two-segments of the corol linear; lip obcordate, with apex deeply retuse.

A native of the vallies amongst the hills near Silhet, where it is called Kattia-rityam by the natives. Flowering time the rainy season.

Root tuberous, like that of most other Scitamineae.—Stems erect, two or three feet high, and rather stout.—Leaves lanceolar, very fine pointed, smooth on both sides. Sheaths smooth, with a very large smooth membranaceous stipula rising far above the mouth.—Spike terminal, solitary, erect, oblong, imbricated; length six or eight inches.

—Flowers numerous, large, yellow, resembling those of H. coronarium, fragrant.—Bractes; exterior between oval and oblong, rather obtuse, smooth, finely nerved, three or four-flowered, about two or two and half inches long and nearly one and a half broad. Interior, one to each flower and much smaller.—Calyx superior, nearly as long as the tube of the corol, membranaceous, inflated, obliquely two or three-toothed.—Corol; Tube slender, length of the exterior bractes, all the five proper segments of the border linear, the inner two more deeply coloured and obtuse. Lip or sixth segment, obcordate, deeply retuse, placed on the exterior or upper side opposite to the filament.—Filament linear, and together with the two-lobed anther about as long as the lip.—Germ hairy, three-celled, with numerous ovula in each, attached to the inner angle. Style length of the co-

* This beautiful plant is a second species of the genus Mantisia, which has been established by Dr. Sims, and confirmed by the illustrious author of the article Globba, in Rees's New Cyclopaedia.—N. W.
Monandria Monogynia. Salicornia.

8f. Stigma large, and villous.—Capsule turbinate, size of an olive, smooth, when ripe yellow, three-celled, three-valved.—Seeds a few, smooth, bright deep red, with a partial ragged aril of the same colour.—Embryo simple, sub-lanceolate, furnished with both perisperm and vitellus.*


Calyx gibbous like an aril lining the inside of the cavities of the fructification in the joints. Corol none. Seed one.

1. S. brachiata. R.

Perennial, erect; branches numerous, decussate, joints clubbed. Spikes cylindric. Flowers conspicuous.

Teling. Quoiloo.

This seems an undescribed plant; nor can I collect what Dr. König thought it was. It is a small, generally erect, perennial species, growing plentifully on such low, wet, salt ground as is overflowed by the spring tides. Flowers all the year round. It should be compared with S. herbacea.

Stems generally erect, woody, about as thick as a goose-quill, though sometimes at the base as thick as the little finger; from twelve to eighteen inches high. Branches decussate, ascending, very numer-

* In January 1816 I received roots of this most charming species from Mr. Smith at Silhet, which produced blossoms in the Botanic Garden in October the following year. It differs from H. coronarium, in regard to its flowers, which are about one third smaller, having the inner segments of the corol linear-clavate, the fissure of the lip narrow with straight sides, and its base contracted into a linear claw. They partake not only of the yellow colour of those of Michelia Champaea, but possess even the peculiar fragrance of the latter, only in a less powerful and therefore more grateful degree. In stature and leaves both species are alike.

The following quotation should be added to H. angustifolium, p. 11.—Edwards's Bot. Regist. n. 157.—Notwithstanding the opinion which this distinguished botanist has expressed I am led to suspect that H. coccinum of Sir J. E. Smith (Rees's new Cyclopaedia, in loco) is a distinct species, of which I have examined the original drawing, left by my inestimable friend and predecessor Dr. F. Buchanan at the Botanic Garden at Calcutta.—N. W.
ous, divided, and subdivided in the same manner; their extremities are the succulent, cylindric jointed spikes.—Joints of the spikes, or leaves, thick, succulent, annular, cap-like portions, that closely surround the extremities of the filiform, woody branchlets, like beads strung on a thread; above they are concave, with two opposite elevations, the lower convex end of the next leaf above enters this concavity; these elevations, like the branches, are decussated with those of the next above and below, with a ring.—Flowers conspicuous, three-fold, (three on each side of each joint,) opposite.—Calyx, a flask-like fleshy substance, with a longitudinal slit for the stamen, and style; they adhere firmly to one another, and to the substance of the leaf, till the seed is ripe.—Corol none.—Stamens constantly one. Anther sagittate.—Stigma two-cleft.—Capsule, no other than the calyx now dry, which separates, and drops with its single seed.

This is also very common, and grows with the former on similar ground.

Stems and large branches woody, diffuse over an extent of some feet; the latter sometimes alternate, sometimes opposite, those that are young, and covered with the leaves are ascending, or nearly erect. —Joints, or leaves longer than in the former species, but in other respects the same. Floral joints or leaves, very short.—Spikes terminal, cylindric, erect, obtuse.—Flowers inconspicuous, opposite, threefold, hid by the upper margin of the next floral leaf below.—Calyx as in the former.—Stamen; in this species I have never been able to discover even the rudiments of one.—Pistil, &c. as in the former.

Obs. Cattle will not eat these plants, although their taste is simply saltish. These two species are very plentiful on the coast of Coro-
mandel, where large quantities of the fossil alkali might no doubt be made at a low rate. Such manufactures deserve much encouragement, particularly here, where there are many more labouring people* than can possibly find employment. Large quantities of this substance are annually imported into England from the Mediterranean, for making soap, glass, &c. It is worth about twenty-eight or thirty shillings per cwt. and as labour is cheap on this coast, the alkali might be made, I think, at so low a rate as to admit of its being sent to England, and paying a freight of 10L. the ton, or more; provided it could be there imported duty free.

*This was written before the famine of 1791, 2, and 3; the case is now (1794) different, as fully half, if not more of the labouring classes were carried off by that deplorable calamity.
Class 2d.

DIANDRIA MONOGYNIA.

NYCTANTHES. Schreb. gen. N. 21.


   Manja pumeram. Rheed. mal. 1. p. 35. t. 21.
   Sephalica. As. Res. 4. 244.

Sans. Hind. and Beng. Singahar, Sewly, Nibari, Har-singhar, &c.*

Of what country this is a native I know not, for I have never found it but in a cultivated state; and it is always raised from seed, which may be the reason we have no varieties of this most delightfully fragrant plant. In our gardens it is found in the state of a large shrub, or small tree. Flowers, on the Coast, nearly the year round; in Bengal only during the rains. The seeds ripen in the cold season.

Trunk erect. Bark scabrous. Branches numerous, spreading in every direction; the young shoots alone are four-sided; four ligneous, cord-like nerves, under the bark, forming the angles.—Leaves opposite, short-petioled, cordate, those near the flowers oblong, pointed, sometimes entire, sometimes very grossly serrate, and sometimes the

* At Napaun, Baleija Soah; Soa, Soang and Swa being synonymous terms in that country for Flower.—N. W.
lower parts are angular; scabrous; from three to five inches long, and from one to three broad.—*Inflorescence* a large, terminal, leafy, cross-armed, *panicle*, composed of small, five-flowered, terminal *umbellets*.—*Flowers* numerous, middle-sized, exquisitely fragrant, open at sun-set, and fall off at sun-rise; the tube orange-coloured, and the border white.—*Involucre* to the umbellets four-leaved, leaflets inverse-cordate, opposite, sessile.—*Calyx* campanulate; mouth a little contracted, and lightly five-notched, downy, withering.—*Corol.* *Tube* cylindric, length of the calyx. *Border* spreading, from five to eight, but generally six or seven parted, contorted; *segments* triangular, or obliquely lobed, exterior margin scolloped.—*Filaments* scarcely any. *Anthers* two-lobed, sitting within the tube.—*Germ* above, compressed. *Style* length of the tube. *Stigma* headed, glandular.—*Capsule* size of a man's thumb nail, obcordate, or nearly orbicular, compressed, two-celled, two-valved, opening transversely from the apex.—*Seeds* one in each cell, compressed, &c. as described and figured by Gœttner; I have not, however, been able to detect any thing like a perisperm.

*Obs.* The flowers of this tree are exquisitely fragrant, partaking of the smell of fresh honey, and on that account the plant is much esteemed; for when destitute of flowers it has but an indifferent appearance.—The orange tubes of the flowers dye a most beautiful buff or orange colour, with the various shades between them, according to the preparation, and mode of conducting the operation; but unfortunately, no way has yet been discovered of rendering this elegant colour durable.

**JASMINUM.** Schreb. gen. N. 22.


* In all the species hereafter mentioned, there is a two-lobed, two-celled germ, with one seed in each, attached to the upper end of the partition; and succeeded by two one-seeded berries, when both come to maturity.
1. J. Zambac. Willd. 1. 35.

Shrubby, twining. Leaves opposite, sub-sessile from cordate to oblong, acute, or obtuse. Segments of the calyx subulate. Berries globular.


Of this we have three varieties, viz.

1st. Single flowered Arabian Jasmine, which I suppose to be Jasminum undulatum. Willd. 1. 96.


Mallica, and Asphota, As. Res. 4. p. 245, are I suspect both this variety. The first is found in gardens, though a small flower, and the second wild in hedges, &c.

Beng. Bun-mullika; or Deshi-mullika.

2d. Double flowered Arabian Jasmine.

Nalla-mulla. Rheed. mal. 6. p. 87. t. 50.

Jasminum Limonii folio conjugato. Burm. zeyl. 128. t. 58. f. 2.

Flos Manorae. Rumph. amb. 5. p. 52. t. 30.

Sans. Suptala, Nuva-mullika. See As. Res. 1. c.

Beng. Bela, or mullika.

3d. Great double Arabian or Tuscan Jasmine.

Beng. Mootta-bela ; Bura-bela, or Patna mullika.

Kudda-mulla. Rheed. mal. 6. p. 89. t. 51.

Flos Manorae plenus. Rumph. ibid.

Septala. As. Res. 1. c.

All the varieties flower during the rains chiefly.

The single variety of this plant, (which is the one described,) is one of the most common in every forest on the Coast. Birds eat the berries, and drop the seeds, which vegetate. In this way, I account for its being so general. Flowers during the hot season.

*Stem and branches* woody, twining. *Bark* scabrous on old plants. —Leaves opposite, short-petioled, cordate-ovate, or oblong-waved, sometimes scolloped, pointed, smooth, except when young; in the axils of the veins on the back of the leaves there are tufts of down,
as in some species of Gardenia.—Flowers terminal, generally forming small, trichotomous umbrellots, white, fragrant.—Calyx bordered with from five to nine, long, subulate, permanent segments. Stigma clubbed. Germ two-lobed, one ovulum in each, attached to the lower part of the partition.—Berries twin; each round, smooth, juicy, one-seeded, when ripe of a beautiful shining black.—Seed conform to the berry; integument single.—Perispem none.—Embryo erect.—Cotyledons conform to the seed.—Radicle small, inferior.

Obs. From this species we have the common double; and rose, or great flowered, and full Mogaries, (Arabian, or Tuscan Jasmines;) these are always raised from layers, and have been improved by culture into their present state as above noted.

The plant that bears the common double sort still retains its twining habits, but it is lost in the great rose, or full flowered sort: here the branches are erect, or spreading, but never twining.

I am inclined to think that Nyctanthes undulata, Sp. Pl. 2. p. 8. is only a variety of this species, arising from soil, culture, &c. for with the utmost attention, I could never discover any thing like a fixed specific character to distinguish it from Zambac, as the number of petals or divisions of the corol are inconstant, and at most mark only the variety.


Shrubby, twining, and scandent, smooth. Leaves opposite, simple, cordate-oblong, entire, taper-pointed. Corymb terminal, globular, trichotomous. Calycine segments six or seven, bristle-shaped, of the corol six to eight, lanceolate, very acute, nearly the length of the clavate tube. Stigma bilobate.

Nyctanthes scandens. Retz. obs. fasc. 5. p. 9.

A native of the southern parts of Bengal. The plants in the Botanic Garden near Calcutta were reared from seed sent from Chittagong; which after they were two years old began to blossom in January and February, and continue so to do, but have not produced good seed.
Trunk none, but many, long, ligneous, at first scandent, but finally twining, round, smooth branches of considerable extent.—Leaves simple, opposite, short-petioled, cordate-oblong, tapering from near the somewhat re-entering base, fine-pointed, entire, smooth, and rather lucid on both sides; length from one to six inches, and from half an inch to two inches broad.—Petioles flattened, channelled.—Corymbs terminal, sub-globular, dense, that which terminates the larger branches more compound. Peduncles short, with the pedicels still shorter, all are villous.—Flowers numerous, pure white, delightfully fragrant.—Calyx villous, border of six, or seven, bristle-shaped, spreading, villous segments.—Tube of the corol widening to the mouth, and more than twice the length of the segments of the calyx. Border of from six to eight, lanceolate, acute segments, which are rather shorter than the tube.—Germ turbinate, two-celled, with one seed in each, attached to the thickened middle of the partition.

Scandent. Leaves opposite, and alternate, lanceolate, villous on both sides. Corymbs terminal. Corol eight or twelve-cleft; segments linear. Stigma bifid.
Nyctanthes elongata. Linn. suppl. 82.
A native of the forests about Hidelee, near the mouth of the Hoogly in Bengal. Flowering time the beginning of the hot season.
Stem woody, straggling to a considerable extent, or climbing. Bark of the woody parts light ash colour; of the young shoots very villous.—Leaves opposite, and alternate, short-petioled, from lanceolate to ovate-lanceolate; very soft with fine down in both sides; length from one to five inches.—Flowers terminal, from simply tern to a large compound corymb, pretty large, pure white, fragrant.—Pedicels clavate, villous.—Bractes short, subulate, villous.—Calyx villous, five or six-cleft; divisions short, and subulate.—Corol. Tube swelling towards the mouth, greatly much than the calyx. Border
of from six to twelve, linear, spreading divisions with margins revolute.—Filaments short. Anthers lodged just within the mouth of the tube of the corol.—Germ turbinate. Style so long as to elevate the two-lobed stigma so as to make it level with the anthers.

Obs. The species differs from my arborescens in being scandent, and in the shape of the leaves, as well as in the pubescence; here they are lanceolate, and very villous; there cordate and smooth.

Leaves cordate, downy. Umbels terminal, sessile many-flowered.
Katu-Tsjiregam-Mulla. Rheed. mat. 6. p. 95. 1. 54.
Nyctanthes multiflora Burm. Flor. Ind. p. 5. t. 3. f. 1.
Nyctanthes pubescens. Retz. obs. 5. 9.*
Sans. माछा, Maghyun, बुन्दू, Koondum. See As. Res. 4. 244.
Beng. Koonda.

A very famous shrub, brought originally from China into the Company's Botanic Garden. It is also indigenous in Bengal. Is in flower during the rains chiefly.

Stem scarcely any; branches numerous, covered with ash-coloured bark; the young parts very downy.—Leaves opposite, short-petioled, cordate, entire, downy, particularly while young; the terminal ones crowded (involucre-like) round the umbels.—Umbels terminal, sessile, tending to be trichotomous, containing from ten to thirty, sessile flowers; downy in all parts.—Flowers large, pure white, fragrant.—Bractes few, lanceolate.—Calyx six-cleft; border of the corol from six to nine-parted; divisions lanceolate.—Stamens within the tube. Anthers beaked.—Germ two-lobed, two-celled, with one ovula in each, attached to the upper part of the partition. Stigma entire, clubbed.

Obs. This is a goodly looking plant, its numerous, large, pure white, fragrant flower, opening in succession make it very desirable.

5. *J. laurifolium*. R.

Scandent, polished. *Leaves* opposite, ovate-lanceolate, lucid, three-nerved. *Flowers* axillary, and terminal, from one to five, long-penduncled. *Calycine segments* six or seven, filiform; those of the corol from nine to twelve, linear, length of the tube.

A very elegant, climbing and twining, highly polished, shrubby species; a native of the mountainous countries east of Bengal, where it flowers during the cool season.

*Leaves* opposite; subsessile, lanceolate, firm and glossy; margins entire, somewhat thick; faintly three-nerved; from two to four inches long, and from one to two broad.—*Peduncles* terminal and axillary, sometimes single, sometimes several together, and sometimes, when terminal, sub-racemed; long and slender.—*Bractes* opposite, subulate.—*Calyx* from five to seven cleft; *segments* long, slender, subulate, and smooth.—*Corol*. *Tube* twice the length of the *calyx*, sub-clavate; *border* of from nine to twelve, ensiform, spreading *segments* which are as long as the tube.—*Stamına* within the tube.—*Germ* two-celled, with one *ovula* in each, attached to the middle of the partition.—*Style* and *stigma* clavate, scarcely reaching to the anthers.

6. *J. coarctatum*. R.


A very ramous shrub, without any tendency to ramble or climb. It is the first simple-leaved *Indian Jasmine* I have found which has not that habit. Is a native of the hills near Chittagong, where it flowers in April and May; may be readily known, without any other mark, by the great number of flowers which form the little dense corymbs.


Scandent, polished. *Leaves* ovate-lanceolate, long-acuminate,
three-nerved, polished. *Flowers* axillary and terminal, solitary. *Calyx* segments six or seven, subulate; those of the corol six or eight, sub-filiform and longer than the long tube.

A native of the forests near *Silhet*, where it blossoms in March and April, and the berries ripen in June.

*Stem,* and *branches* together, some fathoms in extent, running up, and over large shrubs and trees. *Bark* of the old woody parts ash-coloured and rather rough; *tender shoots* polished deep green.

—*Leaves* opposite, petioled, ovate-lanceolate, long, fine-pointed, firm and glossy, three-nerved, three or four inches long, and one or one and a half broad.—*Petioles* short, with a remarkable joint near the middle.—*Flowers* terminal and axillary, solitary, sub-sessile, very large, white and sweetly fragrant.—*Calyx* with a short, smooth tube, border of about six subulate segments which are nearly half the length of the tube of the corol.—*Corol*; *Tube* long, widening above the middle for the stamina; *Border* of six to eight slender, spreading segments, which are an inch and a half in length.—*Filament* short. *Anthers* linear, lodged about the middle of the tube of the corol.—*Germ* oval, two-lobed, two-celled, with one *ovulum* in each, attached to the partition.—*Style* length of the tube of the corol. *Stigma* bifid.

*Obs.* The flowers were solitary the first year the plants were in the Botanic Garden, but during the rainy season of the second year there were usually nine.

8. *J. bracteatum.* R.

Twining. *Leaves* opposite, ovate-oblong, acute, villous. *Flowers* in terminal bracted fascicles of three, five, or eleven flowers. *Calyx* segments from five to seven, subulate; those of the corol from five to eight, oblong, with rounded acuminate apices. *Style* longer than the tube. *Stigma* entire.

A native of the island of *Sumatra*. From *Bencoolen* Dr. C. Campbell sent plants to the Botanic Garden, under the name *Coast*
Jasminum.  In Bengal they blossom during the cool, and the beginning of the hot season; the seed ripen in April.

Stem scarcely any; branches numerous, ligneous, climbing and twining, extending up and over trees of considerable size; tender parts round, and clothed with much, very soft, short, pale green down.—Leaves simple, opposite, short-petioled, ovate-oblong, acute, entire, downy, two or three inches long, and one or two broad.—Flowers numerous, pretty large, white, fragrant, in terminal fascicles of generally three, or five, subsessile ones, or growing on short, axillary branchlets; embraced by one, or two pair of large bractes, and by a greater number, when the fascicle terminates a primary branchlet; the additions in this, as in most of the other Indian species, proceed in opposite pairs of three-flowered peduncles.—Bractes opposite, always two, generally unequal pairs, of an ovate-cordate shape, under each fascicle, and some small subulate ones within them, all villous, like every other tender part of the plant.—Calyx downy. Tube short. Segments five, six, or seven, subulate.—Corol smooth. Tube twice the length of the calyx, sub-cylindric. Border of from five to eight, oblong segments, rounded at the apex, with a small point in the middle.—Germ two-celled, one ovula in each. Style longer than the tube of the corol. Stigma entire, linear, with a groove on each side.—Berries one or two, united from the middle downwards, size of a large pea, oval, smooth, succulent, and of a shining black colour when ripe; one-celled.—Seed single, oval. Integuments two; exterior composed of woolly fibres; inner thinner and more tender, both dark, brownish black.—Perisperm none.—Embryo erect. Cotyledons conform to the seed, green. Plumula two-lobed. Radicle patelliform, inferior.

9. J. latifolium. R.

Shrubby, twining. Leaves opposite, petioled, cordate. Corymbs terminal; calycine segments from five to seven, subulate; those of the corol from ten to twelve, linear, and cuspidate. Berries kidney-shaped.
Telting. Adivi-mulli.

To the best of my knowledge, this species is a native of the mountainous parts of the Circars only. It is much larger than the other species, though like them it has a woody twining, or climbing stem, but its branches are in general straight and spread. Branchlets opposite smooth.—Leaves opposite petioled, varying from oblong, to broad-cordate, pointed, entire, smooth; size various.—Corymb terminal, divided by threes, diffuse.—Flowers large, white, fragrant.—Calyx with a short tube, and seldom more than five-cleft border.—Corol tubular; border from eight to twelve-cleft; segments slender, and patent.—Berries one or two; when single oblong; when two kidney-shaped.

10. J. arborescens. R.

Arborescent. Leaves opposite, and three-fold, oblong, downy. Flowers terminal, numerous, corymbiform, border from ten to twelve-cleft. Stigma two-lobed.

Sans. सतुक्तारा, Suptula, तवभंक्तारा, Nua-mullika.

A native of the more elevated parts of Bengal, where it blossoms about the beginning of the hot season.

Trunk scarcely any; branches many, stout, woody, sub-erect, covered with smooth, ash-coloured bark; young shoots round, and somewhat villous. Height of the whole tree ten or twelve feet.—Leaves opposite, rarely three-fold, or alternate, short-petioled, ovate-cordate, acuminate; margins entire, and often waved, smooth on both sides; length from two to four inches, and from one to three broad.—Petioles channelled, jointed near the middle.—Flowers on terminal, trichotomous, three-flowered peduncles, often forming large, corymbiform panicles; they are large, white, and very fragrant.—Bractes subulate, villous.—Calyx crowned with five or six subulate, incurved, villous divisions.—Corol. Tube longer than the calyx. Border of ten or twelve, somewhat acute, linear divisions.
Jasminum. DIANDRIA MONOGYNIA. 95

—Anthers ovate, within the tube.—Germ turbinate, two-lobed, two-celled, with one ovula in each, attached to the upper part of the partition.—Stigma two-lobed, about half way up the tube of the corol.

Obs. This species is nearly allied to my J. latifolium, and indeed the only specific difference I have yet been able to observe, is, that this species has no tendency to twine or climb; that is twining.


Shrubby, twining; polished. Leaves opposite, petioled, ovate, smooth, of a shining deep green. Flowers terminal, one, two, or three; corol eight or nine-parted. Berries single, ovate.

Nyctanthes triflora. Burm. Ind. 4. t. 2?

J. vimineum. Willd. loc. cit.


This is much like Barman's figure quoted above, but does not accord with his character of alternate leaves; it is very common, and at the same time one of the most beautiful species of Jasmine I know. It abounds in every forest on the coast of Coromandel. Blossoms during the hot season; but in a state of cultivation flowers are produced the greatest part of the year.

Stem and branches woody, twining, smooth.—Leaves opposite on every part of the shrub, short-petioled, ovate-oblong, or oblong, sometimes nearly cordate, finely-pointed, smooth, shining, firm, very deep green, veinless.—Flowers terminal, generally three-fold, peduncled, large, white, with a faint tinge of red, star-shaped, having a peculiar but very pleasant fragrance.—Peduncles clubbed, smooth.

—Calyx; tube short; segments acute.—Corol; border generally eight or nine-parted; divisions lanceolate.—Style short. Stigma lanceolate.—Berries oblong.

Obs. I have for many years cultivated this species. It grows easily in every soil and situation, is constantly covered with leaves,
and their bright, shining deep green colour, renders it always beautiful, and particularly well adapted for screening windows, covering arbours, &c.

12. J. tubiflorum. R.

Scandent. Leaves sub-sessile, ovate-oblong, smooth. Flowers terminal, from three to five, short-peduncled. Calyxine segments from seven to eight, subulate, one sixth the length of the very long slender tube of the corol. Berries ovate.

A native of the Malay Archipelago, differs from all the other Indian species hitherto examined by me in the great length of its slender tube, which is three times longer than the seven or eight, lanceolate segments of its border.


Shrubby, spreading. Leaves oblong, polished. Flowers from three to many terminal. Border of the corol of from six to eight, linear, acute segments, equaling the tube in length.

Native place, the Friendly islands, and the eastern Archipelago, &c. Flowering time in the Botanic Garden the hot season. It does not ripen seeds in Bengal.

Trunk scarcely any; branches many, stout, ligneous, round, smooth; branchlets spreading in all directions.—Leaves simple, opposite, short-petioled, oblong, entire; highly polished on both sides; about two inches long, and about one broad.—Flowers terminal, from three to a decussate panicle, with its ramification trifid. Pedicels clavate, round, smooth.—Bractes minute, subulate.—Calyx campanulate, with a five-toothed border.—Corol; tube, many times longer than the calyx. Border from six to eight-parted; divisions linear, acute, about as long as the tube.—Anthers half erect. Style shorter by half than the tube of the corol. Stigma two-cleft.


Shrubby, twining. Leaves sub-ternate, leaflets ovate, the pair mi-


Sans. बलिनिका, Magudhee, गूनिका, Gunika, यूठिका, Yoot'hika, अम्ब्र, Umbustha. See As. Res. iv. 246.

Beng. Jut'hi, or Jui.

This species is a native of various parts of India, but not common. Its habit is twining, with a woody stem, and branches.

Leaves opposite, ternate. Leaflets, the pair very small, standing opposite, sometimes wanting; the terminal one at least ten or fifteen times larger; all ovate, entire, with a minute point, smooth, except when young when they are downy.—Corymb terminal, always three-forked, dense.—Flowers small, white, sweet-smelling, though less fragrant than those of the former species.—Calyx five-notched, with a round firm glandular process on the outside of each.—Corol; border from five to eight-cleft, divisions oblique, obtuse. Stigma clavate.—Berry exactly as in Sambac.

15. *J. lanceolaria.* R.

Shrubby, erect. Leaves ternate; leaflets lanceolar. Corymb terminal.

A native of the jungles or copses of Silhet, where it blossoms in May.

16. *J. paniculatum.* R.

Shrubby, erect, every part polished. Leaves ternate; leaflets oval, obtusely acuminate. Panicles terminal.

Sam-yeip-son-hing of the Chinese.

From Canton in China this fine erect, shrubby, highly polished species was received into the Botanic Garden, where it blossoms during the rains. The leaflets are from oval to oblong, with an obtuse point, polished, of a hard texture. The flowers are small and white but numerous, on terminal pretty large open, brachiate panicles.
17. J. chrysanthemum. R.
Shrubby, erect. Leaves alternate, pinnate; leaflets three, five, or seven, lanceolate. Corymb sub-terminal. Calycine segments attenuate.

Hemapushpica, or yellow yuthica. As. Res. iv. 246.

Sans. देमपुष्पिका, Hema-pooshpika.*

A native of the mountainous countries north of Hindoostan. Colonel Hardwicke found it on his Journey to Sirinagore, (see As. Res. vi. 349. Jasminum, No. 3.) and Dr. Buchanan in Napaul. In the Botanic Garden it grows freely from cuttings, and becomes a stout, erect ramous shrub, even a small tree, without the smallest tendency to lean, or twine. Flowers more or less the whole year; but, like the other species, the proper season is April and May, at which time it is the most desirable Jasmine I have yet seen.

Stem stout and woody, in plants seven or eight years old as thick as a man's leg. Bark smooth ash-coloured. Young shoots erect, flexuose, angular, smooth; height of the shrub from eight to twelve feet.—Leaves alternate, unequally pinnate; at the base of the young shoots ternate or even sometimes solitary. Leaflets two, or more generally three pair, and a terminal one; opposite, lanceolate, smooth, dark green, but not glossy; length from one and a half to three inches. —Corymb generally terminal, from ten to twenty-flowered, as in the figure of Jasminum odoratissimum, in Curtis's Bot. Mag. No. 285.

—Flowers large, bright yellow, delightfully fragrant.—Bractes ensiform.—Calycine segments five, alternate, nearly as the tube of the calyx.—Segments of the corol five, oval, obtuse, length of the tube.—Filament short. Anthers linear, with their apices rather above the mouth of the tube of the corol.—Germ two-celled, with two ovula in each, attached to the middle of the partition. Style half the length of the tube. Stigma clavate.


Shrubby, scandent (in India). Leaves opposite, pinnate; exterior three or five leaflets confluent. Peduncles terminal.

* Agee-Soa in Nepala.—N. W.
Jasminum, or Spanish Jasmine.

Pitsjigam mullo. Rheed, mal. 6. t. 52.

San. सुमाना, Soomuna, মল্লতি, Malutee, जाती, Jatī.

Beng. Jatee.

This plant I have only found in gardens, where it flowers greater part of the year.

19. J. heterophyllum. R.

Shrubby. Leaves alternate, petioled, simple, sometimes ternate, ovate-lanceolate, waved, lucid, finely acuminate.

A stout shrubby species, a native of Napaul. In the Botanic Garden its branches are weak and variously bent; the bark roughened with little elevated gray spots. While the plants are young the leaves are for the most part ternate, afterwards they are simple.*

20. J. dispersum. Wall.

Shrubby, scandent, smooth. Leaves opposite unequally ternate; leaflets ovate-oblong, acuminate, five-nerved. Corymbs terminal and lateral, brachiate.—Calyx campanulate with subulate teeth. Segments of the corol oblong obtuse. Berries twin, two-seeded!

A native of Napaul, where it is called Gooje-Soah.

It appears to be a ramous rambling shrub, with slender, four-sided, dotted, divaricated branches.—Leaves distant.—Leaflets membranaceous, rounded and sometimes slightly retuse at the base, tapering into a long acumen; besides the short five-nerves at the base, there are a few remote subtransversal ones from the rib, which all unite into a waved submarginal vein. The terminal leaflet is about four inches long; the others three-times smaller, subsessile.—Petioles slender-grooved, curved, an inch long, not articulated.—Corymbs ovate, with opposite, four-sided, three-flowered peduncles; and two opposite subulate bractes at their base.—Flowers large fragrant, white. Tube clavate, about an inch long. Border five-parted,

* This shrub has been in the garden about sixteen years, without having as yet produced any flowers.—N. W.
half the length of the tube.—*Berries* about the size of a small olive, of a dark purple colour; their skin separating, transparent.

*Obs.* In March 1818 I received specimens with flowers and ripe berries from the Honourable Mr. Edward Gardner, the resident at Katmandu in Napaul, to whose unremitting kindness and exertions the Botanic Garden owes a very great accession of the most rare and curious plants, natives of that interesting country. This handsome species is very distinct from the preceding one, but seems to approach to *J. didymum*, Forst. and *J. divaricatum*, Brown Prodr. i. 521.

**PHILLYREA.** Schreb. gen. N. 24.

*Calyx* four-toothed. *Corol* one-petalled, four-cleft. *Germ* two-celled, two-seeded. *Drupe* or *Berry* superior, one or two-seeded. *Embryo* inverse, and furnished with a perisperm.

1. *P. paniculata.* R.


A native of China, and from thence introduced into the Botanic Garden near Calcutta, before 1793. Now, 1802, they have grown to be beautiful small trees, of from fifteen to twenty feet in height, clothed almost to the ground, with numerous, opposite, spreading, and drooping branches, covered with smooth, ash-coloured bark.

*Leaves* opposite, petioled, drooping, ovate, and ovate-oblong, sides incurved, entire, leathery, smooth on both sides, above a shining deep green, underneath glaucous, with two or more obscure glands near their base: length four or five inches, breadth from two to three.—*Petioles* short, recurved, channelled.—*Stipules* none.—*Panicles* terminal from the exterior axills, ramifications thereof opposite, and smooth.—*Flowers* very numerous, rather small, pure white, somewhat fragrant.—*Bractes* minute, caducous.—*Calyx* obscurely four-toothed.—*Corol* one-petalled; *tube* short; *segments* linear, revolute, smooth.—*Filaments* opposite, inserted into the bottom of the tube
of the corol, and about as long as the segments of its border. Anthers incumbent.—Germ above, but lodged deep in the bottom of the calyx, two-celled, with two ovula in each. Style short. Stigma elevate, entire.—Drupe size of a small French bean, obliquely obovate, smooth, generally one-celled.—Nut solitary, with the rudiment of a second, but I never saw more than one come to maturity; pointed at the base, furrowed on the outside, covered, with a thick, somewhat indurated envelope, though scarcely hard enough to be called a nut. Embryo inverse, lodged in a pearl-coloured amygdaline perisperm.

C.s. Ligustrum Japonicum. Thunb. Flor. Japan. P. 17. F. 1. is a tolerably good representation of this tree; but the one-seeded nut, short style, and clavate stigma of my plant, will not allow me to think they can be the same.

2. P. robusta. R.
Leaves ovate-oblong, entire, acuminate. Panicles terminal, large and spreading. Berries sub-cylindric, one-seeded.

Bhooemoora, the vernacular name in Silhet, where it grows to be a very large tree, and furnishes the natives, &c. with very hard durable wood. Flowering time June and July; the seed ripen in January and February.

Young shoots void of pubescence, but dotted with small whitish specks.—Leaves opposite, short-petioled, ovate-lanceolate, acuminate, entire, smooth; three or four inches long, and one or one and a half broad.—Panicles terminal, large, very ramous; ramifications four, round, and villous.—Flowers oblong, acute, villous.—Calyx bowl-shaped, four-toothed.—Corol campanulate. Tube very short; border four-parted.—Filaments short, inserted on the little tube of the corol opposite to each other. Anthers oblong.—Germ superior, depressed, two-celled, with two ovula in each, attached to the top of the partition.—Style and stigma clavate, apex flat and emarginate.—Berries (for they can scarce be called drupes) sub-cylindric, smooth, succulent, dark olive-purple, size of a large berberry, rarely more than one-celled.—Seed solitary, conform to the berry. Integuments
two; *exterior fibrous* and striated; *interior* rather thick, brown, adhering to the perisperm.—*Perisperm* conform to the seed, oily.—*Embryo* straight, nearly as long as the perisperm, inverse. *Cotyledons* lanceolate. *Radicle* cylindric, superior.

**MILLINGTONIA. R.**

*Calyx* three-leaved, calycled. *Corol* three-petalled, nectarial scale on the inside of each. *Germ* two-celled, two-seeded. *Drupe* with one, or two-celled, two-valved, nut seed solitary. *Embryo* curved and folded, with little or no perisperm, and with a curved inferior radicle.

Having found it necessary to deprive our countryman the late Sir Thomas Millington of the genus assigned to his memory by the younger Linneus, (Supl. 45 and 201) because, on finding the ripe seed vessel of the only species thereof, I ascertained it to be a true *Bignonia* as I suspected; I have therefore restored that respectable name to the system, under a different dress, by giving it to the two trees which at present constitute this strongly marked family, and, which I am inclined to think, have not, until now, been described.*

1. *M. simplicifolia*. R.

*Leaves* alternate, simple, broad-lanceolate.

A large tree, a native of *Silhet*, where it is called *Dantrungee* by the natives; the timber is used for various purpose. Flowers in February and March; seed ripe in July and August.

*Leaves* alternate, petioled, broad-lanceolar, tapering most toward the base, entire, or very remotely sub serrate, in very young plants completely serrate, rather acuminate, smooth; veins simple and parallel; from six to twelve inches long, by three or four broad.—*Panicle* terminal, large, oblong, rather open, composed of many, alternate decompound, long, patent, brown, villous branches.—*Flowers* numerous, sessile, very minute, yellow.—*Bractes* oblong, clothed with

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* Millingtonia, Donn. Hort, Cantab. is Roxburgh’s Flemingia.—N. W.
ferruginous pubescence.—*Calyx* three-leaved, independently of two or three minute, villous bractes, like a *calycle*; leaflets ovate, smooth, permanent.—*Petals* three, broad-ovate, waved, twice the length of the *calyx*, permanent.—*Nectary* a variously lobed, smooth scale from the base of each petal on the inside, they form a dome over the pistillum, and round the base of the germ is found a flat, triangular body, with its angles bidentate.—*Filaments* two, opposite, incurved, inserted without the interior, three-angular nectary; bifid, the inner lamina supporting on its apex a patelliform receptacle, on which the two-lobed yellow *anther* rests. *Exterior lamina* bifid, segments subulate, rising rather higher than the anther.—*Germ* superior, two-celled, with two *ovula* in each, attached to the thickened middle of the partition. *Style* single, short. *Stigma* obscurely two-lobed.—*Drupe* size of a pea, nearly round, succulent, smooth, black, one-celled. *Nut* conform to the drupe, rarely more than one-celled, hard, cell somewhat angular; the second or abortive cell always traceable.—*Seed* solitary, concave on the side next the abortive cell of the nut, hemispheric on the other. *Integument* single, membranaceous.—*Perisperm* none.—*Embryo* curved, and doubled, as in the *Convolvulaceae* with a curved inferior radicle.

2. *M. pinnata*. R.

*Leaves* alternate, abruptly pinnate; leaflets from six to twelve pair, sub-opposite, lanceolate.

*Batwa*, the vernacular name in *Silhet*, where it in indigenous, growing to be a middling sized tree, the wood of which is employed by the natives in constructing their houses. Flowers in April and May. The seeds ripen in September.

*Branchlets* smooth.—*Leaves* alternate, abruptly-pinnate; from six to eighteen inches long. *Leaflets* from six to twelve pair, sub-opposite, short-petioled, lanceolate, remotely serrate, acuminate, smooth, three to six inches long, by one or one and a half broad.—*Panicles* terminal, very large and very ramous, a little hairy.—*Bractes* minute.—*Flowers* numerous, small, white.—*Calyx* three-leaved with two smaller ones under them, which may be called *bractes* or a *calycle*; or,
the calyx may be called five-leaved.—Nectary, from the inside of the base of each petal arises a variously lobed, ragged leaflet or scale which is incurved over the germ; besides which round the base of the germ is a small, three-sided cup with bidentate angles.—Filaments two, opposite, length of the germ, short, broad, with enlarged apex; from the base on the outside, rises a broad, tridentate scale, of about the length of the filament. Anthers twin, each lobe globular, opening transversely on the inside.—Germ superior, cordate two-celled, with two ovula in each cell, attached to the partition. Style short. Stigma small, bidentate.—Drupe size of a pea, smooth, black, succulent, one-celled. Nut roundish thick for its size and very hard, rugose, one celled, two-valved, with a projection into the cell opposite to the remains of the style on one side near the base, which marks the abortive lobe.—Seed solitary, conform to the nut. Integument single, membranaceous.—Perisperm none, or in small quantity, and blended with the integument.—Embryo curved, and folded up nearly as in the Convolvulaceae. Cotyledons ovate-oblong. Radicle inferior, curved.

OLEA. Schreb. gen. N. 25.


Shrubby. Leaves oblong-lanceolate, slightly serrate. Peduncles axillary.

A native of China, in the Botanic Garden it blossoms during the cool season.

2. O. paniculata. R.
Leaves opposite, petioled, oblong, entire, smooth. Panicles axillary. Bractes deciduous. Lobes of the stigma divaricate.
A small tree; a native of the Circar mountains. Flowers during the hot season.

Leaves opposite, petioled, oblong, waved, entire, running down the petiole, smooth on both sides, firm, about five inches long, and two broad.—Petioles, an inch and half long, smooth, flat above.
—Stipules none.—Panicles below the leaves, and also from the axils, small, thin, brachiate.—Bractes small, nearly sessile.—Calyx four-cleft, small.—Corol one-petalled; tube shorter; border four-cleft; divisions oblong, spreading, concave; apices sharp and incurved.—Filaments two, opposite, short. Anthers large, oblong, erect.
—Germ superior, round.—Style very short. Stigma two-cleft; divisions entire, acute. Ripe fruit not observed.

3. O. dioica. R.


Atta-jam, the vernacular name in Silhet, where it is indigenous; also on the hills of Chittagong. In both places it grows to be a pretty large tree, the timber of which is reckoned excellent, and put to many uses by the natives. Flowering time the month of March and April; fruit ripe in July.

Bark of the old ligneous parts ash-coloured; of the young shoots smooth and green.—Leaves opposite, short-petioled, oblong, tapering equally at each end, remotely, and acutely serrate, acuminate, smooth, from four to eight inches long, by from two to four broad.—Stipules, the oval concave scales of the buds only.—Panicles axillary, and opposite, below the leaves, thin and not above half their length.—Male flowers more numerous, small.—Calyx four-toothed.—Corol one-petalled, tube very short; border four-parted.—Filaments two, very short, inserted on the short tube of the corol. Anthers oval, hid in the corol.—Germ none, a small two-lobed gland supplies its place.—Female on a separate tree, (probably hermaphrodite, and in that case, all the corols with the stamina, must have fallen off at a very
early period; which I have no reason to think was the case, as they were examined at what I consider a proper age, and no traces of the place where a corol grew could be found.)—Calyx as in the male.
—Corol none.—Germ superior, ovate, two-celled, with two ovula in each, attached to the top of the partition. Style short. Stigma two-lobed.—Drupe nearly round, in size and colour much like the common sloe, Prunus spinosa, one-celled. Nut conform to the seed, thin and rather brittle than hard, one-celled.—Seed solitary, conform to the nut. Integument single, thin.—Perisperm conform to the seed, firm, pearl-colour.—Embryo inverse, shorter than the perisperm, and considerably narrower. Cotyledons ovate-lanceolate. Radicle superior.


Calyx four-parted. Corol one-petalled; segments long. Germ two-celled, two-seeded.—Drupe superior, one or two-seeded. Embryo inverse without perisperm.

1. C. ramiflora. R.
Arboresous. Leaves opposite, broad-lanceolar, entire. Panicle below the leaves.

A native of the Moluccas. Flowering time March and April. Seed ripe in September.

Trunk erect, bark smooth, ash-coloured; branches opposite; young shoots smooth, and round.—Leaves opposite, petioled, broad-lanceolar, entire, acute, smooth on both sides; length about six inches.—Petioles channelled, smooth, about an inch long.—Panicles opposite, from the naked branches below the leaf-bearing shoots, ovate, brachiate, much longer than the leaves, smooth in every part.—Flowers numerous, small, yellow.—Bractes opposite, lanceolate.—Calyx four-parted.—Corol to the base four-cleft, consequently there is little or no tube, segments of the border lanceolate, with incurved margins.—Filaments short and thick, inserted both on the base


Said to be a native of Ceylon.

3. *C. dichotoma*. R.


Native place *Coromandel*. The Asiatic synonima are uncertain. Flowering time in the Botanic Garden the month of March.

*Trunk* short; *bark* dark ash-coloured, with many, elevated, lighter coloured specks. *Branches* dichotomous throughout, very numerous; height of the shrubs in the Botanic Garden, about seven feet in seven years.—*Leaves* opposite, short-petioled, broad-cuneiform lanceolar, entire, rather obtuse; surfaces smooth, texture hard; three inches long by one broad.—*Racemes* axillary, solitary, scarcely half the length of the leaves. *Pedicels* sub-opposite, diverging, three-flowered.—*Flowers* small, white, inodorous.—*Calyx* four-parted; segments ovate, obtuse, villous.—*Corol*, the segments can scarcely be said to be united at the base, except by the filaments, which are inserted on the bases of two, and in that manner form two pair of segments; they are nearly exact, taper a little, and have their margins much incurved.—*Filaments* two short. *Anthers* large, with bifid apex.—*Germ* four-sided, ovate, two-celled, with two ovula in each attached to the middle of the partition. *Style* short. *Stigma* obscurely two-lobed.—*Drupe* superior, oval, or short obovate, size of a black currant, succulent, when ripe purple, one-celled.—*Nut* obovate, rather thin, and
tender, marked with four ribs from the apex to the base, with four small, imperfect ones between, one-celled.—Seed solitary, conform to the nut. Integument single, thin, and tender.—Perisperm none. Embryo inverse. Cotyledons conform to the seed.—Radicle patelliform superior.


Shrubby, scandent, with four-sided branches. Leaves oval, acuminate, three-nerved, glaucous. Panicle terminal and axillary, ramous, brachiate.

A native of the forests of Chittagong, where it is called Chulatalata. In the Botanic Garden it blossoms in April.

A rambling ever green ramous shrub, with ash-coloured separating bark.—Branches long and slender, acutely and exactly four-sided, as well as the other parts of the plant glaucous, smooth.—Leaves opposite, spreading, petioled, five to seven inches long, about three inches broad, acute at the base, firm and leathery, upper surface undulated (bullate) between the principal vessels, nerves and rib much elevated on the pale under surface, and uniting a little above the base; veins a few, reticulated. There are two additional very thin nerves originating at the insertion of the petiole, which together with the preceding larger ones run along the margins of the leaf, forming two arched sub-marginal veins on each side.—Petioles scarcely an inch long, round, channelled above, articulated at the base.—Stipules none.—Panicles short-peduncled, pyramidal, acuminate, ramous, brachiate, about the size of the larger leaves.—Peduncles four-sided, much sub-divided, the upper ones sub-alternate; pedicels pubescent, slightly flattened.—Bractes lanceolate, very small, deciduous, opposite under each subdivision of the panicle.—Flowers small, almost scentless, ternate, sessile, smooth, greenish yellow.—Calyx urceolate, inferior, with four lanceolate acute erect, purple-margined teeth.—Corol infundibuliform, somewhat fleshy. Tube twice as long as the calyx, large, obscurely four-sided. Limb four-parted, longer than the tube, spreading; divisions
linear clavate, equal, contracted at their base, thickened blunt and slightly vertical at their end. \textit{Mouth} shut up by the anthers.—Filaments two subulate, inserted above the base of the tube.—\textit{Anthers} fleshy, with marginal cells, erect, scarcely elevated above the tube, between two opposite fissures of the border.—\textit{Ovarium} ovate, two-celled; \textit{ovula} solitary inserted at their base.—\textit{Styles} (\textit{Stigmas}?) two, subulate, acute, parallel, very short.

\textit{Obs.} This elegant shrub was introduced into the Garden in 1811, and commenced blossoming five years afterwards. Not having observed a single fruit I am doubtful of its identity with \textit{Chionanthus}, under which however I have ad interim placed it. The erect position of the ovula seems to indicate that it belongs to the family of \textit{Jasminae}, as limited by Mr. Brown in his matchless \textit{Prodromus Florae Novae Hollandiae}; in which case it may perhaps be found to constitute a new genus. The aestivation of the corol is valvate.—N. W.

\textbf{SCHREBERA. \textit{R.}}


\textit{S. swietenioides. \textit{R. Corom. pl. 2. N. 101.}}

\textit{Teling. Mucaadi.}

\textit{Tam. Mogalinga marum.}

A large timber tree, a native of vallies over the mountainous parts of the \textit{Raja-mundri Circa\textit{r}, Balaghata} mountains, &c. Flowering time the beginning of the hot season.

\textit{Trunk} erect. \textit{Bark} scabrous. \textit{Branches} numerous, spreading in every direction, so as to form a large beautiful shady head.—\textit{Leaves} nearly opposite, petioled, pinnate with an odd one, about a foot long. \textit{Leaflets}, three or four pair, opposite, short-petioled, the lowermost largest, and obliquely-ovate, or cordate, while those towards the apex become narrower; all are entire, pointed, smooth on both sides, and about three or four inches long.—\textit{Petioles} round, smooth.—\textit{Stipules} none.—\textit{Panicles} terminal, thin, trichotomous.—\textit{Bractes} small, caducous.—\textit{Flowers} rather small, white and brown
Diandria Monogynia

Eranthemum.

Variegated, very fragrant during the night.—Calyx beneath, tubular, somewhat two-lipped; lips nearly equal, emarginate, sometimes there are two lateral toothlets, one on each side in the fissures which separate the lips.—Corol one-petalled, salver-shaped. Tube cylindric, three times longer than the calyx. Border spreading, divided into five, six or seven cuneate, truncate segments.—Filaments two, short, inserted below the middle of the tube. Anthers oblong, hid within the tube of the corol.—Germ above, oval. Style a little longer than the tube. Stigma bifid.—Capsule large, pear-shaped, size of a pullet's egg, scabrous, very hard, two-celled, two-valved, opening from the apex.—Seed four in each cell, they are irregularly oval, and compressed, with a long membranaceous wing.

Obs. The wood of this tree is of a grey colour, very close-grained, heavy and durable. It is reckoned less subject to bend or warp than any other hereabouts; on which account it is employed by weavers in many parts of their looms, particularly the beam. It is also used for a great variety of other purposes.

I am inclined to think it would answer well for scales to mathematical instruments; it does not look so well as box, but its not being subject to warp may render it fitter, though not so handsome.


Calyx five-cleft. Corol hypocrateriform; border regular, or nearly so. Filaments four, two of them sterile. Capsule two-celled, two-valved, bursting with elasticity opposite to the partition.

1. E. montanum. R.

Justica montana. R. Corom. Pl. 2. N. 176.
A small, straggling, jointed, under shrub; a native of the Circar mountains, flowers during the cool season.

Stems many, striated, jointed, smooth, leaning on the ground, and rooting at the joints, young shoots four-sided.—Leaves opposite,
petioled, oval and oblong, pointed, running down the petioles, from three to four inches long, and about two broad.—Spikes many, terminal, erect, slender. **Peduncles** four-sided.—**Bracteoles** exterior opposite, decussate, linear acute, hairy, one-flowered. **Bracteoles** two to each flower, pressing laterally the calyx, and like the exterior, but much smaller.—**Flowers** opposite, solitary, decussate, very pale blue.—**Calyx** five-parted; **segments** subulate.—**Corolla** with a very long, and very slender tube, border of five equal obovate truncate, pale blue segments.—**Filaments** short. **Anthers** single, oblong, within the tube of the corolla.—**Style** length of the tube of the corolla. **Stigma** unequally bifid, appearing just without the tube.—**Capsule** linear-oblong, compressed, pointed, two-celled, two-valved, opening across the partition, with an elastic jerk.—**Seeds** two in each, compressed.


Shrubby, erect **Leaves** ventricose-oblong. **Spikes** terminal, imbricated. **Bractes** ovate-oblong.


A most beautiful, stout, flowering shrub; a native of dry, uncultivated, shady places, over various parts of India, flowering time the cold season. It is generally in its full beauty in February.

**Stems** many, erect, and ascending, or nearly so; two or three feet high. **Branches** many; young shoots four-sided, smooth.—**Leaves** opposite, short-petioled, oblong, waved, pretty smooth; from six to nine inches long, and from three to four broad; they are of a much deeper and brighter green than in *E. montana*, which this resembles most.—**Spikes** terminal.—**Bractes** disposed as in the former, but larger, broader, ciliate, and much nearer to each other.—**Flowers** dis-
posed as in the former but larger, and of a deep bright blue purple
 colour.—Capsule and seeds as in E. montana.

3. E. suffruticosum. R.

Shrubby, erect. Leaves, ovate-oblong, smooth. Spikes terminal; bractes wedge-shaped, naked. Stamen within the tube.

A native of the Andaman islands, from thence several plants were brought to the Botanic Garden, by Colonel Kyd; and are now (March 1797) in blossom. It is a small shrub, and of slow growth.

Stem and branches sub-erect, jointed; the younger somewhat four sided and a little hairy.—Leaves opposite, short-petioled, oblong, and ovate-oblong, somewhat repand, smooth on both sides.—Spikes terminal, flowers opposite.—Bractes three-fold, one-flowered, the exterior large, wedge-shaped, and naked; the interior daggered.—Corol; tube length of the exterior bractes. Border regularly five parted, pale blue.—Stamens two, abortive filaments issuing from the base of the two fertile ones. Anthers half hid in the tube of the corol.

4. E. diantherum. R.


A small delicate, perennial plant, brought from the Moluccas in 1800, blossomed in the Botanic Garden in September 1801.

Stem curved, simple; branches few in our small young plants.—Leaves opposite, petioled, ovate-oblong, entire, obtuse, destitute of pubescence, somewhat bullate; about two or three inches long, by one broad.—Flowers numerous, collected on small, long-peduncled, axillary umbellets; and in opposite fascicles, or solitary, on a long terminal, slender, erect raceme; small, white, with a slight tinge of red, and some minute red spots on the base of the middle divisions of the under lips.—Bractes, a single, ensiform one, at the base
of each peduncle, with one or two, still smaller, about the middle of each pedicel.—Calyx divided almost to the base into five slender, acute divisions.—Corol; tube long, slender, and curved. Border sub-bilabiate: upper lip erect, two-parted; lower three-cleft; all the five segments equal.—Filaments four, short, in the mouth of the tube, two of them very minute, and abortive. Anthers erect, twin.—Capsule with two, or four, somewhat scabrous flattened orbicular seeds.

Obs. Is nearly allied to my E. racemosum, but differs from it in having long, slender-peduncled fascicles of flowers in the axills of the leaves, as well as in having from one to three or more flowers on each of the lower opposite peduncles of the racemes, while in that there is only one; and lastly, in having the upper lip of the corol only two-parted, which in that is three-cleft.

5. E. racemosum. R.

Suffruncose. Leaves oblong, ventricose. Racemes terminal; corol somewhat bilabiate, both lips three-parted.

A small, under shrub, of great beauty, brought into the Botanic Garden from the Moluccas, in 1798; and blossomed in November, 1799.

Stem small, with a few, slender branches; height of the whole plant about two feet.—Leaves opposite, petioled, oblong, ventricose, and running down on the petiole, entire, and pretty smooth; from two to three inches long, and broad in proportion.—Racemes terminal, some of them long, and slender; others shorter.—Flowers opposite, pedicelled, approximate, pretty large, colour a pale pink, or white, tinged with red.—Bractes subulate, one at the base of each pedicel, and two on it.—Calyx; divisions equal, and subulate.—Corol infundibuliform; border somewhat bilabiate; both lips three-parted, the under one considerably larger.—Filaments four, short, inserted within the mouth of the tube, two of them minute, and abortive. Anthers half erect.


A native of the *Andaman* Islands, from whence several plants were brought to the Botanic Garden, by Colonel Kyd, which blossom in March. It is a small shrub, and of slow growth.

*Stem* and *branches* sub-erect, jointed, the younger somewhat four-sided, and a little hairy.—*Leaves* opposite, short-petioled, oblong and ovate-oblong, somewhat repand, smooth on both sides.—*Spires* terminal; flowers opposite.—*Bractes* three-fold, one-flowered, the exterior large, wedge-shaped, and naked; the interior daggered.—*Corol*; tube length of the exterior bractes. *Border* regularly five-parted, pale blue.—*Stamens*, two abortive filaments issuing from the base of the two fertile ones. *Anthers* half hid in the tube of the corol.

7. *E. strictum* Colebr.


A native of the mountains near *Sylhet*, and from thence introduced into the Botanic Garden in 1813, where it produces its beautiful large blossoms in succession in the months of January, February, and March.

Bengalee name *Neel-Vasooka*.

A small shrub of about four or five feet in height, slightly covered with short hair.—*Stem* almost round, jointed, sending forth four-sided slender *branches* in remote pairs.—*Leaves* about four inches long, acute at each end; their margins somewhat revolute and crenulate, smooth and shining, of a peculiar greyish-green colour above, very pale, with prominent, hairy, and reticulated nerves and veins below. The uppermost or floral *leaves*, at the base of the spikes, ap-
proach to the size and figure of the bractes.—Petioles about an inch long, flattened above, and slightly margined by the decurrent base of the leaf.—Spikes solitary, erect, from one to two feet long.—Rachis sharply four-sided, almost four-winged.—Flowers large dark-blue, opposite in alternate pairs, which become remote as the spike elongates.—Bractes adpressed imbricating, with their ends cuneate-lanceolar, dark green, acute, ciliate, about an inch long; the lowermost barren and becoming floral leaves.—Interior two very small, scarcely longer than the five calycine segments, and like them linear, pubescent.—Tube of the corol slender, pubescent slightly enlarged towards the mouth, about twice the length of the outer bracte.—Segments obovate truncate spreading and flat, equal, very pale below.—Two filiform barren stamina between the filaments. Anthers in the mouth of the corol with parallel cells.—N. W.

JUSTICIA. Schreb. gen. N. 35.

Corol one-petalled, irregular. Capsule superior, two-celled, two-valved, bursting with elasticity contrary to the partition.

Sect. 1st. Anthers single.


Carim curini. Rheed. mal. 2. t. 20.

Hind. Oodoo-jati.

A native of our Indian forests. Flowers the greatest part of the year.

Stems several, woody, straight, round, smooth, jointed, and swelled above the joints; from two to four feet high.—Leaves opposite, petioled, oval, tapering a little towards each end, smooth, a little waved.—Spikes terminal, four-sided, imbricated with four rows of large, oval, sharply serrated, waved, one-flowered, bractes.—Flowers a pale blue or azure colour.—Corol; tube very long and slender,
upper lip linear, reflexed, becoming revolute, apex bifid; under lip very broad, three-parted.—Anthers simple, linear, erect.—Stigma perforated, ciliate.—Capsule two-seeded.

2. *J. thrysiflora.* R.

Shrubby, erect, smooth. Leaves lanceolar, drooping. Racemes terminal, flowers verticilled. Corol sub-bilabiate, clavate, ten or twelve-seeded.

This beautiful stately species is a native of the interior part of Bengal, and from thence was introduced by Dr. William Carey, into the Botanic Garden, where it flowers in January and February; and the seeds are ripe in March and April.

Root ramous.—Stem straight, woody. Branches nearly straight, general height from four to eight feet; woody parts round and covered with smooth ash-coloured bark; young shoots smooth, swelled at the insertion of the leaves, somewhat four-sided, and tinged with dull purple.—Leaves opposite, short-petioled, drooping, lanceolar, entire, smooth on both sides, of a firm texture, the upper side deep green, the under side pale; length from four to eight inches, and from one to two broad.—Racemes terminal, often solitary, though sometimes two, or even three-fold, thyrsiform, shape of the flame of a candle, crowded with large orange-coloured flowers.—Pedicels four-fold, verticilled, approximate, one-flowered, shorter than the divisions of the calyx.—Bractes three-fold, subulate; the inner two permanent, and inserted on the base of the pedicels; the exterior single one larger and caducous.—Calyx simple, five-cleft, to the base divisions equal, straight, subulate, half the length of the tube of the corol.—Corol about an inch long. Tube incurved, compressed, laterally somewhat villous. Border bilabiate; upper lip broad, projecting straight forward, deeply emarginate; under lip of three, equal, deeply-divided, ovate, acute divisions.—Anthers even with the upper lip of the corol, dark brown, oval, with an opening on the under side for the discharge of the white pollen, and studded on the back.
3. *J. vitellina. R.*

Shrubby, erect. *Leaves* broad-lanceolar, reflexed, smooth. *Racemes* terminal, cylindric; *flowers* opposite; below fascicled, about the middle term, and above single; sub-ringent, with ample-campanulate throat. *Capsule* linear, few-seeded.

A native of the hilly parts of Chittagong, where it blossoms in February and March.

Stems scarcely any; but several, erect, stiff, short *branches*, with their ultimate tender divisions four-sided, the angles sharp, and rather rough; whole height of full grown plants about three feet. *Leaves* opposite, short-petioled, reflexed, from oblong to lanceolar, entire and pretty smooth; length from two to four inches, by from one to two broad. *Racemes* terminal, solitary, rigidly erect, cylindric; from three to six inches long. *Rachis* four-angled. *Flowers* rather small, colour yellowish pink, on the lower part of the raceme in opposite fascicles, about its middle in threes on common very short peduncles and pedicels; above single. *Bractes* to the single *flowers* solitary, to the lower three. *Calyx* single, five-parted; divisions broad-subulate. *Corol* with the tube shorter than the calyx, and an ample-campanulate throat; *border* sub-bilabiate; upper lip projecting almost horizontally, bifid; lower lip broad, and three-parted. *Filaments* much curved, hairy near the base. *Anthers* single, linear, lodged under the upper lip of the corol. *Germ* two-celled, about four *ovula* in each. *Stigma* simple, obtuse. *Capsule* linear, smooth.

4. *J. alba. R.*

Shrubby erect, smooth. *Leaves* opposite, ovate-lanceolate. *Spikes*
terminal, and axillary. Flowers remote. Corol with filiform tube, and bilabiate border.

This very pretty plant, a native of the great Andaman, was brought from thence to the Botanic Garden, by Capt. Stokoe. Flowering time the beginning of the hot season.

Stem erect, round, smooth, while young swelled above the insertions of the leaves.—Leaves opposite, short-petioled, oblong, waved, smooth and shining on both sides.—Spikes numerous, terminal, and axillary, spreading, with a considerable recurvature, longer than the leaves, round, and smooth.—Flowers opposite, remote, pure white.—Bractes, three small ones to each flower, shorter than the calyx.—Corol; tube long, straight, filiform; upper lip of two, erect, wedge-shaped divisions united below the middle; under lip three-parted; divisions broader and pointing downwards.—Filaments short. Anthers just without the tube.


Shrubby, erect. Leaves broad-lanceolate, pointed. Racemes, sub-globular. Tube of the corol widening, vertically compressed, margins of the segments of the border revolute.

Tjude-maram. Rheed. mal. 6. p. 111. t. 60.

Folium bracteatum. Rumph. amb. 4. p. 73. t. 30.

A large, elegant, ramous shrub, common in gardens, and one of our finest ornaments. I never saw it wild; is in flower most part of the year.

Leaves opposite, short-petioled, ovate-lanceolate, smooth-pointed, generally variegated with large white spots, though sometimes of a uniform green, and we have a variety with the leaves uniformly ferruginous.—Racemes terminal, short, erect, smooth.—Flowers large, generally of a beautiful crimson colour.—Bractes opposite; below three or four-flowered; above one-flowered.—Corol, throat compressed, divisions of the border soon after they expand becoming spirally revolute, with their inside wrinkled, and beautifully ornamented with small chrystalline specks.


*Beng.* Kala-megh, Kalup-nath, or Maha-tita; the last name implies *King of bitters*, and a very powerful, much esteemed one it is.

Kreat is the name by which it is known on the Malabar coast, &c. where it is much used in medicine, and is the bitter of the famous Nostrum, called *Droge amere*.


*Teling*. Nella-vemoo.

A native of dry ground, under the shade of trees, bushes, &c. Flowering and seed time, the wet and cold season.

*Stem* erect, generally annual, at least down to the root, branchy; slender, four-sided, jointed, smooth, one to two feet high. *Branches* opposite, cross-armed, four-sided, spreading.—*Leaves* opposite, short-petioled, lanceolate, entire, smooth; two or three inches long. — *Racemes* terminal, and from the exterior axills, horizontal, long secund, four-sided.—*Flowers* remote, rose-coloured, long-pedicelled, alternate, erect, downy.—*Bractes*, a large, exterior, opposite pair; within the flower-bearing one there are two smaller, embracing the base of the pedicels.—*Corol*, bilabiate. *Tube* recurved; lips linear, and reflected; the *superior* broadest, three-toothed; the *inferior* two-toothed.—*Filaments* as long as the lips of the corol, projecting, hairy. *Anthers* very flat, obovate, firmly united at the base, and three-bearded.—*Capsule* erect, sub-cylindric.—*Seeds* three or four in each cell, cylindric.


Annual, erect, four-sided, hairy. *Leaves* sessile, decussate, oblong and linear. *Spikes* axillary, recurved over the bosoms of the leaves, secund. *Capsule* oblong, with four, verrucose seeds.
A native of Coromandel, and generally found on old walls; in flower all the year.

**Stem** annual, erect, four-sided, hairy, with ascending, opposite, similar branches from the base; whole height about a foot.—**Leaves** opposite, decussate, sessile, from oblong to linear, obtuse, recurved, hairy; from one or two inches long.—**Spikes** axillary, spreading out over the bosom of the leaves, and in general shorter than them; in luxuriant plants compound.—**Bractes** opposite, small, lanceolate, hairy.—**Flowers** alternate, sessile, erect, upper lip purple, the rest white. —**Calyx** of five, long, hairy, ensiform divisions.—**Corol** bilabiate. **Tube** sub-cylindric, upper lip erect, broad, and trifid, under lip narrower, recurved, and bidentate.—**Filaments** projecting, straight, and about as long as the lips of the corol. **Anthers** simple, united and bearded at the base.—**Capsule** oblong, erect, hairy, length of the calyx.—**Seeds** generally two in each cell, oblong, rough.

**8. J. polysperma. R.**

Annual, creeping, round, jointed. **Leaves** sessile, lanceolate, downy. **Spikes** imbricated. **Bractes** three-fold, one-flowered, woody. **Capsules** with from twenty to thirty seeds.

**Beng.** Chhota-micheta.

Is a native of Bengal; appears during the cold season amongst grass, &c. uncultivated places.

**Stems** diffuse, or creeping, very ramous, six to twelve inches long, round, jointed, a little downy.—**Leaves** opposite, sessile, lanceolate, entire, downy.—**Spikes** terminal, and axillary, imbricated with opposite, decussated flowers, and bractes.—**Flowers** small, pale blue.—**Bractes** three-fold, one-flowered, the lower one broader a little than the two lateral, all are woolly.—**Calyx** woolly.—**Capsules** linear, containing from twenty to thirty, small roundish seeds.


Teling. Nella mura.

Grows on pasture ground, generally under the shade of trees. Flowering and seed time the wet, and cold season.

Root perennial.—Stem none.—Leaves radical, spreading close on the ground, sessile, wedge-form or oblong, crenulated, rugose, woolly on the under side; from six to twelve inches long.—Spikes radical, several, as long as, or longer than the leaves, ascending, imbricated from top to bottom, with small, rigid, pointed bractes, each of the superior ones embracing a flower, and two small lateral bractes.—Flowers small, white.—Calyx five-leaved, the superior leaflets much the largest.—Corol; tube cylindric, recurved; upper lip vaulted, under lip broad, three-parted, with the divisions two-parted.—Capsules conical, eight-seeded.—Seeds kidney-form.

Sect. 2. Corols bilabiate. Anthers double.


Pul-colli. Rheed. mal. 9. 135. t. 69.

Sans. बृंगिङ्ख्वमा, Yoothika-purnee.

Beng. Jooi-pana.


This species I have only found in gardens: from whence it originally came, I cannot say. Flowers all the year round, but never ripens its seed, owing, I imagine, to its being always propagated by cuttings, layers, or slips. It grows to be a large thin shrub, of five, or more feet in height.

Root woody, ramous.—Stems many, erect, ramous, the old wo-
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dy parts round, and covered with pretty smooth ash-coloured bark; the tender branches, and young shoots jointed, smooth, and absolutely six-seeded.—Leaves opposite, petioled, broad-lanceolate, point obtuse, above smooth, below a little downy, entire; from two to four inches long, and from one to two broad.—Panicles corymbiform, axillary, and terminal, always three-cleft, as also the subdivisions.—Peduncles and pedicels short, round, a little downy.—Bractes minute.—Flowers small, white.—Corol with a long, slender, compressed tube; under lip broad, three-cleft, upper lip erect, linear, sides reflected, apex bifid.—Nectary, a fleshy ring surrounding the base of the germ.—Anthers without the tube, twin.—Capsule; —I have not seen it.

Obs. Milk boiled on the roots, is reckoned, by the Indian physicians, aphrodisiacal, and as such often employed; for no medicines are more sought after by the natives of India than those which are imagined to belong to that class.

The roots rubbed with lime juice, and pepper, are used, and often with good effect, to cure the ring worms, or Herpes miliaris, which in India is a most troublesome disease, and very common.

They are also used for the bite of poisonous snakes; hence the Telinga and Tamul name Naga mulli, or Jasmine of the Cobra de capella: Naga is therefore prefixed to the name of most of their antidotes, or medicines supposed to destroy the effect of poison, and occurs very often in their writings. For like the ancient Physicians of Greece, Rome, &c. those of India at this day, make poisons, and their antidotes, a very chief part of their studies; but from the seeming inactivity of a very large share of them, we may safely conclude, that their practice is equally frivolous with that of the ancients, and ought to be discouraged as much as possible; because at least, they prevent the application of more efficacious remedies.

11. J. lanceolaria. R.

Shrubby, erect. Leaves petioled, lanceolar, smooth. Fascicles terminal, panicked, clammy, from two to four-flowered, embraced
by many, long, ensiform, bractes. Tube of the corol curved, and twisted; upper lip three-dentate, under lip entire.

This beautiful shrub, is a native of the Silhet district, where it is called Toogee. Flowering time the cold season.

Stems erect, or nearly so, branches round and smooth, and while young, swelled just above the insertion of the leaves; whole height from two to four feet.—Leaves opposite, petioled, lanceolar, (that is tapering equally at each end) entire, acute, smooth; from three or six inches long by one or two broad.—Flowers numerous, large and rosy, collected in numerous, terminal, clammy fasicles of from two to four each, and embraced by numerous, ensiform, clammy bractes, like a common calyx, and longer than the proper perianths; the whole forming a pretty large panicle at the end of each branch.—Calyx five-parted; segments ensiform, smooth.—Corol; tube long, slender, curved outward, and like my J. speciosa, latebrosa, &c. has a half twist; which, as in the orchideae, brings the lower lip uppermost. Border bilabiate, lips nearly equal, oblong; the superior, in its inverted state, three-toothed; the inferior entire.—Filaments from the mouth of the tube of the corol; shorter than the lips, and projecting straight over the under one. Anthers double, one at the end of the other, forming one straight line; the exterior half of the posterior one being attached to the apex of the filaments and to the base of the exterior anther.

12. *J. speciosa. R.*


A native of the interior parts of Bengal, where it blossoms during the cold season, and is then one of the greatest ornaments of the forests.

Stems erect, jointed. Branches few, and erect. Bark of the lig-
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nous parts ash-coloured; of the young shoots smooth and green.
—Leaves opposite, decussate, petioled, ovate-cordate, entire, rather obtuse, a little wrinkled; from one to four inches long.—Peduncles axillary, often proliferous and much longer than the petioles, supporting two, or three flowers.—Flowers large, beautiful, bright carmine colour.—Bractes, or floral leaves opposite, sessile, from ovate to linear.—Calyx simple, divided almost to the base into five eusiform, equal portions.—Corol; tube long, slender, curved, villous, and somewhat twisted; upper lip linear-oblong, recurved over the tube, apex three-toothed, at the base some dark coloured spots; under lip broad lanceolate, pointing directly to the earth, apex slightly two-toothed.—Filaments inserted in the mouth of the tube of the corol, nearly as long as its border, and, with the lower lip, pointing downwards. Anthers double, linear, purple, with pale coloured pollen.—Style as long as the stamens, and beyond the tube taking the same direction with them. Stigma slightly emarginate.
—Capules pedicelled, with two seeds in each cell.

13. J. tinctoria. R.

Beng. Batia-rung.

Found in the woods about Calcutta, in full flower in October.

Stem scarcely any; branches numerous, sub-erect; young shoots jointed and swelled above the joints, round a little downy.—Leaves opposite, petioled, oblong, entire, covered with a little harsh pubescence, two to three inches long.—Peduncles terminal, forming the exterior axills, each supporting some few fascicles, of four to six sessile flowers.—Bractes of the peduncles and pedicels opposite, those of the flowers, or rather, the involucres subulate, opposite, sessile, linear oblong, cordate, entire, unequal; the upper one being the largest, and incumbent over the others, and the flowers they contain: of the calyx small.—Flowers sessile, large, of a beautiful deep pink co-
lour, opening in succession.—*Calyx* five-toothed.—*Corol*, tube length of the largest involucre, filiform, having a small twist near the apex. *Border* two-parted, both divisions oblong, the upper one three-toothed.—*Nectary* a gaping cup in which the germ rests.—*Stamens* projecting. *Anthers* two on each filament.—*Style* rather longer than the stamens. *Stigma* obtuse.


Shrubby. *Leaves* lanceolate. *Peduncles* axillary, and terminal, three to six cleft; lateral pedicels often trifid; ultimate divisions bearing a small head of sessile flowers, between two, unequal, linear bractes. *Capsule* clavate.

A native of the *Moluccas.*

*Folium tinctorium* of Rumphius, quoted under the preceding species, does not so well agree with *J. bivalvis.* I think *Adel-Odagam*, *Rheed. mal.* ix. 81. t. 43. belongs to neither of them.


Perennial, retroflex. *Leaves* cordate. *Umbellets* axillary, from three to five, and with the pedicels (from three to five), distichous, involucre obvate, unequal. *Capsules* round and thin.


A middle-sized, straggling, suffruticose species introduced from China into the Botanic Garden, where it flowers from August, till December.

*Stem* scarcely any; *branches* several, scarcely ligneous, straggling and ascending, slender, somewhat six-angular, pretty smooth; striking root where they rest on the ground; from one to two feet long.—*Leaves* opposite, petioled, ovate-cordate, entire, somewhat acuminate, smooth, from one to two inches long.—*Peduncles* axillary, from three to five in each axil, distichous; of various length, each supporting a little, distichous umbellet of from three to five, one or two-flowered, short pedicels.—*Involucre* of the pedicels two, subulate,
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opposite, of the flowers two, sessile, unequal, obovate, or oblong-ventricose, embracing between them one or two, complete flowers, and one or two rudiment.—Bractes (or inner calyx), ensiform, two to each flower, and rudiment.—Flowers small, pale-pink.—Calyx five-parted, segments ensiform.—Corol; tube length of the involucres, a little twisted.—Border bilabiate, upper lip linear, three-toothed; under lip oval, and slightly emarginate.—Anthers two on each filament, purple.—Capsule pedicelled, small, flat, round, villous, two-celled, with two thin round seeds in each cell.

Obs. I have two varieties (if not distinct species) from the Coast of Coromandel. In the first, the leaves are much narrower, and run more down on the petioles, and, with the bractes of the flowers, longer, more cuspidate, and ciliate. In the second variety, the leaves are cuneiform-lanceolate, and the bractes of the flower broad-ovate, short cuspidate, and hairy.

16. J. latebrosa. Kön. MSS.

Herbaceous, branches straggling, round, smooth. Leaves petioled, cordate-oblong, pointed. Tube of the corol twisted, lips almost equal; the upper one three-dentate, the lower one bidentate. Seeds solitary.

Grows always among bushes, or under their shade, in a dry barren soil. Flowering time, the wet and cold seasons.

Root perennial.—Stem scarcely any; branches many, straggling, weak, round, smooth, jointed, ramous.—Leaves opposite, petioled, cordate-oblong, pointed, entire, smooth; size very various.—Flowers terminal, large, of a bright red colour.—Bractes numerous, lanceolate.—Calyx single.—Corol; tube twisted at the middle; lips equal, linear; the upper one three-toothed and the under one emarginate.—Stamens as long as the lips of the corol, projecting along the under lip. Anthers double.—Stigma two-cleft.—Capsules two-seeded, one in each cell.

*Dianthera malabarica*. Suppl. 85.


*Beng.* *Nasa-bhaga.*

Teling. *Chebiera.*

A poor looking plant, a native of rubbish, road sides, and hedges. Flowering time the wet, and cold seasons.

*Stem* erect, annual, ramous, six-angled, jointed, scabrous, and hairy, from three to five feet high.—*Leaves* opposite, petioled, ovate-cordate, hairy, somewhat scabrous, size very various.—*Flowers* terminal, and axillary, numerous, red, generally three-fold, or rather sub-panicled, and divided by threes.—*Bractes* small.—*Calyx* double, or rather some *bractes* embracing the proper perianth.—*Tube* of the corol with a half twist about the middle; *upper lip* narrowest, linear, three-toothed; *lower lip* broad, oblong, emarginate.—*Filaments* shorter than the corol, projecting along the under lip. *Anthers* red, two on each filament.—*Capsules* four-seeded, two in each cell.


Hind. and *Beng.* *Baku*, *Vasooka*.

* The outer calyx may be called common, for there are always rudiments or buds of more than one flower in it, which often expand in succession.
This small tree or large shrub, is common over most parts of India. Flowering time the cold season.

Trunk straight, bark pretty smooth, ash-coloured. Branches suberect with bark like that of the trunk, but smoother.—Leaves opposite, short-petioled, broad-lanceolar, long, taper-pointed, smooth on both sides, about five or six inches long, and one and a half broad. —Spikes from the exterior axills, solitary, long-peduncled, the whole end of the branchlet forming a leafy panicle, flower-bearing portion short, and covered with large bractes.—Flowers opposite, large, with small ferruginous dots; the lower part of both lips streaked with purple.—Bractes three-fold, opposite, one-flowered. Exterior one of the three, large, ovate, obscurely five-nerved. Interior pair, much smaller, and sub-lanceolate; all are permanent.—Calyx inpetiolate to the base; divisions nearly equal.—Corolla ringent. Tube short; throat ample; upper lip vaulted, emarginate; lower lip broad, and deeply three-parted; both streaked with purple.—Filaments long, resting under the vault of the upper lip. Anthers twin.

Obs. The wood is soft, and esteemed very fit for making charcoal for gun-powder.

19. J. decussata. R.

Shrubby, erect; branches twiggy, villous, and decussated. Leaves from ovate to oblong. Flowers in opposite fasciculi on the leafless branchlets. Anthers double, all calcarate.

A tall, stout shrubby plant, a native of the country above Rangoon; and from thence introduced into the Botanic Garden, where it is in flower during the mouth of February and March.

Stem straight to the top of the plant, ligneous; in two years, old plants as thick as a walking cane. Branches regularly decussate, straight, all the younger shoots villous, and as they shoot into flower nearly leafless.—Leaves short-petioled, ovate-oblong, entire, pretty smooth; from three to twelve inches long.—Flowers in numerous, a little, opposite fascicles, of three to six, appearing subverticilled, over the slender, leafless twigs, subsessile, pale rose colour.—
Bractes numerous, slender, and very downy.—Calyx five-parted; segments ensiform, villous.—Corol ringent; tube gibbous near the base; upper lip sub-lanceolate, concave, erect; under lip broad and three-lobed.—Filaments nearly as long as the upper lip; apex much enlarged. Anthers two on each filament, all with a calcarate base.—Germ oblong, sitting in a large, glandular, yellow ring. Style the length of the stamens. Stigma simple.

Vada-Kodi. Rheed. mal. 9. p. 79. t. 42.
Gendarussa. Rumpl. Amb. 4. p. 70. t. 28.
Beng. Jugut-mudun.
A handsome shrub. I have never met with it wild, but in gardens it is common, and grows readily from slips and cuttings; it is in flower during the wet season chiefly. I am told it is indigenous on the Malay Islands.

Stem scarcely any. Branches numerous, long, straggling, except when kept cut, they are then more erect. Bark of the young parts generally dark purple, and very smooth; in some varieties green.—Leaves opposite, short-petioled, lanceolar, obtuse, frequently a little scolloped, smooth; nerve and veins dark purple, from three to six inches long, and from half an inch to an inch broad.—Spikes terminal, erect, verticilled.—Anthers double, the lower ones have a spur-like process projecting downwards and outwards.

Shrubby. Leaves sub-ovate. Spikes terminal. Bractes white, with

* Willdenow has spoiled this name. Linneus wrote it Gandarussa, which is nearer the truth. The word is गन्दरुस, Gandharusa.
green veins. Corol ringent. Anthers two-lobed, the lower calcarate. Seeds turbercled, two in each cell.

_Bem-Curiai._ Rheed. mal. 2. p. 33. t. 21.

A perennial species; a native of Coromandel. Flowering time the dry season chiefly, though it is more or less in blossom all the year, particularly when in a cultivated state.

_Stems_ several, while young, erect by age, leaning in various directions, round, smooth, swelled above the joints, the height of the whole plant from two to four feet.—_Leaves_ opposite, petiolated, nearly ovate, entire, or slightly waved, smooth on both sides; length from one to six inches.—_Spikes_ terminal, secund, sub-cylindric, erect.—_Bractes_ of the rachis opposite, ovate-oblong, villous, white with green veins, the posterior one always abortive; those of the flowers opposite, and resembling those of the rachis, but narrower.—_Flowers_ pretty large, whitish, with rose-coloured veins.—_Calyx_ single, five-cleft; divisions ensiform.—Corol ringent; upper lip vaulted, and two-toothed; lower three-parted.—_Anthers_ twin, the lower one with a spur from the lower end.—_Capsule_ longer than the calyx, villous.—_Seeds_ two in each cell, tending to be round, rough with numerous sharp points.

22. _J. ramosissima._ R.

Shrubby, creeping, very ramose. _Leaves_ sub-ovate. _Spikes_ terminal, secund. _Bractes_ lanceolate. _Lower_ lobe of the anthers calcarate.

A native of Coromandel. Flowering time, in the Botanic Garden, the cold season.

_Stem_ none, branches numerous, rising in every direction, as well as spreading on the ground, and striking root at the swelled joints; the tender parts striated, and slightly villous.—_Leaves_ opposite, petiolated, sub-ovate, rather obtuse, tapering down the petioles nearly to their base.—_Spikes_ terminal, secund, erect, many times longer than the leaves.—_Bractes_ in opposite pairs, lanceolate, coloured green and white; the posterior one of the rachis always abortive, the other
two are calycine.—Flowers scarcely longer than the bractes, dull white, with a few rosy veins on the centre of the lower lip.—Calyx of five linear-lanceolate, acute segments.—Corol ringent; upper lip vaulted, with a bidentate apex; under lip broad, and three-cleft.—Anthers double; lower lobe with a long curved, sharp spur.—Capsule oblong, four-seeded, very protuberant at the seeds.—Seeds nearly sphaerical, rugose.

Obs. In the foliage, spikes, flowers, and capsules, this species is exceedingly like J. Betonica, which however, is always a tall, erect plant, with coloured bractes, while this is very bushy, spreads on the ground, and strikes root abundantly at the joints; the bractes also are narrower, and greener.


Herbaceous. Leaves round, or broad-cordate. Spikes terminal, four-sided, occasioned by four rows of roundish ciliate bractes. Flowers solitary, in two rows on the fore-part of the spikes. Anthers calcarate.

Common amongst bushes on a dry barren soil, over the coast of Coromandel. Flowering time the wet, and cold season.

Roots perennial, somewhat granulated.—Stems in young plants erect, in old ones uncertain; branches annual, small, straggling, round, a little downy, jointed, and swelled above the joints, from one to two feet long.—Leaves opposite, short-petioled, oval, or round, entire, pretty smooth.—Spikes terminal, peduncled, long, erect, generally four-sided, occasioned by four rows of orbicular, short-petioled, opposite, ciliate bractes; besides these there are a pair of small pointed ones which press the calyx laterally.—Flowers a mixture of pale yellow, and red; standing in the axills of the two rows of bractes that occupy the fore part of the spikes; on the back part they are generally wanting.—Calyx single.—Corol; upper lip emarginate, erect; under lip broad, three-cleft. Anthers double, the lowermost calcarate.—Seeds two in each cell, briskly.
24. *J. glabra* Kon. MSS.


A native of similar places with the last described. Flowering time the same.

*Root* perennial.—*Stems* several, erect, branchy; annual, round, smooth, jointed.—*Leaves* opposite, oblong-cordate, pointed, entire, smooth.—*Panicles* axillary, small, three-forked.—*Flowers* rose-coloured, yellow, and whitish green mixed.—*Bractes* small, pointed; generally two below every division of the panicle, and two or three pressing upon the calyx.—*Calyx* single.—*Corol*; tube short, widening; *upper lip* erect, vaulted; *under lip* broad, and three-parted.—*Filaments* concealed under the upper lip. *Anthers* double, the lower ones calcarate.—*Stigma* slightly bifid.—*Capsule* four-sided, two seeds in each cell.

25. *J. tomentosa* R.


A native of wet, rich, pasture ground. Flowering time the wet and cold seasons.

*Root* nearly spindle-formed, perennial.—*Stems* several, sub-erect, round, hairy, from one to two feet high.—*Leaves* opposite, petioled, broad-lanceolar, entire, very downy; the lower many times larger than the upper ones, the former being often twelve inches long, and the latter (or floral *leaves*) not more than one.—*Spikes* terminal, oval, strobiliform, sessile on little terminal branchlets.—*Flowers* small, bright, bluish purple.—*Bractes* numerous, imbricated, oval, pointed, concave, hairy, one-flowered.—*Calyx* four-cleft; the lower leaflet two-cleft.—*Corol*; tube gibbous on the under side, contracted at the mouth; *upper lip* ovate, half two-cleft, divisions pointed; *under lip* very broad, three-parted.—*Anthers* twin, equal, oval.
Stigma two-cleft; segments broad.—Capsules pointed, eight-seeded.


Obs. It is a native of high, dry, gravelly ground, in the vicinity of Samulcota. Is very like J. tranquebariensis.


Adhadota. spicata flosculos ex foliolis membranaceis producens. Burm. Zeyl. 7. t. 3. f. 2.

A native of pasture ground. Flowering time the wet and cold season.

Root perennial.—Stems many, diffuse, round, jointed, smooth, sometimes rooting at the joints; one to two feet long.—Leaves opposite, short-petioled, broad-lanceolate, entire, sharp-pointed, smooth.—Spikes axillary peduncled, erect, somewhat compressed, second.—Bractes; exterior, four rows, oval, with a broad, white, membranaceous margin; the two rows on the back of the spike neuter; the two on the fore part embracing the flowers; the calyx of each flower is also embraced laterally by two smaller lanceolate bractes.—Flowers alternate, pale rose-coloured.—Corol, stamens, pistil and capsule as in J. procumbens, which it much resembles.


Euphrasia, Alsines angustiore folio, &c. Pluk. Alm. 142. t. 56. f. 3.
Very common on pasture ground over the coast of Coromandel, flowering most part of the year.

Root often perennial.—Stems many, spreading, jointed, five-striated, often rooting at the joints, extremities sub-erect; size very various, but generally from six to twelve inches long.—Leaves opposite, sub-sessile, from round to linear-lanceolate, entire, a little downy; size various.—Spikes terminal, erect, four-sided.—Flowers opposite, decussate, small, rose colour.—Bractes three-fold, lanceolate.—Calyx; upper divisions very minute.—Corol; tube short; upper lip erect, two-cleft; under lip broad, three-parted.—Nectary a yellow ring surrounding the base of the germ.—Anthers double; the lower calcarate or sharp-pointed.—Stigma slightly bifid.—Capsules four-seeded, two in each cell.

Obs. When this plant grows in wet places, it seems altogether another species, being many times larger, nearly erect, with linear-lanceolate leaves. I believe Dr. König described this variety as a distinct species, under the name of *J. juncea*, or *graminea*.

29. *J. quinqueangularis*. Kön. MSS.


A native of the borders of rice-fields about *Sanulcota*. It is but little removed from *procumbens*, when growing in the same soil.


Herbaceous, diffuse. Leaves short-petioled, lanceolar. Spikes sessile, secund. Bractes five-fold, broad, white, membrane-bordered; lower anthers calcarate.

Compare with *J. parviflora*. Retz. Obs. 5. p. 9.

A very beautiful, delicate, diffuse species, growing in shady places. Flowering time the cold season.

Stems many, diffuse, filiform, round, smooth, jointed. Branches
alternate.—*Leaves* opposite, short-petioled, depending, lanceolate; entire, smooth; the pair are generally unequal in size.—*Spikes* axillary or terminal, sessile, much shorter than the leaves, secund, generally three together, the middle one largest.—*Flowers* very small, bright blue.—*Bractes*, to each flower five, of different sizes, oval or lanceolate, with beautiful white, membranaceous margins.—*Corol*; upper lip entire, acute.—*Anthers*, the lower one of each filament has a long obtuse horn from the under end.—*Capsules* four-seeded, two in each cell.

31. *J. lamifolia*. Kön. MSS.
Found in the vicinity of Calcutta, in uncultivated shady places.
*Root* fibrous.—*Stems* and branches very numerous, round, spreading close on the earth, clothed with long soft hair, and down, somewhat glutinous, length from one to three feet.—*Leaves* opposite, sub-sessile, oval, entire, clothed and glutinous like the branches; about an inch long.—*Spikes* terminal, oblong, closely imbricated with the bractes, and flowers.—*Flowers* numerous, small, variegated with deep and light purple.—*Bractes* ovate, one-flowered, hairy, clammy.—*Calyx* four-leaved, the under leaflet with its apex bifid.—*Corol* ringent. *Tube* gibbous; throat compressed; *upper lip* two-parted, and streaked with deep purple; *under lip* broad, and three-parted.—*Filaments* short, inserted into the mouth of the tube. *Anthers* twin, singly oval, and all equal.—*Stigma* of two, broadish, spreading lobes.—*Capsule* conical.—*Seeds* eight or ten, roundish.

Obs. It has the calyx of a *Barleria*, and the stamina of a *Dianthera*. Mr. R. Brown informs me that he thought it would belong to a new genus, which he calls *Nelsonia*.

32. *J. verticillata*. R.
Erect, hairy, spines verticelled with their apices bifid, or trifid.
Leaves petioled, ovate. Flower amongst the verticils of spines, sub-sessile.

**Hind. Custoola.**

Found by Dr. Hunter in the vicinity of Ongein, in seed and flower in March.


1. *G. amara. R.*


Serratula amara. Rumph. amb. 5. p. 459. t. 170. f. 1. which has been quoted by mistake, I presume, for *Scutellaria indica*.

This pretty plant has been accidentally introduced into the Botanic Garden, among spice and other plants from the Moluccas, flowering time the cold season.

Root fibrous.—*Stems* and branches creeping, with their extremities sub-erect, four-sided, coloured, smooth.—*Leaves* opposite petioled, cordate, deeply serrate, somewhat rugose, of a soft texture, but free of pubescence, general length about two inches.—*Peduncles* axillary, solitary, rather longer than the petioles, supporting at their extremities, two or three pairs, of opposite pedicelled flowers.—*Bractes* small, oblong, one under the insertion of each pedicel.—*Calyx* of two pair of opposite leaflets; exterior pair large, cordate, often notched; the upper one larger, and incumbent over the rest of the calyx, and all the corol except the under lip, inner or lateral pair, linear-lanceolate, and much smaller than the exterior.
pair.—Corol bilabiate; tube contracted at the middle; upper lip straight, narrow, with a two-lobed apex; und r lip broad, three-lobed, drooping.—Stamina, the fertile pair of filaments lodged under the upper lip of the corol with twin anthers, adhering by pairs, the sterile pair from the under lip, with large yellow, free, clavate apices.—Tigma two-lobed.—Capsules ovate, two-celled, hid between the exterior leaflets of the calyx.—Seed numerous, very small.*

Obs. As Rumphius observes, the leaves of this plant are exceedingly bitter, and might, no doubt answer valuable purposes in medicine.


A native of moist places. Flowers during the wet and cold seasons. Stems several, annual, creeping, four-sided, smooth; from six to twelve inches long.—Leaves opposite, sessile, oblong, sharply-serrate, pointed, smooth.—Peduncles axillary, about half the length of the leaves, erect, one-flowered.—Flowers light blue.—Corol; tube cylindrical, upper lip entire; under lip broad, three-parted.—Stamens, the two fertile filaments lodged under the upper lip, approaching arch ways. Anthers twin, united; the sterile filaments resting on the under lip and adhering to it, yellow, curved.—Capsules lanceolate, longer than the calyx.

G. alata. R.

A native of the Moluccas, is one of the largest of our Indian Gratiolas, and readily known by the five large membranaceous wings which run the whole length of the calyx.

* In November 1815, I received specimens of this plant from Silhet, under the Khassee name Khat-Nim. It is used medicinally there.—N. W.
4. **G. involucrata. R.**

*Leaves* unequally petioled, round-cordate, with large rounded lobes, many-nerved, serrulate, villous. *Flowers* collected into long peduncled, bracted heads. *Sterile* filaments free. *Capsule* hid in the villous, gibbous, five-toothed calyx.

This species is also a native of the *Moluccas*.


A native of moist places, appearing and flowering during the wet and cold seasons.

*Stems* erect, four-sided, from four to six inches high.—*Leaves* opposite, sub-sessile, round-cordate, serrate, or notched, a little hairy.—*Flowers* axillary, or between the leaves, white. *Peduncles* longer than the leaves.—*Corol*; *stamens*; and *stigma* as in the foregoing species—*Capsules* round, as high as the calyx.

6. **G. integrifolia. R.**


*Tsjanga-pupum. Rheed. mal. 9. t. 57.*

A native of *Bengal*, where it appears as a weed in gardens, during the rains.


*Crusta ollæ minor. Rumph. amb. 5. p. 460. t. 170. f. 3.*

Annual, and like the rest, appearing in moist places during the rainy season.
Grafoila.

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Stem scarcely any. Branches generally opposite, diffuse, four-sided, from six to twelve inches long. — Leaves short-petioled, cordate, serrate, smooth. — Flowers terminal, and also from the exterior axils, long-peduncled, of a bright deep blue colour. — Capsules ovate, rather shorter than the calyx.


Crusta ollæ major. Rumph. amb. 5. p. 460. t. 170. f. 2.
A native of similar places with the last described; flowering time the same.

Stem several, creeping. Branches erect, four-sided, smooth; from six to eight inches long. — Leaves opposite, sessile, decussate, oblong, glandular, smooth, fleshy, finely and most sharply serrate; serrations ending in a minute bristle. — Racemes terminal. — Flowers opposite, decussated, of a violet colour. — Corol, &c. as in the last species.

9. G. racemosa. R.
Annual, erect. Leaves sub-sessile, linear-lanceolate, entire. Racemes terminal, brachiate. Flowers long-pedicelled. Capsules linear, three or four times longer than the calyx.

A native of cultivated land over various parts of India, appearing in the rainy season.

Annual, sub-erect. Lower leaves opposite to each other or to a one-flowered peduncle, lanceolate, serrate. Capsules linear.

G. oppositifolia. Retz. obs. t. 4. N. 5.
A native of moist pasture ground. Flowering in the wet season.
Stems several, nearly erect, ramous, four-sided, smooth; from three to six inches high.—Leaves sessile, opposite to each other, or a flower, linear-lanceolate, serrate, smooth.—Peduncles leaf-opposed, or opposite to each other, short, horizontal, clubbed.—Bracte solitary, embracing the insertion of the peduncle.—Flowers small, blue.—Anthers two pairs united. Sterile filaments small, white.—Capsules linear, twice the length of the calyx.

11. G. serrata. R.
Annual, erect, four-sided, smooth. Leaves opposite, stem-clasping, oblong, smooth, most acutely serrate. Racemes in the division of the branches, and terminal, long-peduncled. Capsules linear, diverging.

Pee-tsjang-a-puspum. Rheed. Mal. 9. t. 59. is exceedingly like this plant, though quoted by Linnaeus for Ruellia antipoda, which I have never met with, if this be not it.
A native of Bengal, and in flower during the rains.
Root annual.—Stem erect, four-sided, ramous, smooth, from two to eight inches high.—Leaves opposite, sessile, or stem-clasping, oblong, very obtuse, most acutely serrate; smooth on both sides.—Racemes solitary, terminal, and also from the divisions of the plant, on long, four-sided peduncles.—Flowers opposite, short-pedicelled, verging, pink-coloured.—Bractes lanceolate, the lower pair of the racemes dentate.—Calyx parted half way.—Corol, upper lip small, incumbent.—Capsules lanceolate, twice the length of the calyx.

12. G. reptans. R.
A native of the Moluccas; from thence introduced into the Botanic Garden, where it blossoms during the rains.
Stems and branches round, smooth, and creeping close to the earth, with short, (about an inch long) floriferous, erect shoots.—Leaves opposite, sub-sessile, on the creeping shoots round, on the
erect flower-bearing ones oblong, with rounded apices; all serrate, and smooth on both sides.—**Peduncles** or racemes terminal, on the short, erect shoots, bearing several, approximate pairs of short-pedicelled, opposite, large, pale bluish pink flowers.—**Bracteae** opposite, one-flowered, ovate.—**Calyx** five-leaved.—**Corolla** with an enlarged throat, and ringent border; **upper lip** of one pale coloured segment; **under lip** broad, deeper coloured, and three-parted.—**Sterile** filaments large, yellow, clavate, with the apices a little recurved, perfectly free.—**Stigma** of two, thin, broad, round lobes.—**Capsule** linear, as long as the calyx, two-celled, two-valved.


Annual, erect, ramous. **Leaves** sessile, ovate-oblong, three-nerved, serrate. **Flowers** long-peduncled, solitary. **Sterile** filaments two-cleft. **Capsules** oblong.

**Stems** erect, ramous, four-sided; with their angles acute, about six inches high.—**Leaves** opposite, sessile, ovate-oblong, slightly serrate, acute, when large three-nerved.—**Flowers** axillary, solitary, long-peduncled, small; I have seen some plants with white flowers, and others with blue ones.—**Anthers** twin. **Sterile** filament two-cleft, each division headed.—**Capsules** rather oblong, pointed, longer than the calyx.


Annual, creeping. **Leaves** sessile, long, obovate, entire. **Peduncles** axillary, solitary, one-flowered. **Calyx** seven-leaved. **Corolla** campanulate; **stamina** four.

**Beng.** Adha-birni.
**Teling.** Sambrani-chittoo.

A native of moist places, borders of brooks, &c. Flowering time the wet and cold seasons.

**Stems** several, annual, creeping, round, jointed, very ramous, smooth, succulent.—**Leaves** opposite, sessile, obovate, wedge-shaped, or oblong, smooth, entire, obtuse, fleshy, dotted with minute spots.—**Peduncles** axillary, alternate, solitary, round, smooth, short-
er than the leaves, one-flowered.—Flowers blue.—Bractes two-awled, pressing on the calyx laterally.—Calyx five-leaved, the exterior three leaflets large, oblong, the two interior small, linear, all are concave, smooth, pointed and permanent.—Corol comanulate; border five-parted, nearly equal.—Stamens as in Didynanna.—Anthers two-cleft, at the base, blue.—Stigma large, somewhat two-lobed.—Capsule ovate, two-celled, two-valved.—Seeds very numerous.

Obs. This plant certainly ought to be placed in the 14th class, it has no one claim, that I can observe, to a place in this genus.*

The natives use the expressed juice mixed with Petroleum, to rub on parts affected with rheumatic pains.


Annual, erect, columnar, nearly naked. Lower leaves lanceolate, stem-clasping; above minute. The two pair of anthers not united. Capsules globular.

Like the rest, this species delights in a wet situation, where it appears and flowers during the rains.

Stem erect, almost simple, round, jointed, smooth, from six to twelve inches high.—Leaves opposite, stem-clasping, lanceolate, obtuse, entire. Floral leaves minute, triangular.—Peduncles axillary, solitary, one-flowered.—Flowers rose-coloured, small.—Anthers twin, not united. The sterile filaments in this species stand between the fertile ones, and are very small.—Capsules globular.

17. G. cuneifolia. R.
Annual, erect, simple, nearly naked. Leaves one pair at the base,

* Monniera Browne. Harpestit Rob. Brown.—N. W.
Utricularia.  

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Cuneiform, obtuse; above one or two minute pairs. *Flowers* solitary, long peduncled. *Capsules* round.

A native of wet places on the coast of Coromandel, and nearly allied to *G. lobelioides*, and *juncea*.


Annual, on the lower part of the simple stem grew from two to four pair of approximate, lanceolate, entire, sessile leaves. *Flowers* toward the apex, remote, solitary, long-peduncled. *Capsules* round.

A native of Coromandel, growing in wet places during the rainy season.


*Calyx* two-leaved.—Corol ringent, and generally calcarate. *Capsule* superior, one-celled. *Seeds* numerous.


*Teling.* Natsoo.

Grows in sweet waters, appears and flowers, during the rains.

*Root* conserva-like, swimming in, and not on the water; I have always found small utriculi adhering to its filaments.—*Scape* sub-erect, simple; raceme above the vertical of bladders, which rest on the surface of the water.

2. *U. fasciculata*. *R.*


*Teling.* Natsoo.

*Beng.* Janjee.
Found swimming in stagnant water in the vicinity of Calcutta, at the end of the cold, and beginning of the hot seasons.

Stem jointed, length various, but often extending some feet.—Radicles most numerous, in alternate fascicles, multifid, filiform, armed with minute, acute, bristles pointing forward.—Utriculi scattered, semi-ovate, dotted, becoming black by age, with two horns from the mouth.—Scape erect, from four to eight inches high, bearing generally from four to eight, alternate, large, yellow, pedicelled flowers.—Bracte ovate, obtuse, one-flowered.—Calyx of two large, permanent leaflets.—Corol as in the genus. Nectary horn-shaped, blunt, nearly as long as the under lip, and bending up to its margins.—Capsules conical, pointed, reflected.

3. U. biflora. R.

Floating, leafless. Scape naked, two-flowered. Utriculi ovate, with filaments from their apices. Nectary horn-shaped, ascending, as long as the under lip. Capsules globular, erect.

Beng. Chota-janjee.

Found with the last described in stagnant water near Calcutta, during the same seasons. A much smaller plant.

Root of a few, scarcely compound, filiform fibres, and some scattered, subulate nigrescent utriculi, with two or more filaments from their apices, or mouths.—Scape about three inches high, filiform, naked, generally two-flowered.—Flowers yellow, small.—Calyx and corol as in the genus, with the faux closed, and a horned, ascending nectary as long as the under lip.—Capsules globular, erect.

Addition by N. W.


Naked, suberect, filiform. Scape with a few gibbous scales, ending in a thin raceme. Bracte three-parted, the middle segment adnate and sharp at both ends, the lateral ones minute. Nectary ascending longer than the lower lip. Capsules globular nodding
I found this delicate plant growing among rice in the vicinity of Serampore during the rainy season.

*Root* consisting of a few capillary simple and short fibres.—*Scape* about six inches long, sometimes divided in two equal branches, when fruit-bearing elongated and twining.—*Flowers* from four to eight, white with a yellowish entire palate, very small on short alternate pedicels. *Calyx* permanent, of two orbicular segments, the uppermost larger and concave.—*Upper lip* very short, linear erect, ending in two toothlets; *lower lip* ovate, larger. *Spur* almost twice as long as the lower lip, conical.—*Capsule* half hid in the calyx.

**LYCOPUS.** Schreb. Gen. N. 44.

*Corol* four-cleft, with one of the divisions emarginate. *Stamina* distinct. *Seeds* four, retuse.

1. *L. dianthera.* Buch.


A native of Nepala; from thence Dr. Buchanan sent the seeds to this garden, (in 1803,) where the plants thrive during the cold season, and blossom in March and April.

*Stems* annual, straight, four-sided; *sides* slightly grooved; angles somewhat hairy. *Branches* axillary, decussate, four-sided, &c. like the stem; height of the whole plant from one to two feet.—*Leaves* opposite, petioled, declined, rhomb-ovate; anterior margins serrate, dotted with minute, darker green glands underneath, general length about one inch, or less.—*Racemes* terminal.—*Bractes* opposite, lanceolate, one-flowered.—*Flowers* pedicelled, small, very pale pink, almost white.—*Calyx* bilabiate; *upper lip* ascending, tridentate; *lower lip* bipartite, and, defended with hair on the inside.—*Corol*; *tube* short, somewhat four-sided; *upper* division of the border broad and emarginate; *lateral* two of the same length, but narrower and semicircular; *under* one large, and nearly round.—*Filaments* four, short, in the angles of the tube of the corol.—*Anthers* twin on the long fila-
ments, and tending to be so on the shorter ones, but very small, and abortive.—Is nearly allied to Thymus.

**SALVIA. Schreb. Gen. N. 50.**

_Coriol_ irregular. _Filaments_ two-forked; _anthers_ on the superior ones. _Seeds_ naked.


Shrubby. _Leaves_ linear-ovate, lanceolate, entire. _Racemes_ verticelled, verticils distinct, many-flowered. An _anther_ to each division of the _filaments_.

The natives on the Coromandel Coast have no name for it. From Bengal it was introduced into the gardens on the Coast a few years ago, by Mr. Parsons; and is only found in gardens, where it grows to be a large, straggling shrub.

_Trunk_ seldom erect, woody, sometimes as thick as a man’s arm. _Bark_ cracked, and peeling off in irregular pieces. _Young shoots_ downy, round. — _Leaves_ as in _salvia officinalis_.— _Racemes_ terminal, often compound, verticelled. _Verticils_ approximate, globular, many-flowered.— _Flowers_ white.— _Calyx_ gibbous, downy, three or four toothed.— _Corol_, both lips recurved, or spreading.— _Stamens_, there are sometimes three or even four filaments, with their extremities bifid, each division bearing an oval proper _anther_.

_Obs._ The leaves of this plant smell and taste considerably stronger, I think, than those of _S. officinalis_, and are applied to the same _uses_.

2. _S. brachiatata_. _R._

Annual, erect, brachiate. _Leaves_ oblong, crenate, tomentose. _Racemes_ verticelled; _verticils_ six-flowered; _seeds_ elevated on a receptacle.

Is a native of moist places, over various parts of India. Flowering time the cold season.

_Стem_ annual, erect, ramous, four-sided, four-grooved, downy; from
one to two feet high. Branches opposite, cross-armed, ascending.—Leaves opposite, petioled, running down on the petioles, oblong, irregularly crenulate, waved, rugose, a little downy; two or three inches long.—Racemes terminal, long, verticellated. Verticils six-flowered, six-bracted.—Flowers small, pale purple. Stamens as in the genus, with the rudiments of two additional sterile filaments between the large pair.—Germ elevated on a large fleshy receptacle.—This plant is slightly aromatic.

S. S. lanata. R.
Herbaceous, four-sided, villous. Leaves sessile, ovate-oblong, entire, woolly. Flowers verticillate.

Found by Colonel Hardwicke on the most elevated mountain near Adwaanee, on the road from Hardwar to Srinagur. It is his S. integrifolia. See Asiatic Researches. vol. 6. p. 349.

Obs. Salvia rosea of Vahl, is the same as S. coccinea, an American plant, which though in a manner naturalized here has no right to a place in this Flora.

VERONICA.

Corol four-cleft, the lower segment smaller. Capsules two-celled.

1. V. undulata. Wall.

This little plant was discovered in the Turraye by Mr. W. Jack, an assistant surgeon on the Honourable Company's Bengal establishment, who most obligingly communicated the following description.

Root creeping.—Stem herbaceous, erect, fistulous, round, smooth, ramous.—Leaves opposite, sessile, stem-clasping with their broad base, linear-lanceolate, acute, gradually narrower towards their apex, with waved, unequally serrated margins, smooth.—Racemes long, axillary and terminal.—Peduncles and pedicels hispid with short, glan-
DIANDRIA MONOGYNIA.  

Boerhaavia.  

Bractes linear, acute, smooth, entire, one under each pedicel. — Calyx deeply four-parted, smooth, persistent, with straight, lanceolate, acute segments. — Corol white, a little shorter than the calyx; tube very small; three segments of the limb ovate, acute, equal; the fourth and lowermost shorter, lanceolate. — Stamina two, upright, short. Anthers oblong. — Pistil as long as the stamina. Stigma capitate. — Capsule roundish, compressed, with a furrow on each side, emarginate at the top, beset with glandular hairs, two-celled. Seeds numerous, minute, round. — N. W.


Calyx inferior, gibbous, entire, permanent, and becoming an envelope for the seed. Germ one-celled; ovula single, erect. Corol campanulate, inserted on the calyx. Seed solitary. Embryo compound, with inferior radicle, and central perisperm.


Sans. पूनरुपव, Poonurnava, श्रीयंशी, Shoutughnee.

Beng. Gadha-poorna, the red variety; and Shweta-poorna, the white one.

Talu-dama. Rheed mal. 7. p. 105. t. 56. good for a young luxuriant plant.

B. diandra, and erecta. Burm. Flor. Ind. p. 3. t. 1. seem to be our plant, taken at different ages.


This species, whatever it may be, whether diffusa, erecta, repan-da or diandra, or all of them, is the only one I have yet found in India. It is not only common everywhere, but one of the most troublesome weeds we have. The long, fusiform, perennial roots, strike so deep, as to render it no easy task to dig them up. It produces blossoms and ripe seed the whole year.
Boerhaavia. DIANDRIA MONOGYNIA.

Root perpendicular, fusiform, slender, perennial. Stem none; branches many, herbaceous, with alternate, bifarious, round, smooth, jointed, often coloured branchlets spreading close on the ground, to an extent of many feet in a good soil but never striking root.—Leaves opposite, unequal in size, one of the leaves being alternately smaller in each pair; petioled, variously cordate, margins more or less scalloped, waved, and often coloured; sometimes acute, sometimes obtuse; all are smooth above, and covered with a silver coloured pellicle underneath; size very various.—Petioles shorter than the leaves, channelled.—Peduncles solitary, from the naked swelled joints between the leaves, but nearest to the small leaf. At the ends of the branches, where the joints approximate, they are so numerous as to form a panicle, each supporting, from one to five, or six small heads of sessile, red or white, minute flowers.—Calyx (apparently the germ), beneath, five-sided, covered with headed glutinous glands; mouth entire, and much contracted.—Corol campanulate, plaited, inserted on the crown of the calyx.—Nectary, a small fleshy, three-toothed cup, surrounding the base of the germ, in the divisions of which the filaments are inserted. It requires a powerful lens, and much patience to understand the structure of this part of the flower.—Filaments generally three, as long as the style. Anthers of two round lobes.—Germ oblong, hid in the belly of the calyx, one-celled; ovulum single, attached to the bottom of the cell. Style slender. Stigma peltate.—Pericarp turbinate, five-sided, covered with clammy pedicelled glands, &c. exactly as in Gærtner's figures of his Boerhaavia erecta.

Obs. There are two varieties of this plant in Bengal; one with red, the other with white flowers; in other respects they are the same. In the St. Helena plant, B. repanda of the hortus bengalensis, the leaves are more angular, the inflorescence terminal, racemes verticelled, with one bracte only to each pedicel.
POLYGAMOUS. Calyx none, or four parted. Corol none, or four-petalled. Samara one-seeded, with lanceolate wings.

1. F. chinensis. R.
Arboreous, with erect branches. Leaflets from three to seven, lanceolate, serrate. Panicles axillary, and terminal. Flowers without petals.

A native of China, from thence introduced into the Botanic Garden by the late Col. Robert Kyd, prior to 1793; where they blossom in April, but have not produced seed, or even full grown seed vessels.

Our small trees have little or no trunk; but several, erect, straight branches and branchlets; giving an entire height of from ten to twelve feet.—Leaves opposite, pinnate, and ternate. Leaflets from three to seven, opposite, lanceolar, serrate, smooth. The pairs short-petioled, much smaller and shorter in proportion to their breadth than the terminal one, which is protruded on a longer winged petiolet.—Petioles channelled, sometimes with a marginal wing. —Panicles axillary, and terminal, small, drooping, and composed of most slender, simple, and compound, sub-verticelled ramifications. —Calyx, in all, four-toothed.—Corol none.—Filaments in the completely hermaphrodite flower much longer than the calyx. In the female wanting, or abortive, and hid within the calyx. Male flowers not found.—Germ ovate. Style long, and curved. Stigma emarginate.

2. F. floribunda. Wall.
Leaflets oblong, tapering, acuminate, acutely and unequally serrated; male flowers with a corolla.

A native of Nepal, from whence I received specimens with male flowers and others with seeds, in April, 1818, under the name Kangu and Tahasee.

Grows to be a large tree with smooth, ash-coloured, dotted
branches; branchlets compressed.—*Leaves* opposite, with three pairs of smooth leaflets, which increase somewhat in size, the terminal or odd one being the largest, ovate and equal; they vary in their figure from oblong to ovate-oblong, measuring from three to four inches, about one inch distant from each other, acute and more or less unequal at the base, tapering into a long narrow serrated acumen, perfectly smooth above, reticulated and nerved below.—*Petioles* slender, grooved, opposite, *terminal* one an inch long.

—*Panicles* terminal, showy and large, compound, smooth, loose, interspersed with a few floral leaves, with opposite branches and branchlets and long slender racemes consisting of innumerable short peduncled or sessile fascicles of white scentless flowers on capillary pedicels.—*Calyx* truncated, four-toothed.—*Petals* very long, linear-clavate.—*Filaments* capillary, almost as long as the corolla; *anthers* linear, erect.—*Rudiment* of the female organs none.—*Capsule* linear, about an inch long, one-celled; wing scarcely two lines broad, veined and marked with elevated dots, slightly retuse at the apex. *Seed*, solitary, possessing a bitterish somewhat aromatic taste; in other respects like *Fr. ex elsior*, Gärt. Carp. i. 222. tab. 49.

*Obs.* I have not seen the female flowers of this ornamental tree which unquestionably comes near to *F. Ormus* (the Manna or Flowering Ash), differing chiefly in having taper-pointed, acutely serrated leaves.—N. W.

**LIGUSTRUM.**

*Corol* four-cleft. *Berry* superior of two cells with two seeds in each cell.

1. *L. nepalense.* Wall.

*Leaves* ovate, or ovate-oblong, acuminate, villous below. *Panicle* terminal, villous, consisting of sub-erect crowded racemes.

A native of the mountains of Nepal where it is called *Goomgacha* and grows to be a considerable tree, producing profuse clusters of white, sweet smelling flowers from April to June; *berries* ripen in four to six months.
Branches round, opposite, ash-coloured, dotted with callous spots; all the younger parts covered with abundance of soft hairs.—Leaves opposite, spreading, on very short channelled petioles, varying considerably in size and figure, mostly ovate with a rounded base, sometimes oblong or lanceolar, generally tapering into a long apex, terminated by a short cylindrical point; from one to two, or even three inches long, of a firm texture, shining above, densely villous underneath, when old entirely smooth, with very fine remote nerves communicating with each other in reticulated arches near the margin.—Panicle somewhat contracted, ovate, from four to six inches long, sessile, consisting of pretty crowded racemes, the uppermost very short and alternate.—Peduncles round, villous, with a deciduous small lanceolate bract under each division.—Flowers short-pedicelled, smooth, disposed in small bunches.—Calyx truncate, with four hardly discernible teeth.—Corol; tube equalling the calyx; segments of the limb spreading, lanceolate, acute, twice as long as the tube.—Stamina almost as long as the corol; filaments inserted within its mouth between two opposite fissures; anthers oblong, bursting lengthways on both sides.—Pistil shorter than the stamina, smooth; ovarium roundish, two-celled, with two pendulous ovula in each cell; style short; stigma fleshy, oblong, acute.—Berries oval, dark blue with a beautiful bloom on them, rather smaller than those of the common Privet; pulp brown.—Seeds one or two; cotyledons broad-ovate. In other respects like those of Ligustrum. Gart. Carp. ii. 72. tab. 92.

Obs. This species differs from L. japonicum, Thumb. and lucidum, Ait. in the figure and villosity of its leaves and the contracted shape of its panicle. It may perhaps be found the same as L. sinense, Lour. especially if the racemes, which in the flora cochinchinensis are attributed to that tree, are considered as panicles, which indeed has been done by the illustrious author of that article in Rees's New Cyclopædia.

I possess specimens taken from old branches, with more expanded panicles, which together with the leaves are perfectly smooth.—N. W.

VERBENA. See Didynamia Angiospernia.
TRIGYNIA.


Leaves bifarious, obliquely ovate-cordate, acuminate, polished, from five to seven-nerved.

Pepper-vine. Marsden’s History of Sumatra, p. 105.

Molago-codi. Rheed. mal. 7. 23. t. 12.

Sans. वेओरि, Vellojung, मीर्ग, Murichung, मरिच, Mureechung, ज्वर, Kolukung, द्वायमूर्त, Krishnumooshunung, यम्माल, Dhurma-nupattunung.

Hind. and Bng. Murich, or Gol-murich.

Tam. Moloovoo-kodi.

Pers. Pilpil.

Arab. Filfil.

Malay. Ladda.

Cultivated in various parts of India, and its Islands.

2. P. trioicum. R.

Triecous, shrubby, rooting. Leaves bifarious, obliquely-ovate, acuminate, from five to seven-nerved, glaucous. Aments leaf-opposed, cylindric, pendulous.

Teling. Murial-tiga.

Roots long, striking deep into the earth.—Stem jointed, winding, when old woody, and scabrous, running along the ground to a great extent, or up trees, &c. when trained to them; from each joint issue roots which take firm hold of whatever they meet with. Branches numerous, alternate; the young ones smooth, the old ones woody, and scabrous like the stem.—Leaves alternate, petioled, cordate, broad-oval, ovate, or oblong, pointed, from five to seven
nerved, (generally five,) above, smooth and glossy, below, lighter coloured, often somewhat bubbled, from four to six inches long, and from two to four broad.—Petioles channelled, smooth, an inch or an inch and half long.—Stipules solitary, spathiform falling off when the leaf begins to be unfolded.

**Male Plant.** Calyx an ament, leaf-opposed, peduncled, filiform, pendulous, closely imbricated with five spiral rows, of fleshy, oval, one-flowered scales.—Scales oblong, peltate, sessile, one-flowered. —Corol none.—Filaments three, very thick, and very short, scarcely elevating the anthers above the margins of the scales of the ament. Anthers four-lobed.—Pistil, in some, a minute cylindric gland in the centre, in others, not the smallest rudiment of one.

**Female Plant.** Calyx an ament, leaf-opposed, shorter, thicker, and more rigid than in the male, imbricated with three spiral rows of scales.—Scales as in the male.—Corol none.—Stamens none.—Germ sessile, globose, immersed in the substance of the ament. Style none. Stigma three-lobed, white, glandular.—Pericarp, a small, round, red, somewhat fleshy berry.—Seed one, globose.

**Obs.** When I described the three vines included in this one species, I had not seen *Piper nigrum*, and took it for granted that this was it; but as soon as I had an opportunity of seeing that famous plant, I was immediately convinced that they were distinct species. In *tricocum*, the leaves have a glaucous appearance, which readily distinguishes it from *P. nigrum*, which has shining dark green leaves.

This vine I have found wild amongst the chain of mountains directly north from Coringa, in the Raja-mundr Circar. It delights in a moist, rich soil, well shaded with trees; to them it adheres most firmly, by means of the roots which issue from the joints. Flowering time, in their wild state, during the latter part of the wet season, September and October. The pepper ripens in March. With me, in a cultivated state, they flower almost all the year round, but chiefly during the forementioned period.

I have not met with any author, or any sort of information, that could lead me to think black pepper was the produce of a dioecious
plant, (male and female on distinct vines,) till upon examination, I found it was so. Attention to this circumstance will, I think, render the culture of pepper much more certain, and successful, viz. by planting to each prop tree a male and female plant, the male on the sides from whence the most prevailing wind blows; and the female on the other.

The vegetable world is full of proofs that the sexual system of the immortal Linneus is founded on the soundest principles; and not a single plant have I ever found in India, that does not corroborate this fact. The Arabians from time immemorial knew, that to render the female date-tree prolific, it was necessary to bring it in contact with the male; which they do by making a slit in the spathe of the female flower, just before it is ready to burst and thrusting therein a branch of the male spadix. I have therefore the utmost reason to conclude the pepper vine will be much more productive, if the above mentioned circumstance be attended to, by the cultivators. I think, if the Malays on Sumatra had known it, the accurate Mr. Marsden, would not have neglected mentioning so material a circumstance, when describing this plant, and the method of cultivating it there.

Soon after the above description was made, I found a third vine bearing aments with hermaphrodite flowers; or hermaphrodite and female flowers mixed on the same aments. At the same time I found that the pepper of the female vine did not ripen properly, but dropped while green, and immature from the plant, and that when dried it had not so much pungency as common pepper, whereas the pepper of this third sort ripens perfectly, when dry is exceedingly pungent, and has been, by pepper merchants at Madras, reckoned equal, if not superior to the best pepper of the Malabar Coast, or Ceylon; consequently this must be the sort that is found cultivated; the other two being, I conjecture, entirely neglected.

This hermaphrodite plant grows wild, with the male and female, in the moist, uncultivated, over-run shady vallies, up amongst the mountains; and also upon the mountains, where springs keep them moist. Such places are common in the cliffs of the rocks, and there
the vines thrive with the greatest luxuriance. In its stem, branches, leaves, and stipules, it agrees perfectly with the other two. The aments are also the same in every respect, except that here are four spiral rows of flowers; the scales of the ament are as in the other two, viz. the male and female plants. — Stamens, generally, two, fleshy, clubbed filaments, shorter than the germ, and placed laterally, so as to press upon it. It frequently happens that they are entirely wanting, or only one is present. Anthers two oval pits in the apex of each filament. — Germ globular, immersed in the substance of the ament. Style none. Stigmas three, spreading. — Berry globular, size of a small pea, red, smooth, one-celled. — Seeds solitary.


 Dioecious, shrubby, creeping. Lower leaves petioled, broad-cordate, floral leaves sessile, stem-clasping, oblong-cordate; all are from five to nine-nerved.


Sans. कृष्ण, Krishna, उपकुल्या, Oopakoolya, वैरी, Videhee, मागुढी, Magudhee, चपुला, Chupula, कंठा, Kuna, उपश्चन, Ooshuna, दीवली, Pippulee, शौंडी, Shoundee, कोला, Kola.

Beng. Pippul, the root Pippula-moola.

English. Long-pepper.

Pippul-chittoo is the Telinga name of the plant, and Pippuloo the pepper.

The plant I have found wild amongst bushes, on the banks of water courses, up towards the Circar mountains. It flowers and bears fruit during the wet, and cold seasons.

Root woody, perennial. — Stems many, creeping, jointed, round; joints swelled; young shoots downy. Branchlets bearing the fruit are erect, with the leaves sessile, or nearly so. — Leaves on the creeping branches largest, petioled, broad-cordate, seven-nerved; on the erect, fruit-bearing branchlets (floral leaves) stem-clasping, oblong-cordate, five-nerved; all are smooth, somewhat wrinkled; below pale green; size various. — Stipules of the petioled leaves two, joining
lengthways to the petioles, lanceolate; of the sessile leaves within the leaf, single, spathiform.

**FEMALE FLOWERS.** *Ament* sessile, leaf-opposed, peduncled, erect, cylindrical, imbricated with five, or more, spiral rows of small, orbicular, permanent, petioted, one-flowered scales.—*Calyx* none.—*Corolla* none.—*Stamens* none.—*Gynoecium* numerous, aggregate, sessile, sub-oralicular. *Style* none or exceedingly short. *Stigmas* three or four-lobed.—*Pericarp* aggregate, sub-cylindrical, composed of firmly united, one-seeded drupes.—*Seed* ovate, smooth.

**Obs.** It is in Bengal only, so far as I have been able to learn, that this plant is cultivated for its pepper. When the pepper (ament) is full grown, it is gathered and daily exposed to the sun, till perfectly dry; after which it is packed up in bags for sale.

The roots, and thickest parts of the creeping stems, when cut into small pieces and dried, form a considerable article of commerce all over India, under the name of *Pippula moola*; for which purpose it is particularly cultivated in many of the valies amongst the Circar mountains. This sort is more esteemed, and bears a higher price than that of Bengal; where by far the largest proportion is cultivated. It is, as well as the pepper, chiefly employed medicinally, and the consumption of both these drugs is very great.

**Cultivation in Bengal.** The long pepper is not propagated by seed, but by suckers, and requires to be cultivated upon a rich, high, and dry soil. The suckers are transplanted soon after the setting in of the periodical rains, and the pepper (which is preserved merely by drying it in the sun), is gathered in the month of January, after which the stalk, and branches of the plant wither, and the roots only remain alive. A bigha of 1nd (the third of an English acre) will yield in the first year about a maund (eighty-four pounds) of the pepper, in the second year four maunds; and in the third six; after which, as the plant becomes annually less and less productive, the roots are grubbed up, dried, and sold; and fresh roots, or young shoots are set in their stead, the earth requiring merely a slight covering of manure. The plants are never to be watered, and at the commence-
ment of the hot season the roots are to be carefully covered with straw to preserve them against the heat of the sun. The plants should be set about five feet asunder. Large quantities of this pepper and also of the roots are exported to Bombay, and Surat, where both are in great demand, the first for culinary, the latter for medicinal purposes. The Ryots in this part of the country, usually sow radishes, or barley, or plant brinjals (Solanum melongena), in the intermediate space between the plants.


Sans. चच, Chuvyung, चविक, Chuvika, चवी, Chuvee, চিক, Chuvikung.
Beng. Choee.
Obs. Cattu-tirpali. Rheed. mal. 7. p. 27. t. 14. represents a very different species, the fruit of which is also used over the continent of India, and particularly in the western part thereof, as long pepper, and is much cultivated in Bengal, chiefly for its root, which the natives call Pippula. Woodward’s figure, in his Medical Botany, is very bad, for it answers neither to this, nor P. longum, Linn. sp. Pl. ed. Willd. 161. which may be called the long pepper of the continent of India. Blackwell’s figure is still worse.

5. P. sylvaticum. R.

Leaves all petioled, broad-cordate, from five to seven-nerved, obtuse; lobes of the base large, equal, circular. Aments erect, short-peduncled, columnar, male flowers tetrandrous.

A native of the mountains on the North-west border of Bengal, where the natives call it Pahari peepul, or mountain long-pepper and use it, both green and ripe, in their dishes. In the Botanic Garden it blossoms, and the berries ripen during the rains.
Root perennial.—Stem or rather branches creeping on the ground, or rooting on trees like Ivy, and most of the East India species of pepper; all the young parts polished.—Leaves alternate, petioled, equally-cordate, obtuse, from five to seven-nerved, smooth, from three to five inches long, by from two to four broad.—Petioles from one to two inches long, grooved.—Stipules interfoliaceous, &c. as in the genus.—Male aments leaf-opposed, short-peduncled, or columnar, slender. Scales one-flowered.—Corolla none.—Filaments generally four, oval, fleshy, very short. Anthers one-celled.—Germ none.—Female aments on a different plant, leaf opposed, short-peduncled, cylindrical.—Germ oval, one-celled, ovula single, erect, that is, attached directly to the bottom of the cell.

6. P. peepuloides. R.

Leaves equally-ovate, and ovate-lanceolate, short-petioled, from three to five-nerved, smooth, acuminate. Aments sub-sessile, cylindric.

Pippul the vernacular name in Silhet, and on the adjacent range of mountains where it is indigenous, and considered the Pippul, or long-pepper of that country, and as such is used in medicine, &c. It differs specifically, no doubt, from the long-pepper plant of lower Bengal, as well as from that of Rumphius, called P. Chaba by Dr. W. Hunter, who found it common on the Island of Pulo-Pinang. It is immediately known from P. longum by the shape of the leaves, as well as by their being all equally petioled; and from P. Chaba, by both sides of the base being equal, or nearly so; whereas in Chaba the lower side is much larger and longer.

Root perennial.—Stems and alternate branches creeping, young shoots smooth.—Leaves alternate, short-petioled, from ovate-oblong, to lanceolate, entire, acuminate; generally five-nerved, of which the exterior two are minute, and when absent the leaf is perfectly three-nerved, from three to five inches long, by from one to three broad.—Stipules stem clasping, and petiolary.—The Female aments have only been found, which induces me to think this species is dioecious, as most of them are; they are short-peduncled, solitary, and directly opposite to the leaves.—Berries smaller than in common
black-pepper (P. nigrum) obliquely oval; pulp in small quantity, one-celled.—Seeds solitary, conform to the berry.—Perisperm conform to the seed.—Embryo minute, lodged in a little hollow in the apex of the perisperm.

Perennial, dioecious, creeping. Leaves alternate, bifarious, cordate, from five to seven-nerved, smooth, entire. Female aments sub-cylindric, drooping.


Beetla-codi Rheed. mal. 7. 29. t. 15.

Sans. तम्बूलुण्ड, Tambooluvullee, ताम्बूली, Tamboolee, नाग वूली, Naguvullee.

Hind. and Beng. Pan.
I have never met with this plant in its wild state. It is much cultivated over India and the Malay countries.

Root wood, ramous.—Stems woody, creeping on the earth, or rising up trees, poles, &c. when carefully trained to them; smooth in every part; innumerable roots issue from the joints, by which the plant is well supported after they have taken hold.—Leaves alternate, petioled, bifarious, from broad-cordate to obliquely ovate-oblong, somewhat pointed, from five to seven-nerved, entire, smooth; from four to six inches long, and from two to four broad.—Petioles of various lengths, and channelled.—Stipules as in P. nigrum.—Female aments leaf-opposed, peduncled, filiform, sub-pendulous, closely imbricated with several spiral rows of scales, and corollets, exactly as in P. trioicum.—The male flowers I have never found.

Obs. The plants are constantly raised from the slips, and cuttings, these are carefully planted in a rich moist soil, well inclosed, and shaded, so that they are in great measure, protected from both sun and wind. In some places, small plantations of Eschynomene grandiflora, are made to train them to, and to keep off the sun; in others, poles are employed for the first, and a thin shed of mats over them for the latter purpose, they require to be frequently watered during the
dry weather. Every history of India describes, and every body knows, the use the Hindoos of all ranks make of the leaves of this plant.

Piper canninum. Rumph. amb. 5. t. 23. f. 2.  
A native of Prince of Wales Island and the countries to the eastward of the Bay of Bengal.

9. P. lanatum. R.  
Creeping, every part very woolly. Leaves petioled, ovate-lanceolate, scarcely three-nerved. Aments leaf-opposed, one-peduncled, as long as the petioles. Berries pedicelled, clavate.  
A native of the Malay Archipelago.

Leaves short-petioled, from salient to obliquely re-entering, cordate, from seven to nine-nerved, entire, smooth.  
A native of the Malay Archipelago. There is no doubt but this is the Sirium decumanum. Rumph. amb. 5. t. 27. but whether it be the South sea Island intoxicating species, I cannot take upon me to say. The leaves are often a foot long, by six or eight inches broad, on sheathing petioles not more than an inch long. I have not seen the fruit.

11. P. arborescens. R.  
Arboreous, creeping. Leaves petioled, ovate-elliptic, acute, five-nerved. Aments leaf-opposed, long, slender, cylindric, on peduncles about as long as the petioles.  
Sirium arborescens tertium. Rumph. amb. 5. t. 28. f. 1.  
A native of the Molucca Islands.
12. P. lanceolatum. R.
A native of the Molucca Islands.

Shrubby, creeping. Leaves rather long-petioled, from salient to re-entering, cordate, five, or seven-nerved. Aments leaf-opposed, filiform, on peduncles that are generally shorter than the petioles.
Amalago. Rheed. mal. 7. t. 16.
Sirium. Rumph. amb. 5. t. 1 i6. f. 2. is no doubt P. Betle, consequently must be excluded from the list of synonyms belonging to this species.

14. P. rostratum. R.
Creeping, tender parts hairy. Leaves short-petioled, obovate, cuneate, obtuse-pointed, villous, five or seven-nerved, downy, meeting above the base. Aments leaf-opposed, short-peduncled. Berries beaked.
A native of the Moluccas.

Leaves long-petioled, round-cordate, sharp-pointed, five or seven-nerved, smooth. Aments cylindric, short-peduncled.
Sirium frigidum. Rumph. amb. 5. 345. t. 119. f. 2.
A native of the Moluccas.

16. P. sarmentosum. R.
Erect, ramous at the top, sarmentose. Leaves from broad-cordate to oblong, smooth, five-nerved, the superior ones sub-sessile. Aments leaf-opposed, short-peduncled.
Gadu. Cando, or Gadukh, of the Malays.
A native of the Malay Islands, and brought by Mr. Smith into the Botanic Garden, where it thrives luxuriantly, and is in fruit most part of the year.

Stems erect, from six to eighteen inches high, ramous at top, jointed, and smooth. Sarmentose shoots of a great length, issuing in abundance from the top of the root, and the lower part of the stem, by which the plant is quickly propagated to any extent.—Leaves alternate, the lower ones pectioled, broad, re-entering, cordate; the upper ones sub-sessile, obliquely-oblung; all are smooth on both sides, and shining on the upper one.—Aments solitary, opposite to the leaves, short-peduncled, oblong, very small, being rarely more than a quarter of an inch long.—Germ oval, one-celled, ovulum one attached by the base to the bottom of the cell.—Fruit compound, sub-cylindric, about the size of an infant's finger, when ripe softish, and of a dark green or livid colour. Berries numerous, most of the germs prove abortive, one-celled. Seed solitary, oval, attached to the bottom of the cell. Integuments single, thin, light brown.—Perisperm conform to the seed, friable.—Embryo shape of a small broad inverted cone lodged in the apex of the perisperm. Radicle superior.

17. P. angustifolium. R.
Scandent, or creeping, smooth. Leaves sessile, obliquely-lanceolate, very smooth. Aments leaf-opposed, short-peduncled.
A native of the Malay Archipelago.

18. P. saxatile. Wall.
Stems furrowed, creeping, with villous joints and fascicled sub-erect branches. Leaves sub-sessile quatern, obovate-cuneate, fleshy, convex and villous beneath, with three-coloured nerves, veinless. Spike terminal, filiform, elongated, peduncled.
A native of the neighbourhood of Katmandu in Napala, where it grows on rocks and blossoms during the first four months of the year.
A small succulent, probably annual species, which creeps to a
considerable extent, sending forth fascicled, sometimes single, opposite or alternate branches from each joint, which scarcely rise four inches above the surface on which the plant grows.—Stems thread-like, pubescent, with four or five furrows; branches once or twice subdivided into small opposite branchlets.—Leaves generally quatern, rarely tern, four or five lines in length, obtuse, cuneate at the base, shining and somewhat concave above, with copious short hairs below, slightly ciliated, without veins or ribs, and losing even the three pale-coloured nerves when dry; the lowest verticils many times, the others two or three times shorter than the interstices between the joints.—Leaves of the young shoots linear-oblong, measuring sometimes an inch in length.—Petioles very short, villous, erect, with a gland-like body in their axils, villous.—Spike terminal, very slender, from an inch to an inch and a half long, round, villous, excavated on its surface with innumerable small pores in which the flowers are lodged, on a peduncle about half its length.

Addition to Jasminum heterophyllum, p. 99.—By. N. W.

Since the above page was printed I have through the kindness of the Honourable Mr. Gardner been favored with flowering specimens of that interesting species which have enabled me to add the following description.

J. heterophyllum. R.

Arboreous. Leaves alternate, petioled, simple or ternate, from oblong to broad ovate, acuminate, waved, lucid, firm.—Panicles terminal, spreading, trichotomous, fastigiate.—Calyx urceolate with subulate teeth.—Segments of the corol oblong, equaling the tube.

Nepala names, Gooje and Javana.

It grows to be a midling-sized tree with long branches which have a tendency to become rambling. Leaves varying so much in size, as well as figure, as to appear to belong to different species, while in
reality they are the produce of one and the same tree, only taken from differently aged branches; oblong and tapering, some times ovate-oblong, or even very broad-ovate almost cordate, generally alternate, in younger shoots opposite, from three to six inches long, two to three or even four inches broad, terminating into a long acumen, rounded, sometimes unequal at the base, perfectly smooth, shining above, pale below, with a very elevated rib, and long, sub-opposite, oblique, arched nerves which unite into sub-marginal reticulated veins. The leaves are promiscuously single and ternate, or even binate on one and the same branch; but in general they have a tendency to become ternate on younger branches.—Petiolns slender, grooved, as well as the peduncles covered with short hairs, which occasionally continue along the principal vessels on the under side of the leaves; from one to two inches long; partial ones, short; they are all articulated at both extremities.—Panicles more or less elevated above the leaves, large, spreading, many times branched, the first divisions being long, the subsequent ones gradually shorter.—Peduncles slender, lax, together with the calyx hairy, with subulate deciduous bractes under each ramification.—Flowers very numerous and dense, ternate, yellow, delightfully fragrant, elevated on longish pedicels to nearly the same level; the intermediate ones sessile.—Tube of the corol about half an inch long, cylindric, striated.—Stamens slightly elevated above the mouth.

Obs. This ornamental Jessamine is probably the largest of the genus, growing as I am informed, to a considerable tree.—N. W.
Class 3d.

TRIANDRIA

MONOGYNIA.

VALERIANA. Schreb. Gen. N. 60.

Calyx none. Corol superior, one-petalled, gibbous on one side of the base. Seed one.


   Flowers triandrous. Leaves entire, four-fold, the inner radical pair petioled, and cordate; cauline sessile, lanceolate. Seeds crowned with a pappus.


2. V. Hardwickii. Wall.

   Triandrous villous. Radical leaves numerous, fleshy, ovate-cordate, acute, unequally sinuated, on long groved petiols; cauline sessile small, opposite, remote, pinnate or laciniate at the base. Corymb terminal gradually elongated; pedicels dichotomous. Seeds crowned with a downy pappus.


   A native of the mountains of Sirinagur and Nepal; where it blossoms in the beginning of the year.

   Newarree Name, Chamamha Soa.

   Root fleshy, as thick as the little finger, sending out a great number of pale, cylindric, slightly pubescent fibres.—Leaves numerous, spreading in all direction, from one to three inches long, with slightly waved and unequally repand, sometimes deeply gashed, margins, covered on both sides with very short soft hairs, dark green and
somewhat shining above; very pale with fleshy prominent rib and nerves and slightly reticulated veins below; the lobes at the base more or less marked, sometimes decurrent or entirely wanting. As the stem grows in length they are elevated with it a few inches above the ground and are then perfectly opposite in very approximate pairs.—*Stem leaves*, two to three or even four very remote pairs, pinnate or pinnatiset, the terminal leaflets lanceolate, sinuate-dentate about an inch long, the others in one or two pairs linear-lanceolate, very small.—*Petiolis* cylindric, pubescent, with a deep channel above, tapering from a broad and thick base, twice or thrice longer than the leaf.—*Stems* several, erect, striated, fistulous, slightly villous, from one to four feet high, as thick as a good goose-quill.—*Corymb* terminal, crowded at first, but afterwards much lengthened, with opposite slender pubescent peduncles, the lowest one or two pairs of which are generally distant and appear like smaller axillary inflorescences; *pedicels* three or four times forked, capillary, ending into short, few-flowered or crowded racemes.—*Bractes* linear opposite under each subdivision of the corymb; lowermost almost as long as the peduncles.—*Flowers* very small, pale, with scarcely any other calyx than an elevated margin at the top of the ovarium. *Corol* funnel-shaped with a five-cleft regular border; its tube naked at the base, villous within.—*Seed* compressed, with a series of white hairs in the furrows of the ribbed side; in other respects like that of *V. rubra*. Gart. Carp. ii. p. 35. t. 86.

Obs. I have received abundance of specimens with flowers and fruit from the Honourable Mr. Gardner. He also sent me roots of this interesting plant, which at present (May 1818), are shooting forth numerous large fleshy leaves. Its fibrous root acquires on being dried a strong smell like that of the common valerian and appearing to be permanent. It is used medicinally by the natives of Nepal.

The flowers and seeds seem like those of *V. Jatamansi*, but in regard to the root and leaves the two plants differ widely.—N. W.

Calyx entire. Corol three-petalled. Nectary of a few abortive filaments inserted on the petals. Germ one-celled; ovulum one, erect. Drupe half hid in the enlarged calyx, one-seeded. Embryo inverse, and amply furnished with a perisperm.


Teling. Turka-vepa.

A large, woody, climbing shrub, a native of forests. Flowers all the year round.

Trunk leaning, often as thick as a man's thigh. Branches numerous, climbing.—Thorns one here and there over the old woody parts only, very large and strong, shaped like the horn of a Rhinoceros.—Leaves alternate, bifarious, petioled, oval, entire, smooth, about two inches long, and one-broad.—Racemes axillary, solitary, half the length of the leaves, few-flowered.—Flowers small, white.—Calyx cup-form, entire, permanent, and enlarging with the fruit.—Petals three; one, two, or all three half two-cleft; divisions linear, spreading.—Nectary, a bifid, filiform, yellow body, rising from the inside of the base of each division of the petals.—Filaments three, short, standing between the nectaries, inserted into the petals below their fissures. Anthers oblong.—Germ superior, ovate, one-celled, containing one ovulum attached to the bottom of the cell. Style length of the corol.—Stigma simple.—Drupe or berry globular, three-fourths covered with the enlarged calyx, yellow, pulpy, one-celled. Birds are fond of them.—Seed single, globular. Integuments, two; exterior nuciform; inner one white and spongy. Perisperm conform to the seed, amygdaline. Embryo inverse, minute, lodged in the apex of the perisperm. Cotyledons two, equal, minute, semi-linear. Radicle larger than the cotyledons, oval, superior.
2. O. imbricata. R.

Shrubby, scandent. Leaves bifarious, from ovate-lanceolate to oblong, entire, glossy. Racemes axillary, before the flower expands bifariously imbricated, (like the spicule in Briza.) Drupes ovate.

A very large climbing shrub, or tree, if any scandent plant can be so called; a native of Chittagong, where it flowers in the hot season.


Calyx five-leaved. Corol five-petalled. Capsules superior, one-celled, three-valved.


Pharmaceum depressum. Mant. 564.

A small, diffuse, annual plant; appearing and flowering in the cold season.

Stems many, pressing on the ground, branchy.—Leaves opposite sessile, with many smaller ones from their axils, which makes them appear verticilled, oval, smooth, from a quarter to half an inch long.

—Stipules four-fold, membranaceous, with many small similar scales about the flowers.—Flowers sessile in the divisions of the branches, and terminal. Petals linear, with three or four-toothed spicis.

HIPPOCRATEA. Schreb. Gen. N. 73.


A large, twining shrub, native of forests, hills, and wild uninhabited places, over various parts of India. Flowers about the beginning of the hot season.

*Teudrils* simple, woody.—*Leaves* opposite, short-petioled, oval, pointed, serrate, smooth, shining, about two inches long.—*Panicles (Umbels)* axillary, opposite, peduncled, about as long as the leaves, dichotomous, expanding.—*Flowers* numerous, very small, of a rusty yellow colour.—*Bractes* minute.—*Petals* linear-oblong.—*Germ* superior, three-lobed, three-celled, with two ovula in each, attached to the axis.—*Style* shorter than the stamens.—*Capsules* from one to three, oblong, one-celled, one-valved.—*Seeds* two, broad-winged, affixed to the bottom of the capsules by the apex of the wing.

2. *H. obtusifolia*. R.


A native of the coast of Coromandel. Flowering time in the Botanic Garden, March and April; the seeds take one year to ripen.

*Stems* and larger branches ligneous, and covered with cracked, spongy grey bark, climbing to a great extent by the help of the smaller, round, smooth, diverging, opposite branchlets, which take a turn, or two round their supporters.—*Leaves* opposite, short-petioled, oblong, entire, (large luxuriant leaves are sometimes obscurely serrate,) obtuse, firm, polished, length from three to four inches. *Stipules* of the leaves four-fold, minute, subulate; those of the branchlets larger. —*Corymbs* terminal, or from the exterior axils, often compoundly dichotomous, and shorter than the leaves.—*Bractes* minute, ovate.

—*Flowers* small, pale greenish yellow.—*Calyx* five-leaved.—*Petals* five, ovate-lanceolate.—*Nectary*, a large, fleshy receptacle receiving the base of the germ; its margin becomes thin, and is divided into three, tapering, antheriferous segments, which are at first erect, but soon become revolute.—*Filaments* no other than the three segments of the nectary. *Anthers* of two, round, one-celled lobes.—
Hippocrates.

TRIANDRIA MONOGYNIA.

Germ three-lobed, immersed in the thick, fleshy nectary, three-celled, each cell containing several seeds, attached to the axis.—Style the length of the filaments; stigma three-toothed.—Capsules three, obovate, thin, smooth, slightly veined, about two inches long, by one and half broad, one-celled, two valued.—Seeds generally four in each capsule, two on each side, lodged about its middle, of a narrow-oblong shape, with a large, oblong, membranaceous wing proceeding from the base, and attached by its extremity to the very base of the capsule. Integuments two; exterior a very thin, smooth membrane; interior rather thick and somewhat spongy.—Perisperm none. —Embryo erect. Cotyledons oblong, pale green while recent. Plumula two-leaved. Radicle short, inferior.

Obs. In the following species there are only two seeds in the capsule, in every other respect it resembles exactly this species.

3. H. arborea. R.


B. Katha-paharia.

A native of the interior parts of India. It blossoms in July, and the seeds ripen in March.

Trunk tolerably straight, but short, about as thick as a man’s thigh, covered with smooth, dark brownish ash-coloured bark. Branches and branchlets spreading and climbing to a great extent, young shoots round and smooth, indeed highly polished; many of them form the claspers.—Leaves opposite, short-petioled, drooping, oblong, taper-pointed, serrate, very smooth on both sides; from six to seven inches long, and about three broad.—Stipules none, but two or three small, dark brown, scaly gems are found in each axil.—Corymb axillary, dichotomous, with a pedicelled flower in the divisions. —Bractes opposite, small, permanent.—Flowers very numerous and small, pale greenish yellow.—Calyx beneath, generally four, though sometimes five or even six-parted; divisions rounded, and only about half the length of the corol.—Corol four, five, or six-petalled, (six
is the most common, and I suppose the natural number,) in a double series, equal, ovoid-oblong, smooth. Nectary a three-sided, fleshy cup surrounding the insertion of the stamens and germ.—Filaments three, membranaceous, shorter than the corol. Anthers four-lobed.
—Germ ovate. Style short. Stigma simple.—Capsules three, cuneiform, striated, three inches long, and about one and a half broad, one-celled, two-valved; valves exactly boat-shaped.—Seeds two, ovate, compressed, enlarged with an oblong, soft, thin, spongy wing, the attachment is between its apex and the base of the capsules. Integument single, ochraceous.—Perisperm none.—Embryo oblique, compressed. Cotyledons conform to the seed, yellow. Plumula two-lobed. Radicle oval, sub-inferior.

JOHNIA. R.

calyx inferior, five-leaved, or five-parted. Corol five-petalled. Nectary or receptacle of the stamina and pestillum sub-globular. Germ three-celled; ovula one or two in each cell, peltate. Berry one or more-seeded. Embryo without perisperm, direction various.

In honour of the Rev. Dr. John of Tranquebar. It is nearly allied to Salacia. Gen. Pl. ed. Schreb. 1380. Its proper place is probably the third order of this class.

1. J. salacioides. R.


A native of Tipperah, Chittagong, and other parts of the eastern frontier of Bengal. It flowers in the Botanic Garden during the hot season; and the fruit ripens about the close of the rains.

A large, very ramous shrub, with its branches spreading much, and often drooping elegantly. Bark of the ligneous parts brownish and somewhat scabrous, that of the young twigs smooth.

Leaves opposite, short-petioled, recurved, broad-lanceolate, entire, firm, polished, obtuse-pointed; about four inches long, and
half as much broad.—Stipules minute, caducous.—Peduncles axillary, several, longer than the petioles, one-flowered.—Flowers small, deep greenish orange colour.—Calyx of five round, villous margined, minute leaflets.—Petals round, sessile, with the margins recurved.—Filaments no other than the three, short, triangular segments of the fleshy urceolate nectary, elevating the three, large, twin anthers even with the stigma.—Germ above, conical; three-celled, with two ovula in each, attached to the axis.—Style scarcely any; stigma acute.—Berry size of a crab-apple, round, smooth, dull-red. Pulp in considerable quantity, white, of a soft, tough, gelatinous consistence, and eaten by the natives.—Seeds two, or three, separated by a thick partition of pulp; transversely oblong; flat on the inside, convex on the exterior.—Integuments, single, spongy, brown.—Perisperm none. Embryo consisting of two equal cotyledons, conform to the seed, and until vegetation begins, so firmly, and closely united, that they seem to be of one entire piece.—Radicle small, lodged at the umbilicus, relative, centripetal.

2. *J. coromandeliana.* R.
Leaves opposite, serrulate, polished. Calyx five-toothed. Petals unguiculate.

A small, straggling tree, or rather a large climbing shrub, a native of forests and mountains of Coromandel.

Leaves opposite, short-petioled, oval, smooth, shining, sometimes most slightly serrulate; about three inches long, and one and a half broad.—Peduncles axillary, several, bowing, one-flowered.—Calyx inferior, one-leaved, five-cleft.—Petals five, clawed, round, or oval, spreading.—Nectary a large globular, fleshy receptacle, elevating the stamens and pistil.—Filaments three, spreading, shorter than the petals, inserted into the top of the nectary round the germ. Anthers small, twin.—Germ half immersed in the nectary, three-celled, with one or two ovula in each, attached to the axis. Style very short. Stigma simple.—Berry superior, globular, upon the remaining nectary, or receptacle, size and colour of a small red cherry; one-celled, one-seeded.
**IRIS. Schreb. Gen. N. 97.**

Corol six-petalled, petals unequal, alternate, jointed and spreading. Stigmas petals, from cowled to bilabiate.


Root creeping. Leaves ensiform, drooping, scape ramous, many-flowered.

This elegant species has been introduced from China, into the Botanic Garden, where it thrives best in cool, moist, shady situations. Flowering time the beginning of the hot season, viz. March and April.

**MOREA. Schreb. Gen. N. 80.**

Corol six-petalled; the three inner spreading and narrower. Stigma three-cleft.


Herbaceous, stems compressed. Leaves bifarious, ensiform, umbels terminal, proliferous, all the six-petals expanding.


Beng. Dusbaha, or Dusbichundii.

A native of India, China, &c. Flowers in the rainy season in the Botanic Garden near Calcutta.

Is common in gardens over India, where it blossoms during the rains, and ripens its seeds in the cold season.

**COMMELINA. Schreb. Gen. N. 86.**

Calyx inferior, three-leaved. Corol three-petalled, often dissimilar. Nectaries or sterile filaments three, with a cruciform head. Capsules two or three-celled. Seeds one or more. Embryo simple, and furnished with a perisperm.


*Beng.* Juta-kanshira.


This species is common over the low moist parts of *India*; flowering time the rainy season chiefly.

*Root* fibrous.—*Stems* numerous, creeping, dichotomous, jointed, round, smooth; length very various.—*Leaves* alternate, sessile on tubular, vaginated sheaths, ovate-lanceolate, acute; margins waved; smooth on both sides, with delicate, parallel veins running lengthways on the under side; from two to four inches long; mouths of the sheathing petioles a little ciliate.—*Spathes* terminal, or sub-fascicled, semi-cordate.


*Ephemerum bengalense*, &c. *Pluck.* 1. 27. f. 3.

*Beng.* Kanshira, also Kanaraka.

Like the last described, this species is a native of wet places over Bengal, but much scarcer and smaller; flowering time the same.

*Stems* creeping, dichotomous, jointed, hairy.—*Leaves* alternate, petioled, cordate, nervous, a little hairy, about an inch long and three-fourth of an inch broad.—*Petioles* sheathing, hairy, and ciliate.—*Spathes* terminal, and axillary, of a shape between that of a short, inverted cone and falcate; open on the upper side only; each containing a common peduncle of two hermaphrodite flowers, and a long-peduncled male one.—*Flowers* small, bright blue colour.—*Calyx* as in the former.—*Corol* three-petalled; two of them larger, and long-clawed, as in the former species, the third small, and sessile, but coloured.—*Nectary*, *stamens* and *pistil* as in *C. communis*, only the style is here beautifully spiral.—*Pericarp* three-celled, three-valved, with generally two seeds in each cell.
3. C. moluccana. R.
Annual, creeping. Leaves sessile, oblong, about five-nerved. J
ers terminal, solitary, sub-sessile. Petals equal.
A native of the Moluccas. Compare with Vahl's. C. attenuata

4. C. salicifolia. R.
Polygamous, creeping. Leaves narrow-lanceolate. Petals t-equal. Spathes from four to six-flowered. Anthers dissimilar. Caps-
sules pointed, three-celled, six-seeded.
Sans. लल्कलवी, Langulee.
Beng. Panee-kanshira.
Found with the former in wet places near Calcutta, it is a native of the Coromandel Coast; flowering time the wet season.

Stems creeping to a great extent, ramous, round, smooth, jointed, very succulent — Leaves alternate, sessile on their cylindrical sheaths, narrow-lanceolate, a little hispid on the upper side and margins, when the finger is drawn backward; from four to six inches long, and not quite one inch broad.—Sheaths cylindrical, striated; mouth ciliate.—Spathes leaf-opposed, long-peduncled, semi-cordate, long-pointed.—Flowers hermaphrodite, and male; large, of a beautiful deep azure colour, disposed as in the former species, only there are few-
er to the common shorter peduncle, and often two on the longer one.
—Calyx as in the former.—Petals three, equal, except that the low-
er one having a shorter claw is nearly sessile.—Nectaries, stamens, and pistilum, as in the former.—Capsules oblong, pointed, three-cel-
led, three-valved, with two seeds in each. Cattle are fond of this species.

5. C. nana. R.
Creeping. Leaves cordate-lanceolate, stem-clasping. Flowers terminal, sub-panicled. Petals equal. Capsules three-celled, many-
seeded.

A native of wet places over India; it appears during the rainy and cold season.
Commelina. TRIANDRIA MONOGYNIA.

Root annual.—Stems or branches creeping, enveloped in the sheaths of the leaves; from three to six inches long.—Leaves stem-clasping, sheathing linear-cordate, somewhat ciliate, and waved; sheaths a little downy.—Flowers terminal, sub-panicled, small, bright blue.—Calyx equal, permanent.—Corol of three, roundish, equal petals. Nectarial filaments as in the other Indian species, but naked.—Filaments three, from the middle downwards clothed with hairs, converging over the stigma. Anthers blue.—Style shorter than the stamens, straight and tapering.—Capsules three-celled, with from three to six seeds in each.

Obs. Were the style longer, or even spirally bent, I should have concluded this plant to be Commelina spirata. Mant. 2. p. 176. Burman’s figure of his C. diffusa. Flor. Ind. tab. 7. f. 2. is so bad that no comparison can be made; they may be the same.


Beng. Kanduli.
Tali-pulli. Rheed. mal. 9. t. 63.

A native of most of the warmer humid parts of India. Flowering time the rainy season.

Stems none, but it has many short, creeping, smooth, jointed branches, with their flower-bearing extremities sub-erect.—Leaves alternate, sessile, linear, sheathing, smooth, excepting a few fine hairs about the mouths of the sheaths.—Racemes terminal, long-peduncled, corymbed, bearing on their upper side many small blue flowers in succession.—Bractes solitary, one-flowered, concave, caducous.—Calyx three-leaved, equal.—Corol of three, obovate, equal, blue petals. Nectarial filaments with a very few, moniliform, blue hairs; corpuscles two, clavate.—Filaments three, two of them ascending, larger, and thicker, well clothed with beautiful jointed blue hairs. Anthers blue,
eval, the third filament sterile. *Style* short, ascending.—*Capsules* three-celled, with two scabrous seeds in each.

7. *C. cespitosa* R.

Polygamous, creeping. *Leaves* lanceolate. *Spathe* cordate, pedunced, few-flowered; *petals* nearly equal. *Capsules* three-celled, with one or two seeds in each.

A native of Chittagong, from thence the plants were sent to the Botanic Garden by Mr. W. Roxburgh. It is in blossom most part of the year.

Stems and branches numerous, slender, smooth, jointed, creeping close over a space of some feet and striking deep root at the joints. *Leaves* alternate; sessile on their smooth cylindrical sheaths, ovate-lanceolate, the upper ones narrower and longer; all are entire, and smooth on both sides.—*Sheaths*, besides the usual leaf-bearing one, there is a second or inner annular one wherever there is a peduncle. —*Peduncles* solitary, leaf-opposed, about an inch long, round, and smooth. *Spathe* cordate, or rather semi-cordate in their natural folded state, each embracing two common pedicels; the superior one bearing two, three, or four, pedicelled male flowers; and the lower about as many hermaphrodite ones; all blossoming in succession.—*Calyx* of three, equal, obovate, concave, pale blue, pellucid leaflets.—*Petals* three; the upper two reniform and pedicelled; the lower one cordate, and sub-sessile, all of a most beautiful light blue colour. *Nectaries* three, erect, on the upper side opposite to the stamens.—*Filaments* three, equal, ascending. *Anthers*, the middle one larger, and sagittate.—*Germ* ovate, (in the male flowers wanting.) *Style* ascending, as long as the stamens. *Stigma* incurved, simple.—*Capsules* oblong, three-celled, with one or two seeds in each.

8. *C. scapiflora* R.

Commelina. TRIIANDRIA MONOGYNIA. 179

A native of Hindoostan and introduced into the Botanic Garden by Colonel Hardwicke, where it blossoms in March and April, at which time the plant is destitute of leaves, nothing being seen but the racemes ornamented with large lively blue flowers round the apex.

Root perennial, composed of several, smooth, elongated tubers, with a few filiform radicles.—Stems none, except the sheathing bases of the leaves, which appear a month or two after the flowers; these are ensiform, waved, acute, smooth, and marked with several straight veins; length from four to eight inches, breadth about one.—Racemes radical, erect, straight, smooth, invested at each of the remote two or three joints, with a small, solitary sheath; these sheaths toward the top are more approximated, each of them there embracing the insertion of a branchlet which bears several pedicelled flowers.—Calyx the three leaflets thereof broad-lanceolate, and considerably shorter than the corol.—Petals equal, round, concave.—Nectaries alternate with the stamens, hairy.—Filaments three, alternate with the petals, longer than the filaments of the nectaries, and like them hairy about the middle. Anthers blue.—Pistil declining. Stigma minutely three-toothed.

9. C. herbacea. R.


A native of Sumatra, from thence introduced into the Botanic Garden by Dr. Charles Campbell, where it blossoms and ripens its seeds during the whole year.

Root perennial, consisting of long, firm, thick fleshy fibres. Stems several from the same root, herbaceous, jointed, ascending, round, smooth, much swelled at the joints, from two to three feet in height, nearly the whole enveloped in the sheath of the leaves.—Leaves alternate, sessile on their sheaths, lanceolate, smooth, slightly marked with five parallel nerves, margins entire, waved, somewhat membranaceous, and coloured. Sheaths shorter than the joints, striated, and smooth, except a few white hairs round their mouths.—Panicles terminal; there.
are also smaller ones from the superior axils, which are sub-globular, and smaller. **Ramifications** alternate, at first divaricate, afterwards recurved. — **Flowers** numerous, small, short-pedicelled. — **Bracteostriangular**, acute. — **Calyx**, leaflets three, equal, oblong, concave, spreading, fleshy, furrowed on the outside. — **Petals** three, equal, oval, much larger than the calyx, concave, entire, spreading and of a delicate translucent pale bluish white. — **Nectarial** filaments alternate with the longer stamina, bearded (like the latter) towards the base, with delicate, slight blue hairs, and crowned with large incumbent, three-lobed, yellow glands.—**Germ** somewhat three-sided. **Style** oblique, length of the filaments. **Stigma** small, crowned with a tuft of hairs. — **Capsules** three-celled, three-valved, with generally from four to six, or seven, angular, rough seeds in each cell. **Embryo** lodged in a deep pit, in the back of the seed, small, oval.

**SONERILA. R.**

**Calyx** superior, three-toothed. **Petals** three on the mouth of the calyx, alternate with the stamina. **Germ** three-celled, cells many-seeded, attachment central. **Capsule** three-celled. **Seeds** numerous, minute.

1. **S. maculata.** Roxb.

**Leaves** opposite, unequally-cordate, bristle-spotted, serrulate, ciliate.


**Sootli**, the vernacular name in the Khassee language.

It is indigenous amongst the mountains on the North-East border of Bengal, and used by the natives as a potherb.* Flowering time the beginning of the rains. In its **natural character** it agrees very exactly with **Burmannia**.

**Root** fibrous.—**Stem** short, being only a few inches high, and when old leaning much, **branches** opposite, longer than the stem, the lower reclinate, with their apices resting on the ground and striking

* I have had specimens from Nepal under the name of Luzhee-Sowa.—N. W.
root, all are nearly round and bristly; height of the whole plant from six to twelve inches.—Leaves opposite, long-petioled, more or less unequally broad ovate-cordate, nerved, bristle-serrulate, pointed, surface bullate, and marked with numerous small white specks, from the centre of each rises a slender, subulate, bristle; veins and nerves bristly, length from two to six inches, by from one to three broad.—Racemes axillary, spiral, their peduncles as long as the petioles, deeply coloured and hairy.—Flowers springing from the upper convex side of the raceme, short-pedicelled, red, bristly.—Bractes subulate, minute.—Calyx superior, three-sided, and tubular; mouth three-toothed, permanent.—Petals three, lanceolar, inserted into the mouth of the calyx, alternate with its segments, smooth on the inside, on the outside are frequently found some slender bristles. Nectary of three, laciniated scales round the base of the style.—Filaments three, alternate with the petals, and about their length. Anthers sagittate, onethird as long as the filaments, until the flower has been expanded some time they are inverted within the tube of the calyx, afterwards erect. —Germ clavate, three-sided, three-celled; ovula numerous, attached to their respective receptacles, rising from the axis, exactly as in Osbeckia chinensis. Gart. Carp. 2. t. 126. Style length of the stamens. Stigma simple.—Capsules erect, three-sided, clavate; pedicel included, about half an inch long, three-celled, opening at the apex.—Seeds very numerous, and too minute to admit of my ascertaining their internal structure.

2. S. emaculata. Roxb.

Leaves opposite, unequally narrow-cordate, acute, bristly, but void of spots, serrulate, ciliate.

A native of the Khassee mountains on the North-East border of Bengal, where it flowers in July, and differs from the preceding species, in the leaves being destitute of the little round white spots, into which the bristles are inserted, (viz. one in the centre of each spot.) It is also less robust than that plant, with longer peduncles to the racemes, which are sometimes leaflet-bracted at the middle.

The flowers, and seed vessels are alike.

*Leaves* opposite, unequally oblong-lanceolate, serrulate, hairy.

A native of the mountains on the North-East border of Bengal, and like the two former species in habit, but the shape of the leaves widely different, and only a little hairy.

4. *S. moluccana*. R.

Sub-caulescent. *Leaves* in pairs, entire, hairy, one minute and nearly round, the other unequally cordate. *Racemes* umbellated.

A native of the Molucca Islands.

5. *S. squarrosa*. Wall.

*Stems* short, cylindric, marked with numerous stipulary inoffensive *prickles* which are deciduous, together with the sub-sessile crowded, sub-verticilled, cuneate-lanceolate, serrulate, smooth *leaves*.

Growing among ferns on the Khassee mountains, where it is called *Tearanga*. It blossoms during the rains.

This little perennial plant rises to the height of from four to six inches.—*Root* consisting of capillary fibres.—*Stem* ash-coloured, about the thickness of a crow-quill, erect, marked with large elevated tubercles to which the leaves were attached, and innumerable small, subulate, axillary sub-erect *prickles* which together with the leaves are deciduous leaving the lower portion of the plant naked. They are about two lines long and interspersed with small elevated dots.—*Branches* few, simple.—*Leaves* of a dark green colour, sometimes verging towards brown, crowded near the top of the plant, spreading, somewhat fleshy, slightly dotted, veinless, scarcely above half an inch long, acute, with adpressed, bristly, purplish serratures, entire toward their base and tapering into a very short flat *petiol* which articulates with the corresponding tubercle of the stem or branch.—*Stipules*, two axillary, opposite, prickles.—*Raceme* terminal or axillary on a filiform peduncle, two or three times longer than the leaves.—*Flowers* unilateral on short pedicels, large in comparison with the size of the plant, rose-coloured, imbricated during their
tivation.—Calyx slightly coloured, with pubescent angles and the segments obscurely keeled.—Petals oval, acute, contracted at the base and inserted into the mouth of the calyx so as to occupy its whole circumference.—Filaments naked.—Anthers beaked, subulate, with a cordate base, bilocular, opening on both sides along their whole length.

Obs. I received this pretty little plant from my indefatigable and zealous assistant, Mr. Smith at Silhet, in 1817. It seems to thrive very well on an elevated bed, in a soil mixed with pebbles, and while I write this, in July the following year, it commences shooting out numerous fresh leaves from the top of the stem and branches. The structure of its flowers agrees entirely with that of the first species; but they are about one third smaller in size.—N. W.

**XYRIS.** Schreb. Gen. N. 89.


Leaves ensiform. *Heads* globular; *scales* round.


*Beng.* Cheena ghauzi. Dalî dooba.

Grows on a low clayey soil, over many parts of Coromandel, and *Bengal.* Flowering time November and December. *Seeds* ripen in January and February.

*Root* fibrous, annual.—*Leaves* radical, bifarious, straight, sword-shaped, on one edge slit into a sheath for the scape, pointed, smooth; from six to twelve inches long.—*Scape* naked, round, striated, erect, length of the leaves, each supporting a round, flower-bearing head.—*Flowers* a beautiful bright yellow.—*Bractes,* or scales one-flowered, orbicular, concave, hard, smooth.—*Calyx* three-keaved, hid within the scale, membranous.—*Petals* three, each supported on an *unguis*
just long enough to raise their expanding, oval, crenate borders above the scales. — Nectary, three filaments inserted, alternately with the petals, round the base of the germ; apex two-cleft, each division ending in a pencil of fine yellow hairs; adhering firmly at the cleft to the edges of the petals, near the apex of the claws. — Filaments three, short, broad, erect, inserted on the inside of the apex of the claws of the petals. Anthers twin, erect, united by a commination of the filament. — Germ superior, three-sided. Style length of the claws of the petals, from thence three-cleft. Stigmas torn. — Capsule three-valved, one-celled. Seeds numerous, attached to a heel down the inside of each valve.

Obs. The following account of the virtues of this plant I have been favoured with, by the Honourable John Hyde, who informs me that "the natives of Bengal esteem it a plant of great value because they think it an easy, speedy, and certain cure for the troublesome irruption called ring worms." This accords with what Van Rheede says of it, at page 139 of the 9th volume of the Hortus Malabaricus, viz. Foliorum succus cum aceto mixtus impetigini resistit. Folia cum radice oleo incocta contra lepram sumuntur.


Ament imbricated on all sides with tailed scales. Corol three-petalled. Seed naked.

1. F. ciliaris. R.


Teling. Elagabora gaggi.

A native of moist places on the Coast of Coromandel, with the Scirpi, &c.

Root fibrous. — Culms nearly erect, about a foot high, round,
striated, leafy, jointed, but not piped.—Leaves sheathing, shorter than the culms, hairy, ciliated on the margin, concave on the inside, not keeled.—Heads sub-globular, compound, axillary, and terminal, the terminal one is considerably longer, they are composed of several oval, imbricated, many-flowered, sessile spikes. Involute of the terminal head one or at most two small leaves; of the others, nothing more than the sheath of the leaf from whence they issue.—Scales of the aments, or spikes, corol, &c. as in the genus.

**KYLLINGIA. Schreb. Gen. N. 9.**

Ament imbricated. Flowers with calyx and corol of two chaffy valves each. Seed one.


Rottb. *gram. 13. t. 4. f. 4.*

Culms six to eighteen inches high, triangular; head terminal, single; involucres three or four. Seeds obcordate, without angles.


Beng. Sweta gothoobi; Nurbishee, its fragrant aromatic root being accounted an antidote to poisons.

Common over *Ludia* on low shady pasture ground, when totally shaded the heads are generally more green, which is rather uncommon.

Root fibrous, and stoloniferous.—Culms erect, from six to eighteen inches high, generally about eight; three-sided, smooth, naked except near the base; angles sharp, and sides hollowed.—Leaves sheathing, as long as the culm, smooth, sharp keeled.—Head terminal, sessile oval, generally white.—Involute three-leaved, unequal, the largest leaf as long as the culm. Back of the glumes of the corol hispid.—Stamens three. Stigma three-cleft.—Seed obliquely obcordate, much compressed, smooth, light brown.

*Culms* from six to twelve inches high, three-cornered. *Heads* terminal, sessile, from three to six; *involucre* three or four; *florets* diandrous; *seed* oblong, without angles.


A native of low shady pasture ground.

*Root* somewhat tuberous, with capillary fibres.—*Culms* straight, from six to twelve inches high, smooth, naked, except at the base, obtusely three-sided; *angles*, rounded.—*Leaves* sheathing, nearly as long as the culm, smooth.—*Head* terminal, composed of from three to six sessile, oval, white spikes, the largest one is in the centre, the rest in the circumference.—*Involucre* as in *K. monocephala*.—*Stamens* seldom more than two.—*Stigma* two-cleft.—*Seed* oblong, much compressed, white, no angles.

*Obs.* It differs from *K. monocephala* not only in having a compound head but in being diandrous, with a bifid style, and oblong lanceolate seed. I have found luxuriant plants with more than one flower in the calyx.


*Culms* from one to two-feet high, three-sided, umbel of sessile and peduncled, cylindrical, ragged spikes, involucres many; *involucels* none. *Seeds* three-sided, linear-oblong.


*Beng. Bura-gooboobi*.

A native of wet or marshy places.

*Root* tuberous, rust-coloured, with rust-coloured fibres.—*Culms* erect, from one to two feet high, three-fourths naked, three-sided, smooth.—*Leaves* sheathing nearly as long as the culm.—*Umbel* terminal, sessile, composed of sessile and peduncled, cylindrical spikes of numerous diverging flowers.—*Involucre*; *universal*, many leaved,
unequal; the largest leaf often as long as the culm; partial, none. Calyx and corol, &c. as in the genus. Seeds three-sided.

Obs. As this plant wants the partial involucre it may be K. sumatrensis of Retzius.

4. K. cyperoides. R.

Culms from six to eight inches high, three-sided. Umbel compound, consisting of globular heads of numerous spikelets, involucre three-leaved. Seed oblong, three-sided.

An elegant cyperus looking small species, a native of moist pasture ground.

Root fibrous.—Culms erect, two-thirds naked, from six to eight inches high, three-sided, smooth.—Leaves sheathing, as long as the culm. Involucre; universal, three-leaved, very unequal, the largest leaf being as long as the culm, and the smallest one inch, partial, minute.—Calyx, corol, &c. as in the genus, excepting that there are sometimes two flowers in the same calyx.

**Tunga. R.**

Ament ovate, imbricated on all sides. Calyx one-valved, one-flowered. Corol two-valved. Seed naked.

The plants which come under this definition I cannot by any means reconcile to the character of Scheanus, nor indeed to any genus known to me. I have therefore constituted a new one of them, under the Telinga name Tunga, which is applied to the whole family of Calamaria. Linn. Cyperoidea. Juss. This genus is probably the same as Vahl's Hypaelyptum.

1. T. triceps. R.

Culms from four to eight inches high, a little compressed; spikes two or three, terminal; involucre two-leaved.

A native of Coromandel, growing with other cyperi.

Root fibrous.—Culms erect, mostly naked, from four to eight inches high, a little compressed, smooth.—Leaves sheathing, broad,
nearly as long as the culm.—Spikes terminal, generally three, sessile, oval, imbricated with innumerable small rust-coloured flowers.—Involucre two-leaved, the largest is often erect, and looks like a continuation of the culm; it is from two to three inches long; besides these there are two or more oval, lateral, scales.—Calyx, a scale, single, nearly as in the scirpi, one-flowered, wedge-shaped, striated.—Corol two-valved, membranaceous, shorter than the scale.—Stamens three.—Stigma three-cleft.—Seed oblong, three-sided, without bristles.

2. T. lavigata. R.

Culms from one to two feet high, three-sided. Spikes several, terminal. Involucre three-leaved.

A native of moist vallies.

Root fibrous. Culms erect, from one to two feet high, nearly naked, three-sided, smooth.—Leaves numerous, sheathing, half as long as the culm.—Head terminal, generally composed of about seven oval, sessile, closely imbricated spikes.—Involucre two or three-leaved, very unequal, the largest from five to eight inches, the shortest one, or one and a half.—Calyx as in T. triceps, only sometimes three-lobed at the apex.—The rest as in T. triceps.

3. T. diandra. R.

Culms leafy, two or more feet high, three-sided; corymbs terminal; involucres alternate. Flowers diandrous. Style two-cleft.

A stout, erect, smooth, long-leaved species; a native of Amboyna.

Culm jointed, three-sided, smooth.—Leaves one at each joint, sheathing, rising much higher than the culm, linear, smooth, acute, three-nerved, about three feet long.—Corymbs terminal, decom-pound or more.—Involucres several, the largest at the first division of the corymbs, and like the leaves of the culm, but smaller; spikelets oval, minute, composed of many small brown imbricated flowers as in the scirpi.—Calyx, a glume, roundish, smooth.—Corol; the two valves, small, placed transversely with
respect to the calyx, and smaller than it.—Filaments two, one rising laterally from the bosom of each valve of the corol; anthers linear. Germ oblong, style deeply two-cleft. Seed oval, rather longer than the calyx.

**SCHÖENUS. Schreb. Gen. N. 92.**

Calyx, or Corol, glumes several; seed one, naked.

1. *S. articulatus. R.*

Culms three-sided, erect, from four to five feet high, jointed, leafy. Corymbs terminal and axillary, compound and decmpound. Style undivided. Seed obovate, beset with bristles, and crowned with the conic base of the Style.

**Telung. Konda-tunga.**

A native of marshy places up amongst the Circar mountains. It may be referred to Vahl.'s *Rynchospora Enum. Pl. 2. 229.*

Culms erect, three-sided, leafy, jointed, smooth, from four to five feet high, angles sharp, between the joints fistulous.—Leaves of the root as long as the culm, smooth, except that the margins are a little hispid, slender considering their great length, those of the culm from five to eight, sheathing, shorter than those of the root.—Umbels the terminal one decmpound, those only from the exterior axils compound.—Involucre of the terminal umbel, from three to four-leaved, about as long as the umbel, leaf-like; the axillary umbels have no involucre, or, at most, a very trifling one.—Flowers sub-solitary, chestnut-coloured.—Calyx none. Corol; petals four. Style undivided, with a permanent conical base.—Stigma entire, acute. Bristles, six permanent ones surrounding the germ.—Seed a little compressed, crowned with a large brown, spongy, conical body, the base of the style.

**Obs.** There is frequently a very slender male flower within the large or inner glume of the corol; it consists of one glume or scale, and three stamens. The plant is so very coarse that cattle will not eat it.
CYPERUS.

Glumes chaffy, bifariously imbricated. Corol none. Seed one, naked.

Sect. 1st, with culminar Culms.

Culms setaceous, from two to three inches high; spike terminal, solitary, naked.
A native of Coromandel, appears and flowers during the rainy season chiefly.

Culms from six to eight inches high, round, incurved, half naked.
Spikes lateral, sessile. Involucre one-leaved, besides the continuation of the culm. Seed oval, rounded.
A native of moist sandy places, over various parts of India.
Root creeping, invested in brown sheaths.—Culms half naked, issuing singly from the root at some small distance from each other, nearly round, ascending, from six to eight inches long; the lower half is involved in the sheath of a single, short leaf.—Leaf sheathing, generally one to each culm, which is only about half its length.—Head about an inch and a half below the extremity of the culm, it consists of five or six small, oval, ten or twelve-flowered spikes.
—Involucre one-leaved, about as long as the spikes; besides these there are some small, chaffy, calyx-like scales.—Seed naked, oval, compressed, white.

Culms erect, columnar, from eight to twelve inches long, naked; Head of five or six sessile spikes beneath the straight apex of the culm; Stigma bifid; Seed oval, compressed.
A native of Coromandel.
Root creeping, dark rusty brown.—Culms straight and perfectly erect, from eight to twelve inches high, round, and naked.—Leaves no other than a short sheath or two, embracing the base of each culm.
—Spikes sessile, five or six, forming a small head on one side of the culm about an inch and half below its apex. **Involucre**, a minute, subulate leaflet immediately under the spikes, and of the same length with them.—**Scales** of the spikes numerous, ovate-oblong, white, smooth and rather obtuse.—**Stamina** three.—**Stigma** bifid.—**Seed** oval, flat on the inside, and convex on the exterior, leadcolour or grey, and smooth.

**Obs.** This differs from the plant which I consider to be *C. mucronatus* of Retz. *fasc.* 5. p. 10. in being perfectly erect and destitute of foliage; whereas that species has leaves, is smaller, and always ascends in a curved direction; in that the scales of the spike are acute, in this obtuse, in other respects they are very much alike. At present I am inclined to think *C. mucronatus* of Vahl. and Rottboel may be referred to this, consequently Willdenow's *C. mucronatus*. Sp. Pl. 1. 273. includes these two species.

4. *C. nudus*. R.

**Culm** from three to four feet high, round, naked, inwardly intercepted. **Leaves** none; **Umbel** compound; **involucre** chaffy. **Stigma** three-cleft. **Seed** three-sided.

A native of stagnating, or slowly running sweet water over India. **Root** perennial, fibrous.—**Culms** erect, round, naked, articulated, smooth, from three to four feet high, above as thick as a common large quill.—**Leaves** no other than a rusty coloured sheath or two embracing the base of each culm.—**Umbel** terminal, generally compound, though sometimes decompound.—**Involucre** several small, chaffy scales.—**Umbellets** long, slender, peduncled, bowing, composed of from eight to twelve linear, sessile, rust-coloured spikes.—**Involucels** like the involucres.—**Seed** sub-linear, three-sided, smooth, light brown.

5. *C. semi-nudus*. R.

**Culms** from two to six feet high, round, tending to be angular at the

**Beng.** Gola-methee.

**Telili.** Godoo tunga kooda.

This species is with the former a native of wet places.

**Root** perennial, creeping, fibrous.—*Culms* erect, from two to six feet high, round, smooth, naked, except at the base, which is embraced by three or four sheaths.—*Leaves* no other than the sheaths just mentioned.—*Umbels* generally decompound, erect.—*Involucre* three-leaved, equal, shorter than the umbel, sides and keel hispid. —*Umbellets* and partial *umbellets* peduncled, composed of linear-lanceolate, yellowish spikes. *Seed* three-sided, smooth.

**Obs.** Cattle are not fond of it, and it is only eaten occasionally by buffaloes.

**Sect. 2d, with a three-sided Culm.**


*Culm* from six to twelve inches high. *Head* terminal, roundish, sessile. *Involucre* of four or five long leaves, some of them longer than the culm.


**Telili.** Tagada tunga.

**Beng.** Chhota-gothoobi.

This species is much like *Kyllingia monocephala*, and is with it, a native of shady, moist pasture lands.

**Root,** a somewhat tuberous head, with many rust-coloured capillary fibres.—*Culms* erect, from six to twelve inches high, three-sided, smooth, the lower third or fourth part involved in the sheaths of the leaves.—*Leaves* sheathing, radical, embracing the base of the culm, very smooth, many of them longer than the culm.—*Head* globular, size of a large cherry, composed of numerous, lanceolate, sessile, white-pointed spikes.—*Involucre* four or five-leaved, un-
equal, some of them longer than the culm.—Seed three-sided, pointed, dark rust-coloured, smooth.

Obs. Cattle eat it.

7. C. monocephalus. R.

Culms from twelve to eighteen inches high, straight; Head terminal, ovate, compound; Involucre, from three to four-leaved; spikelets ovate. Style undivided. Seed three-sided, elevated on a spongy receptacle.

Beng. Gothoobi.

A native of low wet places over Bengal.

Root fibrous.—Culms straight, three-sided, smooth, general height from twelve to eighteen inches.—Leaves three, four, or five, investing with their sheaths, the lower part of the culms straight and smooth, length various, the longest about as long as the culm. Involucre, leaves several, diverging, of very unequal lengths, the longest as long as the culm, and the shortest about an inch.—Heads terminal, composed of a larger one in the centre, and four or five smaller ones in the circumference, all rigidly sessile.—Spikelets ovate, incurved, ten or twelve-scaled, each spikelet embraced on the underside by an ovate-cordate, smooth, dark brown, bracte.—Scales boat-shaped, pointed; keel greenish; sides deep, polished, chestnut colour.

—Stamens three. Style simple and undivided to the extremity.—Seed three-sided, elevated on a spongy whitish receptacle.

Obs. The undivided style and spongy receptacle of the seed distinguish this from all the other species I have yet found in India.

8. C. diffusus. R.

Diffuse, from two to four inches high. Heads terminal, glomerate, sessile; spikelets incurved. Scales daggered. Involucre many-leaved.


A native of moist pasture ground.

Root fibrous.—Culms three-sided, several, diffuse, from two to four inches long, smooth, towards the base leafy, and of a dark
chesnut colour.—Leaves sheathing, two or three embracing the base of each culm and about the same length. Head terminal, sessile, composed generally of one large capitulum in the centre, and four or five in the circumference; these are again composed of small, incurved, from eight to twelve-flowered spikes. Involucre many-leaved; the exterior three larger, being as long as the culm or longer.—Stigmas two, revolute. Seed three-sided.


*Culms* erect, from four to six inches high, leaves as long as the culms. Head terminal, glomerate, round. Involucre many-leaved. Scales with acute, recurved points.


A native of Coromandel.


*Culm* from three to six inches high, with sharp angles. Heads generally single, and sessile; scales with a long recurved point. Involucre three-leaved.

*Scirpus intricatus*. Mant. 182.

A native of moist pasture ground. It is in general from three to six inches high, though sometimes I have met with luxuriant specimens ten inches in height.

Root fibrous.—*Culms* erect, from three to six inches high, three-sided, two-thirds naked, smooth; angles sharp.—Leaves sheathing, erect, short, smooth; sheaths purple.—Head generally simple, and sessile, though sometimes, there is a second, which is peduncled; and in the larger plant above mentioned there are two or three sessile, and two or three peduncled, they are composed of small, sessile, ragged, from six to eight-flowered spikelets.—Involucre three or four-leaved, broad, unequal, the largest being about the length of the culm.—Calyx, scales tapering to a long, fine recurved point, which gives the spikes the ragged appearance they have.—Seed three-sided.
11. C. pectinatus. R.


Culms erect, straight, three-sided, leafy toward the base; from eight to twelve inches high.—Umbel terminal, simple, sessile, globular, composed of about twelve sessile, linear, diverging spikes.—Involucre from two to three-leaved, the longest leaflet about as long as the umbel.—Scales with long, acute, recurved apices.—Stamina three.—Style with a three-cleft apex.—Seed obovate, three-sided, smooth, dark ash-coloured.


Root creeping, fibrous.—Culms erect, from five to ten inches high, mostly naked, three-sided, smooth.—Leaves surrounding the base of the culm, sheathing, those that are nearest the root are little more than sheaths, those within are nearly as long as the culm, and waved. —Umbel terminal, simple, sessile, about an inch each way, composed of linear, many flowered, sessile spikes.—Involucre two-leaved, length of the spikes.—Seed three-sided.


Culms from two to four inches high, obscurely three-cornered; base bulbiferous. Umbels simple. Involucres and spikelets alternate. Scales acute. Seed roundish, three-sided.

Puri-gaddi is the Telinga name of the plant, and Puri-dumpa that of the roots.

A native of dry sandy pasture ground near the sea.

Root bulbiferous, stoloniferous. When the small oval bulbs are taken up entire they appear covered and entirely surrounded with two,
three, or four black and brown, longitudinally striated sheaths, which burst and fall off in succession. There are many capillary fibres issuing from the base of the culm. The stolones generally push their way up through the sheaths, and out at their mouths, run horizontally, producing from their extremities the new plant. On removing the sheath a small truncated, pointed ball is observed, resting in the upper side of the base of the culm, which (onion-like) is formed by the united sheaths of the leaves. This little bulb, which is slightly connected to the base of the culm on which it rests, is the eatable part; it is composed of two or three coats, and about the size of a pea; when its proper exterior brown membranous sheath is removed, it is very white, inviting to the eye, and pleasant to the taste.—Culm erect, two-thirds naked, between round, and three-sided, two, three, or four inches long.—Leaves a few, filiform on the upper side, grooved, four or five inches long, below the surface of the earth, their sheaths form the little firm culm above-mentioned; from its head the capillary roots and stolones issue.—Umbel simple, composed of from six to ten sessile, linear, diverging spikes.—Involucre generally three-leaved, unequal, the largest twice as long as the spikes; they issue not as usual from the same point, but alternately one above another.—Scales oblong, striated.—Stigma two-cleft.—Seed roundish, three-sided, grey.

Obs. The little bulbs are gently roasted or boiled, then rubbed between the hands or the folds of a cloth, to take off the sheaths, which is all the preparation the natives give them, to make them a pleasant wholesome part of their diet, which they have frequent resource to, particularly in times of scarcity. Some dry them in the sun, grind them into meal, and make bread of them, while others stew them in their curries and other dishes; they are palatable, tasting like a roasted potatoe. I wish they could be enlarged by culture, when they might soon prove a valuable acquisition, for on account of their smallness, it is troublesome and tedious gathering and cleaning any quantity of them.
Gramen cyperoides, &c. Pluck. mant. 97. tab. 415. fig. 6. is not unlike this plant.

A native of moist pasture land, of ditches, &c.

Root fibrous.—Culms erect, about a foot high, simple, three-sided, smooth, lower part involved in the sheaths of the leaves.—Leaves shorter than the culm, smooth.—Umbel terminal, compound, crowded, sessile, about an inch each way. Umbellets sub-sessile, crowded, composed of numerous, sessile, linear-lanceolate spikes.—Involucre from four to six-leaved, unequal, the longest being from six to eight inches long, and the shortest only one.—Stigma two-cleft.—Seed compressed, oblong-obcordate.

15. C. punctatus. R.
Culms from two to six inches high, shorter than the leaves. Umbel compound. Involucres longer than the leaves. Seeds oval, compressed, dotted.

Gramen cyperoides elegans, &c. Pluck. t. 192. f. 3.
A small elegant species; a native of moist pasture ground.

Root fibrous.—Culms erect, from two to six inches high, half-naked, three-sided, smooth.—Leaves sheathing, the lower ones little more than the sheaths, the superior ones longer than the culm.—Umbel terminal, compound, about an inch each way. Umbellets some sessile, some peduncled, composed of linear, many-flowered spikes.—Involucre from three to four-leaved, unequal, longer than the culm; scales daggered.—Seed compressed, obovate, beautifully marked with white dots, on a dark-coloured ground, hence the specific name.

Obs. In Königs catalogue he called this C. pygmeus, but Retzius says the culm of that species is round, whereas in this plant it is three-sided.

Culm filiform, from one to two feet high, umbel of one sessile, and two peduncled umbellets. Involucre three-leaved, filiform, flowers diandrous. Spike two-cleft. Seed obovate, without angles.

A native of moist pasture ground.

Root fibrous.—Culms erect, from twelve to eighteen inches high, three-sided, filiform, three-fourths or more naked, smooth.—Leaves sheathing, generally two to each culm; the lower one short, the superior one as long as the culm, very slender and acute.—Umbel small, compound, generally composed of one sessile, and two peduncled umbellets, these are again composed of linear, many-flowered spikes.—Involucre three-leaved, filiform, the largest is longer than the culm; the shortest about an inch long, and the other between the two.—Scales membranaceous, obtuse.—Stamens two.—Style two-cleft.—Seed obovate, compressed, brown, pretty smooth, half hid in the rachis.


Culms from six to ten inches high, shorter than the leaves, angles blunt. Umbel simple or compound. Involucre three-leaved. Scales daggered. Seed obcordate, triangular.

Gramen cyperoides rarius, &c. Pluck. t. 192. f. 1.

Beng. Chooncha.

Telisi. Saltunga.

Delights in a moist soil.

Root fibrous.—Culms erect, from six to ten inches high, two-thirds naked, three-sided, smooth; angles blunt.—Leaves numerous sheathing, many of them longer than the culms, smooth and glossy.—Umbel terminal, simple, or compound; when compound the umbellets are peduncled; from one to three; and consist of from three to six, green, linear, sessile, many-flowered spikes.—Involucre three-leaved, smooth, the largest of them is nearly as long as the culm.—Scales acute.—Seed turbinate, three-sided, smooth, dark-brown colour.

Obs. The upper flowers of the spike are incomplete.

Culms from two to six inches high, length of the leaves. Umbels generally compound; length of the involucre. Scales with long recurved points, monandrous. Seed rugose, obtusely triangular.

A most beautiful delicate, small species; delights in moist, sandy, pasture land.

Root fibrous.—Culms erect, from two to six inches high, naked, three-sided, smooth.—Leaves sheathing, filiform, scarcely so long as the culm.—Umbel terminal, one or one and half inches, simple, or compound, but in general composed of from one to five small peduncled umbellets; and one or two sessile ones.—Spikelets linear, many-flowered.—Scales three-keeled, with a recurved point, green keel and chestnut coloured sides.—Stamen single, (at least I have not found more.)—Style two-cleft.—Seed obtusely three-sided, oblong, rugose.


Culm from nine to eighteen inches high, angles sharp. Umbels compound, umbellets globular, spikelets crowded. Involucre from two to three-leaved. Scales imbricated. Seed obovate, three-sided.


*Beng.* Behoaa.

Grows equally in either a dry, or wet sandy soil.

Root fibrous.—Culms two-thirds naked, erect, from nine to eighteen inches high, three-sided, smooth, angles sharp.—Leaves sheathing, as long as the culm, keeled, smooth.—Umbel compound, small, being only about an inch and a half each way. Umbellets from two to four, sub-sessile, and from two to four longer or shorter peduncled, globular, composed of innumerable, very small, oval spikes.—Involucre from two to three-leaved, very unequal, the longer being half as long as the culm; and the third (when present) less than an inch.—Scales imbricated, margins membranaceous.—Seed three-sided.

Culms about six inches high, angles blunt. Umbels compound; umbellets sub-globular. Spikelets, Scales daggered.

Delights in a moist soil.

Root fibrous.—Culms erect, six inches high, half naked, obsolescently three-sided, smooth, angles rounded.—Leaves sheathing, shorter than the culm.—Umbel compound, umbellets from three to six, shorter or longer peduncled, globular, composed of ten or twelve linear, many-flowered spikes.—Involucre three or four-leaved, unequal, the largest as long as the culm. Scales acute.

21. t. 5. f. 1.

Culms three-sided, from six to twelve inches long. Leaves sub-radical, umbel compound, involucre three or four-leaved. Scales obtuse, flowers diandrous. Style two-cleft. Seed round and smooth.

A native of low pasture land all over Bengal, &c. where it is found growing in tufts during the rainy season. Like most of this natural order.

Obs. Cattle rarely eat it, except when pressed by hunger.

22. C. incurvatus. R.


A native of the moist banks of the Ganges. Flowers during the cool season.

Roots creeping, stoloniferous, with dark-coloured fibres.—Leaves ensiform, polished, shorter than the culms.—Culms slightly incurved, leafy round the base, triangular, with sharp angles, concave sides, and from one to two feet high.—Involucre two; or three-leaved, incurved, one of them two or three times longer than the umbel—Umbel compound, spikes needle-shaped, incurved.—Scales
oblong, obtuse, with a green rib.—Stamina three.—Germ oblong.
Stigma three-cleft.—Seed linear, oblong, three-sided, smooth, brown.


Culms obtusely three-sided, from six to eight inches high: Umbel compound, length of the involucre. Spikelet linear, incurved, flowers diandrous. Seed obovate, compressed, without angles.

A native of moist pasture ground.

Root somewhat tuberous, with filiform fibres.—Culms erect, from six to eight inches high, naked, three-sided, smooth.—Leaves radical, shorter than the culm.—Umbel compound. Umbellets from four to eight, shorter and longer peduncled, composed of large, linear, many-flowered, chestnut-coloured, curved spikes.—Involucre three-leaved, longer than the umbel.—Stamina two.—Style two-cleft.—Seed obcordate, compressed, smooth.


Root tuberous. Culms from one to two feet high, obtusely three-sided. Umbel compound, spikelets alternate; involucre three-leaved, length of the umbel. Seed angled.

Sans. मुखा, Moosta, मुखक, Moostuka.
Beng. Mootha.
Teling. Shaka-tunga.

This is by far the most common species we have in India; it delights in a moist sandy soil, though it grows abundantly everywhere.

Root tuberous, with filiform fibres, tubers about the size of filberts or acorns, of irregular form, outwardly a dark brownish rust colour; inwardly firm, tender, white, and very fragrant.—Culms erect, from one to two feet high, naked, three-sided, smooth, with the angles rounded.—Leaves radical, or only investing the base of the culm, sheathing, shorter than the culm, smooth, glossy.—Umbels terminal, compound
in very luxuriant plants, sometimes decompound, from two to three inches each way. *Umbellets* from two to eight, all having peduncles of from one-fourth of an inch to two inches long.—*Involucre* generally three-leaved, unequal, smooth, the largest is only a little longer than the umbel.—*Spike* linear, sub-sessile.—*Seed* obsolesly three-sided, brown, a little rugose.

*Obs.* Cattle eat it. Hogs are remarkably fond of the roots. Dried and powdered they are used as a perfume at the weddings of the natives. It is by far the most troublesome weed we have in our gardens, there is no extirpating it as every little bit of the root grows readily.

25. *C. pertenuis*. R.


*Beng.* Nagur-Mootha.

This most delicate, tall, slender species, I have only found in low wet places, in the vicinity of Calcutta.

*Root* somewhat tuberous, with many dark-coloured villous fibres.

—*Culms* naked, except at the base, straight, generally three or four feet high, slender, tapering much, toward the base nearly round, becoming more and more three-sided, till they are acutely so at the umbel.—*Leaves* one or two at the base of each culm, slender, about one third the length of the culm.—*Umbel* compound and decompound, very small for the height of the plant, generally composed of one sub-sessile umbellet, and three or four, on naked, smooth, filiform peduncles, of different length, and these again composed of from four to twelve, most slender, long, filiform, many-flowered spikelets.—*Involucre* three-leaved, the longest about the length of the umbel, the other two shorter, all slender, and tapering to most acute points.—*Scales* membranaceous.—*Stamens* three.—*Style* three-cleft.

—*Seed* three-sided.

*Obs.* Its naked delicate form, small and compound umbel, short
slender leaves, and scanty involucre, immediately distinguish it from all the other Indian species I have yet met with.


This seems to me to be only a luxuriant variety, if so much, of *C. rotundus*. It grows in the same places, the roots are tuberous, &c. in short, I can scarcely perceive any difference.


Culm from two to four feet high, sharp angled. Involucre three or four-leaved, much longer than the decompound umbel. Spikelets alternate. *Scales* obtuse; *seeds* obcordate, three-sided.

*Telins*: Gelleba-tunga.

Grows in standing sweet water.

Root creeping, with ramous fibres. — *Culm* erect, from four to six feet high, naked, three-sided, smooth; *angles* sharp. — *Leaves* mostly radical, shorter than the culm, deeply channelled, smooth. — *Umbel* terminal, decompound, from four to eight inches each way. — All the umbellets peduncled, oblong, spreading, composed of alternate, sessile, lanceolate, from twenty to thirty-flowered spikes. — *Involucre* three or four-leaved, very unequal, the largest being from one to two feet long, and the shortest about one or two inches. — *Scales* obtuse, apex often emarginate and membranaceous. — *Seeds* three-sided, obovate.

28. *C. strictus*. R.

Culms about twelve inches high, stiff and straight, shorter than the leaves; *angles* sharp. *Umbel* decompound, straight, flowers diandrous. *See* s obovate, compressed, without angles.

Delights in a moist uncultivated soil.
Root fibrous. — **Culm** straight, rigid, about a foot high, obtusely three-angled, three-fourths naked, smooth. — **Leaves** mostly radical, sheathing, many of them longer than the culm, erect, rigid, much keeled, smooth. — **Umbel** erect, linear, thin, sometimes decompound, though in general only compound. **Umbellae**, one or two sessile; and from three to eight with peduncles of unequal lengths; the largest peduncles are compound. — **Involucere** from three to five-leaved, very unequal; the largest nearly as long as the culm, the smallest not more than an inch long. — **Spikes** sessile, lanceolate in small plants, in large ones linear. — **Stamens** two. — **Style** two-cleft. — **Seed** compressed, obcordate.


**Culms** from six to eight inches high, generally shorter than the leaves. **Umbel** decompound, longer than the involucre; **umbellae** globular, **spikelets** crowded; **flowers** monandrous. **Seeds** obcordate, three-sided.

This is a small delicate species, a native of moist places on the coast of Coromandel.

- **Root** fibrous, dark purple. — **Culm** erect, from six to eight inches long, naked, three-sided, smooth. — **Leaves** sheathing, very short, embracing the base of the culm. — **Umbel** compound, or decompound, from one to two inches high, **umbellae** one or two sessile, and from two to eight on peduncles of various lengths, the highest sometimes bears a small partial umbellet. **Involucere** two-leaved, shorter than the umbel. **Spikes** lanceolate, chestnut-coloured, **flowers** monandrous. **Seeds** white, short, three-sided, a little rough.


**Culms** from one to two feet high, **angles** sharp, **umbels** decompound, shorter than the involucres; **spikelets** alternate; **flowers** rather distinct, **scales** imbricated. **Seeds** obovate, angular.
Ira. Rheede. mal. 12. p. 103. t. 56. does not very well agree with my plant.

Gramen cyperoides, &c. Pluk. Almag. t. 191. f. 7. is much more like this plant than the above-quoted plant of Van Rheede.


Is a native of moist, cultivated lands.

Root fibrous.—Culms erect, from one to two feet high, four-fifths naked, three-sided, sharp-angled.—Leaves sheathing, nearly the length of the culm, keeled, smooth.—Umbel decompound, from two to four inches high, umbellets from four to eight, one or two sessile, the rest unequally peduncled; partial umbellets lanceolate, racemelike, being composed of alternate, linear, from six to twelve-flowered spikes.—Involucre from three to four-leaved, the largest two or three times as long as the umbel.—Scales imbricated, with membranaceous sides.—Style two-cleft.—Seeds three-sided, length of the scales.

31. C. inundatus. R.

Culms from two to four feet high, exactly triangular. Leaves as long as the culms. Involucre from four to five-leaved, one very long. Umbel decompound. Spikelets lanceolate. Stamens two. Style two-cleft. Seed obcordate, a little compressed.

Beng. and Hind. Patee.

Found in great abundance on the low banks of the Ganges and rivulets near Calcutta; where the tide rises high over it, it thrives most luxuriantly and helps much to bind, and protect the banks from the rapidity of the water.

Root jointed, creeping, stoloniferous, perennial.—Culms erect, from three to four feet high, exactly three-sided, about as thick as the little finger.—Leaves numerous, radical, or surrounding the base of the culms, smooth, deeply channelled on the inside, and keeled on the back.—Universal involucre composed of four or five leaves of very unequal lengths, the largest being two feet or more long, and the shortest as many inches; partial involucre subulate.—Umbel de-
compound, erect, about a span long.—Spikelets sessile, diverging, lanceolate, rigid, obtuse.—Style two-cleft.—Seeds obcordate, a little compressed, smooth.


Culms from three to four feet high, naked. Leaves scarcely any. Umbels decompound; involucre three or four-leaved; involucels setaceous. Spikelets filiform. Seeds oblong, compressed.

Beng. Chumati Patee.

Is common on the banks of the Ganges, and serves, with C. inundatus, the same useful purposes, though in an inferior degree.

Root jointed, creeping, stoloniferous, perennial.—Culms erect, naked, smooth, three-sided towards the apex, sides concave, from two to four feet high, and about as thick as a goose quill.—Leaves one or two, sword-shaped, very short, involving with their sheaths, the base of the culm. Universal involucre three or four-leaved, very smooth, the longest twice the length of the umbel; partial minute, setaceous.—Umbel decompound, composed of one sessile umbellet in the centre, and from four to eight spreading, compound ones in the circumference, supported on fine, compressed peduncles of unequal lengths.—Spikelets filiform, from ten to twenty-flowered.—Scales obtuse.—Stamens three.—Seed oblong, compressed.

Obs. Its naked, exactly three-sided culms, and scarcity of short leaves readily distinguish it from all the other species I have yet described. C. tegetum has the angles rounded, and no leaves.

33. C. procerus. Rottb. gram. 29. t. 5. f. 3.

Culms from three to six feet high, angles sharp. Umbel decompound. Involucres none; spikelets alternate, linear, flowers diandrous. Seeds obcordate, compressed, without angles.


Is a native of moist vallies, rivulets, &c. amongst the mountains.
Obs. In Bengal this plant, or one exceedingly like it, (for it differs from it only in having three stamens, the culm, leaves, umbels, scales, and seeds being the same) grows on the banks of the Ganges and so low as frequently to be entirely under water during the high tides; yet it thrives and helps to bind the banks of the rivers where it grows and is one of those plants that prevent their giving way so much to the rapidity of the stream as they otherwise would do.

34. C. spinulosus. R.

Culms from three to five feet high, rigid. Umbel scarcely decomposed; spikes long, and short-peduncled, globular, spikelets rigid, from three to four-flowered; involucre and involucels many-leaved.

Teling. Kurra-tunga.

A large strong coarse species, grows in ditches and water courses.

Root fibrous. — Culms erect, from two to five feet high, very rigid, obsoletely three-sided, smooth, four-fifths naked. — Leaves sheathing, length of the culm, rigid, striated, margins hispid. — Umbel terminal, decomposed, from six to eight inches each way. Umbellets with peduncles of various lengths, composed of peduncled, globular heads, and these again of numerous small, sessile, linear, lanceolate, rigid, spinulous-pointed, from three to four-flowered spikelets. — Involucre from four to six-leaved, unequal, the largest being from two to three feet long, and the shortest about the same number of inches, margins hispid, like those of the leaves. Involute from three to six-leaved, length of the umbellets. — Scales linear.

Obs. I have not seen the pistil nor seed. It is a remarkably coarse species; no animal eats it.


Culms from six to twenty feet long, sharp-angled. Umbel scarcely decomposed. Spikes all sub-sessile, linear, erect. Spikelets most numerous, alternate, from six to eighteen-flowered, anthers ending in a thread. Seeds oblong, three-sided.

Beng. Gol-malunga.

Teling. Rakisha.
This is by far the largest species on the coast of Coromandel. It grows in sweet standing water.

Root fibrous.—Culms erect, from six to twenty feet high, and thick in proportion, naked, except near the base, three-sided, angles sharp, rigid and scabrous, so as to cut the hand readily, other parts pretty smooth.—Leaves sheathing, in small plants, as long as the culm, about an inch in diameter at the broadest part, triangularly concave, with the keel and margins sharply serrate.—Umbel terminal, decompound, erect, small for the size of the plant, being only about a foot high in middle-sized plants. Umbellets one, or two, sub-sessile and from eight to ten peduncled, composed of erect, linear, short pedicelled, compound spikes, of simple, sessile, lanceolate, from six to ten-flowered spikelets which surround every part of the compound spikes.—Involucre three-teaved, with some smaller within these three, margins and keel as in the leaves.—Involucels small, one-third the length of the umbellets.—Scales membrane-bordered, acute.—Filaments three, membranaceous. Anthers ending in a thread.—Seeds three-sided.


Culms from four to six feet, blunt-angled. Umbel decompound; spikes all sub-sessile, linear, spreading; spikelets numerous, alternate, from three to four-flowered. Seed elliptic, three-sided.

Teling. Pedda shaka.

A large species, growing in standing fresh water.

Root fibrous.—Culms erect, from four to six feet high, pretty smooth, naked, except at the base, absolutely three-sided, angles rounded, sides hollowed.—Leaves mostly radical, sheathing, the longest of them about as long as the culm.—Umbel decompound, spreading, about six inches each way. Umbellets, two or three sub-sessile, and from five to ten on pretty long peduncles of unequal lengths; they are composed of small partial, short-pedicelled umbellets of three to six linear compound spikes, composed of numerous, small, sessile, from three to four-flowered, simple spikelets. Involucel from three
to four-leaved, of the length of the umbels.—*Involucre* from three
to six-leaved, unequal; the longest from two to three feet, the short-
est as many inches.—*Seeds* three-sided, smooth.

37. *C. digitatus*. R.

*Culms* from one to six feet high. *Umbel* decompound, fastigiate.
*Involucre* and *involucels* many-leaved; *spikes* digitate, linear, *spike-
lets* diverging, many-flowered, *scales* with long recurved points.

A middle sized species; grows in marshy places, ditches, &c.

*Root*, a somewhat tuberous head with many fibres.—*Culm* erect,
from one to six feet high, mostly naked, smooth, three-sided.—
*Leaves* sheathing as in the other species, their margins slightly armed
with minute prickles.—*Umbel* compound, or decompound, from two
to four inches high.—*Umbellets* sessile, and peduncled, composed of
erect, compound spikes, of small diverging, linear, acute, from four
to six-flowered spikelets;—*Involucre* many-leaved, unequal, most of
them longer by far than the umbel, margins armed like the leaves.
—*Involucel* many-leaved, length of the umbellets.—*Seed* three-sided,
oblong, with grooved sides.

*Obs*. In Bengal I have met with this species six feet high, with
a decompound umbel, a foot or more every way, and with from
twelve to twenty-four flowers to the spikelets, the culm between
round and three-sided, and in the largest almost entirely round.

38. *C. verticillatus*. R.

*Culms* four feet high, three-cornered, leafy at the base. *Umbel* de-
compound; *involucre* many-leaved, *involucels* filiform, spikes of the
umbellets verticelled; *spikelets* lanceolate. *Scales* with a blunt
point. *Seed* linear, oblong, three-sided.

Beng. Burethi.

Found during the rains, in wet low places, in the vicinity of Cal-
cutta.

*Root* perennial, somewhat tuberous, with numerous dark-co-
loured, thick, spongy fibres.—*Culms* naked, except just at the base,
from two to six feet high, and about as thick as a stout quill, absolutely three-sided, smooth, shining, deep green.—Leaves, one, two, or three at the base of each culm, and about the same length, keeled, somewhat spongy, very deep green, whitish underneath, margins armed with minute, short, sharp, aciculae, pointing forwards.

—Umbel, compound and decompound. Umbellets many on smooth somewhat angular peduncles of various lengths, composed of from five to eight cylindrical, spreading spikes in a vertical, with an erect, sessile, simple or pedicelled compound one in the centre.—Spikelets most numerous, imbricated, lanceolate, from eight to twelve-flowered.—Involucre many-leaved, some of them nearly as long as the culm, and like the radical leaves keeled and armed on the margins. —Involucels scarcely so long as their respective umbellets.—Scales of the spikelets boat-shaped, with membranaceous margins, and sharp thickened points.—Stamens three.—Seed oblong, obsolescently three-sided.

Obs. This species comes near Rottboell's Cyperus alopecuroides.


Culms about three feet high, three-cornered. Umbel decompound, with the involucre and involucels many-leaved; spikelets linear, alternate; flowers distant, with obtuse scales. Seeds oblong, three-sided.

C. elatus. Rotth. gram. 37. t. 10.

Beng. Panee-mulunga.

Is a native of wet places around Samulcota.

Root fibrous.—Culms erect, two feet high, four-fifths or more naked, three-sided, smooth; angles blunt.—Leaves from two to four, embracing the base of the culm, and nearly as long, sheathing, deeply grooved above, and keeled below, smooth.—Umbel decompound, from four to six inches high. Umbellets some sessile, and from four to eight, with erect peduncles of unequal lengths. Partial umbellets oblong, raceme-like, being composed of alternate, needle-like, diverging spikes.—Involucre from three to six-leaved, unequal; the
largest about a foot, or fifteen inches long, all are smooth.—Involucels three-leaved, length of the umbellets.—Flowers remote, scales obtuse.—Seed three-sided.

40. C. tegetum. R.
Leafless, culms from three to six feet high, angles rounded, umbel decompound. Involucre as long, and longer than the umbel; involucels chaffy. Spikelets linear-lanced, alternate. Seed clavate, three-sided.

Hind. and Beng. Madoor-kati.
Is common in ditches, borders of lakes, &c. in the vicinity of Calcutta during the rains.

Root creeping under ground, perennial.—Culms naked, generally from three to six feet high, obsoletely three-sided, smooth.—Leaves no other than two or three sheaths embracing the base of the culms.—Umbel decompound; umbellets sub-sessile, and on peduncles of various lengths, sub-erect.—Involucre about four-leaved, one or two of them longer than the umbel.—Involucels minute.—Spikelets alternate, linear-lanceolate, many-flowered.—Seeds elliptically triangular.

Obs. Those elegant, useful, durable, large mats so common on the floors of rooms in and about Calcutta, are made of the culm of this plant. When green they are split into three or four pieces, which in drying contract so much as to bring the margins in contact, or to overlap each other; in this state they are wove.


Culms from four to five feet high. Umbel decompound; involucre three-leaved, spikes nodding, spikelets alternate, many-flowered.


This is also a large species, and a native of the same places.
Root fibrous.—Culms erect, from four to five feet high, except
at the bases three-sided, smooth.—Leaves as in the other species.—Umbel decompound, drooping, from six to twelve inches high. Umbellets one or two sub-sessile, and from four to eight with peduncles of various lengths. Partial umbellets peduncled and composed of beautiful, linear, bowing, compound racemes of lanceolate, many-flowered, chesnut-coloured spikelets.—Involucre three-leaved, une-qual. Involucels, small, frequently only chaffy scales.—Seed three-sided, smooth.

Obs. I have seen small plants with the umbellets small, dense and globular.

42. C. nudus. R.

Leafless. Culms from four to six feet high, three-cornered. Umbels super-decompound, naked. Involucres, and involucels chaffy; spikelets subulate, alternate. Seed oblong, compressed without angles.

Beng. Goola-Methhi.

A native of low wet places over Bengal. Flowers during the rains.

Root perennial, somewhat tuberous.—Leaves no other than a short sheath or two, which envelope the base of the culm, the uppermost one sometimes ends in a short ensiform leaflet.—Culm about five feet high, naked, smooth, bright-green, three-cornered, with the angles rounded. Involucres three or four, sub lanceolate, erect, about one-fourth the length of the umbel.—Umbels decompound and super-decompound, with the sub-divisions, and slender, smooth, compressed peduncles of various length.—Spikelets alternate, subulate, of a bright brown colour, each bearing from twenty to thirty flowers.—Stamens three.—Style three-cleft.—Seed oblong, compressed, without angles.

Obs. This species is very like C. tegetum, and about the same size, though I am informed, never used for mats, as that is. To know it from C. tegetum attend to the involucre, which in this is only about one-fourth the length of the umbel, but in that as long or longer.

Culms from four to sixteen inches high. Umbel super-decompound, involucrse two-leaved. Seeds globular, white.

Gramen cyperoides madasarptatum, &c. Pluck. altm. 192. f. 2.

Teling. Poo-cusalic.

An elegant small species, a native of cultivated moist places.

Root fibrous.— Culms erect, from four to twelve inches high, three-fourths naked, absolutely three-sided, smooth.— Leaves sheathing, often as long as the culm, very slender.— Umbel super-decompound, in small plants as long as the culm. Umbellets one or two sessile, and from four to six peduncled. Partial umbellets of the first and second degrees pedicelled.— Involucrse generally two-leaved, unequal, the longest rather longer than the culm; involucr a few chaffy scales only.—Stamens two or three.— Seed sub-globular, pure white, smooth.

SCIRPUS.

Glumes chaffy, imbricated on all sides. Corol none. Seed one.

Sect. 1st. Without leaves.

1. S. tuberosus. R.


Pi-tsi, Maa-tai, Pu-tsai, or Pe-tsi, or water chesnut of the Chinese.

It is mentioned by Abbe Grosier under the first name, and under the other appellations was transmitted from Canton, by Mr. Duncan, at the desire of the Governor General, for the Company's Botanic Garden, where it blossoms about the close of the rains, in September.

Root fibrous, with stoloniferous shoots and round turnip-shaped tubers.— Culms erect, naked, slightly twisted to the right, inwardly intercepted by slender membranes, distant a line, or a line and a half from each other, every eighth or tenth of these partitions, is of a
firmer texture than the others and visible on the outside, even when the plant is growing.—Leaves none except a slender short sheath or two at the base of each culm.—Spike terminal, solitary, cylindric, naked. —Scales oblong, membranaceous margined.—Stamens three.—Style two or three-cleft, at the base swelled out into an ovate-cordate, compressed shape.—Seed obcordate, surrounded with glochidiate bristles.

Obs. For the economical uses of the tuberous roots of this plant, I beg leave to refer to Abbe Grosier, and other historians who have had opportunities of observing in what manner they are employed by the Chinese, and to the following extract from Mr. Duncan’s letter which accompanied the plants.

"The Maa-tai, Pec-tai or Pi-tse of Abbe Grosier, the water-chestnut, grows in ponds, which are manured for its reception about the end of March. A pond being drained of its water, small pits are dug in its bottom, these are filled with human manure, and exposed to the sun for a fortnight; their contents are then intimately blended with the slimy bottom of the pond, and the slips or roots of the plant deposited therein; the water is now returned to the pond, and the new crop of tubers come to perfection by the beginning of September.

"This nut is in high estimation among all ranks of Chinese, not only as a pot root, but also a medicine. It is eat either boiled or raw. I will not vouch for the truth of the singular virtues ascribed to the Maa-tai, but just relate one of the most plausible. "The children here often play with cash in their mouths, which sometimes slip down into the stomach, and bring on alarming symptoms. The nut is immediately given in quantities, either raw or boiled, and they say it never fails to give relief being considered as specific which has the effect of decomposing the metal."


Culms, columnar, from two to four feet high, intercepted. Spike
terminal, naked, sub-cylindric; scales oblong, obtuse. Seeds beset with bristles.

A leafless, rush-like species; it grows in shallow standing sweet water.

Root stoloniferous, with thick, spongy, and capillary fibres.—Culm erect, round, smooth, naked, except the lower part, which is covered with a membranaceous sheath or two; inwardly intercepted with transverse, rigid septums, at every inch and quarter, besides numberless, irregular, smaller ones between.—Spike terminal, cylindric, two inches long, naked.—Scales obovate, smooth, a little keeled, margins membranaceous.—Stamens three, with bristles intermixed round the base of the germ.

3. S. tumidus, R.

Culms from two to three feet high, round, regularly intercepted. Spike terminal, cylindric. Scales broad-lanceolate. Seeds beset with simple bristles.

This species is very much like the last described, and a native of similar places, but much rarer.

Root, the same.—Culm erect, three feet high, round, smooth, naked, seemingly swelled, intercepted with a conspicuous transverse partition every sixth of an inch.—Leaves none, but sheathes as in the former.—Spike single, terminal, erect, cylindric, an inch long.—Scales broad-lanceolate, acute, a little keeled, otherwise smooth.—Stamens, bristles, &c. as in the other species.


Culms from two to three feet high, three-sided. Spike terminal, naked, cylindric, obtuse. Scales lapped. Seeds beset with bristles.

This is a native of the same places with the last described.

Root stoloniferous, &c. as in S. plantaginus.—Culm erect, from two to three feet high, naked, three-sided, angles sharp, smooth, not articulated, nor interrupted inwardly.—Leaves none, but a sheath or two embracing the base of the culm.—Spike as in S. plantagi-
mus, but the flowers are more numerous.—Scales imbricated seemingly without order, smooth, lapped, margins broad, and membranaceous.—Stamens, bristles, &c. as in the two preceding species.

5. S. acutangulus. R.
   Culms from two to three feet high, triangular. Spike terminal, tapering, acute; scales somewhat acute; seeds bristly.
   Grows in similar places to those which produce the two last species.
   Root as in the last species.—Culm three sided, from two to three feet high, naked, smooth; angles very sharp, even almost winged.—Leaves no other than a sheath or two involving the base of each culm.—Spike terminal, &c. as in the two former.—Scales disposed spirally, oval, somewhat acute, striated, margins membranaceous.—Filaments membranaceous. Bristles, &c. as in the former two.
   Obs. It differs from S. spiralis in having the angles of the culm sharp. In having the flowers few and disposed spirally. In having the scales striated, oblong and somewhat pointed.

6. S. medius. R.
   Culms from one to two feet high, three-cornered. Spike terminal, sub-cylindric; scales obtuse. Seeds bristly.
   A species resembling the last, and growing in similar places.
   Root as in the species already mentioned.—Culm erect, one or two feet high, smooth, three-sided, angles rounded.—Spike as in the former.—Scales smooth, obovate.—Stamens, bristles and pistil as in the last four species.

7. S. incurvatus. R.
   Culms in tufts, columnar, from six to nine inches high, incurved, leafless, intercepted. Spikes in a globular, naked verticil near the base of the culm. Stigma trifid. Seed three-sided.
   A native of moist places near Calcutta. Flowers during the cool season.
Root of rust-coloured, capillary fibres. — Culms numerous, from their incurved shape forming nearly a globe, leafless, round, smooth, intercepted at every half inch or less; general length from six to eight inches, and thicker than a crow quill. — Sheathes a few between the spikes and root. — Spikes numerous, sessile, ovate-oblong, forming a round verticil about an inch and a half above the root. — Scales round, ovate-obtuse. — Seed ovate, triangular.


Culms from two to four feet high, culumnar, intercepted with conspicuous partitions. Spikes pointed, crowded into a head near the base. Seed naked, three-sided.


Hind. and Beng. *Putputi-chechka.*

Teiling. *Lutti-pitta-allie.*

This is also a native of standing sweet water.

Root stoloniferous, and fibrous as in the former. — Culm erect, from two to four feet high, round, smooth, naked, intercepted inwardly by transverse septums at every inch, or half inch; they are conspicuous on the outside, even while the plant is growing. — Leaves no other than a short sheath or two, involving the base of the culm. — Head lateral, near the base of the culm sessile, sub-globular, composed of many, (fifty to sixty) oblong-pointed, sessile, many-flowered spikes. — Scales broad-cordate, a little pointed. — Stamens three; the bristles of the foregoing five species are here wanting. — Style slightly two-cleft. — Seed three-sided, smooth, white.

9. *S. subarticulatus*. R.

Culms from two to three feet high; culumnar, intercepted with inconspicuous partitions. Spikes obtuse, crowded into a head near the base. Seed three-sided, pointed.

A native of the same places with the former.

Root resembling that of the preceding species. — Culm erect, from two to three feet high, round, smooth, naked, intercepted every
quarter of an inch by a slight membrane; their places do not appear externally even when the plant is dry.—Leaves no other than a sheath or two.—Head lateral, near the base of the culm, sessile, globular, composed of many, (about one hundred) small, oval, obtuse; sessile, many-flowered spikes.—Scales oval, membranaceous.—Seed three-sided, white, smooth.

10. S. dubius. R.

Root tuberous. Culms naked, columnar; intercepted with numerous partitions.

Teling. Allike.

Roots tuberous, with stolones and numerous fibres issuing from them, outwardly of a dark dusky colour, inwardly white.—Leaves erect, cylindric, smooth, about a foot long.

Obs. I have never met with flowers of this plant which is a native of wet sandy pasture ground, and was formerly considered as a species of Isoetes. The natives boil and eat the roots which they say they are as good as yams.


Culms naked, from four to eight inches high, columnar; spikes, terminal, globular. Seed black, roundish, bristle-beset.

S. caribaeus. Rottb. gram. 46. t. 15. f. 3.

A native of barren, sandy, moist places.

Root fibrous.—Culms erect, from four to eight inches high, round, smooth, naked.—Leaves no other than a sheath or two.—Spike terminal, naked, sub-globular; permanent bristles surround the germ in this species, as in those with single, terminal, cylindric spikes.—Style two-cleft.—Seed obcordate, compressed, smooth, shining black.

12. S. juncoides. R.

Culms from one to three feet high, columnar. Spikes oval, from three to five in a sessile head, far below the apex. Seed roundish, beset with bristles.

A native of wet and marshy places.
Root fibrous. Culms erect, from one to three feet high, naked, round, and slender in proportion to the height, striated, otherwise smooth. Leaves none, except two sheaths embracing the base of each culm. Spikes from three to five, lateral, sessile, oval, naked, from four to six inches, below the apex of the culm, which is erect, and like that below the spikes. Involucre none. Stamens three, intermixed with bristles. Stigma two-cleft. Seed obcordate, compressed, smooth, white.


Culms from six to twelve inches high, three-cornered. Spikes peduncled and sessile below the apex. Seed black, scabrous, sub-triangular.

A native of sandy ground.

Root fibrous.—Culms erect, from six to twelve inches high, firm, naked, three-sided, striated, with rounded angles, above the spikes half round, with a groove on the flat side. Spikes lateral, sessile and peduncled, naked, from six to twelve, oblong, many-flowered. Nectarial bristles of the germ wanting.—Seed somewhat three-sided, black, with scabrous spots.

14. *S. triangulatus* R.

Culms in tufts, erect, two feet high, naked, acutely three-angled. Spikes from eight to twelve, sessile just under the straight three-winged apex. Germ embraced by six long, slender bristles, besides the three-broad filaments.

Native of Chittagong, where like most of the order, it delights in low wet ground.


Culms in tufts, curved, three-cornered, generally naked. Spikes several, under the grooved apex, sessile and peduncled. Involucre one-leaved, besides the apex of the culm. Seed three-sided, transversely rugose on the back, black.

Found growing in tufts, in wet places, in the vicinity of Calcutta, during the cool season.

Root of brown capillary fibres.—Culms numerous, about a foot high, curved, three-cornered, angles rounded, above the spikes incurved, and deeply channelled.—Leaves rarely any other than a few short sheaths, investing the base of the culms, and they generally end in an ensiform point, when present solitary and like the culm above the spikes.—Spikes many, peduncled and sessile, considerably under the apex, oblong.—Scales ovate, mucronate, with brown chaffy margins.—Seed three-sided, black, transversely rugose.

Culms from one to two feet high, nearly culumnar. Umbel compound; involucre shorter than the umbel. Seed long, obovate, smooth.  
Teling. Billapa.  
A native of wet sandy places.  
Root fibrous.—Culms erect, from one to two feet high, as thick as a crow quill, a little compressed, smooth, except near the base which is involved in, from three to five, large, pointed sheaths.—Umbel terminal, small, compound. Spikes oval.—Involucre two-leaved, unequal, erect, shorter than the umbel.—Filaments three, broad, and membranaceous.—Style broad, margins fringed. Stigma two-cleft. —Seed obcordate, compressed, smooth, light brown.

17. S. pectinatus. R.  
Culms from three to four feet high, culumnar. Panicle lateral, just below the straight subulate apex of the culm. Scales daggered. Stigma two-cleft. Seed roundish, beset with four pinnate bristles.  
Grows chiefly in marshy places, where the soil is sandy.  
Root fibrous.—Culms erect, from three to four feet high, as thick as a quill, naked, round, smooth.—Leaves no other than a sheath or two round the base of each culm.—Umbel lateral, about its own length below the apex of the culm, compound, rarely decom- pound, bowing.—Spikes oblong.—Involucre no other than the ter-
mination of the culm, which is erect and about as long as the um- 
bel.—Scales chaffy, daggered.—Stigma two-cleft.—Nectarial bris-
tles two on each side of the germ they are beautifully pinnate and 
permanent.—Seed obovate, compressed, smooth, brown, embraced 
by the nectarial bristles.

18. S. pentagonus. R.
Culms, from six to nine inches high, somewhat five-sided. Umbel 
terminal, compound; involucre chaffy; flowers monandrous. Seed 
obovate, triangular.
A native of pasture ground.
Root fibrous.—Culms erect, from six to nine inches high, naked, 
somewhat five-sided, slightly striated, otherwise smooth.—Leaves 
no other than a sheath or two.—Umbel terminal, compound, small, 
erect.—Involucre, a few small chaffy scales, with long tapering points. 
—Stamens single.—Stigma three-cleft.—Seed somewhat three-sid-
ed, white, scabrous.

Sect. 2d. With leaves.

Grows in small tufts. Culms from three to four inches high, seta-
ceous, erect, columnar, longer than the leaves. Spikes terminal, nak-
ed, solitary, oval.
A native of poor, wet sandy, pasture land.

20. S. minimus. R.
Grows in tufts. Culms from one to two inches long, setaceous, 
curved, shorter than the leaves. Involucre three-leaved. Spikes 
terminal, globular, squarrose, about as long as the involucre.
Found with S. atropurpureus on poor, wet sandy lands.

Culms straight, from six to twelve inches long, columnar. Spike 
terminal, solitary, naked, scales roundish. Seed obovate, smooth.
Delights in barren, sandy pasture lands.
Root fibrous, purple-coloured.—**Culms** erect, from six to twelve inches high, round, smooth, three-fourths or more naked.—**Leaves** sheathing, nearly as long as the culm, filiform.—**Spikes** terminal, single, naked, oval; flowers few.—**Scales** sub-orbicular.—**Style** broad, with downy margins. **Stigma** two-cleft.—**Seed** obcordate, compressed, smooth, light brown.

22. **S. strobilinus. R.**

**Culms** two feet high, three-sided, base leafy. **Leaves** triangular. **Spike** lateral, solitary. **Scales** cordate, cuspidate. **Stigmas** two-cleft. **Seed** roundish, beset with bristles.

A native of the soft, wet banks of the Ganges. Flowering time the cool season.

Root *stoloniferous*, with pale-coloured fibres.—**Culms** simple, straight, about two feet high, three-sided.—**Leaves** two or three, of different sizes, embracing the base of each culm, the longest nearly the length of the culm, keeled and deeply channelled, smooth.—**Spike** solitary, lateral, one-third part of the culm below its apex, ovate-oblong, about one inch in length. **Involucr** one-leaved, besides the continuation of the culm, length of the spikes.—**Scales** cordate, cuspidate, smooth.—**Stamina** three, with about double the number of bristles between them.—**Anthers** linear, when old spiral.—**Germ** obovate. **Stigma** two-cleft.—**Seed** flat, particularly on the inside, roundish, obcordate, crowned with a minute portion of the remaining style, and embraced by about six slender, soft, permanent bristles which are about the same length.

23. **S. scaber. R.**

**Culms** erect, from four to eight inches high, angular. **Spikes** terminal. **Scales** oblong, diandrous. **Stigma** *bifid*. **Seed** obcordate, scabrous.

Compare with **S. polytrichoides. Retz. Obs. iv. p. 11.**

A native of dry, sandy pasture ground on the coast of Coromandel.
**Scirpus.**

**Root** composed of dark purple capillary fibres. **Culms** erect, from four to eight inches high, four-fifths naked, angular, smooth.—**Leaves** sheathing, mostly radical, filiform, half the length of the culm.—**Spike** single, erect, oblong, many-flowered.—**Involucre** two or three-caducous scales, shorter than the spike.—**Scales** oblong, apex rounded, falling as the seeds ripen.—**Stamens** generally two.—**Stigma** two-cleft.—**Seed** obcordate, compressed, lead-coloured, rugose.


**Culms** erect, from six to twenty-four inches high, filiform. **Spires** from two to three, terminal, sessile, and peduncled, involucred; **scales** roundish. **Seed** obcordate, with a callous margin.

**Teling.** Khooshi-tunga.

**Beng.** Kesoori-mulunga.

Delights in a moist rich soil, grows in large distinct tufts.

**Root** fibrous.—**Culms** sub-erect, four-fifths naked, very slender, filiform, somewhat five-sided, smooth.—**Leaves** sheathing, in large plants long, slender, and often twisted a little, in small plants more rigid.—**Spires** two or three terminal, ovate; one is always sessile, the other one or two peduncled.—**Involucre** one or two-leaved, about as long as the peduncled spikes.—**Scales** nearly orbicular.—**Stamens** and **style** as in *S. monostachyos*.—**Seed** obcordate, compressed, white, with a thick callous margin.


**Culms** erect, from six to twelve inches long. **Spires** one or two, terminal, naked, acute. **Scales** pointed. **Seed** obcordate, angular, dotted.

**Beng.** Moormoori.

A native of dry pasture ground, generally amongst bushes.

**Root** fibrous.—**Culms** sub-erect, from six to twelve inches high, three-fourths naked, filiform, a little compressed, particularly towards the tops, and striated.—**Leaves** as in the former.—**Spike** generally single, though there are sometimes two, in which case one is peduncled, few-flowered.—**Involucre** entirely wanting.—**Scales**
large, with a large keel and sharp point.—*Style* enlarged at the base. *Stigma* three-cleft.—*Seed* three-sided, very scabrous, pearl-coloured.


*Culms* from six to eight inches long, slender, curved, striated. *Leaves* shorter than the culms. *Spikes* from two to four, oblong. *Involucre* two-leaved, one longer than the spikes, apparently a continuation of the culms. *Style* two-cleft, villous. *Seed* obcordate.

A native of Bengal, appears during the cool season in low moist places.

*Root* fibrous, brown.—*Culms* numerous, in tufts, slender, variously bent, though nearly erect, slender, grooved, particularly deep on the opposite sides, from six to eight inches high.—*Leaves* few, subulate, hard, half the length of the culms.—*Spikes* generally three, varying however from one to five, sometimes short-peduncled, oblong.—*Involucre*, two-leaved; one erect, longer than the spikes, seems a continuation of the culm.—*Scales* oval, somewhat mucronate.—*Germ* cordate. *Style* villous. *Stigma* two-cleft.

*Obs.* It differs from Rottboell's plant in having the *scales* mucronate, and the *stigma* two-cleft; yet I think they must be the same.


*Culms* from three to six inches long. *Spikes* three; *involucre* two-leaved. *Scales* ending in a long recurved hairy horn. *Seeds* angular.


*Beng*. *Goovi*.

A small delicate species, growing in distinct tufts on dry sandy pasture ground.

*Root* fibrous.—*Culms* numerous, bent in various directions, from three to six inches long, four-fifths naked, round, smooth, filiform. —*Leaves* a few only, sheathing, shorter considerably than the culm. —*Spikes* terminal, generally three, sessile, oval.—*Involucre* two-
leaved, the largest about an inch long; being nearly erect, it appears a continuation of the culm. — Scales numerous, terminating in a long, hairy, recurved point. — Seed three-sided, oblong, smooth.


Culms erect, from three to six inches high, angular. Head terminal, of three to five spikelets; involucre from two to three-leaved; scales acute, monandrous. Seed roundish, angular.

A native of sandy pasture ground.

Root consisting of capillary fibres. — Culms naked, straight, from three to six inches high, angular, smooth. — Leaves fiddleform, as long as the culm, woolly near the mouth of the sheaths. — Head terminal, sessile, composed of from three to five small, sessile, few-flowered spikes. — Involucre from two to three-leaved. Scales pointed. — Stamen single. — Stigma three-cleft. — Seed three-sided, short, thick, smooth, white.


Culms erect, from three to six inches high, round. Head terminal, of many spikelets. Involucres from two to three-pointed. Seed three-sided.

Grows on sandy pasture ground.

Root fibrous. — Culms erect, from three to six inches high, round, smooth. — Leaves radical, embracing the base of the culms, sheathing, half the length of the culm. — Head or Umbellet terminal, globular, composed of numerous small, sessile, few-flowered, conical, pointed spikes. — Involucre from two to three-leaved, scarcely the length of the head. Scales pointed. — Seed three-sided, smooth.*

*This is Isolepis barbata, R. Brown, prodr. nov. holl. I 222. — I have had specimens from Nepal, where it is common during the rainy season, forming extensive tufts. The mouth of the sheaths, as well as their ligula, are bearded with long hairs. — N. W.

Culms sub-erect, from four to eight inches high, semi-culmular. Head terminal, of many sub-sessile spikelets; involucres from two to three, scales obtuse, monandrous. Seed roundish, compressed.


Found on sandy pasture ground, growing in large tufts, with the exterior culms of the tuft curved.

Root fibrous.—Culms erect, or ascending, mostly naked, from four to eight inches high, round on one side, and flattened on the other, sometimes with a groove on the flat side.—Leaves as in the former species.—Head or Umbellet terminal, composed of from fifteen to twenty cylindrical, obtuse, sessile, silver-coloured, many-flowered spikes.—Involucre two, three, or four-leaved, unequal.—Scales oblong, obtuse; keel green, the rest silver-coloured.—Stamen single.—Stigma two-cleft.—Seed obcordate, compressed, smooth, pearl-coloured.


Culm six inches high, semi-culmular. Leaves numerous, from one to two inches long. Umbel composed of from six to twelve ovate spikelets. Involucres and involucels the length of the spikelets. Hind. Bura Nirbishee.

Native of Coromandel and Bengal.


Culms from six to twenty-four inches high, compressed, furrowed. Leaves tortuose. Umbel simple. Involucre one or two-leaved, shorter than the umbel. Scales obtuse, diandrous. Seed obcordate, striated and dotted.

A native of various parts of India, appearing in low moist places during the rainy season.

Culms about six inches high, compressed, and furrowed.—Leaves radical, or surrounding the lower portion of the culms, narrow,
Scirpus. TRIANDRIA MONOGYNIA. 227

a little twisted, and nearly as long as the culms.—*Umbel* generally simple, of from four to six sessile, or pedicelled, ovate-oblong brown spikes; sometimes one of the pedicels supports two spikes.—*Involucre* one or two-leaved, small and shorter than the umbel.—*Scales* of the spikes ovate, chaffy.—*Stamens* two.—*Style* thick at the base; *apex* two-cleft, and villous.—*Seed* accordion, furrowed longitudinally, and dotted with white on a brownish ground.

33. *S. tenellus*. R.


A native of Coromandel.

*Culms* many, uncommonly slender, erect, about a foot high, toward the base invested with the sheaths of a few slender leaves.—*Umbel* very thin, composed of one sessile, oblong spike, and of from six to twelve or about half the number of pedicels of various lengths.—*Involucres* minute, the longest scarcely exceeding the sessile spike.—*Scales* boat-shaped, scarios, with a short point.—*Style* swelled at the base to the full size of the germ; this swelled part, however, is not more permanent than the rest of the style. *Stigma* trifid.—*Seed* obovate, obscurely three-sided, much dotted, pearl-coloured.

34. *S. (Rhynchospora ?) mollis*. Wall.

*Culms* roundish, erect, longer than the narrow, setaceous, villous leaves; *umbel* composed of about seven unequal, one to three-spiked rays; *involucre* about five-leaved, shorter than the umbel, villous; *spikes* oblong *scales*; ovate, sub-aristate, smooth.

A native of Nepal, where it is found during the rainy season.

*Root* creeping, brown.—*Culms* one or two feet high, jointless, slightly furrowed and hairy, somewhat compressed at the top.—*Leaves* a few towards the base of the culm, five or six inches long, channelled above, with long membrane-margined, very hairy sheaths.—
Rays of the umbel from half an inch, to one and a half inches long, with one or two sessile spikes among them.—Leaves of the involucre setaceous, hairy, one or two, as long as the rays; the rest as well as the involucels shorter than the brown, acute, from three to six lines-long spikes.—Scales smooth, broad-ovate, with a greenish rib ending in a short round point; the lowest smaller, two or three of them abortive.—Stamens three, short.—Ovarium minute, surrounded by three long, hairy bristles.—Style compressed, hairy and ciliated, with a broad cordate articulate base.

Obs. The habit of this grass is that of a Pimbristylis, from which however it differs in having several long, curved bristles attached to the base of the ovarium; it seems therefore to be a legitimate species of Rhynchospora.—N. W.

35. S. tridens. R.

Culm straight, from two to five feet high, angular. Umbel compound; involucels from two to three; spikelets pointed; scales lapped, jagged and daggered. Seed roundish, three-angled, and bristly.

Compare with S. maritimus.

Teling Goorapa-shaka-tinga.

Grows in water courses, ditches, &c. where the water is fresh; never in salt, or brackish water.

Koot stoloniferous with some small tubers, and many fibres.
—Culm erect, rigid, leafy, jointed, from two to five feet high, three-sided, smooth, angles sharp.—Leaves numerous, sheathing, sub-erect, rigid, keeled, smooth.—Umbel compound, small for the size of the plant.—Involucre from two to three-leaved, erect, unequal, the longest being three times the length of the umbel, and the shortest equaling the latter.—Spikes lanceolate or cylindric, large; some sessile, some peduncled.—Scales three-toothed, the lateral ones torn, the middle one long and subulate, keel green, the rest rust-coloured.
—Seed three-sided, short, thick, smooth, with bristles round the base.

Obs. I believe König called it S. maritimus indicus, but the form
of the seeds and jointed culm, will, I think, render it a very well marked and distinct species.

36. *S. strictus*. R.

_Culms_ straight, from twelve to eighteen inches high, culmular. _Umbe_ compound. _Involucres_ chaffy; _scales_ obtuse, diandrous and roundish, compressed.

Grows on a moderately dry, hard, barren, sandy soil.

_Root_ fibrous.—_Culms_ straight, naked, rigid, from twelve to eighteen inches high, round, very smooth.—_Leaves_ radical, short, rigid, but smooth.—_Umbe_ terminal, sometimes decompound, contracted, seldom more than two inches long, and one broad.—_Involucre_ from two to four, small, chaffy, tapering sheaths.—_Spikes_ ovate, small, many-flowered.—_Scales_ with a broad, white, membranaceous border.—_Stamens_ two.—_Stigma_ two-cleft.—_Seed_ much compressed, obcordate, dotted with brown.

37. *S. brevifolius*. R.

_Culms_ erect, from six to eight inches high, semi-culmular. _Umbe_ decompound; _involucels_ chaffy; _scales_ cuspidate, monandrous. _Stigma_ bifid. _Seeds_ obcordate, striated.

Is found generally on low sandy pasture ground.

_Root_ fibrous.—_Culms_, erect, mostly naked, from six to eight inches high, flat on one side and rounded on the other.—_Leaves_ sheathing, short.—_Umbe_ terminal, decompound.—_Involucre_ from two to three-leaved, shorter than the umbel.—_Spikes_ small, oblong; while young sessile, but when old appearing peduncled, the scales and seeds gradually dropping off and leaving the rachis naked.—_Scales_ keeled and pointed.—_Stamen_ single.—_Style_ broad, enlarged at the base; above, the margins are hairy. _Stigma_ two-cleft.—_Seeds_ obcordate, convex on the outside, flat on the inner, white, striated.

_Obs._ The single stamen and striated seed are the best specific marks. It much resembles Rottboel's figure of *S. dichotomus*, but
that species is described by Vahl as having three stamina: (see *Fimbristylis dichotoma*, *Enum.* ii. p. 287,) consequently they must be different.*


Spikes rounded, subsquarrose; *involucre* six-leaved, longer than the compound umbel; *scales* monandrous. *Vahl. Enum.* ii. 288. (under *Fimbristylis*.)

I received this elegant little grass from Nepal where it grows in low fields during the rainy season.

*Obs.* My specimens agree perfectly with the descriptions quoted above. They are three inches high; spikes oblong, obtuse, measuring about three lines in length, with villous scales which end in a long, recurved, scabrous awn as in *S. squarrosus*. *Ovarium* lenticular, obovate, smooth, shining, pearl-coloured, covered almost to its base with numerous loosely adhering, white, flat fascicles of villi, which proceed like rays from the enlarged base of the smooth, bifid style, and serve to keep the latter attached to the seed. This is a second instance of a singular structure, observed by the immortal author of the *Prodromus florae novæ holländiae*, in another species of *Fimbristylis*, (vol. i. p. 225).—N. W.


*Culms* erect, from one to two feet high, semi-columinar. *Umbel* decompound; *scales* obtuse, diandrous. *Seeds* roundish, obcordate, smooth.


Delights in a rich wet soil.

*Root* fibrous.—*Culms* erect, seven-eighths naked, from one to two feet high, sometimes a little compressed.—*Leaves* chiefly radical, half the length of the *culm*, rigid.—*Umbel* terminal, decompound. —*Involucre* two or four-leaved, the larger about the length of the um-

* I have received specimens of this grass, which undoubtedly is a *Fimbristylis*, from Nepal; it is intermediate between *F. dichotoma* and *glauca*, Vahl, differing from both in being monandrous.—N. W.
Scirpus.  

**TRIANDRIA MONOGYNIA.**

bel, *partial involucres small.*—**Spikes** numerous, oblong, some sessile, some peduncled, exclusive of the naked rachis of those that are old, dark brown.—**Scales** oblong, obtuse, dark brown.—**Stamens** two.—**Stigmas** two-cleft.—**Seed** obcordate, much compressed, smooth, brown.

40. **S. (Isolepis) densus. Wall.**

*Culms* tufted, setaceous as well as the short leaves; sheaths bearded; *umbel* decompound with unequal capillary rays; *involucres* squarrose, awned; *spikelets* oval, long-peduncled, except the central ones.

Native of Nepala; in vigour during the rains.

A most slender, glaucous, capillary, spreading, smooth grass, which forms extensive and dense tufts. **Root** grayish, consisting of innumerable long fibres. **Culms** from six to twelve inches high, three-cornered.—**Leaves** three or four near the base of the grass, and a great many radical ones, three or four times shorter than the culm; sheaths short, flaccid, brown, with a number of long-curved hairs at their back and mouth. Rays about five, unequal, mostly an inch long; some of them bearing a few-spiked umbellet, others supporting only a single spikelet. **Scales** of the involucre chaffy, brown, imbricating, one of them often ending in a capillary leaflet.—**Spikelets** very small, brown, somewhat angular, consisting of oval, keeled, pointed scales.—**Seed** obovate, sharply three-cornered.—**Bristles** none.

**Obs.** The root, culm, leaves and sheaths of this elegant little grass are exactly like those of Isolepis barbata, (see above;) the inflorescence, however, is totally different.—N. W.

41. **S. miliaceus. Linn. Sp. Pl. ed. Willd. i. 303. Rottb. gramm. 57. t. 5. f. 2. Retz. Obs. 5. 16.**

*Culms* erect, from one to two feet high, semi-culmnan. **Umbel** decompound; *involucres* and *involucels* shorter than the umbels and umbellets. **Seed** obcordate, striated.


This species delights in wet pasture ground.
Root fibrous.—Culms erect, from one to two feet high, seven-eighths naked, generally round, though sometimes a little compressed, and chiefly near the apex striated, otherwise smooth.—Umbel decom- pound, very thin.—Involucre three or five-leaved, unequal, but the largest is seldom so long as the umbel. Involucels like the involucre, but much smaller.—Spikes sessile, or peduncled, oval, rust-coloured, many flowered.—Scales broad, a little pointed, very concave.—Stamens two or three.—Style enlarged at the base, broad, with hairy margins. Stigma two-cleft.—Seed obcordate, compressed, pearl-coloured, striated, without bristles.


Culms sub-erect, from one to two feet high, edged. Umbel from compound to super-decompound. Involucre two-leaved, erect; scales lanceolate. Seed obcordate, dotted.

Hind. Kuratzya-juvani.

A native of moist or wet places.

Root fibrous.—Culms nearly erect, but waving a little, from one to two feet high, naked, except at the base, compressed, two-edged; edges sharp, and turned different ways, striated, smooth, often a little twisted.—Leaves radical, or embracing the base of the culm, nearly as long as the culm, linear, waved, often a little twisted, apex abrupt.—Umbel super-decompound, dense.—Involucre two-leaved, opposite, erect, unequal, the longest about the length of the umbel. Involucels chaffy, ending like bristles.—Spikes sessile, or short-pedicelled, oblong, few-flowered.—Scales rust-coloured, acute.—Seeds obcordate, rugose, white.

43. S. tetragonus. R.

Culms from one to two feet high, four-angled. Umbel decom- pound and super-decompound. Involucre and involucels bristly, scales roundish, diandrous. Seeds round.

Hind. Bura-juvani.

Teling. Murcushalee.

Grows with the other species on moist pasture ground.
Root fibrous.—Culms nearly erect, from one to two feet high, naked, except at the base, four-sided, smooth.—Leaves radical, and about the base of the culm, bifarious, tapering, nearly as long as the culm.—Umbel super-decompound, rather thin, and of an irregular form.—Involucre and involucels small, bristle-like.—Spikes minute, globular, many-flowered.—Stamens, from one to two, rarely three.—Stigma two or three-cleft.—Seed nearly globular, compressed on the inside, scabrous, white.


Culms from one to two feet high, five-angled. Umbel super-decompound; involucre much shorter than the umbel; scales oval, monandrous. Seed three-sided, rugose.

A native of similar places with the last species.

Root fibrous.—Culms as in complanatus, and tetragonus, and of the same height, but in this species always five-sided. The angles sharp and the sides concave.—Leaves as in Sc. complanatus.—Umbel super-decompound, rather thin, and unequal as in Sc. tetragonus.—Involucre three-leaved, the largest about the length of the umbel.—Spikes mostly pedicelled, oval, very small, few, from six to eight-flowered.—Scales oval.—Stamen one.—Stigma three-cleft.—Seed oblong, three-sided, rugose.

45. Sc. pallescens. R:\n
Culms from six to ten inches high; columnar. Umbel super-decompound, rather shorter than the involucre, monandrous Scales obtuse. Seed obcordate, without angles, streaked, and wrinkled.

A native of low pasture ground.

Root fibrous.—Culms nearly erect, from six to ten inches high, mostly naked, nearly round and striated.—Leaves sheathing, as long as the culm, concave; edges slightly serrulate, somewhat woolly.—Umbel terminal, super-decompound; large in proportion to the rest of the plant.—Involucre two-leaved, nearly erect, opposite margins slightly serrulate, longer than the umbel; a few small scales lateral.
ed.—Spikes very minute.—Scales oval, concave.—Stamens solitary.—Style two-cleft.—Seed obcordate, a little compressed, striated longitudinally, and wrinkled transversely.

46. Sc. anceps. R.

Culm erect, twelve inches high, two-edged. Involucre two-leaved, shorter than the super-decompound, four or five times-divided umbel.

Beng. Joopi.
A native of Bengal.

47. Sc. comosus. Wall.

Glanseous. Leaves radical, together with those of the involucrum very long, channelled, ending in a triangular capillary acumen. Corymb super-decompound, nodding. Spikes geminate or ternate, sessile, oblong, crowned with the long straight silvery hairs of the seeds.
A native of Nepal, where it is found among rocks during the rains.

Root fibrous.—Culms many, tufted, erect, from six to twelve, or more inches long, very slender, scarcely thicker than a crow-quill, obscurely three-cornered, smooth, naked.—Leaves radical, numerous, embracing the base of the culm with their short brownish, membranaceous sheaths, which burst on one side; generally twice as long as the culm, very narrow, slightly keeled, channelled above, the margins and keel scabrous, ending in a long three-cornered point.—Corymb terminal unilateral and slightly nodding, composed of about twelve unequal, slender, somewhat flattened, smooth rays from three to six inches long, surrounded at the base with a short, brown, narrow, two-keeled ochrea; they end in partial, more or less compound umbellets, consisting in general of four or five simple or divided short capillary peduncles.—Involucrum consisting of five very long leaves, resembling the radical ones, but somewhat broader at their base, embracing the apex of the culm with their brown, membrane-winged insertions; the largest measuring from twelve to eighteen inches.
—Involucels consisting of a few chaffy, brown, subulate scales.—Spikes very numerous, about three lines long, terminal, or lateral, sessile, geminate, sometimes ternate; some single pedicelled ones are crowded in the centre of the general and partial umbels.—Scales lanceolate, keeled, brown, with short subulate points; the lowermost broader and sub-aristate, barren.—Ovarium linear, oblong, surrounded at the base by about twelve silvery, shining straight hairs, which are twice as long as the scales. Style trifid, scabrous, shorter than the hairs.

Obs. This beautiful grass, which I have received both from Katmandu and Gossein-Than, an uninhabited place at the foot of the Himalaya mountains, from whence Mr. Gardner, the Honourable Company's Resident at Nepal, has sent me the most rare plants, comes near Sc. eriophorum and like that connects the genus Scirpus with Eriophorum. It differs in its shorter and smaller stature, and in having oblong sub-cylindric spikes. Perhaps it is only a variety of that species.—N. W.

48. Sc. Kysoor. R.

Culms from five to six feet high, triangular, and hispid. Umbel super-decompound. Spikes ovate. Seed oblong, three-sided, crowned, and beset with five villous bristles.

Beng. Kesoor or Kesooree.

Common in Bengal, growing on the borders of lakes, ponds, &c. of fresh water, in flower during the latter part of the rains.

Root tuberous, with numerous ferruginous fibres.—Culms straight, from four to six feet high, three-angled, the sides deeply grooved and the angles very sharp, and backwardly hispid.—Leaves several to each culm, and about their length, sheathing at the base, above that part deeply channelled, with the margins and keel while young, somewhat hispid, and the points long and subulate.

—Umbel, terminal, super-decompound.—Involucres about three, very unequal, the largest from one to two feet long, and the shortest as many inches; resembling the leaves in form.—Spikes ovate,
brown.—Scales roundish oval, concave, chaffy, brown, smooth; the rib or nerve ending in a subulate point beyond the rounded apex.

—Stamens three on the exterior side of the germ, one-bearded bristle between each filament, and three on the back, making in all five.

—Germ ovate.—Style with swelled, permanent, cordate base.—Stigma three-cleft.—Seed oblong, three-sided, surrounded by the five-bearded bristles.

Obs. It approaches Sc. grossus. Vahl. Enum. ii. 270; the best marks to distinguish them by, are the bristles which embrace the germ, and continue with the seed; here they are five in number and villous, there six, and barbed, or armed on the margin, with sharp bristles pointing backward. My Sc. maximus is a much larger species, and the germ destitute of bristles.


—Culm erect, from six to ten feet high, triangular. Umbel super-decompound. Seed three-sided, beset with six, backwardly hispid bristles.

Exclude Sc. grossus. Retz. Obs. v. 15. which I presume is my Sc. maximus; the germ and seed being there destitute of the bristly involucre. To which of these Sc. grossus, Linn. Suppl. ought to be referred, I cannot say.

This, next to Sc. maximus, is by far the largest species I have ever met with. It grows in standing sweet water.

—Culm erect, mostly naked, from six to ten feet high, three-sided; angles sharp, sides concave.—Leaves radical, and round the base of the culms sheathing, much keeled, almost as long as the culms; edges slightly scabrous.—Umbel super-decompound, five or eight inches each way.—Involucre three-leaved, the largest about two feet, the shortest six inches, they taper to a long, acute point; margins pretty smooth.—Involucels chaffy.—Spikes oblong, dark-brown, many-flowered.—Stamens three, with two bristles between each pair.

—Style three-cleft.—Seed three-sided, embraced by the six enlarged bristles, which are armed on the edges with stiff, bent back, short hairs.
50. Sc. maximus. R.

Culms straight, from six to fifteen feet high, triangular. Umbel decompound; spikelets roundish. Seed obcordate, three-sided, without bristles.


Is found only in pretty deep, standing, sweet water.

Root fibrous, and stoloniferous.—Culms erect, most rigid, naked, except at the base, from six to fifteen feet high, and from one to two inches in diameter, three-sided; angles very sharp; sides somewhat concave.—Leaves mostly radical, almost as long as the culm, much keeled, (a transverse section appears like the letter V,) smooth, inside only a little striated.—Umbel super-decompound, generally about a foot long.—Involucre, from three to four-leaved, the largest from three to four feet long, the smallest from three to four inches, smooth.—Involucel chaffy.—Spikes minute, ovate, few-flowered.—Scales broad, and short.—Stamens three.—Stigma three-cleft.—Seed three-sided, without bristles, which easily distinguishes it from the last Sc. grossus.

Obs. I have not in any of the foregoing genera of Cyperoideae taken notice of the sheaths which embrace the base of the peduncles and pedicels of the umbels, and their sub-divisions; because they are common to all, and so much alike, that I do not think they can convey any information. Nor have I attended to the form of those peduncles and pedicels; because I have not found it uniform. The culm, inflorescence, involucre, and seed, are I think, the best marks to discriminate the species by, particularly the culm and seed. The number of stamens and divisions of stigma, sometimes vary even in the same plant, much more in different plants of the same species.

Nearly the whole of the plants belonging to the six foregoing Genera (called Calamaria by Linneus, and Cyperoideae by Jussieu) are natives of low, barren, moist places, and borders of rice fields on the coast of Coromandel. They appear, blossom, and ripen
their seed during the rains, and the beginning of the cool season. They are in general rejected by cattle.

DIGYNIA.


Calyx none. Corol two-valved; valves equal, and awned.

Culms piped, from nine to eighteen inches high. Leaves short, waved, and ciliate. Raceme cylindrical.

Saccharum spicatum. Linn. Sp. Pl. 79.

Is a native of high, dry sandy barren ground, over the coast of Coromandel.

Root fibrous.—Culms at the base resting on the ground, and there branchy, above erect, leafy, jointed, from nine to eighteen inches high, smooth.—Leaves sheathing, short, broad at the base, margins waved and hispid; sheaths about half the length of the joints. —Racemes (not spikes) terminal, erect, cylindrical, lead-coloured.—

Flowers numerous, diverging.—Calyx, two-valved, both awned, and are totally destitute of hairs round their base, or any where else;—Corol two-valved, very minute. Seed . . . .

Obs. Cattle are not fond of this grass.


Involucre echinate, and four-flowered. Calyx from two to three-valved, one or two-flowered.

1. C. biflorus. R.
Spikes simple, cylindric. Involucres two-flowered; segments sub-bilate, hooked, and hairy within.
A native of the interior, elevated, dry parts of the Coromandel coast.

**Culms** straight, from six to twenty-four inches high, smooth.—**Leaves** long, slender, somewhat scabrous; mouths of their sheaths a little hairy.—**Spikes** terminal, solitary, simple, cylindric, from three to four inches long. **Rachis** flexuose, three-sided.—**Flowers** numerous, solitary, alternate.—**Involucre** two, rarely one-flowered, multifid, divisions longer than the flowers, subulate, grooved on the back, inside hairy, apex slightly hooked. Both flowers hermaphrodite.—**Calyx** three-valved, one-flowered, the exterior one smaller, all are thin, smooth, nerved.—**Corol** two-valved, valves hard, acute, but not awned, in length nearly equal, and scarcely longer than the calyx.—**Stamina** three.—**Styles** two, plumose.

**SACCHARUM.** Schreb. Gen. N. 104.

**Calyx** one-flowered, two-valved, girt at the base with wool; **corol** uncertain.


**Culms** from one to two feet high, shorter than the leaves. **Panicle** linear, white with the wool of the calyx. **Corol** and **calyx** two-valved and diandrous.

**Lagurus cylindrica.** *Sp. Pl*. 120.
**Gramen caricosum.** Rumph. *amb*. 6. 17. t. 7. f. 2.
**Beng. Oolo.**
**Teling.** Baroomhiss.

Is a native of moist, stiff, pasture ground, and particularly common over Bengal, where the fields are white with it when in flower, after the first rains in April and May.

**Root** creeping at some depth under the surface.—**Culms** erect, simple, from one to two feet high, leafy, jointed, joints bearded.—**Leaves**, those of the root or lower part of the culm are much longer than the culm, tapering equally towards each end, smooth, those of
the culm are little else than sheaths.—*Panicles* terminal, cylindric, from three to four inches long, composed of small, erect branchlets, of a bright cotton-like whiteness, from the quantity of wool that surrounds the insertion of the flowers.—*Flowers* pedicelled, generally simple.—*Calyx* two-valved, with here and there a long white hair.—*Corol*, two-valved, minute.—*Stamens* two.

*Obs.* Cattle are not fond of it, particularly when old. It is used in the marriage ceremonies of the Telinges. In Bengal it is much used for thatch.


*Sans.* Kasha.

*Hind.* Kagara.

*Teling.* Relloo-gaddy.

Grows on the banks of rivers, in hedges, and on moist, uncultivated land; in a good soil, it is frequently from ten to fifteen feet high, in a poorer soil, from five to ten.

*Root* perennial, creeping very deep in the ground.—*Culms* annual, erect, leafy, round, lower parts perennial, and as thick as the finger, annual shoots about as thick as a common quill, solid, height various as above observed.—*Leaves* sheathing, remarkably long and narrow, but firm; margins hispid; a transverse section appears crescent; sheaths with their mouths woolly.—*Panicles* terminal, spreading, erect, oblong, from one to two feet long, composed of verticilled, filiform, simple, (except the lower verticil or two,) spiked racemes; *spiked*, because half the flowers are sessile, and half pedicelled. The immense quantity of long, bright, silver-coloured wool, which surrounds the base of the flowers gives this species a most conspicuous, gaudy appearance.—*Flowers* paired, one-pedicelled, the other sessile.—*Calyx* two-leaved; margins ciliate, acute, sur-
rounded with many soft, very long, silver-coloured hairs.—Corol one-valved, ciliate, acute, membranaceous.—Stigma feathery, purple.

Obs. I have not seen the ripe seed. It is so very coarse that cattle do not eat it, except while very young. It makes good mats for various purposes, and is used to thatch houses.

3. S. fuscum. R.

Erect, from five to eight feet high. Leaves sub-lanceolate, smooth. Panicle spreading, verticilled; ramifications compound. Flowers paired, both pedicelled, wool of the calyx short and scanty. Corols three-valved.

Beng. Khuree or Pata-Khuree.

A native of damp places over Bengal. Flowering-time the rainy season.

Culms erect, from five to eight feet high, as thick as the little finger, hairy near the top.—Leaves sheathing, linear-lanceolate, smooth in every part, except the margins of the sheaths, which are fringed with much soft hair; length about three or four feet, breadth about, or under two inches.—Panicles from one to two feet long, erect, linear, verticilled, except toward the apex; ramifications compound; ramule nodding.—Flowers paired, one short-pedicelled, the other longer, both hermaphrodite; wool of the pedicels, &c. short and in small quantity.—Calyx with ciliate margins, otherwise smooth and shining.—Corol three-valved, of which two are equal and nearly as long as the calyx, the third minute, all much ciliated.—Seed long, obovate, brown, smooth.

Obs. The natives make their pens of the culms of this and the following species, and use it for screens and light fences.

4. S. semidecumbens.

Lower portion of the culms procumbent, and perennial. Leaves narrow, channelled. Panicle oblong, lax, with compound verticilled ramifications, corol one-valved.

Beng. Khuree.
A native of Bengal, where it delights in low wet places, blossoms about the close of the rains, and the beginning of the cold season.

Root perennial.—*Culms* of great length, i.e., from eight to sixteen or more feet long, one half or more, generally resting on the ground, and striking roots at the joints; this portion is often as thick as the little finger, and perennial; the extreme portion erect, straight, and taper to the thickness of a crow-quill at the panicle; filled with pith in every part.—*Leaves* from one to six feet long, very slender, pointed, channelled, bottom of the channel white, margins most acutely hispid, mouths of the sheaths and for some way above them bearded with much soft white hair.—*Panicles* ovate, or oval, erect, large. *Ramifications* coloured, verticilled, compound.—*Flowers* approximate, paired; one sessile, the other pedicelled, both girt with much, pure white, soft hair.—*Calyx* two-valved; inner valve ciliate.—*Corol* one-valved, ciliate.


*Culms* from six to twelve feet high. *Leaves* flat. *Panicle* ovate, spreading; *branches* alternate, decompound. *Corol* one-valved.

*Sans.* रच्छु, Ikshoo, रसालः, Rusala; the light-coloured varieties; पूँड़, Poondra, and कङ्गारुकः, Kanguruka, the red.

*Beng.* Ik, Ook, Ak. Kooshiar, also *Poori* and *Kullooa* the two pale varieties, and *Kajool* the red.

*Teling.* Cherukoo-bodi, or Cherukoo-duboo.

Where wild, I do not know.—*Panicles* terminal, spreading, erect, oblong, from one to three feet long, of a grey-colour, from the large quantity of long soft hair that surrounds the flower. *Ramifications* alternate, very ramous, expanding.—*Rachis* striated.—*Flowers* hermaphrodite, in pairs; one sessile the other pedicelled.—*Calyx* two-leaved, smooth.—*Corol* one-valved, smooth, membranaceous, rose-coloured.—*Stamens* and *Pistil* as in the genus. I have not seen the seed.

*Obs.* It is much cultivated in the *Rajamundri* Circar, where they only make a coarse sort of brown raw sugar, which is sold on the spot for about three half-pence per Pound. The cane is cultivated
on their best lands, which can be easily watered; but, unless the farmer pleases, not easily flooded during violent rains.

The land is first well ploughed during the month of April and beginning of May. The field is then flooded from the river, if there is not sufficient rain; the upper part of the cane is then cut into two lengths of one or two joints each, (the lower part of the same canes are employed to make sugar from) these are placed over the wet field, at about fifteen or eighteen inches asunder, in rows, the rows about four feet from one another, and trode under the soft wet surface with the foot; in six days after the planting, the field is again flooded, if there has not been rain. In about eight days more the shoots appear; the land is soon after slightly hoed, and weeded. A month after the planting some rotten chaff, or other such manure, is scattered about the young plants. Every ten or fifteen days, if there be not sufficient rain, the field is watered; two months from the planting, some stronger manure is strewn about the plants; and every fifteen or twenty days the field is slightly hoed, and the weeds rooted out.

During the wet season, drains must be made, to carry off the superabundant water. By August or September, the cane will be from three to five feet high; in each shoot, the produce of every cutting, which may contain from three to six canes, a straight bamboo is stuck into the earth, in the centre; to this the canes are tied by their leaves. In this country the leaves are never stript from the cane, but as they wither are tied round them. This must impede the free circulation of air, which may be conceived hurtful. In January, viz. between nine and ten months from the time they were planted, the cane, when stript of its leaves, and the useless top cut off, will be about as thick as a good stout walking cane, and from four to six feet long; they then begin to cut the cane, express the juice, and boil the sugar, which is with the natives here, a very simple process; a small mill turned by cattle squeezes the cane, and one boiler boils it.

In Bengal there are three varieties cultivated, viz. The above
described or common yellow cane, called by the Bengalees Poori. Secondly the purple cane called by them Kajooli, which is said to yield juice one-eighth part richer than the yellow cane; but the sugar thereof is always of a dark-colour. The third and last is a very large, light-coloured cane, called Kullooa, which grows in a low swampy soil, where neither of the other two will succeed; its juice is still weaker than that of the yellow cane; but it has these advantages, that it grows to a much larger size, and where neither of the other two will thrive. It is therefore much cultivated, because the other sorts planted on higher situations are apt to suffer from drought.

6. S. sinensis. R.

Culms from six to ten feet high. Leaves flat, with margins hispid, panicles ovate, with simple and compound verticilled branches. Corol of two valves on the same side.

Stem erect, jointed, whole height from ten to fifteen feet; the greatest part covered with the sheaths of the leaves; joints from four to eight inches long, and from two to three inches in circumference, colour pale brownish yellow.—Leaves sub-bisarious, tapering from the base, to a long, fine, point; plain, smooth on both sides; margins armed with numerous, small, very acute spines pointing forward, length from two to three feet, and about an inch and a half broad at the base.—Sheaths smooth, with a small ligula, or stipulary ring round the inside of the mouth.—Panicle ovate, erect; branches, simple and compound, sub-verticilled, reclinate, long and slender. In S. officinarum the branches of the panicle are scattered over the common rachis and are decompound, and super-decompound; on this I rest the most obvious specific deference, independent of the additional small inner scale, or valve of the corol.—Calyx, and its surrounding wool, as in the genus.—Corol of the two valves on the same (anterior) side, the inner one very small.—Nectary of two, large, broad, cuneate, crenulate, fleshy scales, which occupy the two posterior sides of the germ, opposite to the two valves of the corol.
Saccharum.  TRIANDRIA DIGYNIA.

Obs. This new species, for such it appears to me, was introduced from China into the Botanic Garden, at the close of the year 1796, in hope of finding it in some respects better than the common cane cultivated over India. It promises considerable advantage; particularly, from its being so solid, and hard, as to resist the forceps of the white ants, and the teeth of the jackall, two great enemies to our East Indian sugar plantations. At the same time it bears drought much better than the sorts in general cultivation. It produces a profitable crop even to the third year; while the common cane of India must be renewed every year. It is also said to yield juice of a richer quality.

This seems to be the sort employed over China for making their sugars, as appears from the following extract of a letter from Mr. A. Duncan, surgeon to the factory at Canton, to Richard Hall, Esq., President, &c. of the Select Committee, dated Canton 26th October, 1796, which accompanied plants of this cane from China; explaining the mode of cultivation and manufacturing the sugar in the province of Canton.

"Sugar canes. A first and second sort are cultivated in the province of Canton; the former being small, compact and highly Saccharine, is manufactured into sugar, whereas the latter, being of a larger size, and looser texture, is generally cut into joints, and eat by the natives, either raw, or gently heated.

"The culture of sugar canes commences about the middle of March or beginning of April, in proportion to the temperature of the weather, when a good, light, sandy soil is thrown up into beds of about four feet diameter leaving intermediate spaces of one and a half, which serve as drains and passes for the husbandmen. A composition of human manure and water is thrown over the beds; after which the tops of sugar canes, fifteen inches long, (the Chinese are here economical) are planted in a slanting position, and occasionally watered at sun set, till the young shoots rise a cubit high, when the husk and refuse of the ground nut, or of some oleaginous seeds after the oil is extracted, are well beaten into a kind of
powder and put round the root of the plants, in small quantities and afterwards covered over with earth. The canes are now left to the fertility of the soil till they arrive at maturity, except when it proves such a dry season, that watering becomes requisite, and are cut down about the 1st of November. The first sort planted in the foregoing manner, generally yields three crops, while the second requires fresh planting.

The sugar canes are now removed from the ground to the mill for expression. The juice, being extracted, is carefully strained, mixed with a small quantity of lime water, then poured into large warm iron pans, placed on a plat-form of brick work, with the places below; it is now boiled for a length of time, and being removed from the fire, and allowed to cool, it is a second time strained, and being again returned to the pans, the boiling is repeated for once, or twice, till it acquires a saccharine consistence.

The sugar, still very moist, is now put into cylindrical jars, which have a small hole in each of their bottoms, for the purpose of draining; and their tops being covered over with from half an inch to an inch of clayey moist earth, these are placed on stands, and remain for three or four days; when the old earthen covering is removed, and a fresh one put on. They continue in that situation for three or four days more, the covering is then taken off, and the sugar being sufficiently clarified is removed from the jars, and spread out on flat baskets, exposed to the sun till dry, when it is fit for use.

The mill for expressing the juice; of which I have sent a very exact miniature model, appears so far as I recollect, preferable to those used in India. The machine is wrought by a buffalo yoked to the small end of the crooked beam, while its thick end is fastened to the long axle of one of the cylinders. The canes having undergone one expression, and being consequently in a split state, are not thrust a second time through till all the irons are greased. The cylinders are not always of the same dimensions; those I examined were two cubits high, and one and two-thirds in diameter,
these are the common size; I am however told they are sometimes much larger.

To point out the benefit that may accrue to the cultivators of this sugar cane, I need only add the following copy of a letter from Mr. Richard Carden, superintendent of the Honourable Company's Rum and Sugar works at Mirzapore Cula in Bengal, to me, dated 13th August, 1801, soon after the introduction of the cane.

With respect to the produce of the common Bengal sugar canes, I have never been able to collect an account that can be depended upon; the natives generally manufacture the juice into Jaggery in my neighbourhood, which yields them nearly 14 cutcha maunds, of 60 sicca weight, per bigha on an average; and a profit of about 11 or 12 rupees per bigha. Neither the white ants nor jackalls, have committed any depredations on the China canes that I have planted, although the latter have often been seen among them, which certainly gives these canes a decided preference to the Bengal sugar canes. I do not think the China ones degenerate in the least, nor do they improve; they appear to me to remain nearly in the same state. If planted at the same time the natives put their canes into the ground, they will not make such good returns as the Bengal sort, but planted in the West India mode, in the month of September or October, and suffered to remain on the ground till the December or January twelve months, they will then yield double the returns of what the Bengal canes do, which is owing in part to the length of time they are in the ground, and principally to the ants and jackalls not destroying them, whereas if the Bengal cane was to remain so long on the ground, the natives would have great difficulty to prevent the greatest part of them from being destroyed, and the young shoots would suffer very much from the hot winds, and ants, which I witnessed the second year I came to Mirzapore; but the shoots from the China canes I cut last January, stood the last hot season uncommonly well, and will next January, I have reason to believe, from the present appearance, make half, or nearly three-fourths the quantity of
"sugar they did last January; and that with the trifling expence of clearing the ground twice; cutting, and manufacturing the juice. I should be extremely happy to have sent you a more particular account, but that is not in my power, as the native statement is not to be depended upon. I did purchase twelve cottas of the best Bengal canes last January, merely as an experiment, which yielded just half the quantity of sugar my China canes did."

7. *S. procerum*. R.

Perennial, from ten to twenty feet high, erect. *Leaves* ensiform, with a white rib, and hispid margins. *Panicle* diffuse, with verticilled, compound and decompound branches. *Corol* of the pedicelled flower two, and of the sessile three-valved, with the inner one retuse. 

*Beng. Teng.*

A native of Bengal, and by far the most beautiful of the genus I have yet met with. It comes nearest in appearance to *S. Officinarum*, but is a taller and much more elegant plant. *Culms* perennial, straight, simple till the second or third year, then branchy, about as thick as a slender walking cane; joints from six to twelve inches long, and filled with insipid pith; height of the whole plant, when in flower from ten to twenty feet.—*Leaves* from three to five feet long, tapering to a long and very fine point, the greatest breadth is at one or two feet above the sheath, and is there from one to two inches; nerve white, margins hispid.—*Sheaths* bearded round the mouth, and at their insertion on the outside.—*Panicles* large, from one to two feet long, ovate, erect, composed of numerous expanding, subverticilled, compound, woolly branches, when in blossom much expanded, afterwards they become erect, and pressed in on the common rachis, forming a dense cylindrical panicle, and I have repeatedly observed this variation in the form of the panicle at different periods, to run through the whole genus.—*Flowers* in pairs, one sessile, the other pedicelled.—*Calyx* purple, woolly.—*Corol* of the sessile flower three, of the pedicelled two-valved, all are exceedingly delicate, and the third valve of the sessile flower is retuse.
Saccharum.

Obs. The seeds or culms are long, strong and straight, and employed by the natives for screens, and various other economical purposes.

8. S. sara. R.

Erect, from eight to twelve feet high. Leaves flat with prickly margins. Panicle dense, sub-verticilled; ramifications decompound. Flowers paired, one of the pair sessile. Corol three-valved.

Sans. गुङ्गङ, Goondra, तेजनुकङङ Tejunuka, घुङङङ Shura.
Beng. Shur.


Found in the vicinity of Calcutta but rather rare, whereas S. spontaneum (which Sir William Jones mistook for Sara) is very common everywhere. It is readily distinguished by being a stronger reed, the leaves much larger, with very hispid margins, the ramifications of the panicle decompound, and a corol of three-valves. Culms perennial, erect, from six to sixteen feet high, often near the base as thick as the little finger, smooth, remarkably strong.—Leaves, the lower ones from four to eight feet long, and narrow; the superior ones shorter, broader, tapering from the base to a most fine point, strong, and rigid; concave above, margins hispid.—Sheaths from twelve to eighteen inches long, with a tuft of hair above their mouths on the inside.—Panicle dense, when in flower open, when in seed condensed and of a lanceolate shape, from one to three feet long; branches decompound, or more; the inferior alternate, the superior sub-verticilled with generally three sharp angles armed with small stiff bristles besides long white silky hairs.—Flowers paired, one sessile, the other pedicelled.—Calyx two-valved, clothed with long, soft, white, silky hairs.—Corol three-valved, fringed.

9. S. exaltatum. R.

Culms from ten to sixteen feet high. Leaves flat with prickly margins. Panicles linear, crowded. Calyces woolly. Corol, two and three-valved.
Kerpa. Hort. mal. 12. S3. t. 46. seems to be this, rather than S. spontaneum.

Teling. Konda-Kanamoo.

A very high beautiful species, a native of vallies; compare with S. Arundinaceum.

Root creeping.—Calms many, erect, from ten to sixteen feet high, towards the base perennial, ligneous, inwardly spongy, (not piped,) smooth, round, without any groove, or hollow any where, about an inch in circumference at the thickest part which is near the middle. —Leaves alternate, sheathing, remote, remarkably long and narrow, but firm, tapering from the middle towards each end; margins armed with very sharp spines, mouth of the sheaths woolly.—Panicles terminal, crowded, when the flowers are on the decay linear, oblong, erect, eighteen inches long, three in diameter, and composed of beautiful cream-coloured, downy, short, sub-erect, ramosus, sub-verticilled spiked racemes. —Rachis round, striated.—Flowers in pairs, one sessile, the other pedicelled, both hermaphrodite.—Calyx one-flowered, two-valved, both valves pointed, and covered with much long, cream-coloured soft hair as well as their pedicels, and particularly round their insertion.—Corol of the sessile flower three-valved, of the pedicelled flower two-valved, membranaceous, white. I could not observe any nectary.—Stamens, &c. as in the genus.—Seed clavate, smooth, clear whitish yellow.

Obs. Cattle do not eat it.

10. S. Munja. R.

Straight, from eight to ten feet high, every part smooth, except the inside of the base of the hispid, margined, long, linear, white-nerved, channelled leaves. Panicles large, oblong, spreading; branches thereof verticelled, and super-decompound. Flowers all hermaphrodite. Corols two-valved.


A native of the countries about Benares where the natives make ropes of it. In the Botanic Garden it blossoms in November. I
never saw it, nor, so far as I can find, is it known so low down as Bengal, otherwise I might have thought it König's S. bengalense.

11. S. canaliculatum. R.
Perennial, erect, (from eight to twelve feet high.) Leaves subulate, deeply channelled, very long. Panicles linear-oblong, ramifications simple, and verticilled; calycine valves with thick callous base and fringed margins, corol one-valved.
A most beautiful stately species, a native of Bengal in most thickness, &c. where the soil is rich, flowering in August and September.

Erect. Leaves taper from the ciliate base. Accessory florets two or three-valved, neuter; exterior valve of the sessile flower papillose, ciliate near the apex.

An erect annual species, a native of various parts of India, appears about the close of the rains, in October and November, and continues during the cool season.
TRIANDRIA DIGYNIA.

Anthisliria.

Culms erect, about two feet high, in our rich soil of Bengal, more slender than a crow quill, smooth, and often coloured.—Leaves few, ensiform; broadest at the base and there more ciliate, particularly the small floral leaves.—Sheaths much shorter than the joints, smooth, and carinated on the back.—Ligula short and chaffy.—Panicles sometimes drooping, though in general erect and composed of a few, rather remote, axillary branches.—Involucres longer than the flowers, smooth, cuspidate.

Hermaphrodite Flowers bearded at the base.—Calyx two valved; valves hard, obtuse, and somewhat hairy, by age changing from straw colour to dark brown.—Coroll one small, pellucid valve, and a very strong, long, thick, brown, hairy awn on the opposite side.—Stigma three.—Styles two, with ochraceous plumose stigmas, which become brown by age.—Nectarial, scales large, with creuate, truncate apices.

Accessory Flores six, all neuter.—Calyces two-valved, those of the sessile four, papillose, ciliate near the apex; those of the upper pedicelled two, smaller and smooth.—Corolls none, or of one, small, hyaline valve.—Stamina none.

2. A. polystachya. R.

Culms numerous, sub-erect. Leaves taper from their sub-ciliate base. Accessory Flores three-valved, male, exterior valves of the sessile four, papillose, ciliate near the apex.

A native of Bengal, and with the other species which are natives of the same country, appears at the close of the rains, in October and November.

Culms many, annual, erect, or ascending, smooth, from one to two feet high.—Leaves about the length of the joints of the culm, taper from the base, and there sometimes sub-ciliate.—Panicles slender, erect, or nearly so, composed of a few alternate, axillary branches.—Involucres longer than the flowers, smooth, sub-aristate.

Hermaphrodite Flowers bearded at the base.—Calyx two-valved, both hard, a little hairy awn on the opposite side.—Coroll one-valved with a long, strong, hairy awn on the opposite side.
Accessory Florets six, all male.—Calyces two-valved, the exterior one of the four sessile florets papillose, ciliate near the apex. —Corol of one transparent valve.—Stamens three.—Pistil none.

3. A. scandens. R.
Perennial, ramous, scandent, geniculate, emitting roots from the joints. Floral leaves with the base ciliate. Panicles copious, shaggy. Involucres smooth. Accessory florets two-valved, neuter; exterior valve of the sessile four, papillose, ciliate near the apex.

A native of Bengal; flowers during the cool season.

Root perennial.—Culms scandent, running to an extent of many feet, smooth, ramous, jointed, and coloured, from the joints numerous roots issue, and enter the ground if not too far removed from it.—Leaves ensiform, the floral ones much shorter, and ciliate at the base.—Panicle terminal, composed of erect ramifications of numerous, rather remote fascicles of axillary, short-pedicelled umbellets, each of which is furnished with a boat-shaped spathe or bracte, and consists of four, sessile, neuter, two-valved florets in a verticil; above these are two more, but much smaller, on short pedicels, with one sessile, awned, hermaphrodite one in the centre, on a short scaly receptacle.—Calyx two-valved, the exterior valves of the lower four neuter florets bearded, of the hermaphrodite ones boat-shaped, and very obtuse.—Corol of the hermaphrodite flower two-valved, with a long, ferruginous, straight arista.

Obs. It differs from A. ciliata in being an extensively scandent, perennial plant.

4. A. heteroclita. R.

Culms leaning, geniculate. Leaves ciliate. Involucres five-flowered, two awned hermaphrodite ones, and three ciliate male ones.

This is one of the smallest of the genus, a native of newly made pasture land in the vicinity of Calcutta, where it appears about the close of the rains, and during the cool season.
Triandra Digynia.

**Antistiria.**

*Culms* annual, erect, or leaning, geniculate, smooth, and colored; from twelve to twenty-four inches high.—*Leaves* ensiform, soft and hairy. *Sheaths* much shorter than the joints.—*Panicles* copious, hirsute, composed of numerous small umbels and these in general of five or more umbels, the former with a common cymbiform, bristly involucre, and the latter with a small, proper characteristic involucre, equally bristly; all the bristles have a round bulbous base.—*Umbellets* five-flowered; the two hermaphrodite ones awned, and the three male ones pedicelled, and awnless; one of the former is sessile below, with a pedicelled male one by it; the other elevated on a common peduncle, embraced by the other two male ones on their proper pedicels, in all of them the calyx is two-valved, no corol, the arista in the hermaphrodite flowers excepted.

**Obs.** This species may be immediately distinguished by its umbels being composed of two hermaphrodite awned florets, and three male ones. In all the rest, which I have met with there is one awned hermaphrodite, and six male, or neuter florets in the umbellet.


**Creeping.** *Leaves* scarcely longer than their sheaths. *Involucres* smooth. *Accessory florets* male, with a two-valved hairy calyx and one-valved awnless corol.

A common grass, delighting in rich pasture ground.

*Culms* creeping, or leaning on other plants, filiform, ramous, winding from joint to joint, round, smooth, from one to three feet long.—*Leaves* below, and on leafy shoots bifarious, small, particularly the floral ones, smooth.—*Sheaths* short, compressed.—*Panicles* thin, leafy. —*Flowers* numerous, collected in little pedicelled, involucred fascicles from the axils of the exterior leaves. *Fascicles, or umbellets,* their peduncles are jointed near the apex, and from thence upwards embraced by a long, boat-shaped sheath or involucre. *Flowers,* of the
Anthostiria.

TRIANDRIA DIGYNA. 255

umbrelllet seven; one hermaphrodite or female, and six male; four of the male florets on their proper short pedicels surround a common pedicel which elevates the hermaphrodite or female one, and the other two male florets; these last two have also their proper pedicels: all their insertions are surrounded with hair.

Hermaphrodite two, or Female three Flowers. Calyx two-valved, pointed.—Corol one-valved, a pretty long twisted awn occupying the place of the other.—Stamens three, or none.—Male flowers, four at the base, and two embracing laterally the hermaphrodite, or female flowers, each of these two has its proper pedicel.—Calyx two-valved, lanceolate, hairy.—Corol one-valved.—Stamens three.

Obs. It often happens that there are two hermaphrodite, and seven male flowers in the fascicle; in that case one of the usual lateral pedicels supports the additional two flowers.

6. A. cymbaria. R.

Erect, ramous. Leaves many times longer than their sheaths.—Involucres smooth.—Accessory florets male, with a two-valved, ciliate calyx, and a one-valved, awnless corol.


This is a large species. I have generally found it amongst bushes on mountains.

Culms many, erect, from three to six feet high, very ramous, smooth, solid, ligneous, joints smooth.—Leaves large in proportion to the size of the plant.—Panicles linear, leafy, erect, composed of innumerable bracted, fascicles like those of the last described.—Bractes boat-shaped, ending in a very long, subulate point, sometimes coloured, and in luxuriant plants fringed with many long rigid hairs.—Flowers seven in each fascicle or umbrelllet as in the last, and disposed exactly in the same manner, only here the four male flowers that surround the base, of the common pedicel are sessile.
Hermaphrodite Flowers. *Calyx* two-valved.—*Valvelets* nearly equal, obtuse, smooth, of a firm texture.—*Corolla* one-valved, the place of the second is occupied by a long twisted awn.—*Stamens* three, &c. as in the genus.

Male Flowers. *Calyx* two-valved, the exterior valve fringed with many strong hairs about the apex.—*Corolla* one-valved.—*Stamens* three.

7. *A. arundinacea*. R.

Perennial, straight, from six to twelve feet high; *leaves* from four to eight feet long, *accessory florets* male, with both *calyces* and *corollas* two-valved; the exterior valvelet of the former shaggy.

A native of Bengal. Flowering time the beginning of the cool season.

*Root* perennial.—*Culms* straight; jointed, glaucous, between the joints much contracted, round and very smooth, the lower joints of the large plant as thick as the fore finger; every part filled with white spongy pith; height of the whole plant when in flower, from six to sixteen feet. In the Botanic Garden where the soil is rich some plants are full sixteen feet high.—*Leaves* from six to eight feet long, slender, deeply channelled toward the base, recurvate, margins hispid. The radical ones are bifarious, the floral ones alternate, sheaths smooth, compressed, much shorter than the joints of the culm.—*Panicle*, the whole upper half of each culm may be so called, and is composed of numerous, axillary, very ramous branches, bending elegantly to one side, particularly with a breeze of wind.—*Bractes* one to each umbellet of flowers, boat-shaped.—*Umbellets* numerous, long, slender, pedicelled, drooping, each one is composed of four, sessile, awnless accessory male flowers surrounding, and inserted on a short clavate pedicel, which supports an hermaphrodite awned flower, and two pedicelled awnless ones.

*Male Flowers. Calyx, glume*, two-valved, the exterior valve clothed with much diverging fulvous hair, making it quite shaggy.—*Corolla, glume*, two-valved, linear, membranaceous.—*Nectary* of two cuneate, truncated scales.—*Stamens* three.—*Pistil* none.
Hermaphrodite Flowers. Calyx two-valved, villous. — Corollone-valved, a long arista occupies the place of the usual second valve. — Nectary and stamen as in the male. — Germ oblong; styles two, villous.


Polygamous. Flowers in pairs, hermaphrodite, sessile. — Calyx two-valved, one-flowered. — Coroll for the most part two-valved, and generallyawned. Male, or neuter pedicelled. — Calyx as in the hermaphrodite. — Coroll for the most part two-valved, generally awnless.

Sect. 1st. With terminal spikes.


Spikes solitary, or paired, imbricated with sessile, hermaphrodite, awned flowers on the outside, and two rows of awnless pedicelled male ones on the inside.

Sans. बेली, Venee, करा, Khura, गारी, Gurree, ज़गरी, Urguree, खरागरी, Guraguree, गरागरी, Guraguree, देवताड़ि, Devatara, ज़.मुळः, Jeemoota.

Beng. Detara, or Detta.

A native of pasture ground. Flowers during the cold season.

Culms at and near the base creeping, branchy, with only about a foot of their flower-bearing extremities erect, and as thick as a sparrow’s quill, round, smooth, joints slightly villous. — Leaves small, inside a little hairy, mouth of the sheaths hairy. — Spike terminal, generally solitary, though sometimes there are two or even three; when single, long-peduncled, when two, each has a very short, erect pedicel; the spike or spikes are about an inch or an inch and a half long. — Flowers in pairs, numerous, imbricated, on one side are two rows of sessile, hermaphrodite ones, and in the other two rows of pedicelled ones; male rachis, waved, jointed and hairy. Hermaphrodite flowers sessile. — Calyces two-valved, the exterior one broad, com-
pressed, striated, a little hairy, rounded at the apex; margins fringed with hairs; involucre smooth, glossy, keeled, pointed.—Corol of the hermaphrodite flower one-valved; the arista which is pretty long and twisted, occupies the place of a second; that of the male two-valved, the inner one slender and bifid.

Obs. Cattle will eat it, but not greedily.


Monoecious. Spikes solitary: inferior flowers male or neuter and awnless; superior flowers one female and awned, the other male and awnless.

Telangi. Yetadi.

Grows in tufts on rich pasture ground.

Culm near the base spreading a little, there compressed and sa-

mous, the rest from one to two feet high, erect, round, and smooth; joints smooth.—Leaves below bifarious, middle-sized, upper side scattered with a few hairs, margins and mouths of the sheaths hairy.

—Spikes always single, terminal, bowing, cylindric; rachis jointed, waved, round, below where it is occupied by the male and neuter flowers smooth; above where the female flowers are, it is covered with much, short, brown hair.—Flowers numerous, imbricated in pairs; on the lower half of the spike they are all neuter, or male, and awnless, one sessile, one pedicelled; on the upper half the sessile flower is female, and the pedicelled one male.

Male or neuter Flowers. Calyx two-valved, one-flowered, exterior valvelet green, and covered with stiff white hair, inner valve membranaceous, and smooth, except the margins, which are slightly ciliate. Corol two-valved, membranaceous, margins slightly ciliate. Stamens three or none.

Female Flowers. Calyx one-valved, one-flowered, rigid, embrac-
ing the corol on all sides, brown, a little hairy.—Corol one-valv-
ed, small, the place of the other is supplied by a very long, twist-
ed arista.
3. **A. tenellus. R.**

Filiiform, *spikes* paired, *flowers* paired, the sessile ones hermaphrodite, and awned; the pedicelled ones neuter, and awnless; exterior valves of both *calyces* oblong, striate, hairy, and three-toothed, neuter *corol* of one minute valve.

A most delicate tall grass, a native of Bengal, where it appears in hedges, &c. during the cool season.

*Culms* from two to three feet long; at the base resting on the ground, ramous, scarcely so thick as a pack thread; *joints* villous.—*Leaves* slender, a few hairs toward the base.—*Spikes* paired, erect, short-pedicelled; *outside* imbricated with two rows of sessile, awned, hermaphrodite flowers; *inside* with rows of pedicelled, awnless, neuter ones.—*Rachis* jointed and hairy.—*Calyces* two-valved; *exterior* oblong; three-toothed, striated, hairy; *interior* acute, three-nerved, that of the neuter flower shorter.—*Corol* of the hermaphrodite flower one-valved, with a long brown awn on the opposite, or inner side, that of the neuter flower single, and very minute.


Slender, towards the base creeping; *spikes* paired, incurved, *flowers* paired, the sessile ones hermaphrodite, and awned, the pedicelled ones male, with an awnless, two-valved *corol*.

A native of Bengal, appears during the cool season.

*Culms* very slender, toward the base ramous, and creeping; *joints* with a scanty short beard.—*Leaves* slender, somewhat hairy toward the base.—*Spikes* paired, on a long filiform peduncle, short pedicelled, somewhat incurvate; *outside* imbricated with two rows of sessile, awned, hermaphrodite flowers, *inside* with two very distinct (for they are separated by a deep groove) rows of pedicelled, awnless, male ones. *Rachis* jointed, and hairy.—*Calyces* of both two-valved; *exterior* oblong, hairy, ciliate, five to seven-nerved, edges thin, apex of the male tridentate, of the hermaphrodite obtuse. *Inner valves* acute, three-nerved.—*Corol* of the hermaphrodite flower of one hyaline valve on the outside and an arista for the other; of the male one...
of two very unequal hyaline valves.—*Styles* two; *stigmas* purple, villous.—*Seed* oblong, smooth.

5. *A. conjugatus*. *R.*

Straight, very ramous, filiform. *Spikes* conjugate, both flowers hermaphrodite, and both awned; *exterior* valves of the calyces lanceolar, and copiously ciliate.

A native of Bengal, and the smallest of the genus I have yet met with. Flowers during the cool season.

*Root* a few very slender, brown fibres.—*Culms* in tufts, and very ramous, filiform, erect, smooth, even the joints; from six to twelve inches high.—*Leaves* minute, a few hairs near the base.—*Spikes* always exactly paired as in most species of *Ischemium*, erect, flat on the inside, where they touch each other. *Rachis* winding, and clothed with long, silver-coloured hairs, length about an inch.—*Flowers* in pairs, one sessile, one pedicelled, both hermaphrodite, and both awned.—*Calyces* two-valved, one flowered; *exterior* valve in both lanceolate, with the margins copiously ciliate.—*Corol* two-valved; *valves* transparent, and brown, that (the inner) which gives support to the arista, bifid.—*Stamens* three. *Styles* two. *Stigmas* long and plumose.


Filiform, annual, erect. *Spikes* paired. *Flowers* all sessile, solitary; hermaphrodite, diandrous, with a corol of one valve, which ends in a long awn.

This is the most delicate species I have yet met with; appears in small tufts, on pasture land near Calcutta, in the months of October, November, and December.

*Culms* numerous, filiform, smooth, erect, from nine to twelve inches high.—*Leaves* small, slender, and smooth.—*Spikes* two, terminal, filiform, scarcely two inches long.—*Flowers* all hermaphrodite, solitary, sessile, no pedicelled flower being found, no pubescence about the calyx, no rachis.—*Calyx* two-valved, one-flowered.—*Corol* of one
large, awned valve.—Stamina two, one of the anthers larger.—Germ ovate.—Styles two.

7. A. tristachyos. R.

Spikes three, both flowers hermaphrodite, and both awned. Calyces lanceolate, and ciliate.

A delicate, beautiful species, found on newly laid down pasture ground in the vicinity of Calcutta, and in flower in October, November, and December.

Annual, with numerous, nearly straight, erect, smooth, slender, pithy culms, of from one to two feet in height.—Leaves taper from the base, most acute, about as long as the joints of the culms; a few long soft hairs on the inside near the base.—Sheaths smooth, shorter than the joints.—Spikes two, rarely three, and I have not seen four, one sessile the other two a little more elevated on a common pedicel, expanding; from two to three inches long. Rachis jointed, winding, and hairy.—Flowers in pairs, one sessile, the other pedicelled, both hermaphrodite, and both awned.—Calyces two-valved; valvellites lanceolate, ciliate; backs smooth, and brown.—Corol of two, small, pellucid, brownish valves, the inner of each, ends in a long, brown arista, proceeding from the bifid apex of the valvulet.

8. A. tridentatus. R.

Spikes paired, hirsute, both flowers hermaphrodite, and awned. Calyces shaggy, exterior valves cuneate, truncate, tridentate. Corols four-valved.

A delicate, rather tall species: a native of Coromandel.

Culms straight.—Leaves small.—Spikes terminal, paired, sessile, lanceolate, shaggy.—Flowers in pairs; one sessile, the other short-pedicelled, both hermaphrodite, and both awned.—Calyx, exterior valves in both flowers cuneiform, with apices truncate, tridentate, back striated; middle part, as well as the margins from thence down, and the base bearded with fulvous hairs; inner valve longer than
the exterior, ending in a pretty long arista, margins amply fringed with long fulvous hairs.—Corol in both flowers four-valved; the exterior one on the inside bifid, and awned.

9. A. lanceolatus. R.

Leaves lanceolate, with cordate stem-clasping base, bristle-ciliate. Spikes tern, peduncled. Sessile or hermaphrodite flower awned, with the margin of the exterior valve of the calyx acutely pectinate, serrate.

A native of Coromandel, and very much like Panicum setigerum. Culms scandent, or creeping, emitting roots from the joints, seems perennial.—Leaves lanceolate, base cordate, and stem-clasping, apex acute, smooth on both sides, but the edges from the middle down, bristle-ciliate.—Spikes terminal, two, three, or four, peduncled. Rachis and pedicel of the male flower somewhat woolly.—Calyces lanceolate; exterior valve, and chiefly that of the hermaphrodite sessile flower with the margins minutely and acutely pectinate-serrate.—Corol in both two-valved, with an arista in the hermaphrodite one.

10. A. scandens. R.

Climbing, spikes from three to six, digitate; calyx lanceolate, male corols one-valved, and awnless, hermaphrodite ones with an one-valved corol and an awn.

Grows commonly in hedges, and on that account scandent; appears and flowers during the rains.

Culms long, ramous, creeping, or climbing over bushes, &c. emitting long roots from the joints; smooth and deeply grooved on one side; flower-bearing extremities erect, and about one or two feet long; joints woolly.—Leaves sometimes a little hairy on the upper side, mouths of the sheaths membrane-stipuled, and hairy.—Spikes generally from three to six, terminal, short pedicelled, sub-panicled flowers in approximate pairs; one hermaphrodite, and sessile, the other male, and pedicelled. In both the calyx is of two lanceolate, somewhat hairy valves. In the hermaphrodite one the corol is of
one valve, and the place of the second valve is occupied by a long twisted arista. In the male one it is two-valved.  

*Obs.* It is a coarse grass. Cattle are not fond of it.

Near the root creeping. *Spikes* from four to eight, digitate, pedicelled, exterior valve of the sessile, awned, hermaphrodite calyx with a pit on the back; male or neuter corol one-valved


Is found on old pasture ground, which is generally shaded by trees.

*Culms* creeping near the base, &c. as in the last two species; joints bearded.—*Leaves* small, ciliate; *mouths* of the sheaths bearded.—*Spikes* from four to eight, in other respects exactly as in the last species.—*Flowers*, the specific mark is to be found in the pit of the exterior valves of the calyx of the hermaphrodite flowers, as in *A. strictus*, and *A. punctatus*, to be described; an arista occupies the place of the second valve of the corol; the valvelets of the calyx are both awnless.

*Obs.* I should doubt this being König's *Holcus pertusus* if he had not pointed it out to me himself.

Sub-scandent; joints pubescent. *Spikes* from three to six, sub-panicled. *Calyces* lanceolate; male corols two-valved; hermaphrodite ones one-valved with an arista; *flowers* paired.

*Beng. Louri.*

A native of hedges, and road sides, but chiefly of old pasture ground.

*Culms* as in the last described species; joints much bearded.—*Leaves* the same.—*Spikes* from four to eight, short-pedicicelled, inserted round the last half in each of the culms; in other respects they are as in the last described species.—The flowers resemble those of that species, but are a little more remote.—*Calyx* and *Corol* the same as in *A. scandens*. 

Spikes from six to eight, fascicled, peduncled; *rachis* hairy. Flowers lanceolate; hermaphrodite, sessile, and awned; male pedicelled and awnless; *calyxes* acute; exterior valve hairy.

A native of Coromandel, a stout, erect species, with a branch from the axil of each of the superior smooth short leaves, having much the appearance and habit of *Bladhii* and *pertusus*; from the former it differs most conspicuously in the valves of the calyces being acute, whereas in *Bladhii* they are broad and rounded; and from *pertusus* in the want of the pit on the back of the exterior valve of the hermaphrodite flower.

*Sect. 2d. With long peduncled, axillary spikes.*

14. *A. monandrus*. R.

Erect, filiform, with erect, filiform, branches at the top. Spikes solitary, flowers hermaphrodite, and female; exterior valvelet of the calyces and corols of both awned, hermaphrodite, monandrous.

A native of mountainous countries.

*Culms* many, ramous, filiform, straight; about a foot high, round and smooth.—*Leaves* small, base and mouths of the sheaths hairy.—Spikes generally solitary, terminal, and from the exterior axils, long-peduncled, straight, about an inch long.—*Peduncles*, filiform, jointed, and spathed at the middle. *Rachis* jointed, winding, hairy.—Flowers numerous, inarticulated in pairs; one, the hermaphrodite, sessile and the other, female, pedicelled.

Hermaphrodite Flowers sessile. *Calyx* two-valved, nearly equal, exterior valvelet ending in a long slender arista, the inner one with its apex obtuse, and bearded.—*Corol*, exterior valve ending in a long slender awn.—*Stamen* one.—*Styles* two, &c. as in the genus.

Female Flowers pedicelled. *Calyx* and *corol* as in the hermaphrodite ones; only the inner valve of the calyx is pointed, and bearded.
15. *A. strictus* R.

Straight, ramous at the top; base of the leaves ciliate. **Spikes** fascicled on their own proper pedicels; exterior valvelets of both calyces pitted; inner glume of the hermaphrodite corol awned.

A native of mountains, and their vicinity.

*Culms* straight, ramous, about two feet high, and as thick as a sparrow's quill, round and smooth; joints bearded.—**Leaves** slender, a little hairy, and ciliate near the base; mouths of the sheaths stipulated.—**Spikes** from three to six, long-pedicelled, and collected on a common peduncle, one of which is terminal, and one or two more from the next one or two exterior axils; very slender, perfectly erect, and about an inch long. **Rachis** as in the former species.—**Pedicles** most fine, straight, two inches long, jointed near the base, where a fine slender spathe begins.—**Flowers** in pairs; one hermaphrodite and sessile, the other small and pedicelled.

**Hermaphrodite Flowers** sessile. **Calyx** as in the genus, except that the exterior large valvelet has a large pit in it, as in *Andropogon pertusus*.—**Corol**, inner valve slender, ending in a long twisted awn.

**Male Flower** pedicelled. **Calyx** one-valved, and pitted as in the Hermaphrodite flower.—**Corol** two-valved, awnless.

16. *A. polystachyos* R.

Straight, **spikes** numerous, axillary, simple, each elevated on a long jointed, sheathed peduncle. **Flowers**, inferior pairs male and awnless; one of the superior ones is female and amply awned, the other male and awnless.

A native of the Peninsula of India. The flowers greatly resemble those of *A. contortus*, but the habit of the grasses is very different.

*Culms* straight, ramous.—**Leaves** ensiform, straight, acute, ciliate at the base.—**Spikes** simple, many together on the axil of the leaves, each elevated high on its long, filiform, jointed, sheathed peduncle; length from one to two inches.—**Flowers** paired, those on the lower
two-thirds of the spike are all male, and awnless, and, as usual, one of them sessile, the other short-pedicelled; superior pairs, the sessile one of each of these is a slender female, amply bearded at the base with much dark brown hair, which is the more conspicuous as every other part of the spike is smooth; the other short-pedicelled, male, and awnless, like the inferior pairs.

**Male Flowers.** Calyx two-valved.—Corol two-valved.—Stamina three.

**Female Flowers.** Calyx of one linear, striated, hard, dark-brown valve.—Corol one-valved with a very long, twisted awn on the other side.—Stamina none. Styles two.

Sect. 3d. Panicles naked, and terminal.


Creeping Leaves shorter than their sheaths. Panicle linear-oblong, erect, ramifications three-flowered, one hermaphrodite, sessile, and two male, peduncled.

Gramen aciculatum. Rumph. Amb. 6. t. 5. f. 1. good.

Raphis trivalvis. Lour. Cochinch. 676.


Sans. शंखिणी, Shunkhince, चारपुखे, Chora-pooshpee, बेंगी Keshinie.

Beng. Chora-kanta.

Grows on barren, moist, pasture ground; its seeds are exceedingly troublesome to those who walk where it grows, as they stick in the stockings and produce a disagreeable itching.

Culms straight, simple, from one to two feet high, round and smooth. Leaves small, waved, with the margins prickle-ciliate. Panicle terminal, erect, linear-oblong, from two to three inches long. Ramifications (or rather peduncles) verticelled, simple, three-flowered, nearly erect; apex armed with short stiff hairs. Flowers, one sessile, hermaphrodite, and two pedicelled male ones on each peduncle.

**Hermaphrodite Flower.** Calyx two-valved, nearly equal; the inner one ends in a short arista, and has the keel scabrous; base
involved in brown short hair.—\textit{Coroll} two-valved, the inner one ending in a short rigid arista.—\textit{Stamens} three, \&c. as in the genus.

\textbf{Male Flowers.} \textit{Calyx} and \textit{Coroll} as in the male, except that there is no \textit{arista} to the corol.

\textit{Obs.} It is of a very coarse nature. I never found it touched by cattle.

18. \textit{A. verticillatus.} \textit{R.}

Erect. \textit{Leaves} long, and very hairy; \textit{Panicle} conical, \textit{ramifications} verticelled, three-flowered; one hermaphrodite, sessile, with two awns; and two-pedicelled, male, with one awn each.

A native of mountains, flowering about the end of the wet season. \textit{Root} woody, perennial.—\textit{Culms} erect, simple, very leafy, smooth, round, towards the base solid, as thick as a small goose quill; from four to six feet high.—\textit{Leaves} approximated, eighteen inches long, and three quarters of an inch broad; margins set with minute spines, and particularly hairy on the inside near the base.—\textit{Panicles} erect, conical, \textit{lan}, from eight to ten inches long, composed of many verticelled, most simple, filiform, waved, bowing, three-flowered branches, as in \textit{A. aciculatus}.

\textbf{Hermaphrodite Flowers} sessile. \textit{Calyx}, glume one-flowered, two-valved, inner valve awned, both hairy, having the base surrounded with much brown hair.—\textit{Coroll} one-valved, a long twisted awn occupying the place of the other.—\textit{Stamens} three.—\textit{Style} yellow.

\textbf{Male Flowers} pedicelled, one on each side the hermaphrodite one; pedicels covered with brown hairs.—\textit{Calyx}, exterior valve a little hairy, and awned, base involved in short brown hair.—\textit{Coroll} two-valved.—\textit{Stamens} three.


A large, leafy, sub-erect species; a native of the mountainous parts of the northern Circars.
I am not possessed of any other description of Swartz's *A. saccharoides* than the specific character, as it stands in Willdenow's edition of the species, which agrees with my plant; I therefore conclude they are the same.


*Spikes* from six to eight, fascicled, peduncled; *rachis* hairy. *Flowers* lanceolate, hermaphrodite, sessile and awned; *male* pedicelled and awnless; *calyces* acute, exterior valve hairy.

A native of Coromandel. It is a stout erect species, with a branch from the axil of each of the superior smooth short leaves; it has much the appearance and habit of *Bladhii*, and *pertusus*; from the former it differs most conspicuously in the valves of the *calyces* being acute, whereas in *Bladhii* they are broad and rounded; and from *pertusus* in the want of the pit on the back of the exterior valve of the hermaphrodite flowers.

21. *A. punctatus*. R.


This is a mountain grass.

*Culms* from two to four feet high, without branches, below bent towards the earth for half a foot, often erect, entirely surrounded with the sheaths of the leaves; not piped, but replete with spongy pith.—*Leaves* numerous, large, with some long white hairs scattered over them near the base; mouths of the sheaths stipulated, bearded, and woolly.—*Panicle* erect, oblong, from four to five inches high, composed of many, erect, short-peduncled, filiform, secund, spiked racemes; *rachis* and flowers exactly as in *A. fascicularis*; except that here the outer valve of the calyx of both flowers has a pit in the middle.—The *corol* of the hermaphrodite flower wants the inner valve, in its place is a pretty long twisted awn.
Andropogon. TRIANDRIA DIGYNIA. 269

22. A. fascicularis. R.

Erect, ramous. Panicle composed of fascicled, simple, or divided branches. Flowers paired; hermaphrodite ones awned; neuter ones awnless and without a corol.

Teling. Kunda-jeri.

A native of mountains.

Culms erect, jointed, smooth, rather thicker than a crow's quill, from three to five feet high, sulcated, mostly naked, rush-like, not pipped. — Leaves from three to four, small, remote, retrorso-scabrous; mouths of the sheath hairy; from each sheath springs a short panicle-bearing branch.— Panicle terminal, six inches long, erect, fascicled; fascicles remote, alternate, composed of several erect, filiform, often ramous, secund spikes, or spiked-racemes.— Flowers in pairs; the hermaphrodite ones sessile; the neuter peduncled. Common rachis round, smooth; partial one undulated, jointed, compressed, woolly.

Hermaphrodite Flower. Calyx, glume one-flowered, two-valved, smooth, awnless, base surrounded with wool.— Corol, exterior valve the length of the calyx; inner short, bifid, with a long twisted awn from the fissure. Neuter floret small, its pedicel woolly, length of the hermaphrodite flower.— Calyx two-valved.— Corol none.


Erect in all situations. Leaves sub-bifarious, long, narrow, and rigid. Panicle verticelled, ramifications simple, expanding, hermaphrodite and male flowers awnless, with muricate calyces, and corols of three valves.

Sans. बीरधू, Veerunung, वीरतर, Veeruturung.

Beng. Bena, the name of the plant, and Khuskhus the root.

Tam. Woetiwear.


It is very common in every part of the Coast and Bengal where it meets with a low, moist, rich soil, especially on the banks of water courses, &c.
**Triandria Digynia.**

*Andropogon.*

*Root of many perennial, long, spongy, brown fibres.—Culms many, smooth, simple, rigidly erect, a little compressed at the base, jointed, smooth, inwardly spongy; from four to six feet high and as thick as a goose quill.—Leaves near the base bifarious, narrow, erect, from two to three feet long, pretty smooth, rigid.—Panicle from six to twelve inches long, conical, composed of numerous spreading, short-peduncled, simple, linear, verticelled spiked-racemes. Rachis of the spiked-racemes jointed, winding, naked.—Flowers paired, awnless, one hermaphrodite, sessile; the other male, and pedicelled; insertion nearly naked.*

**Hermaphrodite Flower.** *Calyx* two-valved, nearly equal, muricated.—*Corol* three-valved, membranaceous.—*Nectary,* two obcordate scales embracing the germ and insertions of the filaments.—Stamens three.—Stigmas feathery.

**Male Flower.** *Calyx* as in the hermaphrodite.—*Corol* two-valved. *Nectary* as above.—Stamens three.

*Obs. The roots, when dry, and then gently moistened, emit a pleasant kind of fragrance; they are employed to make large fans, commonly called *Vissarees;* and also to make screens which are placed before windows and doors, which being kept moist during the hot winds render the air that passes through them, both cool and fragrant. See Observation on *Aristida setacea.* The grass is often employed for thatch.*

Dr. König was too accurate a Botanist to describe this very conspicuous plant under two names, viz. *A. squarrosus* Linn. Sp. Pl. Willd. iv. 908, and *A. muricatus*; the former is evidently a very different species, and found by him in Ceylon, floating on pools of water; whereas *A. muricatus* (which I formerly called *aromaticus*) is always rigidly erect, whether growing in water, or on dry land. Its root is delightfully aromatic, as mentioned by König himself, and by Sir William Jones, particularly when moistened with water.

I am inclined to think König’s *Andropogon squarrosus* is my * Panicum paludosum*; a species with thick spongy culms which is generally found swimming on pools of sweet water.
24. *A. glaber. R.*

Erect, ramous, smooth. Panicle ovate, verticelled; ramification simple, two or three-cleft. Flowers paired, the hermaphrodite ones awned, with the calyx pitted; the male ones neither pitted nor awned, with a two-valved corol.

Beng. Gundha-gooran.

Found thinly scattered on rather elevated spots over Bengal.

Root perennial.—Culms sub-erect, very ramous, smooth, from three to four feet high.—Leaves glossy, smooth in every part.—Panicles ovate, verticelled; ramifications simple, and two-cleft, or even three-cleft sometimes.—Flowers paired; the hermaphrodite ones sessile and awned; the male ones pedicelled, and awnless.

Hermaphrodite Flowers. Calyx two-valved, smooth, purple-coloured; exterior valve pitted on the back.—Corol one-valved, a long awn occupying the place of the second.

Male Flowers nearly as large as the female.—Calyx not pitted.—Corol two-valved.

25. *A. montanus. R.*

Shrubby near the base, creeping. Leaves long and slender. Panicle sub-verticelled; ramifications ramous; flowers paired, the hermaphrodite ones awned, the neuter awnless, with a corol of one valve.

Teling. Auroots hangali.

A native of mountainous countries.

Culms many, below resting on the ground and rooting, round, smooth, from three to four feet high, and as thick as a large crow-quill.—Leaves long and narrow, a little hairy on the upper side near the base only; mouths of the sheaths bearded.—Panicle terminal, conical, from four to eight inches long, composed of many, ramous, sub-verticelled spikes, or rather spiked-racemes; rachis winding, jointed, a little hairy.—Flowers as usual, in pairs, an hermaphrodite one sessile; and a neuter one pedicelled.

Hermaphrodite Flowers. Calyx two-valved, the exterior
one a little hairy.—**Corol** one-valved, a twisted **awn** two or three times the length of the corol supplies the place of the other.—**Neuter** flowers like the hermaphrodite ones, but without arista.

26. *A. bicolor*. **R.**

Erect. **Panicle** diffuse, with expanding, decompound and super-decompound branches; **hermaphrodite** calyces with smooth backs, and fringed margins; **corol** three-valved, and awned, calyx of the **neuter flower** hairy with a two-valved corol.


**Beng.** Kala-deodhan.

**Hind.** Kala-jooar.

**Teleng.** Muka-janoo, and Muka-janoolar the grain.

I have only found it in a cultivated state.

**Culms** generally single, straight, round, smooth, from four to ten feet high, and as thick as the finger or thumb, mostly covered by the sheath of the leaves.—**Leaves** from one to three feet long, and from one to three inches broad, smooth; **mouths** of the sheaths bearded.

—**Panicle** erect, oval, dense, composed of many ramous, expanding, sub-verticelled branches, the various ramifications angular and very hispid when the finger is drawn backwards over them, their flower-bearing extremities hairy.—**Flowers** paired, and, as in the genus, the sessile one is hermaphrodite and the pedicelled one neuter.

**Hermaphrodite Flowers** sessile. **Calyx**, **valvelets** nearly equal, with the back smooth, and as they ripen becoming of a shining black, with many white hairs round the margins (ciliated.)—**Corol** three-valved, fringed, the second or solitary valve ending in a short twisted arista.—**Seeds** oval, brown, smooth, free, with an impression on the back near the base.

**Neuter Flowers** pedicelled. **Calyx** striated, hairy.—**Corol** two-valved, awnless.—**Stamens** none.

**Obs.** This and the following species *A. Sorghum* seem to me to possess more of the character of *Andropogon* than of *Holcus*. I have therefore changed their places from the latter to the former.
27. **A. Sorghum. R.**

Erect. *Panicle* contracted, dense; hermaphrodite *calyces* hairy.

*Corols* three-valved, awned.


Beng. and Hind. *Jooar.*

*Teting.* Tella, or Konda (white) *janoo* the name of the plant, and Tella-janoolar the grain.

*Obs.* This also I have only found in a cultivated state. It differs from the former.

1st. In having the *panicle* contracted, very dense, and less regularly verticelled.

2d. In having the *glumes* of the *calyx* of a whitish green colour and very woolly.

3d. In having three-valves to the *neuter flowers*.

There are two other sorts, which I take to be only varieties of the last; their names in Telimga are *Pacha* (green) *Janoo* and *Yerra* (red) *Janoo*.

These last two with their varieties are much cultivated on a rather elevated, good soil. Seed time October; and harvest time January. The produce in good soil is often upwards of an hundred-fold. The grain is much used for food. It is probable that through the whole of Southern Asia as many of the inhabitants live on the various kinds of dry or small grain, as upon rice, and they are reckoned fully as wholesome as that is.

All kinds of cattle are remarkably fond of the straw notwithstanding its thickness, and solidity.

28. **A. cernuum. R.**

Erect, from five to fifteen feet high; lower half with verticels of *roots* from the joints. *Panicles* oval, with numerous, long, compound, cernuous branches; *glumes* villous and fringed; *corol* three-valved and fringed, the inner scarce awned.


This species, (or variety of *Sorghum,* is the kind cultivated by the inhabitants of the Munipoora, Koonkee, and other mountainous districts
immediately east of Bengal. The grain is milk white; some of it was sown in the Botanic Garden, during the early part of the rainy season of 1812, and in November the plants were from ten to fifteen feet high, several ramous stems arising from the same root, or grain of seed; all the joints of the lower half of the original stems which are as thick as a slender walking cane, throw out copiously verticels of roots from all the joint, the lower ones near the soil enter it, and give additional support and nourishment to the plants, which are of two, or more years' duration, if suffered to remain; the leaves are from twenty to forty inches long, by two or three broad, soft and smooth, the rib white on both sides. Panicles large, oval on the more slender branches, and in those, while in flower erect; but in such as terminate the primary stems the form is obscure, from the drooping habit of their branches. The flowers agree with those of Sorghum, except that the awn is so small and short as to be hid within the glume of the calyx; the neuter flowers are very minute, and consist of only one or two slender, villous, calycine glumes. The grain of this plant is the staff of life of those wild savage mountaineers, who inhabit the above mentioned countries, where it is one of the few articles cultivated by them. Cattle are fond of the straw, or rather canes.

29. A. sacharatus. R. 
Erect. Panicles verticelled, with ramifications drooping. Calyx hairy, corols awuless; hermaphrodite three-valved, neuter one-valved.

Hind. and Beng. Deo-dhan.

Is much cultivated over various parts of India during the rainy and cold seasons upon land which is too high for rice.

Root ramous.—Culms erect, round, jointed, sometimes ramous, lower joints radicating, from eight to twelve feet high, three or four inches in circumference near the base.—Leaves bifarious, sheathing sword-shaped, margins hispid, the rest smooth, with a white nerve
on the upper side, three feet long, and three or four inches broad. Sheath as long as the panicle is when young, afterwards the whole is completely bent down from the weight of the seed.—Flowers paired, one hermaphrodite, sessile; the other neuter, and pedicelled.

Hermaphrodite Flowers sessile. Calyx one-flowered, two-valved, both valves hairy.—Corol three-valved, the solitary valve daggered; dagger, shorter than the calyx.—Seed oval, white.

Neuter Flowers pedicelled. Calyx two-valved, hairy.—Corol one-valved, awnless.—Stamens none.

Obs. The only circumstance that renders me uncertain whether this is Holcus saccharatus of Linneus is the total want of the arista in the hermaphrodite flowers; in other respects they agree.


Erect, from one to fifteen feet high. Panicle ovate, lax; ramifications sub-verticelled, compound and decompound. Calyx hairy; corols fringed, those of the hermaphrodite three-valved, and awned.

Beng. Kula-moocha.
Teling. Gaddi-janoo.

Grows in hedges, on banks of water courses, and on land that has lately been in cultivation.

Root somewhat woody, perennial.—Calm near the base bending to the earth, and there rooting at the joints, the rest erect; the whole is of a firm ligneous texture, inwardly spongy, jointed, round and smooth; below naked, above covered by the sheaths of the leaves. In hedges on the banks of the rivers, &c. where the soil is good, it is often from ten to fifteen feet high; while on a barren dry soil, not more than one or two.—Leaves long, smooth, except the margins, which are scabrous.—Panicle very large, oval, often bowing, rather thin, composed of sub-verticelled, ramous, spreading branches, with woolly insertions; the branchlets of the branches are composed of four or six pedicelled, spiked racemes. Rachis of the spikes jointed, &c.—Flowers paired, &c. as in the other species.

Hermaphrodite Flowers sessile. Calyx two-valved; valve-
lets equal, hairy.—Corol three-valved, membranaceous, margins fringed with hairs; the second one reteuse, with a pretty long twisted arista; the inner one very small.—Nectar as in the last species.

Male Flowers pedicelled. Calyx as in the hermaphrodite.—Corol two-valved.

31. A. miliaceus. R.

Erect, from six to ten feet high. Panicle ample, lax; ramifications verticelled, expanding, or drooping. Corol three-valved, in both hermaphrodite and male flowers.

The seeds of this most beautiful stately grass were sent me from Lucknow, by the late Gen. Claude Martin, under the name of hill grass. It being a native of the mountains north of Oude. It blossoms in this garden during the latter part of the rains.

Culms erect, ramous, smooth, the largest of them nearly as thick as the little finger; general height (in the rich soil of the Botanic Garden) about ten feet.—Leaves ensiform-lanceolate, soft, and smooth, except the margins, which are armed with minute sharp bristles; pointing forward, general length from two to three feet, and from one to two inches broad near the base, where broadest.—Sheaths smooth, except at the mouths, and there bearded on both sides.—Panicle very large, erect, with long, slender, smooth, elegantly drooping, verticelled, compound, and decompound ramifications.—Flowers in pairs, as in the genus; one hermaphrodite, and sessile; the other male, and pedicelled.—Calyx two-valved, one-flowered, oval, rather obtuse, and hairy, but without the characteristic woolly, or hairy involucre round the base of the flowers.—Corol in both sorts three-valved, membranaceous, and fringed, sometimes the hermaphrodite flower is awned.—Nectary two, fleshy, broad, truncated, fringed scales.

Obs. In habit this beautiful species comes near my Andropogon tumbuckia., from the Cape of Good Hope, but is more elegant in the panicle.
32. *Andropogon pumilus* R.

Erect; twelve inches high; panicles composed of numerous axillary, and terminal, conjugate spikes, on long, jointed, sheathed peduncles. *Calyx* of the sessile hermaphrodite, flower awned, cuspidate.

A native of Coromandel, and one of the smallest of the genus.

*Culms* ramous, erect, smooth. *Leaves* rather small, particularly the floral ones, which are little more than large sheaths. *Panicle* composed of numerous, axillary, and terminal, conjugate, hirsute, second spikes, elevated on slender, jointed peduncles, embraced by many delicate, chaffy bractes at the base, and by a sheath from the joint upwards. *Flowers* in pairs on the joints of the hairy rachis, one sessile and hermaphrodite, the other peduncled and male. *Calyx* two-valved, that of the hermaphrodite flower cuspidate. *Corol* one-valved, an arista occupies the place of a second in the hermaphrodite flower.

33. *Andropogon parviflorus* R.

Ascending. *Leaves* linear. *Panicle* leafy, thin; *spikelets* solitary, with proper, jointed, leafy spathes; both flowers awned, the pedicelled one a rudiment only.

A very beautiful most delicate species, a native of pasture land up amongst the Circar mountains and also of the mountains themselves.

*Culms* very branchy, ascending, filiform, about a foot, or a foot and a half high. *Leaves* numerous, small, linear, rather obtuse, mouths of the sheaths stipulated. *Spikes* axillary, minute, peduncled, generally one or two, rarely three. *Rachis* jointed and waved as in the other species, but here it is smooth, except at the insertions of the flowers. *Peduncles* most slender, jointed at the middle, from whence a small spathe ascends, which generally hides a part of its spike. *Flowers* in pairs; one hermaphrodite and sessile, the other merely the rudiment of a floret on a long clubbed pedicel.
Perennial, erect. Panicle sub-secund, linear, leafy; spikelets thereof paired, on a common, spathed pedicel, with proper pedicels and spathes; flowers of both sorts awnless, the male corol one-valved.

Sans. मालाटब्रच्य, Malatrinukung, भूसूलां, Bhoostrinung.
Beng. Gundha-bena.
Schænanthum amboinicum. Rumph. amb. 5. p. 181. t. 72. f. 2.
Schænanthus, 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-ligneous 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 girt at the base with wool, &c. as in the family.—Corol two-valved, awnless. Nec-

* 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, awnless. 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 curries, to give them an agreeable flavour.*


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

Beng. and Hind. Ibharan kusha, Iwarankusha, Kurankusha.


A native of the skirts of the northern mountains of India. Dr. Blane found it between the river Raptee 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.
TRIANDRIA DIGYNIA.  

Andropogon.

long, linear, erect, or drooping, intercepted panicle, composed of numerous, (many of them prolixious,) fascicles of slender, pedicelled, thin spikes of five joints; each fascicle is furnished with its own proper, boat-shaped spathe, besides many chaffy bractes within it among the insertions of the pedicels; and a proper spathe to each pair of spikes.—Flowers on the body of the rachis paired; one awned, hermaphrodite, and sessile; the other awnless, male, and pedicelled, the terminal florets are three, one hermaphrodite, sessile, and awned; the other two male, pedicelled, and awnless.

Hermaphrodite. Calyx one-flowered, two-valved, base girt with wool, as is also the rachis, and proper pedicels.—Corol two-valved, and fringed; inner valvelets two-parted, with a short arista in the fissure. Nectary two, minute, leaflets embracing the germ laterally.—Stamens, pistil, and seed, as in the genus.

Male. Calyx as in the hermaphrodite. Corol one-valved, nectary and stamens as in the hermaphrodite, no pistil.

Obs. This species comes remarkably near to A. Schranthus both in habit and taste.

For the virtues of the roots of this plant, see Dr. Blane's account thereof in the second part of the 80 volume of the Philosophical Transactions of the Royal Society of London; also Asiatic Researches iv. p. 109. The virtues seem to reside almost entirely in the larger parts of the root, marked with annular cicatrices, the taste is agreeably aromatic, with some degree of bitterness.

36. A. Martini. R.

Perennial, erect. Panicles linear, sub-secund; spikelets paired, three-jointed, with common spathes only; hermaphrodite corols of one valve, and an awn; male awnless.

A native of the high lands of Balla-ghat, General Martin collected the seeds while there with the army, during the last war with Tippoo Sultan, and has reared abundance of it at Lucknow.

It is also now plentiful in the Company's Botanic Garden, raised from seed sent from thence by that gentleman, whose name I have applied as a specific one for this elegant plant.
Paspalum.  

**Triandra Digynia.**

Root perennial, with long wiry fibres.—**Culms** erect, from three to six feet high, often ramous, smooth, filled with a spongy pith.—Leaves very long, tapering to a very fine point, smooth in every part and of a soft delicate texture.—**Sheaths** shorter than the joints on full grown plants, with a membranaceous stipulary process at the mouth.—**Panicles** as in A. Iwarancusa; spikelets paired, but with only three joints.—**Flowers** also paired, &c. as in the former species, only there the lowermost pair on the most sessile of the two spikelets are both male, and one of them rests upon a smooth, convex, callous receptacle instead of a pedicel.—**Rachis** jointed, and woolly.—**Calyx** as in A. Iwarancusa.—**Corol** one-valved, a long black awn occupies the place of the other, which has two small filaments near its base. **Nectary**, &c. as in the foregoing species.

**Obs.** General Martin, who sent me this grass from Lucknow, writes to the following effect:

"I took particular notice of a sort of long grass which the cattle were voraciously fond of, which is of so strong an aromatic and pungent taste, that the flesh of the animals, as also the milk and butter, have a very strong scent of it. Of this grass I send you a small stalk, some roots, and seed; if you taste the latter, though old, you will find it of a very pungent aromatic taste."

**PASPALUM.** Schreb. Gen. N. 81.

**Calyx** one-flowered, two-valved, valvelets rounded, equal. **Corol** of two-valves, and like the calyx. **Seed** adhering to the corol.


**Spikes,** axillary and terminal, sessile, alternate, erect. **Flowers** alternate, in two rows, or crowded, smooth. *Calyces* from three to five-nerved. **Culms** erect, two feet high, smooth. **Seed** round, smooth.

Sans. कोरुड़ू | Korudeosha, कोरुड़ू | Kodruva.
Beng. Koda.
Teling. Aruga.

Jj
This is cultivated by the natives over many parts of India. It delights in a light, dry, loose soil, but will grow in a very barren one. Time of cultivation the rainy season.

Root fibrous. — *Culms* erect, ramous, jointed, smooth; about two feet high, involved in the sheaths of the leaves. — *Leaves* sheathing, bifarious, longer than the culm, every part smooth. *Sheaths* longer than the joints, often embracing the spikes like a spathe. — *Spikes* axillary and terminal, from two to four, alternate, sessile, erect, second. — *Rachis* broad, membranaceous, with a waved keel on the inside. — *Flowers* oval, alternate, in two rows; in luxuriant plants the flowers are crowded without order. — *Calyx*, exterior valve three-nerved, *interior* valve five-nerved. — *Seeds* brown, smooth, size of that of hemp.

Obs. The seed is an article of diet with the Hindoos, particularly with those who inhabit the mountains and most barren parts of the country, for it is in such countries only where it is cultivated, it being an unprofitable crop, and not sown where others more beneficial will thrive. I have eaten of the boiled grain, and think it as palatable as rice.


*Spikes* terminal, alternate; *flowers* alternate, in two-rows, smooth. *Calyces* from three to five-nerved. *Culms* below procumbent, from one to eight feet high.

P. orbiculare. Forst. prodr. N. 35.

_Hind._ Kodu.

_Teling._ Neer (i.e. water) Aruga.

A native of the borders of water courses.

Root fibrous, annual. — *Culms* resting on the ground near the base, above ascending, branchy, jointed, smooth; from one to three feet long. — *Leaves* as in *P. scrobiculatum*, but shorter. *Spikes* generally two, or three, though in very luxuriant plants I have seen seven or eight, terminal, sessile, horizontal, and erect, the rest as in the last described species.
Obs. Cattle are very fond of these two species, whether green or dry.


Teretu-pullu. Rheed. mal. 12. p. 81. t. 44.


Root creeping.—Culms creeping, with their extremities ascending six or eight inches high, jointed, smooth.—Leaves sheathing, alternate, bifarious, short; mouths of the sheaths bearded.—Spikes paired, terminal, sessile, spreading, secund.—Flowers in two rows, alternate, oblong, somewhat paired, smooth.—Calyx and corol without nerves.

4. P. longijolium. R.

Erect, simple. Leaves as long as the culms. Panicle of many simple, alternate, diverging spikes scattered round a three-sided rachis. Valvelets of the calyx three-nerved. Seed oval, lucid, and marked with minute pits.

Of what country this is a native is uncertain. It appeared in the Botanic Garden in 1807, in a place where plants from Sumatra had been planted, it is therefore more than probable that the seeds were in the earth.

Culms several from one root, simple, straight, jointed, nearly erect, round and smooth, height of the whole plant when in flower above three feet.—Leaves long, viz. from one to three feet, sheaths included, slender, acute, smooth, except the edges when rubbed backward. Sheaths longer than the joints of the culm, and smooth, except at the top, where there are a few, long, soft hairs near the short scariosc ligula.—Panicle composed of from twelve to twenty.
four, simple, diverging spikes, scattered alternately round a threesided rachis, nearly a foot in length.—Spikes sessile, with a few, long, straight, white hairs round their insertions, about three inches long. Rachis flat, with a waved keel on the underside, and coloured, waved margins.—Flowers in numerous, alternate, imbricated pairs on the underside of the flat rachis, on unequal, short-pedicels.—Calyx of two, very equal, oval leaflets with a nerve or rib round the margins, and one down the middle.—Seeds oval, dotted with innumerable, small pits, shining.

**Lappago. Schreb. Gen. N. 131.**

*Calyx* from two to three-valved.—*Corol* two-valved, resupine.

1. *L. biflora. R.*

*Culms* creeping. *Pedicels* two-flowered; inner valvelets of the calyx armed with hooked bristles.


It is a small, prostrate grass, a native of the dryest pasture ground on the Coromandel Coast.

*Culms* pressing on the earth, and striking root from the joints, from six to twelve inches long, ramous.—*Leaves* short, margins ciliate, and waved; mouths of the sheaths bearded.—*Racemes* terminal, simple, from one to two inches long.—*Pedicels* short, diverging, two-flowered.—*Flowers* lanceolate, echinated on the back, or outside, diverging on all sides round the rachis, which is waved, angular, striated, and downy.—*Calyx* one-flowered, two-valved; the exterior valve very minute, second or inner valve, (for there is no other,) lanceolate and completely embracing the corol on all sides, on the back and sides covered with many, strong, hooked bristles.—*Corol* two-valved, membranaceous. *Nectarial scales* large.—*Stamens, Pistil,* &c. as in the genus.
**Panicum.**

**Triandria Digynia.** 285


Calyx, Glume one or two-flowered, three-valved: exterior valvlets minute; seed adhering to the corol.

**Sect. 1st. Spikes simple.**


Culms from four to eight inches, ascending from a repent base. Spikes sub-cylindric, naked. Calyx smooth, no involucres.

P. conglomeratum. Linn. Sp. Pl. ed. Willd. i. 341. does not agree with our plant in having cylindrical spikes with flowers equally disposed on all sides. This is a very small species, a native of Coromandel.

2. **P. barbatum.** R.

Culms from three to five feet high; very ramous at top. Leaves lanceolate. Spikes simple, cylindric. Involucres simple, and bearded, surrounding on every side a single flower; seed smooth.

This species sprung up in beds, in the Botanic Garden where earth had been thrown that came from Sumatra, or Amboyna. Compare with **P. polystachyon.** Linn. Sp. Pl. ed. Willd. i. 335.

Root annual in Bengal.—Culms erect, about five feet high, simple, till near the top, there very ramous.—Leaves lanceolate, often a foot and a half long, hispid on the margins, otherwise smooth; the sheaths about half the length of the joints, with a few single hairs at the mouth.—Spikes terminal, and solitary (though from the numerous ramification of the top of the culms the whole may be called a large leafy panicle) sub-cylindric, about three or four inches long.—Involucres of two sorts, the longest about twice the length of the flowers with their lower half bearded, (hence the specific name, which for the same reason is also applicable to my Panicum holcoides,) the innermost one is in this species about double the length of the other five, six, or seven; all are of a reddish brown colour from the bearded part to the point. The other sorts of in-
volucrets are simple and about the length of the flowers. The two sorts surround on all sides a single flower.—Calyx one-flowered, exterior valve very minute.—Seeds smooth, slender and pointed.

Obs. It differs from my P. holcoides in the culms being very ramous at the top only, and in the leaves being lanceolate; from polys a-chyon it differs, I think, in having two sorts of involucrets equally disposed round the flower, and in the leaves being lanceolate and smooth.

3. P. spicatum. R.

Erect. Spikes cylindric. Involucres hairy, surrounding from one to three awnless polygamous flowers. Calyces two-valved, both shorter than the corol, the inner longer and retuse.

Gramen panicum, Pluck. &c. aln. t. 32. f. 4. good.
Hind. Bujera, or Bujra.
Pedda-Gantee is the Telinga name of the plant, and Gantíloo, the grain.

I have only found this in a cultivated state. It is sown about the beginning of the rains, viz. the end of June, and the beginning of July, and ripe in September.

Culms several, if the soil is good, from the same grain of seed, erect, with roots from the lowermost joint or two, round, smooth, from three to six feet high, and nearly as thick as the little finger.

—Leaves alternate, sheathing, broad and long; mouths of the sheaths bearded.—Spikes or rather racemes, terminal, cylindric, erect, as thick as a man's thumb, or more, and from six to nine inches long. Pedicels generally two-flowered, though sometimes only one and sometimes as many as four.—Flowers surrounded with many, woolly, hispid purple bristles or involucrets, about the length of the flower.—Calyx two-flowered, one hermaphrodite the other male, two-valved; exterior valuelet minute, interior nearly as long as the corol, retuse, both awnless.—Corol of the hermaphrodite flower two-valved, of the male one-valved.—Style single. Stigma two-cleft, feathery.—Seed obovate, pearl-coloured, smooth.
Obs. It agrees perfectly well with our Indian species of *Panicum*, on that account I have transferred it to that genus.

This species is much cultivated over the higher lands on the Coast of Coromandel. The soil it likes is one that is loose and rich; in such it yields upwards of an hundred fold, the same ground will yield a second crop of this or some other sort of dry grain during October, November, December, and January.

The Hindoo farmer knows four other varieties of this species, all of which he cultivates. Their Telinga names are 1st. *Pitta* (birds) Gantee; 2d. *Munda-boda-Gantee*; 3d. *Palla-boda-Gantee*; and 4th. *Yerra-Gantee*.

Cattle are fond of the straw, and the grain is a very essential article of diet amongst the natives of these parts.

4. *P. involucratum*. R.
Erect. *Spikes* cylindric, numerous, scattered, two-flowered, alternately longer and ciliate; shorter and smooth. *Calyces* two-valved, the exterior one minute, the inner one shorter than the corol, and emarginate.

A native of mountains chiefly, where it grows wild.

*Culms* as in the last species, from two to four feet high; joints woolly.—*Leaves*, mouths of their sheaths bearded.—*Spikes* as in *P. spicatum*, but the pedicels smaller, two-flowered.—*Involucrre*, many bristles surrounding on all sides the flowers, they are of two sorts, simple ones awled, and longer ones with fringed margins.—*Calyx* one or two-flowered; valvelets as in the last species.—*Corol*, when there is only one to the calyx it is hermaphrodite, when two, one hermaphrodite the other male as in the last species.—*Styles* two.

Obs. I know of no use this is put to at present; it may be *Panicum spicatum* in its wild state, though it is more like my *Panicum holcoides* in its present wild state.

*Culms* erect, from one to three feet high; *involucel* one bundle of
hairy bristles, one-flowered. Flowers generally polygamous. Seed transversely rugose.

Panicum, hairy bristles, one-flowered. Flowers generally polygamous. Seed transversely rugose.


This species is generally found on cultivated lands, growing amongst the different sorts of small or dry grain.

Root fibrous.—Culms sometimes near the base resting on the ground, and striking root; the rest erect, ramous, smooth, a little compressed; from one to three feet high.—Leaves sheathing, nearly bifarious, smooth; mouths of the sheaths hairy.—Spikes terminal, columnar, from two to six inches long.—Flowers solitary, or joined to the rudiments of one or two more, short-pedicelled, numerous.

—Involucels longer than the flowers, consisting of one bundle of hairy bristles which issue from the middle of the underside of the pedicel.—Calyx generally two-flowered, in which case one is male, the other hermaphrodite, with its corol, as in the family. The male corol consists of one membranaceous glume between the inner valve of the corol and inner glume of the calyx, it has three stamens only.

Obs. It may probably be P. helvolum of the Supplementum Plantarum. P. 107.

In India we have two or three varieties of this coarse grass, can any of them be Alopecurus indicus? the small reddish one comes very near it.

6. P. helcoides. R.

Erect. Involucels numerous, scattered, one-flowered, alternately one longer and woolly, and another shorter and smooth; flowers sometimes polygamous. Seed oblong, smooth, resembling a small grain of common oats.

Beng. Swat.

Grows, with the former, on cultivated lands, but chiefly up amongst the mountains.

Root fibrous.—Culms erect, ramous, from two to four feet high,
round, smooth.—Leaves sheathing; sheaths half the length of the joints; mouths bearded.—Spikes as in P. glaucum, but larger.—Flowers solitary, short-pedicelled, without order.—Involucels, numerous, bristles entirely surrounding the flower; of two sorts, the largest twice the length of the flower, and woolly from the middle down, the other sort are smaller, and without wool or hairy. —Calyx one or two-flowered, as in the last; exterior valve minute, the other two as long as the corol, of which the apex of the exterior one is somewhat three-toothed.—Seed smooth, very like common oats, but smaller.

Obs. It differs from P. polyschachyon in having the involucels scattered round the pedicels and flower. It may therefore be Kumph's gramen caricosum vol. vi. t. 7. f. 2. A.


Culms above water erect. Spikes simple, cylindric; flowers crowded, smooth, polygamous; seed smooth.

Beng. Naulula.

Teling. Wolam.

A very large species, grows in deep standing water.

Culms ramous, those parts under the water swelled, as thick as the little finger, with many fibres from the joints; the parts above the water erect, about as thick as a common quill, from two to four feet high, smooth, involved in the sheaths of the leaves.—Leaves, sheaths longer than the joints, smooth.—Racemes or spikes simple, erect, columnar, from four to six inches high.—Flowers small, oval, pedicelled, numerous, generally many, from nearly the same place. —Involucre entirely wanting.—Calyx two, inner glumes striated, from six to seven-nerved.—Corol, the small flower is present here. —Seed oblong, smooth, shining white.


Culms erect. Spikes curved; flowers crowded, smooth, hermaphrodite; seed smooth.
Grows about the borders of lakes.

_Culms_ numerous, ramous, erect, as thick as a crow quill, from two to three feet high, smooth.— _Leaves_ numerous, very long, slender, and smooth.— _Racemes_, or _spikes_ columnar; lower part somewhat ramous; branchlets adpressed.— _Flowers_ numerous, covering most completely every part of the racemes, pedicelled, oval.— _Calyx_, two inner glumes striated.— _Coroll_ no neuter, only one hermaphrodite.— _Seed_ smooth, shining, white.

**Obs.** This may be only a variety of _P. interruptum_.


_Spikes_ secund, jointed; joints excavated, daggered on alternate sides of the apex, from one to five-flowered. _Calyx_ two-flowered, one hermaphrodite, the other male.

_A native of the Peninsula of India, scarce._

_Culms_ short, oblique, smooth; whole height from six to twelve inches.— _Leaves_ slender, smooth, obtuse, rather broad toward the apex.— _Spikes_ solitary, secund, jointed, smooth, from three to five inches long. _Joints of the rachis_ from eight to twelve rigid, excavated for the reception of the flowers, except the lower one or two, which are longer; in all except these a long sharp point or dagger proceeds from the apex, on the alternate sides of the articulation.— _Flowers_ lodged in the concave joints of the rachis, on very unequal pedicels, the lowermost having each three or more, while those about the middle of the spikes have uniformly two, and the last two or three only one.— _Calyx_ two-flowered, two-valved; flowers both sessile, one hermaphrodite, the other male; valves unequal, the exterior one smaller; the inner one about as long as the valve of the coroll, or it may be described with three valves as in the genus; but then the male flower will have but one glume.— _Corolls_ two-valved; valves nearly equal, those of the male flower much firmer, the sides of the exterior one (which may be called the inner valve of the calyx, if it be allowed, to have three), with the sides bent in at right angles.— _Stamina_ three.— _Germ_ in the hermaphrodite flower oblong. **Style**
undivided for a short distance. Stigma plumose.—Seed oblong, dark brown, dotted; on the anterior side near the base is an oblong elevated mark.

Obs. Dr. Rottler, of Madras, an excellent Botanist, obliged me with the only specimens of this rare grass which I have yet met with, and had he not informed me that this was considered to be P. dimidiatum I should have been inclined to have taken it for an Ischaemum.

Sect. 2d. Spikes paired.

10. P. conjugatum. R.
A slender, soft, villous, half creeping species; a native of Coromandel. It differs from P. distachyon in the number of the spikes being constantly two, and the flowers always solitary and sessile. To these marks of distinction may be added that the valves of the calyx are three-nerved, and the accessory one particularly large.

Culms creeping, from ten to twenty inches long. Spikes paired, horizontal, rachis articulate; flowers in a fascicle on the upper end of each joint of the rachis.
Cenchrus muricatus. Mant. 302.
P. dimidiatum. Burm. Ind. 25. t. 8. f. 2.
A native of dry sandy ground near the sea.
Culms branchy, creeping, with their flower-bearing extremities suberect; from ten to twenty inches long.—Leaves short, but rather broad, and covered with soft hair; sheath large, downy, involving most of the culms.—Spikes two, terminal, spreading, horizontal, or ascending like a pair of horns, secund. Rachis composed of from four to eight, oblong joints, divided by a waved ridge; on each side of

K k 2
the ridge membranaceous.—*Flowers* collected in sessile bundles of from four to eight, alternately disposed on the upper end of each joint.—*Calyx*, the *exterior* one minute, and lanceolate; the *second* large, embracing loosely the *corol*, pointed, and striated; the *inner* one nearly as small as the *exterior*, tapering from the base to a fine point, three-nerved; margins fringed, of a chaffy texture.—*Corol* as in the genus, and rather longer than the inner *glume* of the calyx, here is a third neutral membranaceous valve, as in many species of this genus.

**Sect. 3d. Spikes fascicled.**


Smooth, creeping. *Spikes* digitate, secund, *corol* gibbous on one side, and twice as long as the calyces.


**Sans. विझ, Doora, द्रव बन्ध, Shatn urvika, सष्णचवौयौ, Su. hasuaveerya, भाघ वी, Bharguvee, जवर, Ourooha, अनमला, Unanta.**

**Benz. Doorba.**

**Teling. Ghericha.**

**Tam. Arugam-pilla.**

This is by far the most *common* and useful grass in India. It grows everywhere abundantly, and flowers all the year.

*Root* creeping.—*Culms* creeping, with their flower-bearing branch-leaves erect, from six to twelve inches high, smooth.—*Leaves* small, and smooth.—*Spikes* from three to five, terminal, sessile, filiform, expanding, secund, from one to two inches long. *Rachis* waved.

—*Flowers*, alternate, single, disposed in two rows on the underside.
—*Calyx* much smaller than the *corol*.—*Corol*, the large or exterior valve boat-shaped, keel slightly ciliate.—*Stigmas* villous, purple.

**Obs.** This most valuable grass forms three-fourths of the food of our horses and cows in India. It is by the brahmans of the Coasts
held sacred to Guneshra, (the Janus of the ancients,) under the name of Doorwall.

Creeping at the base. Spikes from four to eight; corymbed, smooth. Flowers paired on unequal pedicels; accessory valve of the calyx minute or wanting, the other two very unequal, nerved, and ciliate on the margins only.

Obs. Is rather a scarce grass in India, and grows in tufts. Cattle do not seem fond of it, whereas all are fond of P. dactylon.

Culms creeping at the base. Spikes sub-digitate. Flowers paired, one sessile the other pedicelled; inner two valves of the calyces equally long, and bearded with four woolly ridges; third minute.

Hind. Makur-jalee. 
Teling. Shangali-gaddi. 

It delights most in newly laid down pasture ground.

Culms creeping, with one or two feet of the extremities erect, these ramosus, round and smooth.—Leaves sheathing, short for the size of the grass; margins ciliate near the base; sheaths sometimes a little hairy, shorter than the joints of the culm, their mouths rise above the insertion of the leaf, stipule-like, as in Dr. Smith’s Erharta calycina, but here it is entire.—Spikes or rather spiked-racemes, from four to ten, digitate, expanding, secund.—Flowers paired, one sessile, one peduncled.—Rachis three-sided, waved.—Calyx, exterior valve most minute. Interior two many-nerved, four of the nerves are clothed with very long, white, soft hairs.

Obs. Small plants on a poor soil, have much the appearance of Agrostis radiata. Cattle are very fond of this grass.

Creeping, filiform, smooth. Spikes, from two to four, sub-digi-
tate, filiform, secund; flowers paired, one sessile the other pedicelled. Calyx with the accessory valve, minute; inner one half the length of the corol or middle one; these last two are three-nerved, and villous on the margin.

From China it was brought to the Botanic Garden, where it thrives well, and blossoms the whole year, but chiefly during the rains.

Culms ramous, creeping, very delicate, and smooth, a large portion next the spikes erect, naked, coloured and filiform.—Leaves soft and small, ciliate, with a few long hairs at the base.—Spikes generally from two to four issuing from the same point, very slender, secund. Rachis flexuose.—Flowers, in a pair, one sessile.—Calyx one-flowered, flower hermaphrodite; accessory valve exceedingly minute, but by careful observations may always be found; second valve as long as the corol, the inner one only half their length, which is one of the best specific marks; these two have three smooth nerves on the back, and their margins are slightly bearded.—Corol two-valved.


Sub-erect, smooth. Spikes from two to six, digitate, filiform. Flowers all hermaphrodite, awnless, and pedicelled. Calycine valves, the accessory one minute; the inner two equalling the corol, and three-nerved.

P. lineare. Burm. Ind. p. 25. t. 10. f. 3, is a tolerable representation of this pretty delicate grass.

A native of China, accidently introduced from thence into the Botanic Garden, where it is in flower the whole year; but like most other grasses most luxuriant during the rains. It has a great resemblance to P. dactylon, ciliare, filiforme, and aegypticum, but does not creep like them. The flowers are less regularly paired, more minute, smooth, and obtuse, the two inner valves of the calyx equal, and as long as the corol, and the accessory one very minute, or not to be found.
Panictum. 


Culms erect, hairy, from one to two feet high. Racemes peduncled, corymbed; flowers polygamous, in pairs; exterior valvelets of the calyces fringed; corol awned.

Millin cimicinum. Mant. 184.

A rare plant, native of ground that has been lately in cultivation.

Culms from one to two feet high, sub-erect, hairy.—Leaves short and broad, hairy, and fringed round the margin; sheaths also hairy.

—Racemes from four to ten; when more than four or five, the rest are elevated on a common peduncle above the point from whence the first four or five issue; all are pedicelled, bowing, second.—Flowers in two rows and in pairs, scarcely ever single.—Calyx, border of the inner valve fringed, with red hairs.—Corol, the arista is sometimes wanting, and its valves three-nerved; in mine there is a second, or male floret as in many species of Panicum.

18. P. corymbosum. R.


Teling. Cheepa-bora-gaddi.

This species I have found only in the valleys amongst the Circair mountains; it grows to a great size in standing sweet water.

Culms of great extent, creeping, or floating, with their extremities erected above the water; on dry ground I have also found it, where it is in general from one to four feet high.—Leaves as in other grasses; sheaths covered with stiff white hairs.—Spikes corymbed, numerous; from four to eight inches long, filiform, sub-erect, second, level-toped. Rachis, common striated; partial three-sided.

—Flowers oblong, in two rows, paired; one very short pedicelled, the other longer.—Calyx two-valved; the exterior valve small, the other as large as the corol, and striated, but no third or inner valve.—Corol as in the family.—Seed oblong, smooth white.
Sect. 4th. Spikes alternate on one side only of a common rachis.


Culms sub-erect. Leaves short. Spikelets remote, adpressed. Flowers oval, solitary, polygamous; inner two valves of the calyx equal; nectarial petals long; seed ovate, pointed, rugose.

P. flavidum. Linn. Sp. Pl. ed. Willd. i. 339. Retz. Obs. iv. 15. appears to be the same plant growing on a barren soil; this was the opinion of König. P. flaccidum of the Banksian Herbarium seems the same, or a variety only.

Teling. Oda, or Woodoo-gaddi.

It is common in every soil and situation, even in deep water; in one that is rich and moist, it is often from two to four feet long, and again on one that is dry and barren only as many inches. It grows in tufts, various parts of it are often tinged purple.

Culms near the base resting on the ground, and rooting above, regularly ascending, compressed, smooth.—Leaves bifarious, smooth, their length differs much; mouths of the sheaths bearded.—Spikes compound, secund, their length various according to the size of the plant. Spikelets secund, number very various, alternate, erect, pressing on the common rachis; below they are often two or three times their length from each other; above less remote. Rachis, common, somewhat three-sided, with a groove on the outside where the spikelets rest.—Flowers always disposed in two rows, sub-globular.—Calyx two-flowered. Inner valve the size of the corol, middle valve rather shorter; all are striated with green nerves. —Corol one hermaphrodite, and one male, as in some of the species already described, always present, except in very minute plants, and even then the stamens of the second floret are only sometimes wanting.—Nectary, in each two obovate scales.—Seed short, oval, pointed, slightly rugose.


Culms from two to three feet high, creeping at the base. Leaves
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long. Spikelets numerous, approximate, longer than the interstices. Flowers hermaphrodite, oblong, two exterior valvelets of the calyces minute; seed oblong.

Beng. Peti-nar.
Teling. Doosa.

Delights in a moist rich soil, such as the banks of water-courses, borders of rice fields, &c.

Culms at the base creeping, above nearly erect, round, smooth, from one to four feet long, including the part that rests on the ground.—Leaves smooth, except about the mouths of the sheaths where they are bearded, and sub-ciliate.—Spike compound, secund, exceedingly like that of P. brizoides, only here it is generally longer, with often as many as twenty-five or thirty spikelets; their distance from one another is not so regular and is generally less than their own length.—Flowers disposed in two rows on the outside of the spikelets, which are oblong.—Calyx one-flowered, the two exterior valves very small.—Seed oblong, pointed, rugose.


Culms, creeping. Leaves lanceolate, mouths of their sheaths elevated and bearded. Flowers hermaphrodite; valvelets of the calyces equal, the exterior one awned. Seed smooth, oblong.

P. aristatum, of the same author, seems the same grass.

Compare with P. compositum. Linn. Sp. Pl. ed. Willd. i. 346. In the Banksian Herbarium the same species is labelled P. unguinosum. Grows under the shade of trees.

Culms creeping, ramous, with their extremities, from one to two feet high, sub-erect.—Leaves lanceolate, waved, often tinged with purple; sheaths shorter than the joints, hairy; mouths elevated, stipula-like, and hairy.—Spike compound, secund; from six to twelve inches long. Spikelets alternate, somewhat remote, secund, direction between expanding and adpressed. Rachis, common and partial three-sided.—Flowers generally paired, one-sessile, the other short-pedicelled; insertions often surrounded with hairs, when single
there is an awn, or the rudiments of a second floret accompanying it.

—*Calyx*, the exterior glume as large as the next within it, and ending in a long waved, purple awn; exterior glume rather longer.—

*Coral* no *neuter*, nor male floret.—*Seed* oblong, smooth, slightly three-nerved.

*Obs.* Cattle are not fond of it.


*Culms*, creeping. *Leaves* lanceolate, hairy; *flowers* hermaphrodite; all the valvelets of the calyces hairy, and awned. *Seed* slender, smooth, pointed.


This species is always found on pasture ground, under the shade of large trees.

*Culms*, creeping, branchy, with their extremities erect.—*Leaves* sheathing, lanceolate, waved, hairy; sheaths half the length of the joints; very hairy.—*Spikelets* compound, secund, erect. *Spikelets* from four to eight, alternate, secund, adpressed. *Rachis*, common and partial three-sided.—*Flowers* generally paired; one sessile the other pedicelled.—*Calyx*, the two exterior glumes are hairy, and have long awns, that of the inner is shorter and smoother.


*Culms*, from one to four feet high. *Leaves* smooth. *Flowers* polygamous, three-fold, sub-sessile. *Calyces* hairy, and hispid; inner valvelets awned.

*Beng.* Dul.

Teling. Pedda-woondoo.

Delights in wet, cultivated, paddy lands.

*Culms*, towards the base resting on the ground, and striking root; above erect, which part is from one to four feet high.—*Leaves* smooth, soft, with only the mouths of the sheaths ciliate.—*Spikelets*
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compound, secund, erect. Spikelets alternate, sessile, secund, expanding a little. Rachis, both common and partial three-sided.—Flowers, very numerous; three-fold below, above in pairs, all sessile, or nearly so; their insertion surrounded with small bristles, involucre-like.—Calyx, only the inner valve awned, all striated, hairy and hispid.—Corol, complete; male florets, besides the usual hermaphrodite one.

Obs. This is a coarse species. Cattle are not fond of it.


Culms, creeping at the base. Leaves downy. Spikes from six to ten, three times longer than their interstices. Calyces downy. Corol three-valved. Seed oblong, obtuse, smooth.

A middle-sized, delicate, rare species, found on pasture ground.

Culms, uniform, creeping at the base, above nearly erect, ramous.

—Leaves soft, downy; sheath hairy.—Spikes compound, secund, from one to three inches long. Spikelets from four to twelve, alternate, adpressed, secund, about three-fourths of an inch long; sometimes there is a very small ramification at the lower part of one or two. Rachis, common, two-furrowed; partial, three-sided, downy.

—Flowers paired, or single, in two rows; both pedicelled; pedicels hairy, of unequal length, but both short.—Calyx striated, very downy.—Corol, the neuter valve is here present.—Seed oblong, smooth, shining white.


Culms, creeping at the base. Spikes from six to ten, short. Flowers three-fold, sub-sessile. Glumes of the calyces three-nerved. Corol three-valved; seed roundish, smooth, three-nerved.

Beng. Shama. There is a reddish variety, called Lal-shama.

Teling. Woondoo-gaddi.

Delights in rich pasture ground.

Culms, below resting on the ground, and rooting; above sub-erect, that part is from one to two feet high, branchy, a little compressed,
smooth.—Leaves tending to be bifarious, short, smooth, tapering from the base to a sharp point.—Spikes compound, secund. Spikelets, from six to twelve, alternate, somewhat remote, secund. Rachis, both common and partial three-sided; the two sides from whence the spikelets issue concave.—Flowers two or three from the same point, generally three; all sessile, or very nearly so; sometimes a few small bristles mixed with them.—Calyx as in the genus, all the glumes three-nerved, a little hairy, and scabrous.—Corol, the neuter valve is here present, but no stamens.—Seed broad, oval, smooth, a little pointed, three-nerved.

Obs. Cattle are very fond of it, yet it is not cultivated in these parts.


Culms, creeping. Leaves soft and downy. Spikes from six to ten; flowers solitary, sub-sessile. Corol three-valved. Seed oblong, acute, transversely rugose.

Loves fresh pasture ground.

Culms, in a good soil creeping to a great length, in a poor soil nearly erect.—Leaves, tapering from the base to a fine point, somewhat downy, and very soft.—Spikes compound, secund. Spikelets from four to twelve, alternate, secund, expanding on one side, most simple, in two rows.—Calyx pretty smooth.—Corol, the neuter valve is always present. Nectary a rugose gland between the germ and exterior valve of the corol.—Seed oblong, white, slightly rugose in a transverse direction.

Obs. The form and rugosity of the seed distinguish it from P. colonum, the flowers also are here single, there two or three from the same point.


Culms, at the base creeping. Leaves soft. Spikes, from six to ten; flowers paired on a common pedicel. Corol three-valved. Seed ovate, longitudinally streaked, and transversely rugose.
This is also a native of pasture ground, but chiefly that which is shaded. It is exceedingly like the last described species.

*Culms*, creeping, &c. as in the last.—*Leaves* also the same.—*Spikes*, the same as in *P. grossarium*. *Spikelets* or rather *racemes*, the lower one or two sometimes branchy in luxuriant plants. *Rachis*, common striated; partial three-sided, and downy.—*Flowers*, the inferior ones in pairs, upon a short, common pedicel; besides, having their partial pedicels, one of which is nearly as long as its flowers; above they are often single, and somewhat remote; hairs surround the insertion of all.—*Calyx* hairy.—*Corol*, the neuter valve is here present.—*Seed* ovate, a little pointed, rugose, like that of the last species.

*Obs.* The chief character consists in the lower flowers of the racemes being paired on a common peduncle, with pedicels of very unequal lengths and hairy involucres.

28. *P. cuspidatum*. R.

Creeping near the base, wholly smooth. *Leaves* linear, without ligula. *Spikes* compound, secund; *spikelets* adpressed, secund; *flowers* from one to three, equally sub-sessile, all hermaphrodite; *valves* of the calyx three-nerved, and cuspidate. *Seed* cuspidate.

A native of Bengal. Found in a rich moist soil, in flower and seed in April.

*Culms*, numerous in luxuriant tufts, creeping near the original root, then ascending to about two feet in height, ramous, smooth.—*Leaves* ensiform, smooth, with coloured margins. *Sheaths* shorter than the joints, smooth, and completely destitute of ligula.—*Spikes* compound, secund, slightly recurvate, with the secund spikelets on the convex side pressing on the common, three-sided, hispid rachis; often of a dull purple colour.—*Flowers*, from one to three together, and equally sub-sessile.—*Calyx*, all the glumes three-nerved, and cuspidate, and generally armed with a few minute bristles.—*Corol* three-valved; the third or accessory one membranaceous, and neuter.—*Seeds* ovate, smooth, cuspidate.
Sect. 5th. Spikes alternate on all sides of a common rachis.


Culms, below creeping, sub-ligneous. Leaves with cordate base and ciliate margins. Insertions of the spikelets and flowers bristly. Corol three-valved. Seed oval, transversely rugose.

Beng. Bura-ja-ganti.

P. setigerum. Retz. Obs. iv. 15.

Grows amongst bushes or under the shade of trees.

Culms long, straggling, rooting when they rest on the ground, firm, almost woody towards the base, but small, and very smooth; joints downy.—Leaves sheathing, broad-cordate at the base, tapering from thence to the point; margins ciliate, and waved; mouths of the sheaths bearded.—Spikelets compound. Spikelets from four to twenty; secund, spreading, disposed equally on all sides. Rachis, common four, five, or six-sided, partial three-sided.—Flowers paired; pairs alternate, in two rows, one sessile, one pedicelled, intermixed with many long strong hairs, like an involucre.—Calyx, the two inner glumes downy and striated lengthways with many green nerves.

—Corol, the neuter membranaceous valve always present, but no stamens.—Seed oval, transversely rugose.

Obs. When exposed to the weather, the leaves are of a smooth shining deep green, when under trees, of a pale colour, soft, and somewhat downy, which made me long think they were different species. Cattle are fond of it.


Creeping. Leaves broad, waved, base cordate, stem-clasping, and ciliate. Spikelets from four to ten, equally disposed on all sides. Flowers awnless; involucre hairy. Corol three-valved.

P. repens. Burm. Ind. t. 11. f. 1. is like this, only the partial spikes are rather too long, and the leaves too narrow.

Common about the beginning of the rains on cultivated land, in gardens, &c. near Calcutta. It is a pretty, cespitose species which cattle are fond of.
Culms, creeping to the extent of from one to two feet, geniculate, smooth, often coloured.—Leaves lanceolate, base cordate, stem-clasping, and ciliate. Sheaths shorter than the joints, somewhat hairy.—Spikes from four to ten, small, short, sessile, secund, equally inserted on the four or six-sided, villous rachis.—Flowers generally paired, and both unequally pedicelled, with an involucre of long soft hairs on the outside of the pedicel.—Calyx, exterior valve minute, and truncate, the inner two equal, five-nerved.—Corol, with a nenter valve.


Leaves broad-lanceolate, with cordate, stem-clasping base, waved, ciliate, and hairy. Flowers, polygamous, solitary, sessile. Seed ovate, transversely rugose.

Telung. Salla woodoo.

Is found on the borders of cultivated land, on pasture ground, &c.

Culms, spreading at the base; resting on the ground and rooting; above ascending; joints downy.—Leaves broad, base cordate and embracing the culms, much waved, hairy, with the edges ciliate; sheaths also hairy with a thick beard round the mouths.—Spikes composed of six or twelve, simple, alternate, secund, expanding spikelets, surrounding a common, four or five-sided, hairy rachis. —Partial, rachis three-sided, hairy.—Flowers in two rows, single, alternate, sessile, often intermixed with bristles.—Calyx, all the valves hairy and striated.—Corol; a complete, one-valved male floret in the same calyx with the hermaphrodite.—Seeds ovate, transversely rugose, white, daggered.

Obs. Cattle are very fond of it.

32. P. tomentosum. R.

Culms, sub-erect. Leaves hairy; spikes from ten to twelve, oblong, from six to eight-flowered, intermixed with hispid bristly involucels. Seed ovate, transversely wrinkled.
This is a delicate, rare species, found growing in tufts, or dry pasture ground over various parts of India.

_Culms_, ascending, compressed towards the base, branchy, from twelve to eighteen inches high.—_Leaves_ soft, covered with much, long, soft hair; _sheaths_ half the length of the joints; _mouth_ bearded.—_Spikes_ compound, terminal, consisting of ten or twelve (generally alternate, though sometimes in pairs) _spikelets_ of six or eight flowers, intermixed with hispid bristles, they are not placed on one side, but round the common rachis, which is generally three-sti- ed.—_Calyx_, the two interior valves five-nerved; the second, half the length of the corol, as in _P. glaucum_.—_Corol_ has a third neuter valve.—_Seed_ transversely wrinkled, as in _P. glaucum_.

_Spikes_ cylindric. _Spikelets_ quatern, sub-verticelled. _Involucels_, backwardly hispid bristles. _Seeds_ oblong, three-nerved, and rugose.
_Hind._ Dora-byara.
_Teling._ Chicklenta.
Delights in a rich soil in out of the way corners, where there is rubbish, &c.

_Culms_, below resting on the ground and striking root, above weak, often leaning over to one side, smooth, length of the creeping part, from one to two feet, and that of the more erect culms from one to two feet.—_Leaves_ sheathing, linear-lanceolate, a little downy; margins hispid when felt backwards; mouths of the sheaths hairy.—_Spikes_ columnar, compound, from three to four inches long, generally matted together by means of the bristly involucels.—_Spike- lets_ or rather _racemelets_, tending to be verticelled, generally four in the verticel, composed of three or four short-pedicels, each bearing a few flowers; all intermixed with very stiff bristles (_Involucels_) arm- ed with short, stiff, recurved points, by which they adhere firmly to every thing that touches them.—_Calyx_ as in the family.—_Corol_, a third neuter valve, but no stamens to it.—_Seed_ three-nerved, and slightly waved across.
Observations. Cattle will not eat it, so that it is reckoned a troublesome weed wherever it is found.

Plants reared from English seed, were not near so luxuriant as those of India, but evidently the same species. Thunberg's large cultivated variety is certainly *Panicum italicum*. Curtis's figure in his *Flora Indiae orientalis* is represented with the leaves broader at the base than our Indian plant, or even than in plants reared in India from English seed.


*Culms* erect. *Spikes* nodding; *spikelets* scattered, ovate; *pedicels* from two to three or four-flowered, with smooth bristles intermixed.

*Seed* ovate, three-nerved.


*Sansk.* ಕುಂಗು, Kungoo, ಪ್ರಿಯುಂಗು, Priyungoo.

*Beng.* Kungoo, and Kunguee.

*Hind.* Kora.

*Teling.* Kora; Koraloo, the grain.

This is one of the plants called dry or small grain. It is cultivated in many parts of India, and requires an elevated, light soil. I never saw it wild.

*Culms* several from one grain of seed, erect, from three to five feet high, round, smooth; roots issuing from the lower joints.—*Leaves*, margins backwardly hispid; mouths of the sheaths bearded.—*Spikes* compound, &c. There is more or less of a third, or neuter valve on the corol.

Observations. Small plants have the spike more erect, and uniform, without vacancies between the racemelets.

The seed is an article of diet with the natives. It delights in a light, elevated, tolerably dry soil. Seed time for the first crop, about the month of June and July; harvest time in September; produce about fifty-fold in a favorable season. A second crop may be had from the same ground, between September and the end of January.
35. *P. strictum. R.*

*Culms* straight, from two to three feet high. *Spikes* compound cylindric, straight, with numerous expanding spikelets. *Glumes* of the calyx hairy, and acute. *Corol* three-valved, the innermost one awned.

*Beng.* Gang bena.

A native or Bengal, where it is found, though rarely, on dry barren spots.

*Culms* straight, from one to three feet high, slender as a crow quill, hairy, particularly at and near the joints.—*Leaves* short, straight, broadest at the base, and from thence tapering to a fine point; a little hairy, particularly underneath.—*Sheaths* more hairy, their mouths bearded with much long, soft, white hair.—*Spikes,* (panicles) cylindric, straight, composed of numerous, one-ranked, expanding, short spikelets.—*Flowers* paired, on shorter and longer pedicels which unite before their insertions into the rachis of the spikelets.—*Calyx,* valvelets acute; two exterior with a few straight hairs, inner one smooth; corol-like.—*Corol* three-valved, the inner and smaller one awned.


*Culms* erect, from three to four feet high. *Spikes* panicled, erect, lanceolate; *spikelets* secund; *flowers* two-fold, both sub-sessile; valvelets of the calyx bristly, the middle one daggered, the inner one awned; *corol* three-valved; *seed* ovate, pointed, polished.

*Beng.* Bura-Shama.

Grows on the borders of rice lands, and rich moist places. Is never cultivated nor made any use of.

*Culms* erect with a few erect branches.—*Leaves* long, narrow, fine-pointed, smooth.—*Spikes* straight, panicled, composed of numerous, secund, erect spikelets, surrounding the common four, five, or six-sided rachis.—*Flowers* numerous, almost always two together and equally sub-sessile.—*Calyx,* all the three valves harsh with numerous sharp bristles issuing from the nerves of the glumes.
The two exterior ones with sharp subulate points; the inner one ends in a pretty long, strong, hispid arista.—Corol, with a third, membranaceous, neuter valve.—Seed ovate, pointed, polished.

Obs. It comes near my P. frumentaceum, and may probably be the same in its wild state.

37. P. frumentaceum. R.

Culms erect, from two to four feet high. Panicle erect; spikes secund, incurved; flowers three-fold, unequally pedicelled. Valve-lets of the calyces daggered, or awned; seed ovate, smooth.

Sans. श्यामा: Shyamaka.
Beng. Shama.
Teling. Bonta-shama; shamaloo, the grain.

This I have only found in a state of cultivation, it delights in a light, tolerably dry, rich soil; the same ground yields two crops between the first of the rains in June, July, and the end of January.

Culms erect, ramous, a little compressed, smooth, from two to four feet high.—Leaves large, margins hispid.—Panicle erect, oblong, rigid, composed of numerous, secund, condensed, incurved spikes; they entirely surround the common rachis and sometimes tend to be verticelled. Rachis, common five or six-sided, a little hairy; partial three-sided, waved.—Flowers almost always three from the same point, one sessile, the second short pedicelled, and the third a little longer pedicelled.—Calyx, with all the glumes three-nerved; the two large daggered.—Corol, with a third neuter valve.—Seed ovate, pointed, smooth.

Obs. There are several varieties of it known to the Hindoo farmers. The seed is wholesome and nourishing, it is an article of diet, particularly amongst the lower classes of the natives. It yields about fifty-fold in a good soil. Cattle are fond of it.

Sect. 6th. Panicled.


Culms creeping. Panicle halved. Leaves stipuled. Pedicels two-
flowered. Inner valve of the calyces vaulted; corol three-valved. Seed, half round, smooth.

Grows on pasture ground, under the shade of trees, &c.

Culms creeping, filiform, from one to two feet long, with a few inches of the extremities erect.—Leaves lanceolate, soft, a little downy; sheaths ciliate, with a stipule-like process.—Panicle halved, oblong, smooth, composed of from three to ten ramous branchlets, rising on one side only when the plant is small; pedicels two-flowered. Partial pedicels unequal.—Calyx, inner valve cucullate, obtuse; all the valves striated and hairy.—Corol, with a neuter, but small valve.—Seed smooth, obtusely and obliquely three-sided.


A small, delicate, creeping species; it delights in shady pasture ground.

Culms like those of P. trigonum.—Leaves broad, with a cordate base, from thence tapering to a fine point, downy; sheaths hairy, their mouths want the stipule-like process.—Panicle small, about one and a half or two inches long, oval, ramous; ramifications smooth.—Flowers oval, solitary.—Calyx, two-flowered, the three valves are nearly equal, all smooth but striated; the inner one appearing more like a second valve to the male floret than one of the calyx, and the more so as it drops off with the seed, leaving the two exterior ones behind.—Corol, one male, or sometimes one neuter, and one hermaphrodite.—Seed oval, smooth.


Culms creeping. Leaves lanceolate, cordate. Panicle ovate, very ramous, partly hid in the sheath of the exterior leaf, second valvelet of the calyces bearded; corol three-valved. Seed ovate, smooth.

Grows, with the two preceding species on shaded pasture ground and is very much like them.
Culms creeping, as in the two last described species, but rather more robust.—Leaves broad, and somewhat cordate at the base, waved; margins of the sheaths ciliate.—Panicle, the lower part always confined within the sheaths of the extreme leaf, oval, from three to five inches long, composed of numerous very fine capillary ramifications, the common rachis and larger branches very woolly.

—Flowers obliquely-oval, numerous, on very fine, long pedicels.
—Calyx, the exterior valve lanceolate, the second boat-shaped, with the outside covered with very long soft wool, the third oval.—Corol, with a neuter valve, but no stamen.—Seed oval, smooth, white.

41. *P. tenellum.* R.


Grows on pasture ground, borders of cultivated lands, &c.

Culms many, branchy, near the ground prostrate, rooting at the joints, the rest ascending; from one to two feet high, and as thick as a sparrow's quill.—Leaves soft with white hairs.—Panicles oblong, generally as long as the rest of the plant, thin, composed of expanding, capillary, ramous branches.—Flowers remote, oval, small.—Calyx, the glumes striated, otherwise smooth.—Corol, with a third neuter valve.—Seed oblong, smooth, light-brown, five-streaked.

42. *P. serrulatum.* R.

Culms erect, from two to four feet high. Leaves sword-shaped, with serrulate margins. Panicle, spiked valvelets of the calyces sharp-pointed; Seed smooth, oblong.

A large erect, coarse species; a native of moist valleys.

Culms erect, ramous, from two to four feet high. Leaves somewhat cordate at the base, from thence tapering to a point, margins ciliate; sheaths as long, or longer than the joints, smooth.—Panicle erect, linear, composed of erect, linear, ramous ramifications, which stand somewhat remote, particularly below, so that the pa-
nicle appears to be a compound, interrupted spike.—*Flowers* lanceolate.—*Calyx*, glumes lanceolate, very acute, the two inner ones somewhat hispid on the back.—*Corol* single, hermaphrodite.—*Seed* oblong, smooth, white.

43. *P. paludosum*. R.

*Culms* erect, from two to three feet high. *Panicle* erect, ovate, thin; *ramifications* few, three-sided, with sharp hispid angles; pedicel two-flowered; valvelets of the calyces cuspidate. *Corol* three-valved. *Seed* oblong, smooth.

*Beng*. Boruti, and *Kulus-nar*.

*Teling*. Soda.

It grows generally in sweet water amongst the Circar mountains. *Culms* erect, from two to three feet high, swelled under the water, and there emitting roots from the joints.—*Leaves* erect, acute, retrorso-hispid; *sheaths* longer than the joints, with a thick bearded mouth.—*Panicle* oval, diffuse, thin, composed of scattered, sub-alternate, ramous branches; all nearly triangular, the angles sharp, and armed with fine points.—*Flowers* oblong, pointed, in pairs on a common pedicel with unequal partial pedicels.—*Calyx*, exterior valve short, broad, involving the bottoms of the others.—*Corol*, with a small neuter glume, always without stamens.—*Seed* oblong, smooth, brown.

*Obs*. This grass is of a coarse nature; cattle are not therefore fond of it. When it grows on dry ground, the grass is much smaller; but the panicle larger.

44. *P. nilginosum*. R.

*Culms* erect, from two to four feet high. *Panicle* thin; *ramifications* four-sided, smooth; *flowers* polygamous, solitary; *seed* oblong, smooth.

*Beng*. Burunda.

*Teling*. Gundru.

A native of the moist borders of rice fields, in wet ground.
Root fibrous, white.—Culms many, ramous, below resting on the ground and rooting; above erect, a little compressed, smooth; from two to four feet high.—Leaves short and sharp, inside a little downy; sheaths shorter than the joints; mouths bearded. In paludosum they are surrounded on the inside with hair. Here the ramifications are compressed, and somewhat four-sided, there triangular, and hispid.—Panicle more contracted than in paludosum.—Calyx the same.—Corol, with a complete male floret.—Seed oblong, smooth.

Obs. To distinguish it from P. paludosum, attention must be paid to the leaves, ramifications of the panicle, and male florets.

45. P. sarmentosum. R.

Perennial, inane, hairy, sarmentose, with sub-erect, floriferous shoots from the joints. Panicle patent. Flowers solitary; calyces smooth and obtuse, containing one hermaphrodite and one neuter floret.

A native of Sumatra; and from thence introduced by Dr. Charles Campbell into the Botanic Garden in 1804, where it grows luxuriantly, and blossoms throughout the year.

Culms round, sarmentose, and of great length, inane, with nearly erect, frequently ramous, floriferous shoots of about two or three feet in height rising from the joints; every part clothed with much soft hairy pubescence, particularly the runners.—Leaves ensiform, soon becoming reflex, margins hispid, length from six to twelve inches, from half to three quarter of an inch in breadth at the broadest part. Sheaths rather longer than the joints.—Panicle terminal, ovate; composed of many, single, alternate, patent, compound, smooth branches.—Flowers very numerous, awnless, smooth, solitary, pedicelled.—Valves of the calyx three, obtuse, slightly marked with green nerves, the exterior one long, containing a two-valved hermaphrodite flower, and a small neuter one.

46. P. miliare. Lamarck.

Culms erect, ramous, from two to three feet high, smooth. Pa-
TRIANDRIA DIGYNIA.  

Panicum:  
nicle thin; flowers paired on a common pedicel, with unequal partial pedicels; corol three-valved; seed ovate, smooth, five-streaked.  
Teling. Nella-shama. Nella-shamallo, the grain.  

This species I have found only in a cultivated state, it is one of the sorts of dry or small grain which is generally cultivated on an elevated, light, rich soil.  

Culmus, many from the same seed, erect, branchy, round, smooth, from two to three feet high.—Leaves smooth.—Panicle oblong, beautifully bowing with the weight of the grain; branches alternate, ramous; capillary, angular, hispid.—Flowers oval, paired upon a common pedicel, with unequal partial pedicels.—Calyces, glumes smooth, striated lengthways with nerves.—Corol, accompanied by a neuter valve.—Seed oval, striated, smooth, shining brown.  

Obs. The seed is an article of diet with those Hindoos who inhabit the higher lands. Cattle are fond of the straw.  


Culmus erect, ramous, from two to four feet high; the whole plant very hairy. Panicle oblong; glumes of the calyces cuspidate; corol three-valved; adventitious valve two-toothed; seed oval, smooth, five-streaked.  

Sans. वीरेभ्यर्द, Vreehibheda, उनु, Unoo.  
Hind. and Beng. Cheena.  
Teling. Worga; Worglo, the grain.  

This is another of the cultivated cerealia; the same soil suits it as is proper for the last described species. Time of culture immediately after the rains.  

Culmus many from the same seed, erect, ramous, very hairy; from two to four feet high.—Leaves large, with long sheaths, which involve most part of the culms, every part covered with much white hair.—Panicle as in the former, only here and there a few hairs.—Calyx all the three glumes are much pointed.—Corol the neuter valve is here emarginate. Nectary two, triangular, emargin-
ate bodies embrace the germ laterally.—Seed oval, mouth brownish, with smooth, coloured streaks lengthways, as in the last.

48. P. tenue, R.

Culms erect, ramous; from one to six feet high. Panicle thin, flowers paired on a common hairy pedicel, with unequal partial pedicels; Corol three-valved; Seed ovate, transversely waved.

This is a wild species, which grows amongst the Circar mountains.

Culms erect, sometimes resting on the ground, and striking root there, ramous, smooth, from one to six feet high.—Leaves large; upper-side hairy; edges armed with very sharp points. Sheaths shorter than the joints, hairy, with their mouths bearded.—Panicle erect, till the seeds are ripe, then, as in the cultivated sorts last described, bowing from the weight of the grain, it is composed of alternate, compound, nearly secund racemes. Rachis, common from four to five-sided; partial three-sided, winding, and hairy.—Calyx, glumes many-nerved, otherwise smooth.—Corol, the neuter valve is here present, and in luxuriant plants, the stamens also.—Seed oval, transversely wrinkled, which distinguishes it from all the other panniced species.

49. P. plicatum, R.

Erect, herbaceous, harsh with stiff hairs. Leaves lanceolate, plicate. Panicle lanceolate, ramifications compound, flowers paired, polygamous.

Introduced into the Botanic Garden, from the Island of Sumatra. Flowering time the beginning of the cold season.

Root perennial.—Culms erect, or ascending, below as thick as a goose quill, and then somewhat compressed; every part filled with pith.—Leaves sub-bifarious, expanding, lanceolate, plicate, a little hairy; from six to twelve inches long, and from one to two broad.

Sheaths about the length of the joints of the culms, armed with sharp, rigid hairs; mouths ciliate.—Panicle oblong, lax; lower ra-
mifications rather remote, above approximate, and composed of unilateral short spikelets.—*Flowers* solitary, paired, or threefold, when more than one they are on pedicels of unequal lengths; sometimes there is a single coloured bristle from the pedicels of the exterior flowers.—*Calyx* three-valved, two-flowered, one of the flowers male, with a corol of one membranaceous glume; the other hermaphrodite, and having the usual two-valved corol.—*Seed* oblong, rugose on the convex-side.

*Obs.* It is of too coarse a nature for cattle, but its foliage make it ornamental in the shrubbery, or flower-border.

50. *P. nervosum*. *R.*

Erect, from three to four feet high. *Leaves* lanceolate, plaited; *sheaths* longer than the joints, with the mouths bearded. *Panicle* very thin, composed of long, simple, filiform, remote branches. *Flowers* generally single, with a neuter valve to the corol.

From Nepal Dr. Buchanan sent the seed to the Botanic Garden, where the plants blossomed in October, just one year from the time the seed was sown.

*Root* perennial.—*Culms* erect, slender, completely invested in the sheaths of the leaves, except from six to twelve inches below the panicle; height three or four feet.—*Leaves* lanceolate, plaited, a little hairy, particularly near the base, from six to twelve inches long, and one and a half broad.—*Sheaths* longer than the joints, a little hairy; mouths bearded.—*Panicle* very thin, and composed of long, simple, filiform, drooping branches. *Spikelets* remote near the base, secund, bearing a few alternate, generally single flowers.—*Calyx* three-valved, smooth, from three to seven-nerved.—*Corol*, with a third neuter valve, but no stamens.

*Obs.* In foliage this agrees very exactly with my *Panicum plicatum*, but differs widely in the panicle.

51. *P. costatum*. *R.*

*Culms* creeping. *Leaves* lanceolate, plaited, very hairy, as also
Panicum.  

**Triandria Digynia.**

315

their sheaths, which are shorter than the joints. *Panicle* composed of short expanding, secund, spiked-racemes. *Flowers* polygamous.

Introduced into the Botanic Garden from the Mauritius, by Captain Tennant, in 1802.

_Culms_ creeping, throwing out numerous strong roots from the joints; length from three to six feet.—*Leaves* lanceolate, plaited, hairy; about six inches long, by one broad.—*Sheaths* shorter than the joints, very hairy.—*Panicle* oblong, smooth, composed of somewhat compound, secund, spiked-racemes, with here and there an arista-like coloured bristle.—*Calyx* three-valved, smooth, from three to five-nerved.—*Corol* three-valved, two-flowered; the exterior floret one-valved and male. *Seed* transversely rugose.

Obs. In the foliage this is perfectly like my *P. nervosum* and *pli- catum*.

52. *P. montanum. R.*

_Culms_ erect, smooth, from three to four feet high. *Leaves* lanceolate, unequally divided by the nerve. *Panicle* oblong; _ramifications_ capillary, straight. *Corol* two-valved; *Seed* smooth, oval, three-nerved on the back.

A native of the Circar mountains.

_Root_ fibrous, from a ligneous perennial head.—_Culms_ erect, smooth, of a firm woody texture, as thick as a crow quill, and three to four feet high.—_Leaves_ lanceolate, large, beautifully striated lengthways, somewhat hairy, lower margins next the mouths of the sheath ciliate; the nerve divides the leaf unequally, which is an uncommon circumstance in grasses.—*Panicle* linear, oblong, from twelve to eighteen inches long, composed of straight, sub-erect, capillary ramifications.— *Flowers* small, oval, remote.—_Calyx_ as in the genus.—*Corol* as in the family; this is one of the few instances of the want of a male or neuter floret.—*Seed* smooth, brown, with three stripes.

Calyx two-valved, sessile, linear, truncated, with a bi-cuspid tip. Corol inclosed.

1. P. erinum.
Grows in tufts; Culms ascending. Panicle linear, crowded with innumerable soft, bearded ramifications; both glumes of the calyx awned and ciliate, and the large glume of the corol awned.

A native of Nepala, and of the northern part of India.

From the former country it was introduced into the Botanic Garden by Dr. Buchanan; and from the latter by Col. Hardwicke.

Culms numerous from a single root, ascending, length from six to twelve inches, round, smooth, and involved in the sheaths of the leaves, which are longer than its joints.—Leaves ensiform, from three to six inches long, smooth.—Panicle linear, oblong, dense, exceedingly soft from the immense number of most delicate, pale-coloured awns.—Flowers minute and numerous.—Calyx, glume one-flowered, two-valved; valves nearly equal, with a most delicate, long, soft arista from the apex; hairy, chiefly on the back, and membranaceous ciliate margins.—Corol two-valved; valves obtuse, much shorter than the calyx, as in general a very minute awn issues from the apex of the larger valve.—Seed smooth, oblong, but obtuse.

Obs. In the cold season of 1802-3, I reared the same grass from seed sent from England by A. B. Lambert, Esq.


Calyx, glume one-flowered, two-valved. Corol two-valved, less than the calyx.

1. M. filiforme. R.
Creeping, smooth. Leaves short, with a stipulary process at
the mouth of the sheath. *Racemes* two or three, terminal, erect; *flowers* alternate, solitary, awnless.

**Hind.** Kanka juriya.

Grows on pasture ground, is a small, delicate species, has much the appearance of *Agrostis linearis*.

*Culms* creeping, except a small flower-bearing portion, which is erect, round, smooth; and from six to twelve inches high.—*Leaves* small, smooth; mouths of the sheaths stipuled.—*Racemes* two or three, terminal, sessile, erect, secund. *Rachis* membranaceous, a little waved.—*Flowers* single, alternate, imbricated in two rows, awnless.—*Calyx*, glumes nearly equal, membranaceous, a little hairy.—*Corol*, valves rigid, smooth.

2. *M. sanguinale*. R.

*Culms* sub-erect, smooth. *Racemes* sub-digitate; *flowers* threefold, on unequal pedicels.

*Panicum sanguinale*. *Burm. Flor. Ind. t. 10. f. t.*

*Beng. Chiri-chira.*

A native of pasture ground. *Culms* sometimes creeping near the base, the rest erect, smooth, and about a foot and a half high.—*Leaves* long, narrow, smooth in every part.—*Panicle* racemed, sub-erect. *Racemes* from four to eight, secund, erect, rachis three-sided.—*Flowers* generally in threes, though sometimes in pairs or in fours, all have pedicels of unequal length.—*Calyx* and *corol* as in the last species.


Smooth; *culms* sub-erect, from two to four feet high. *Panicle* six or eight, remote, with somewhat ramous branches; *flowers* paired on common pedicels. *Calyces* pointed, and very hairy.

Found growing in large tufts, on moist, rich pasture ground.

*Root* creeping.—*Culms* from one to four feet long, spreading near the base, and striking root at the joints that rest on the ground.—*Leaves* smooth.—*Panicle* oval, very thin, composed of a few, from
four to eight-compound, spreading, secund, racemes. Rachis of the racemes three-sided. — Flowers below, on a common-pedicel, besides which each has its proper pedicel, but of unequal length; above single. — Calyx, valves equal, pointed, and very hairy. — Corol, the exterior valves ends in an awled point.


Calyx, glume one flowered, two-valved. Corol two-valved, larger than the calyx.


Culms from four to eight inches high. Panicle verticelled; ramification simple, secund; inner valve of the calyx as long as the corol; exterior valve minute. Seed naked, obovate, rugose.

Telng. Yellika-tungoo-gadi.

A native of pasture ground.

Culms spreading near the base, then ascending, from four to eight inches long, mostly involved in the sheaths of the leaves. — Leaves rather broad, waved and slightly ciliated; mouths of the sheath bearded. — Panicle oblong; large for the size of the grass, composed of expanding, simple, verticelled, secund racemes. — Flowers awnless, generally in pairs, unequally pedicelled. — Calyx, exterior valve like that of the accessory valve in Panicum. Inner as large as the corol, and gaping with it when the seed ripens. — Seed, it drops uncovered by the corol, leaving it and the calyx in their places; it is of an oblique oval form, brown, and transversely rugose.


Smooth, creeping. Leaves minute. Panicle filiform; exterior valvelet of the calyx shorter than the corol.

Telng. Toema-gerika.

A small, rigid species; growing on old, poor, stiff, pasture ground, where it forms extensive plants of tenacious turf.
Agrostis, TRIANDRIA DIGYNIA.

Culms ramous, creeping to a great extent, with from four to eight inches high of their flower-bearing extremities, erect, smooth, filiform, and very firm.—Leaves very small, and smooth.—Panicle erect, linear; ramifications and flowers adpressed, from one to two inches long.—Calyx, exterior valve smaller than the interior.—Corol as large and long as the inner valvelet of the calyx.

Creeping. Leaves pungent. Spikes terminal, solitary, few-flowered.
A native of the barren sandy lands, near the sea on the Coast of Coromandel.

Smooth; culms erect, from one to three feet high. Panicle linear, branchlets short, expanding; flowers paired, diandrous. Calyx scarcely half the length of the corol. Seed naked, obovate, rugose.
Beng. Bena-joni.
A native of moist pasture ground, in the vicinity of Calcutta.
Culms nearly erect, from one to three feet high, almost covered with the sheaths of the leaves.—Leaves narrow, tapering to a fine point, smooth; mouths of the sheaths slightly bearded.—Panicle linear-oblong, bowing a little, often a foot long, composed of expanding, alternate, compound, seemingly simple racemes.—Flowers in pairs on a common peduncle, but unequally pedicelled.—Calyx, valves equal, scarcely half the length of the corol, smooth, membranaceous.—Stamens two. Seed narrow-obcordate, dropping from the calyx and corol, brown, obtusely rugose.

5. A. maxima. R.
Culms erect, from four to twelve feet high. Panicle ovate, expanding. Calyces minute, exterior valvelets of the corol fringed with long hairs.—Stamens two.
This is the largest species I know; it is a native of hedges, &c. amongst the mountains.

Root ligneous, perennial.—Culms erect, from four to twelve feet high, often as thick as the little finger, round, and smooth, inside replete with a fibrous spongy substance.—Leaves smooth, from one to two feet long; and from one to two inches broad at the base, tapering from thence to a fine point.—Panicles erect, oval, or oblong, from one to two feet long, composed of alternate, ramous, filiform, expanding or bowing branches.—Calyx, valves equal, four times shorter than the corol.—Corol, exterior valve fringed round the margins, with long, soft, white hairs.—Stamens two.

Obs. The leaves of this plant are much more like those employed by the Chinese to pack up various articles with, than any other I have yet seen.


Polygamous. Calyx, glume two-valved, one to three-flowered. Corol, glume two-valved, the hermaphrodite awned.—Stamina three. Styles two.

1. H. nervosus. R.

Erect, hairy. Panicle oblong. Glumes three, and five-nerved, cuspidate, two-flowered; flowers both sessile, one hermaphrodite and awned; the other male and awnless.

A native of Coromandel.

Culms erect, ramous; long, wiry roots issuing from the lower joints.—Leaves and their sheaths papillose, hairy.—Panicles oblong, smooth. Ramifications alternate, simple.—Flowers paired; one sessile, the other pedicellated.—Calyces two-flowered, three to five-nerved, smooth, straight, cuspidate, longer than the flowers.—Corol in both two-valved, the exterior floret male, large, and awnless, the inner minute, hermaphrodite, and awned.—Stamens three.—Styles two, in the hermaphrodite.
2. H. ciliatus. R.
Erect, hairy, panicle linear, hirsute. Glumes papillose, ciliate, two-flowered, both flowers sessile, one hermaphrodite and awned, the other male and awnless.

A native of Coromandel.

Whole plant about a foot high, erect. The culms with bearded joints.—Leaves rather large, hirsutely papillose, as are also their sheaths.—Panicles linear, shaggy with the numerous hairs of the calyces.—Calyx two-valved, two-flowered; valves nearly equal, considerably longer than the flower, backs covered with little warts, from each of which arises a very conspicuous hair; apices cuspidate, and recurvate.—Corol two-valved in both.—Exterior floret rather larger, male, or male hermaphrodite, and awnless; inner hermaphrodite and awned.—Stamina three.—Styles two in the hermaphrodite, in the male hermaphrodite the rudiments of two, but no germ.

**ISCHEMUM. Schreb. Gen. N. 1569.**


Annual. Leaves sword-shaped, ciliate and hairy, with coloured margins. Spikes paired, secund. All the calyces two-flowered; valves striated; exterior of the sessile flower with a bifid membranaceous border round the anterior margin; an awned hermaphrodite floret in each flower.

A native of newly formed pasture land, in various parts of India, appearing about the close of the rains. It is a scarce grass, and does not appear to be fit for cattle.

Culms at the base resting on the ground and there rooting, ramous; erect portions from one to two feet long, slender, with woolly joints.—Leaves length of the spikes, ensiform, broadest at the base and there cordate, hairy, ciliate, with hispid, coloured margins.—Spikes two, terminal, secund, from one to two inches long. Rachis flexuose, joint-
ed, three-sided, with the angles very hairy.—**Flowers in pairs, one sessile, the other pedicelled.** Pedicel three-sided, and ciliate.—**Calyx** of the sessile flowers two-valved, two-flowered; one floret hermaphrodite, the other male. **Exterior valve** striated, with its anterior margins and apex enlarged with a broad, membranaceous, bifid border; **inner valve** boat-shaped, keeled, ciliate, and sub-aristate, one floret male, the other hermaphrodite.—**Corol, glumes** of each floret two-valved; the exterior one of the hermaphrodite floret bifid, with a long arista in the fork.—**Calyx** of the pedicelled flower two-valved, two-flowered; **valvelets** equal, boat-shaped, keeled, ciliate, and sub-aristate; one floret male, the other hermaphrodite.—**Corol,** as in the sessile flowers, and also awned in the same manner.

**Obs.** I am not certain that this is the original I. aristatum of Linneas and Retzius.


Erect, fleshy. **Leaves** lanceolate; **spikes** paired, both flowers awned; **calyces** oblique, obtuse, hard, and transversely rugose.

Is generally found growing among rice, and is so much like it, the inflorescence excepted, that they are not, till in flower, to be distinguished.—**Leaves** large, smooth; **mouths** of the sheaths crowned with a long, two-parted ligula.—**Spikes** terminal, and from the exterior axils paired, erect, from two to three inches long. **Rachis** jointed.—**Flowers** in pairs; one sessile, the other on a short, thick, angular clubbed pedicel.

**Sessile flower.** **Calyx** two-flowered, two-valved; **valvelets** in size nearly equal, the exterior one rugose, and very hard; one of the florets hermaphrodite, the other male, each with two membranaceous valves; the inner valve of the hermaphrodite flower has a long twisted awn issuing from the middle of its back.

**Pedicelled flower** smaller. **Calyx** as in the other, but containing two male flowers, one of which is also awned.

3. I. semisagittatum. R.

**Annual.** **Leaves** ovate-lanceolate, semisagittate. **Spikes** paired,
secund, all the calyces two-flowered, exterior valvelets transverse-
ly rugose; hermaphrodite floret of the sessile flower awned.

A native of newly formed pasture land in Bengal. It is a rare
glass, appearing about the close of the rains.

Culms ramous, resting on the ground near the base, and there
striking root at the joints, the sub-erect portion from twelve to eigh-
teen inches, very delicate, firm, and smooth.—Leaves short, broad-
ensiform, or rather ovate-lanceolate, with a cordate base, and one of
the lobes generally projecting considerably beyond the culm; mar-
gins slightly hispid, length one and a half or two inches.—Spikes
two, terminal, sub-secund, an inch and a half long. Rachis jointed,
scarcey flexuose, three-sided; angles hairy.—Flowers in pairs, one
sessile, the other sub-sessile, both with their base bearded.—Caly-
ces of both flowers almost alike, two-flowered, two-valved; exte-
rior valvelets obliquely-lanceolate and rather obtuse, the lower gib-
bous half transversely rugose, as in I. rugosum, upper portions tria-
ed lengthways; margins of the lower rugose portion notched; of the
upper striated part ciliate; inner boat-shaped in both, one floret is
male, the other hermaphrodite.—Corol, glumes of each floret two-
valved; the exterior valvelet of the hermaphrodite floret bifid, with
a long arista in the fork.

Obs. It ought to be compared with I. barbatum.

4. I. conjugatam. R.

Partly creeping. Leaves short, acute, with broad cordate base.
Spikes conjugate, seemingly united. Flowers paired, with the exte-
rior valves of both calyces even, and very woolly; the sessile one
hermaphrodite, awned.

A native of pasture land in the vicinity of Calcutta, appearing in
the cool season.

Culms very ramous, creeping near the base, filiform, smooth,
length from six to eighteen inches, generally purplish.—Leaves with
broad cordate base, from thence tapering to a fine point, sheaths
smooth.—Spikes conjugate on a slender, clavate, purple peduncle;
united at the base, at all times continuing close as if one. Rachis very hairy, and jointed. — Flowers from four to eight pairs on each spike, one sessile, the other sub-sessile. — Calyces nearly alike, two-valved, two-flowered; the exterior valves even, acute, and uncommonly woolly on the backs; the inner boat-shaped, acute, and smooth. In each, one of the florets is hermaphrodite, the other male. — Corols all two-valved, hyaline; the inner valve of the hermaphrodite floret in the sessile flower bifid and awned. — Stamina three. — Styles two.

5. I. geniculatum. R.

Stems geniculate, creeping, smooth. Leaves ensiform; spikes conjugate, apparently only one. Calyces two-flowered, smooth, and crested; with the hermaphrodite flowers awned.

A small species, a native of Bengal. Flowering time the cool season.

Culms polished, from one to two feet long, very ramous, diffuse, geniculate; joints large, emitting smooth, very brown roots. — Leaves small, ensiform, smooth; sheath smooth, and shorter than the polished joints of the culm. — Spikes terminal, conjugate, generally so close as to seem only one, smooth, about an inch long. Rachis jointed, flexuose; angles sharp, and sometimes hairy. — Flowers paired, one sessile, one peduncled. — Calyces, both two-flowered; one hermaphrodite and awned, the other male and awnless. Exterior valve of the sessile flower enlarged with two, hard, serrulate crests, one on each side of the apex; inner mucronate, with a similar crest on the back, under the apex; of the pedicelled flower both are boat-shaped, mucronate, or sub-aristate, and the exterior one crested on the back under the apex; all are smooth and marked with green, longitudinal veins. — Corols two-valved; the exterior valve of the hermaphrodite flowers bifid and awned.

6. I. tenellum. R.

Creeping near the base. Leaves linear; spikes paired; exterior
valve of the sessile flower truncate, the rest cuspidate, hermaphrodite flower alone awned.

A weak straggling species.

Culms weak, creeping and ramous towards the base; towards the heads erect; the thickness of a pigeon's quill; joints bearded. Leaves a little hairy near the base, mouths of the sheaths ligulate, and hairy.—Spikes paired, &c. as in the last species.—Flowers paired, &c. Calyx of the sessile flowers two-valved, two-flowered; exterior valve retuse and bordered; inner valve ending in an awled point.—Flowers two, one hermaphrodite with a two-valved corol, the exterior of which ends in an arista, the other is male with an awnless two-valved corol.—Calyx, of the pedicelled flower both valves alike, and ending in an awled point; it contains a single flower, which is sometimes hermaphrodite, and sometimes male, with the rudiment only of the second flower.

7. I. repens. R.


A native of Pulo-penang.

Culms creeping, flexuose, smooth, from one to two feet long.—Leaves bifarious, sword-shaped, short, rigid. Sheaths as long as the joints, a little hairy, with a stipulary process at the mouth.—Spikes terminal, paired, uniting a little above what seems to be their base. Rachis jointed, three-sided, smooth.—Flowers about six pair, one of each pair sessile, the other peduncled, both the pedicelled and sessile one consisting of a two-flowered, two-valved, rigid, acute, smooth calyx.—Flowers polygamous, one hermaphrodite, the other male, both awnless, each floret having a corol of two acute valves.

8. I. cuspidatum. R.

Floating on sweet water with a portion of the tops of the plant
emerging. Leaves linear, smooth. Spikes three-fold. Exterior valve of the calyces with a long, waved, ensiform point; all the corollots two-valved, and awnless.

A native of Bengal, where it is found floating on pools of sweet water, and blossoming about the close of the rains in October.

Culms appear to be perennial, a fathom or two long, jointed, as thick as the little finger, floating.—Leaves linear, acute, from one to two feet long, margins backwardly hispid, in other respects smooth.—Spikes terminal, three in the only plant that has yet blossomed in this Garden, each about six or eight inches long, a little compressed; when the flowers expand about noon they appear like Chevaux de frise, at other times they appear smooth.—Flowers in pairs, one sessile, containing one hermaphrodite, and one male floret, the other pedicelled and neuter, or with two male florets.—Calyx two-valved; exterior valve rigid, with hispid margins and long, flat, waved, hispid-margined, ensiform points; inner valve boat-shaped with a flat hispid keel.—Corolls of each floret two-valved.

**APLUDA.**

Polygamous. Involucre one-valved, two-flowered, one-sessile, the other pedicelled with a pedicelled neuter rudiment. Calyces two-flowered, the sessile one polygamous, the pedicelled one the same, or with male only. Corolls two-valved.


Perennial, creeping, or scandent. Leaves lanceolate. Hermaphrodite flower awned.

Beng. Goroma.

Teling. Pootstrangali.

Is commonly found in hedges, under the shade of trees and such like places.

Culms creeping, or climbing, as thick as a crow-quill, jointed, coloured, the lower part naked, inwardly spongy; from the joints spring, erect, ramous, flower-bearing branches of from one to seven
feet high — *Leaves* very elegant, somewhat bifarious, sheathing, petiolated, linear-lanceolate, backwardly hispid; from six to eighteen inches long; *sheaths* smooth, mouths short-stipuled.—*Panicules* terminal, and from the exterior axils, or, the whole may be considered, as one linear leafy panicule.—*Bractes* three-flowered, boat-shaped, with an awned point.—*Flowers*, one of the three sessile, or rather sitting on a globular receptacle, consisting of a common, two-flowered calyx, one of which is sessile, awned, and hermaphrodite; the other sessile, male and awnless; just without the calyx on each side, there is a bent, compressed pedicle, one of these supports a common calyx, with two male, two-valved, awnless flowers, the other only the rudiments of one or more florets.

2. *A. geniculata.* R.

Perennial, creeping, or scandent, intricately geniculate. *Leaves* lanceolar. In each calyx one hermaphrodite, and one male flower, all awnless.

Found on the banks of the Ganges in flower during the latter part of the rains and the cool season.

*Culms* creeping, or climbing amongst bushes, reeds, &c. to an extent of many feet, smooth and slender, bent at angles about a span distance at the swelled joints, emitting numerous wiry roots, filled with spongy pith, the thickest about the size of a crow-quill.

—*Leaves* linear lanceolate, and smooth, but much smaller than in *A. aristata*. *Sheaths* shorter than the joints. *Ligula* lacerate.—*Panicules* terminal, composed of numerous slender branchlets of distinct fascicles of flowers, each fascicle containing many short pedicelled, three-flowered, boat-shaped, cuspidate, smooth bractes or involucres.—*Flowers* one of the three sessile, containing one hermaphrodite, and one male floret; the other two elevated or broad sulcate; proper pedicels, one minute and abortive, the other polygamous as in the sessile flower.—*Calyces* of both the sessile and pedicelled flowers two-valved, two-flowered.—*Corol* in all of them two-valved; *valves* unequal, exterior one thin, and transparent.
Obs. The accurate Gærtner, Carp. vol. ii. p. 466 t. 175 gives to the sessile flower of A. mutica, one hermaphrodite, and one female floret, and to the pedicelled one two male ones, consequently this must be different, and a second awnless species.

AIRA. Schreb. Gen. N. 112.

Calyx two-valved, two-flowered, without the rudiment of a third.  
Smooth, erect, one foot high. *Leaves ensiform. Panicles oblong, compound, of simple, linear, secund racemes.*

A native of pasture ground.

*Culms erect, mostly naked, round, smooth, about a foot high.—Leaves small, smooth; mouths of the sheaths enlarged by a membranaceous, torn process.—Panicle erect, thin, oblong, composed of alternate, simple, one-ranked, filiform, expanding racemes.—Flowers in two rows.—Calyx two-flowered, large.*


Calyx two-valved, two-flowered, with the rudiment of a third.

1. M. digitata. R.
*Culms from four to five feet high. Spikes terminal, expanding, mostly five-fold. Calyx one-flowered; outer valvlets of the corol and rudiment awned.*

A large beautiful species, a native of hedges, thickets, &c.

*Culms near the base procumbent, but when supported by bushes erect and often from four to five feet high.—Leaves upper side somewhat hairy; mouths of the sheaths bearded.—Spikes four or five, digitate, secund, spreading, filiform, from six to nine inches long, hairy at the base. Rachis three-sided.—Flowers in two rows, sessile, awned.—Calyx one-flowered; glumes unequal, the interior being three or four times longer than the exterior, and short-awned.—Corol, valvets unequal, the largest has a long awn issuing just below
its apex on the outside.—*Corpuscle*, or neuter floret pedicelled, and awned.

2. *M. refracta*. R.


A native of the Moluccas, and from thence introduced amongst other plants, into the Botanic Garden, where it blossoms during the cold season.

*Root* perennial.—*Culms* ascending, from one to three feet long, round and smooth.—*Leaves* lanceolate, smooth; *sheaths* smooth, scarcely bearded at the mouths.—*Panicle* terminal, ovate; *ramifications* somewhat compound, and refracted like the drooping branches of some species of *Pinus*.—*Calyx* smooth, two-valved, two-flowered, with an abortive third, or the rudiment of one.—*Corol*, exterior glumes, chiefly of the second flower, bearded with refracted, sharp, stiff bristles which fix to every thing that touches them.

3. *M. diandra*. R.


A native of mountains on the Coromandel Coast.

*Culms* ascending, from two to four feet high, firm, smooth, about as thick as a fine quill.—*Leaves* bifarious, lanceolate, striated, smooth; *margins* waved, unequally divided by the nerves, about an inch and half broad, and six inches long; *mouth* of the sheaths projecting above in a membranaceous process.—*Panicles* large, thin, oblong, bowing a little, composed of sub-alternate, simple, spreading racemes.—*Flowers* awnless.—*Calyx* two-flowered, with the characteristic corpuscle, which is also here pedicelled, but awnless.—*Corol*, exterior valve of the inner one has its *margins* and *keel* ciliate.—*Stamens* two.
4. M. latifolia. R.

Perennial; culms erect, simple, from four to eight feet high. Leaves lanceolate. Panicles large and open, with alternate, compound drooping branches.

A native of the Garrow hills, from thence it was brought to the Botanic Garden, by Mr. Robert Kyd, where it blossoms in March, at which period and indeed at all times it is one of the most elegant plants in the whole order.

Stems very numerous from the same root, erect, straight, and always without branches, more or less invested in the sheaths of the leaves; very smooth, texture remarkably hard, and filled with firm pith, generally about as thick as a goose quill, and when in flower from six to eight feet high.—Leaves sessile on their sheaths, lanceolate, smooth; from six to twenty inches long, and from one to four broad. They are much like the leaves employed by the Chinese to put between the boxes and lead canisters in which their Teas are packed.—Seed ventricose-oval, smooth, both ends rather pointed.

CHLORIS.

Polygamous. Calyx two-valved, from two to six-flowered; hermaphrodite flowers sessile; male, or neuter ones pedicelled. Corol of the hermaphrodite flower two-valved; of the male, or neuter one-valved, all of them awned.

1. C. tenella. R.

Spikes solitary; Spikelets with three or four hermaphrodite awned florets, and a neuter rudiment.

A native of the Peninsula of India.

Culms delicate, erect, smooth, about a foot high.—Leaves rather large in proportion to the rest of the plant, smooth, and soft.—Spikes solitary, secund, scarcely two inches long.—Spikelets alternate, and alternately pointing two ways.—Flowers of the spikelets, or to each calyx, three, four, or five, all hermaphrodite, (at least in the rather imperfect state in which I have found this rare species) ex-
cept the innermost one which is a one-valved corpuscle or rudimen-
tment, as in Melica.—Calyx from three to five-flowered, two-valved;
valvelets unequal, broad lanceolate, smooth, acute, permanent.—
Corol of the hermaphrodite two-valved; exterior valvelets obcordate,
cucullate, awned; margins smooth, but with three hairy nerves on
the back and sides; interior oblong, with edges ciliate and always
awnless.

2. C. montana. R.
Spikes digitate, secund, united at the base; hermaphrodite flower
ciliate, and awned; neuter of three awnless valves.

This a native of mountainous tracts only. It differs from Chl. bar-
bata only in the following respects. 1st. The spikes are in number
from four to six, and united into a common flower-bearing rachis
near the base. 2d. The neuter floret has a third awned valve and
the awns are all straw-coloured.

Spikes digitate, secund; hermaphrodite corol ciliate, and awned,
neuter of two awned valves.
Grows in large tufts on pasture ground, &c. very common every
where.

Culms, below creeping, and ramous, the joints perfectly smooth.
—Leaves near the base bifarious; margins near the base and mouths
of the sheaths ciliate.—Spikes terminal, from six to twelve, sessile,
secund, expanding, from one to two inches long. Rachis striated,
not hairy, nor jointed.—Flowers pedicelled, alternate, in two rows
on the outside of the spikes—Calyx two-flowered, two-valved,
membranaceous and awnless. The lower flower is sessile and her-

maphrodite, its corol consists of two unequal ciliate valves, the
base of which is surrounded with hairs, the exterior one ending in
a long, coloured awn. The other floret I have always found neuter;
it stands on a short pedicel and consists of two-obcordate, awned valvelets; *awn* and *margin* of the valvelets coloured.

*Obs.* Cattle eat it till in flower; after which I never saw any animal touch it.

4. C. *polystachya*. R.

*Spikes* from ten to twenty, fascicled. Exterior glume of the hermaphrodite flower with ciliate margins; neuter florets two, with single smooth valves.

A native of the Peninsula of India.

*Culms* below procumbent for a little way, then erect, and about two feet high.—*Leaves* as in other grasses, and smooth.—*Spikes* about sixteen, in a terminal, sub-fastigiate umbelliform fascicle, secund with the alternate spikelets, or flowers pointing to opposite sides, length from two to three inches.—*Calyx* of two, unequal, lanceolate, boat-shaped, smooth, permanent awnless valves, which contain one, two-valved, hermaphrodite, awned flower; and two peduncled, one-valved, awned, neuter florets. The exterior valvulet of the hermaphrodite flower has its margins ciliate.

**POMMEREULLA.** Schreb. Gen. N. 97.

*Calyx*, *glumes* two-valved, from three to four-flowered; *valvelets* four-cleft, awned on the back.


A very singular, small, rare grass; growing under bushes on dry uncultivated ground.

*Root*, *Culms*, and *Leaves*, as described by König, but mine has the spike compound and secund, the rest as he says, alba base abvolu-ta folia sub-spathiformi.—*Spiculis* distichus, each having an involucre of two, lanceolate, acute, membranaceous valves. Within these two valves, is a short, clubbed, downy pedicel supporting the partial spikelets of four flowers, with their common calyx, it is joined to
the involucre by an articulation and drops off most readily, particularly when dry, leaving the involucre attached to the rachis.—Calyx, Corol, and Stamens, are as König describes them; but the germ is obcordate, and there are always two styles with feathery recurved stigmas.—Seed as he describes it.

**POA. Schreb. Gen. N. 114.**

Calyx two-valved, containing many flowers of two unequal valvlets disposed alternately on distichous spikelets.


Teling. Wooda-tallum.

I believe König called it Poa malabarica.

Grows on mountains and other dry situations.

Culms straight, simple, from twelve to twenty-four inches high, a little compressed, smooth.—Leaves small, smooth.—Spikes straight, secund, from four to eight inches long. Spikelets alternate, sessile, lanceolate, in two spreading rows, though issuing from one side of the common rachis.—Calyx below, from four to six-flowered; above many-flowered.


Smooth, from two to four feet high. Panicle of many alternate, simple, expanding, secund ramifications; Spikelets alternate, short-pedicelled, from four to six-flowered.

Beng. Bura-pini-nuti.

A large, beautiful species, growing on the borders of water courses, and places where there is much moisture.

Culms ramous, creeping near the base, above expanding, from two to four feet high, every part smooth, and a little compressed.—
Leaves as in other grasses, smooth; mouths of the sheaths bearded.

—*Panicle* large, oval, composed of long, alternate, filiform, simple, expanding, second branches. *Spikelets* alternate, from four to six-flowered, short-pedicelled, expanding, in two rows from one side of the simple branches.

3. *P. procera. R.*

Smooth, erect, from three to five feet high. *Ligula* large; *ramifications* of the panicle simple; *spikelets* pedicelled, rather remote, linear, many-flowered.

*Teling. Rewa.*

Delights in a moist rich soil.

*Culms* nearly erect, branchy, from three to five feet high, round, smooth, much covered by the sheaths of the leaves.—*Leaves* long, slender and smooth. *Sheaths* longer than the joints, with their mouths crowned with a long ragged membranaceous process.—*Panicle* large, from nine to eighteen inches long, oblong, bowing a little, composed of numerous, long, filiform, expanding racemes, scattered round the common *rachis*; which is filiform, waved, three-sided, and hispid. *Spikelets* alternate, pedicelled, linear, remote, many-flowered.


Smooth, straight, from one to three feet high. *Leaves* long and acute. *Panicle* straight, sub-cylindrical; *ramifications* horizontal, *spikelets* depending, from six to twelve-flowered.


*Beng. Koosha.*

*Teling. Durbha, Dubha,* or *Durpa.*

A strong coarse species, a native of dry barren ground.

*Root* creeping, perennial.—*Culms* straight, rigid, round, smooth, from one to three feet high.—*Leaves* numerous, very long, chiefly
about the base of the culms, rigid margins hispid.—*Panicle* erect, linear-oblong, often tending to a conical form, composed of many somewhat three-fold, verticelled, horizontal, short, rigid, second ramifications. *Spikelets* many-flowered, depending, in two rows, from the under side of the ramifications.—*Corol*, valves pointed, the inner one rather the largest.

*Obs.* It is employed by the brahmins in their religious ceremonies. Cattle do not eat it. Can this be *Gramen capillaceum*, &c. *Plak. Alm.* p. 176. t. 34. *Fig. 2.*—*Cusa*, or *Cusha*, the Sanscrit name of this much venerated grass, was given to it at a very early period, by the Hindoo Philosophers, and believed, by Sir William Jones, to have been consecrated to the memory of *Cush*, one of the sons of *Ram*. See *Asiatic Researches*, vol. iii. p. 490. If so, we have here a very ancient precedent for the present very convenient practice of giving such arbitrary names to plants, and to their families.


Smooth, sub-erect, from one to two feet high. *Panicle* contracted, linear, with the lower ramifications remote. *Spikelets* from six to twelve-flowered; *inner* valvelets of the corol ciliate.

Delights in the same soil and situation with the last described species.

*Culms* near the base procumbent, above erect for one or two feet.—*Leaves* as in the last.—*Panicle* linear, from three to six inches long, the ramifications short, those of the lower part stand at some small distance, their insertions are not hairy.—*Calyx* from six to twelve-flowered, not ciliate.—*Corol*, only the inner valve ciliate.—*Seed* as in the last.

6. *P. cylindrica*. R.

Erect, slender, from twelve to eighteen inches high. *Leaves* slender. *Panicle* cylindric, crowded with short, adpressed, ramous, alternate branches; *spikelets* from six to twelve-flowered; *flowers* di-androus, inner valve of the corol ciliate.
From Canton in China the seed was received into the Botanic Garden, where the plants grow freely and blossom during the rains and the cool season.

7. P. ciliata. R.
Smooth, sub-erect, from one to two feet high. Panicle columnar; spikelets from six to twelve-flowered; margins of all the valvelets of the calyces and corols ciliate. Seed globular.
Is generally found on a poor dry soil.
Root perennial.—Culms erect, rigid, smooth; from one to three feet high.—Leaves smooth, mouth of the sheaths downy.—Panicle columnar, from two to four inches long, branches thereof crowded, insertions hairy, spikelets from six to twelve-flowered.—Calyx, margins ciliate.—Corol, the margins of both valves much ciliate, the exterior one has three nerves and is pointed, the inner one two-nerved.—Seed obovate, smooth, brown, dropping from the corol when ripe.

Erect, smooth, from one to three feet high; ramifications of the linear panicle short, and collected into remote fascicles. Spikelets from six to twelve-flowered. Seed obcordate.
Teling. Nakumaral.
Grows about at the borders of rice fields.
Culms generally erect, from one and a half to three feet high, round, smooth.—Leaves narrow, long, sharp, and smooth.—Panicles erect, from six to twelve inches long, linear; ramifications sessile, nearly erect, remote, particularly those of the lower part, where they are often twice their length asunder; one, two, or more from the same point, which makes it appear verticled.—Spikelets minute, pedicelled, from six to twelve-flowered.—Corol, valves smooth.—Seed as in the last two species.

Erect, smooth, from three to five feet high, panicles contracted;
ramifications adpressed, fascicled, and approximated. *Spikelets* from eight to fourteen-flowered; *seed* oblong.

_Teling._ Urenka.

Delight in a rich, moist soil, such as the banks of water courses, borders of rice fields, &c.

_Culms_ erect, from three to five feet high, generally simple, round, smooth.— _Leaves_ narrow, long, sharp, and smooth.— _Panicle_ linear, from one to two feet long; *ramifications* filiform, pedicelled, adpressed, one, two, or more from nearly the same place, but seldom so far asunder as their own length. *Spikelets* pedicelled, from eight to fourteen-flowered.— _Calyx_ and _corol_ smooth.— _Seed_ oblong, smooth, brown.

_Obs._ The best mark to distinguish it from the last species is the form of the *seed*, which in that is obovate, in this oblong. Cattle are not fond of any of these tall, erect, coarse species.

10. *P. diandra._ R.

Erect, smooth. _Leaves_ long, fine-pointed; _panicle_ linear, half the length of the whole plant; *ramifications* scattered, compound, expanding, smooth; _spikelets_ from four to eight-flowered. _Flowers_ diandrous.

A native of Bengal, where it blossoms during the cold season.

_Culms_ erect, growing in tufts, with few branches, smooth; height of the whole plant in a good soil, from three to six feet.— _Leaves_ from one to two feet long, smooth in every part, tapering to a long fine point.— _Panicle_ linear, half the length of the whole plant; _ramifications_ thereof scattered, expanding, smooth, compound, from two to three inches long.— _Spikelets_ lanceolate, small, smooth, from four to eight-flowered.— _Corol_ , with both valves smooth, and rather obtuse.— _Stamens_ two. _Anthers_ purple.


_Culm_ ascending, from nine to eighteen inches high, clammy. _Panicle_ linear-oblong; _ramifications_ verticilled, short, spreading;
spikelets from three to twelve-flowered; inner glumes of the corol ciliate.

This species grows in tufts on dry pasture ground.

Culms numerous, spreading, with their extremities ascending, ramous, from nine to eighteen inches long.—Leaves small, margins involute; sheaths shorter than the joints, with their mouth surrounded with long, slender, white hair.—Panicles linear-oblong, from two to four inches long, composed of short, sub-verticelled, sessile, expanding ramifications.—Calyx from three to four-flowered.—Corol, inner valve ciliate.

Obs. Every part of the plant is covered with tenacious gluten.

Erect, smooth, from one to two feet high. Panicle linear-oblong, verticelled. Spikelets pedicelled, from four to six-flowered, smooth.
A native of pasture ground.

Culms erect, round, smooth, from one to two feet high.—Leaves smooth, mouth of the sheaths much bearded.—Panicles linear-oblong, composed of verticelled, filiform, expanding, ramous branches, having always at their insertions and sub-divisions a few fine, long hairs. Spikelets pedicelled, from four to six-flowered.—Calyx and corol smooth.—Seed oval, brown, smooth, falling from the corol when ripe, as do all the other species of this genus that I have yet seen.

Obs. The anthers shine through the valves, as in P. punctata, and indeed in most, if not all the Poas.

Sub-erect, smooth. Panicle ovate-oblong; ramifications scattered, horizontal; insertions hairy; ramuli depending. Spikelets pedicelled, from four to six-flowered; inner valvelets of the corols ciliate.

Tsjama-pullu. Rheed. mal. xii. p. 75. t. 41.
Gramen fumi. Rumph. Amb. vi. p. 10. t. 4. f. 3.
Is found growing in tufts on pasture ground.

Culms filiform, many, ramous, spreading a little at the base, above erect, from one to two feet high, round, smooth.—Leaves, months
and margins of the sheaths fringed, with long delicate white hairs.—
Panicle oblong, composed of many, capillary, alternate, horizontal, ramous branches, their insertions and sub-divisions are fringed with a few, fine, white hairs. Spikelets minute, pedicelled, depending, from four to six-flowered.—Calyx smooth.—Corol, inner valve fringed with hairs in the back.—Seed oblong, brown, smooth.

Erect, smooth, from six to eighteen inches high. Panicle oblong; ramifications simple, expanding, lower ones verticelled. Spikelets from twelve to fourteen-flowered, smooth.—Seed obliquely oblong.

This species grows in tufts on pasture ground.

Culms erect, generally simple, round, smooth; from six to eighteen inches high.—Leaves small, smooth; mouths of the sheaths bearded.—Panicle oblong; ramifications simple, expanding, the lower ones collected into one verticel; above alternate.—Spikelets pedicelled, rather remote, linear, from twelve to fourteen-flowered.—Calyx and corol smooth, thin, showing the unexpanded anthers and stigmas through them.—Seed oblong, smooth, brown.

15. P. elegans. R.
Sub-erect, smooth, from one to three feet high. Panicle oblong, nodding ramifications solitary, ramous, adpressed. Spikelets from eight to twelve-flowered. Seed globular.

A very elegant, tall, delicate species, a native of moist pasture ground.

Culms simple, at the base spreading for a few inches, the remaining part is erect, round, smooth; from one to three feet high.—Leaves few and very small, smooth in every part, except the mouth of the sheaths, which are bearded.—Panicles linear-oblong, nodding, composed of erect, adpressed, distinct, somewhat remote ramification, each of which forms a small, but similar panicle. Partial rachis with the angles hispid. Spikelets pedicelled, linear, from eight to twelve-flowered, purplish.—Corol, outer valve three-nerved.—Seed globular, smooth, and brown.
16. *P. multiflora*. R.

Sub-erect, smooth, from six to eighteen inches high. *Panicle* longer than the rest of the plant, nodding. *Spikelets* crowded, from fifty to seventy-flowered. *Seed* globular. Is found on dry elevated places.

*Culms* nearly erect, naked, except at the base, from six to twelve inches high, round, and smooth. — *Leaves* one or two near the base of each culm, short; *mouths* of the sheaths a little hairy. — *Panicle* oblong, bowing; *ramifications* sub sessile, short, filiform, simple, the lower collected into one or two remote branches; the upper ones alternate. *Spikelets* pedicelled, very long, linear, from fifty to seventy-flowered. — *Calyx* smooth, obtuse. — *Corol* smooth, outer valve three-nerved. — *Seed* round, smooth, brown.


Erect, smooth, from one to two feet high. *Panicle* ovate; *ramifications* short, simple, below fascicled; above solitary, horizontal; *spikelets* long-pedicelled, from sixteen to twenty-flowered. *Seed* oblong.

*Beng.* Konee.

A most elegant species, a native of dry elevated situations.

*Culms*, below ramiuous, with a small portion resting on the ground, the rest erect, and from one to two feet high, round and smooth. — *Leaves* few, small, and smooth; *mouths* of the sheaths bearded. — *Panicles* half as long as the whole plant, erect, oblong, thin; *ramifications* peduncled, filiform, disposed as in *multiflora*. *Spikelets* ovate, from sixteen to twenty-flowered, generally of a bluish purple colour. *Corol*, outer valve three-nerved, as in *P. multiflora*. — *Seed* oblong, smooth, brown.

18. *P. flexuosa*. R.

Sub-erect, flexuose, nodding, smooth, from eighteen to twenty-four inches high. *Panicle* ovate, crowded; *ramifications* solitary, ra-
Poa.  

TRIANDRIA DIGYNIA.  

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mous, expanding, insertions hairy, spikelets twenty-flowered. Seed globular.

A pretty large species, growing in tufts on old walls, so exactly resembling P. unioloides as to be easily mistaken for it. It has much the habit of Briza Eragrostis.

Culms sub-erect, winding, round, smooth; from one and a half to two feet high.—Leaves much larger than in the last species, and the mouths of the sheaths more hairy.—Panicle oval, very large, generally more than half the length of the whole plant, branches alternate, nearly horizontal, ramous, with a brown, hairy gland in the axil of each division of the panicle.—Spikelets white, or pale green, lanceolate, large, about twenty-flowered.—Seed globular, brown, and smooth.

19. P. paniculata. R.

Erect, smooth, from two to four feet high. Leaves long; mouths of their sheaths bearded. Panicle oblong; ramifications most numerous, filiform; insertions hairy. Spikelets from four to sixteen-flowered; valvelets of the calyces ciliate. Seed globular.

Culm sub-erect, round, and smooth; length from one to two feet high to the panicle, which is about the same length, making the whole height from three to four feet.—Leaves large, mouths of the sheaths very hairy.—Panicle oblong, very large, composed of numerous, ramous, filiform, expanding branches, their insertions and subdivisions involved in fine, long, white hairs. Spikelets long-pedicelled, linear, from four to sixteen-flowered.—Corol. outer valve round at the apex, and three-nerved; inner one slightly ciliate on the back.

20. P. gangetica. R.

Grows in very dense tufts. Panicle thin; spikelets linear, from thirty to forty-flowered.

A native of the banks of the Ganges, but scarce.

Culms numerous, and ramous, growing in crowded tufts, smooth in every part, general length about a foot.—Leaves few, small, and smooth.—Panicle ovate, composed of a few, remote, alternate, sub-
diverging branchlets, each supporting a number of heaped, linear, acuminate, smooth spikelets, of from twenty to fifty-flowers each; as they advance from the apex the lower-florets drop, leaving the zigzag rachis naked as they ripen.—*Calyx*, both valves smooth and obtuse.—*Seed* oval, smooth, brown.

**DACTYLIS. Schreb. Gen. N. 117.**

*Calyx* two-valved, compressed, one valvelet larger, keeled. *Seeds* few.


Creeping. *Leaves* rigid, with spinescent points. *Heads* globular. *Calyces* from six to eight-flowered, hairy, as are also the corols; *anthers* blue.

It is generally found growing on a salt sandy soil near the sea.

*Culms* creeping to a great extent, with from four to eight inches of the flower-bearing portions, erect, they are of a firm, ligneous texture, round and smooth, every part of the erect portions covered by the sheaths of the leaves. *Leaves* numerous, small, approximate, firm, acute, resembling thorns.—*Head*, or *spike* terminal, short-peduncled, globular, composed of many, closely crowded, sessile, roundish spikelets.—*Calyx* from six to eight-flowered; *glumes* equal, shorter than the flowers, obtuse and hairy.—*Corol* two-valved, exterior striated, hairy, and obtuse; *inner* membranaceous, involving the stamens and pistillum.—*Stamens* three. *Anthers* blue.


It is found on dry sandy ground at a small distance from the sea. *Culins* spreading, ramous, creeping, with their flower-bearing extremities ascending, from six to twelve inches long. *Branches* ge-
Eleusine. *Triandria digynia.*

Generally opposite. *Leaves* short, with their margins ciliate.—*Head* or *spike* terminal, long-peduncled, globular, composed of two or three, sessile, secund, short spikes, which are again composed of two rows of alternate, from six to twelve-flowered, sessile, ovate-oblong spikelets.—*Calyx*, from six to twelve-flowered, equal, acute, striated.—*Corol*, outer valve keeled, acute, three-nerved, very hairy near the base, inner valve as in *Poa*, with its back ciliate.—*Seed* oval, compressed, smooth, and brown; dropping from the corol when ripe.

*Obs.* Both these species are of a coarse nature.

The Linnean definition of the genus does not accord well with the only two species I have met with in India. That of *Poa* agrees better with their essential character; and had not Burman, in his *Flora indica*, made them both belong to this genus, I should certainly have considered them as species of *Poa*, though in their general habit they by no means agree with the elegant plants of that genus. When I had an opportunity I forgot to examine the seeds in a sufficiently exact manner. I suspect they have the aril of the following genus, because they have much of its general habit.

**ELEUSINE. Gært. Carp. i. p. 7.**

*Calyx* two-valved, containing many flowers of two equal valvelets. *Seed* with a complete membranaceous aril.


It is called Nutchanee by Europeans on the Coromandel Coast.

* I adopt Gærtner’s name on account of the aril, which envelopes the seed, and the total want of the involucre of *Cynosurus* in all the Indian species that I have yet met with.
Ponassa, or early Soloo, is the Telinga name of the grain, and Sodee the name of the plant.

Beng. Muroon.

Raggee of the Coast Mahomedans.

This species is cultivated during the rains. I never saw it wild.

Culms erect, generally several from the same grain of seed; from two to four feet high, a little compressed, smooth.—Leaves bifarious, large, smooth; mouths of the sheaths bearded.—Spikes, from four to six, digitate, incurvate, secund, from one to three inches long, composed of two rows of sessile, from three to six-flowered spikelets. Rachis compressed, a little waved.—Calyx from three to six-flowered, exterior glumes twice as long as the interior; both are keeled, obtuse, and membranaceous-margined.—Corol, valves nearly equal.—Seed globular, dark brown, a little wrinkled, covered with a thin, pellicid, membranaceous aril.

2. E. stricta. R.

Culms erect, from two to five feet high, compressed. Leaves bifarious. Spikes digitate, straight. Calyces from three to six-flowered. Seed round.

Teling. Pedda, viz. great Soloo.

Hind. Raggee.

This is still more cultivated than the last, and differs from it only in having the spikes straight, being generally of a larger size, and more productive, the great weight of the seed, when full grown bends the spikes down into a horizontal direction.

There is a variety of this straight-spiked sort, which the Telinga farmers called maddee rooba soloo; it grows to still a larger size, with a greater number of straight spikes.

They all require a light rich soil, on which the water does not remain after heavy rains. The first or early sort does not require so rich a soil as the other two, it is sown earlier by which means the same ground yields two crops. From July to January inclusive they reckon on an increase of about one hundred and twenty fold if the soil and season are favourable.
Eleusine.  

The second sort requires a richer soil; it is sown later in the season; its increase is greater.

The third sort, maddi ruba soloo, requires a still richer soil; land fit for it is scarce, and the rent high. I am informed that it is nearly twice as much as that of land fit for the first sort, the increase of this kind is prodigious, five hundred fold, the farmers say, if the season and soil are favourable.

About twenty years ago, there came up accidentally amongst some rubbish in my garden at Samul-cotah, two tufts of this plant, each, upon examination, I found to be the produce of one seed, each had twenty-five culms, and each of these culms had on an average two lateral branches making in all seventy-five culms and branches, each produced upon an average, six spikes, (for they had from four to eight) in all four hundred and fifty spikes, each of these had at a medium sixty spikelets, and each spikelet ripened on an average three or four seeds, total produce eighty-one thousand. I was myself particularly attentive in counting the above produce because it was so astonishingly great.

In the Rajamundry Circar, where these observations were made, the soil is in general rich, and the season favourable.

2. *E. aegyptica.* R.

Culms with a creeping base, from one to two feet high. Spikes four-fold, cruciate. Calyces daggered, from three to four-flowered. Seed oval, somewhat three-sided, and transversely rugose.


*Gramen vaccinum.* Rumph. amb. vi. p. 10. t. 4. f. 1.

*Cavara-pullu.* Rheed. Mal. xii. p. 151. t. 69.

*Hind. Makura-jali.*

Grows in pasture ground, and by road sides, &c.

Culms, creeping near the base; the remaining part nearly erect for a foot, or a foot and a half, ramous, a little compressed, and smooth.—Leaves fringed with hairs.—Spikes terminal, from three to five, horizontal, secund, &c. as in *E. Coracana.*—Calyx from three
to four-flowered; glumes acute, particularly the exterior one which ends in a short awn.—Corol, outer valve very acute.—Seed oval, somewhat three-sided, wrinkled, arilled, but in this species the aril is so thin and delicate, as to be often removed by the time the seed is full grown.

Obs. Cattle are fond of it.

Erect, smooth, from one to two feet high. Leaves bifarious. Spikes from five to seven, digitate. Calyces from three to five-flowered, seed oblong, three-sided, rugose.

Hind. Mal-ankuri.
Teling. Kuror, viz. wild soloo.

A common coarse species, found growing in large tufts on pasture ground, road sides, &c.

Culms ascending at the base, ramous, a little compressed, smooth, from one to two feet high.—Leaves bifarious, large, with a few long white hairs scattered over the insides and sheaths.—Spikes terminal, from three to six, expanding; one generally standing single a little below the rest, linear, secund, from two to four inches long; insertions glandular and hairy, spikelets in two rows on the underside.—Calyx from three to five-flowered; glumes equal, as long as the flowers, smooth and rather obtuse.—Corol, valves smooth, obtuse.—Seed obtusely three-sided, rugose, arilled.

Obs. Cattle are not fond of it.

5. E. verticillata. R.
Erect, smooth, from one to four feet high. Leaves bifarious. Spikelets numerous, panicked. Calyces from eight to twelve-flowered; glumes daggered; seed oblong, wrinkled.

It is a native of moist pasture ground.

Culms erect, round, smooth, from one to four feet high.—Leaves as in the last described.—Panicle erect, oblong, composed of many
verticelled, expanding, round, sessile, linear spikes, much resembling those of *E. indica*; spikelets imbricated in two rows on the under side of the spikes.—*Calyx* from eight to twelve-flowered, corol-like.—*Corol*, exterior valve ending in a long dagger, inner valve membranaceous.—*Seed* oblong, wrinkled, arilled; in this species the aril is fully as delicate as in *E. agystica*, and is nearly found whole on the full grown or ripe seed.

6. *E. calycina*. *R.*

Erect, from two to three feet high. *Panicle* linear. *Spikes* numerous, alternate; glumes of the *calyces* equal, many times larger than those of the corol, daggered, three-flowered. *Seed* three-sided, wrinkled.

*Teling*. Wadata-toka-guddee.

Grows in small tufts on dry pasture ground, but generally amongst bushes.

*Culms* erect, generally about two feet high, much covered by the leaves.—*Leaves* very thinly scattered with hairs.—*Panicle* linear, erect, from eight to twelve inches long, composed of many sessile, expanding, alternate, secund spikes; *spikelets* occupying, as in the other species, the under side of the spike.—*Calyx* generally three-flowered, glumes equal, twice as long as the three flowers they embrace, each ending in a long, sharp dagger.—*Corol*, valves obtuse.—*Seed* three-sided, wrinkled. I cannot say that I have seen the aril in this species, though I have often looked for it; it may therefore be a species of *Dactylis*.

**ARUNDO. Schreb. Gen. 124.**

*Calyx* two-valved, containing one or more two-valved flowers, surrounded with long hairs.


Erect, smooth, leafy, from twelve to eighteen feet high. *Panicle*
Triandria digynia.  

Arundo.

t erect, linear, oblong, dense; calyces, three-flowered, much longer than the florets; glumes of the corol woolly.

Teling. Patoo-ederoo.

Is found chiefly among bushes on the banks of rivulets, lakes, 
&c. on the Circar mountains.

Culms sword-shaped, smooth, about ten to fifteen inches long, and from one to two broad.—Panicle erect, oblong, very much crowded with innumerable ramifications, which stand erect and press close on one another while in seed.—Flowers erect, on a common woolly pedicel within the calyx.—Calyx three-flowered; glumes equal, pointed, larger than those of the flowers.—Corol, exterior valve twice the size of the inner one, it is pointed and woolly on the outside.

Obs. The leaves seem to be one of those sorts with which the Chinese line the inside of their Sugar-candy tubs and other packages.


Erect, smooth, leafy, from eight to twelve feet high. Panicle loose, verticelled. Calyces, from three to four-flowered, exterior glume of the corol three-nerved, and daggered. 

Sans နေ, Nula, နာ, Nula, ဓမ္မား, Dnunuma, ပွိုင်, Pottugula.  
Teling. Naga-sara maitantos.

Is a native of similar places with the last described.

Culms erect, ramous, from eight to twelve feet high, and as thick as the last, round, smooth, entirely covered with the sheaths of the leaves. —Leaves approximate, sword-shaped, smooth, from twelve to twenty-four inches long, and one or one and a half broad; mouths of the sheaths bearded.—Panicle bowing with the wind, but if not disturbed erect, oblong, composed of many filiform, erect, (in luxuriant plants drooping,) sub-verticelled, ramous branches.—Rachis of the branches angular and hispid.—Florets alternate, on a longer common woolly pedicel than in A. bifaria, within the calyx.—Calyx from
three to five-flowered; *glumes* unequal, the largest shorter than the exterior valve of the corol.—*Corol*, exterior valve three-nerved, tapering into long fine subulate points, inner valve scarcely half so long. —*Stamens* often only two, and the pistil is frequently wanting.

*Obs.* It does not agree with Retzius's description of *A. Karka* in the number of flowers in the calyx. Pipes are made of the culms, particularly those used by the people who carry about the dancing snakes.

In Bengal it is more luxuriant than on the Coast. The common Durma mats of that place are made of the stalks split open. Vessels from the port of Calcutta are generally dunnaged with them.


*Culms* from six to ten feet high, fistulous. *Leaves* bifarious, sword-shaped, drooping. *Panicle* lax; *valvelets* of the calyx equal, from two to three-flowered; exterior valve of the corol woolly, dagged, and three-nerved.

*Beng.* Gaba-nul.

This elegant species is found growing in ditches, &c. low places in the vicinity of Calcutta, where it blossoms during the month of October and November.

*Culms* erect, from six to ten feet high, fistulous.—*Leaves* very numerous, approximate, bifarious, drooping, sword-shaped, from one to two inches broad at the base, from thence taper to a fine point; smooth on both sides, and in the margins.—*Sheaths* also smooth, with a long membranaceous margin round the mouth.—*Panicle* oval, lax, from one to two feet long, erect; *ramifications* alternate, ramous, drooping a little.—*Flowers* pedicelled, scattered.—*Calyx* two or three-flowered; *valves* nearly equal, and of the length of the flowers.—*Corol*, exterior valve three-nerved, and woolly on the back, with a very fine, long, taper point. *Inner* valve small and smooth. —*Nectary* two, cunei-form scales embrace the germ on the two sides.

*Obs.* The wool which girds the base of the corol, in most of the species, is in this species, found growing on the back of its exterior valve.
TRIANDRIA DIGYNA. Aristida.


Calyx two-valved, one-flowered. Corol one-valved, with three awns at the top.


Grows in a dry, barren, binding soil.

Root perennial.—Culms straight, generally simple, from two to four feet high, and about as thick as a crow quill at the base, solid, and of a very firm ligneous texture, round and smooth.—Leaves few, narrow, margins involute, nerveless, smooth.—Panicle bowing with the wind, linear, from six to twelve inches long, composed of sub-sessile, remote, adpressed ramifications.—Calyx, corol, &c. as in the family, except that the three awns are erect.

Obs. Cattle do not eat it, yet it is very useful. The Telinga paper-makers construct their frames of the culms; it also serves to make brooms and tooth-picks. It is employed in preference to other grasses for making the screens called Tatties, for this purpose it is spread thin on bamboo frames, and tied down, these placed on the weather side of the house, during the hot land winds and kept constantly watered during the heat of the day, renders the temperature of the air in the house exceeding pleasant, compared to what it is without.

The Thermometer in the out side exposed to the wind, but not to the sun, will then be at one hundred or one hundred and fifteen degrees, or even more; and within, if the Tatties are properly disposed and well watered, they will keep it down to from eighty-five to ninety, with two or even three rows of Tatties, made very thin, and all kept well watered, the Thermometer, when it blows hard, may be brought down to eighty, but then it is absolutely chilling, and disagreeably cold. The difference between the open air and this refreshed air, is to the feeling inconceivably great. • The Thermo-
meter in the sun, at this season rises to from one hundred and thirty to one hundred and forty. This contrivance we received from Bengal, and by it the hot season which used to be so much dreaded, is now rendered to those who can keep within doors tolerable. I have never observed any bad effects from this cool moist air; however the hot season is the most healthy of the whole year.

   Culms diffuse, about two feet long. Panicle oval, large, thin; ramifications spreading, two-forked.
   Teling. Shilpuroo-kalli.
   This species is a native of the same soil with the last described.
   Culms depressed, straggling, crooked, rigid, somewhat branchy, about two feet long.—Leaves as in the last species.—Panicle large, oval, thin; direction various, composed of diverging, generally two-cleft peduncles and pedicels.—Calyx, corol, &c. as in the genus.
   Obs. This species is of no use that I know of.

   Ascending, ramous, from twelve to eighteen inches long. Panicle linear, of six to eight alternate ramifications; glumes of the calyces keeled.
   Teling. Nalli-pootiki.
   Is found upon the same kind of land with the two last species.
   Culms below depressed, ramous; above ascending, filiform, round, smooth, solid, rigid; from twelve to eighteen inches high.—Leaves as in the former.—Panicle smaller, and with fewer ramifications than in A. setacea.—Calyx, the glumes have a large green keel.—Corol, &c. as in the genus.
   Obs. This is also so far as I know, perfectly useless.


Polygamous. Rachis jointed. Hermaphrodite calyx two-valved, one-flowered. Corol two-valved, less than the calyx. Male, or neuter calyx two-valved, one or two-flowered. Corol two-valved.

Culms creeping, smooth, from nine to eighteen inches high. Spikes solitary; exterior valve of the hermaphrodite calyx panduriform and emarginate; male calyx two-flowered.

Teling. Nallatt-panolookoo.

Is a native of dry elevated sandy ground.

Culms several, ramous, diffuse near the base, rooting at the joints, extremities ascending, from nine to eighteen inches long, as thick as a crow quill, compressed, smooth, not piped.—Leaves small and smooth; mouths of the sheaths increased by a lacerated membranaceous border or stipule.—Spikes solitary, terminal, and from the exterior arils peduncled, secund, jointed, smooth, a little compressed, from one to two inches long.—Peduncles articulated, and bracted at the middle.—Flowers, the hermaphrodite ones occupy a waved row of pits on the four sides of the spike, while the male ones possess two sides, the back is naked.

Hermaphrodite flowers. Calyx two-valved, one-flowered; the exterior valvelet has a broad coloured margin, which is emarginate, and deeply indented at the sides, like a fiddle; inner valvelet oblong, lodged in a pit of the rachis.—Corol two-valved, membranaceous. Nectary two obcordate, crenulated scales embrace the germ.—Stamens three. Styles two.

Male flowers. Calyx two-flowered, two-valved, valvelets nearly equal, boat-shaped.—Corol with two membranaceous valves. —Stamens three.—Pistil none.


ramous, sub-erect, hairy, from one to two feet high; spikes fascicled. Hermaphrodite calyx oval, and rugose; male or neuter one-flowered.

Grows among bushes.

Culms very ramous, nearly erect, filiform, hairy, from one to two.
feet high.—Leaves numerous, very hairy, stiff and sharp.—Spikes terminal, and axillary, peduncled, several together, small, compressed, from half an inch to an inch long.—Panicles as in the former. Rachis jointed, much waved, and excavated as in Rottbællia.—Flowers from four to ten of each sort, their situation exactly as in the last species, viz. the hermaphrodite occupy the forepart, while the male, or neuter are placed on the sides, the former are globular, and the latter lanceolate.

Hermaphrodite flowers. Calyx one-flowered, two-valved, exterior valve round or rigid, and very rugose; inner valve less rigid.—Corol two-valved, membranaceous.—Stamens three.—Styles two.

Male or neuter flowers. Calyx two-valved, one-flowered.—Corol two-valved.—Stamens three or none.


Rachis (generally) jointed, variously excavated for the reception of one, or two flowers in a two-valved calyx, in each excavation.

1. R. glabra. R.
Near the base creeping, with extremities erect, smooth. Leaves bifarious, all hermaphrodite. Calyx one-flowered, corol three-valved.

Beng. Buksha.

A native of Bengal, where it grows on pasture lands, the borders of rice fields, and other moist places. Cattle are fond of it.

Culms jointed, smooth, compressed, filled with pith, creeping near the principal root for a foot or more, the remaining part from one to two, or even three feet, erect.—Leaves alternate, bifarious, approximate, short, spreading, ensiform, smooth.—Sheaths shorter than the joints of the culm, smooth.—Spikes axillary, solitary or in pairs, with a solitary terminal one, subulate, three-sided, smooth, short-peduncled, the peduncles with generally a part of the spikes hid in the sheaths of the leaves; general length from two to three inches.—Flowers opposite, in general all, or the greatest part herma-
phrodite and as long as the joints of the rachis.—Calyx one-flowered, two-valved, smooth, cartilaginous. The exterior valve of one of the pair obliquely emarginate, the other acute.—Corol, the hermaphrodite and male three-valved, one valve on the inside, and two on the outside; all tinged with deep red at the base.


Culms climbing, from five to twenty feet high, smooth, compressed; spikes axillary and terminal; rachis jointed; flowers opposite, hermaphrodite calyces one-flowered. Corol three-valved.

Beng. Pansheroo.

Teling. Shervoo, i. e. lake panookoo.

Is found on the borders of lakes, amongst other roots of long grass, and brush wood.

Culms several, creeping or climbing, ramous, compressed, from five to twenty feet long, piped, smooth, about as thick as a common quill, and very hard.—Leaves numerous, bifarious, small for the size of the plant, smooth and soft; sheaths short, compressed, and smooth.—Spikes peduncled, terminal, and from the exterior axills; generally from two to five together, compressed, a little smooth, from two to four inches long.—Peduncles articulated at the middle and there bracted, lanceolate, chaffy, bractes also surround their insertion.—Flowers all hermaphrodite, opposite, decussated, lodged in the excavations of the jointed rachis.—Calyx one-flowered, two-valved, valves nearly equal; the flowers have alternately their valves pointed and somewhat longer than the excavation in the rachis, both cartilaginous;—and obtuse, equal to the pits in the rachis, with the exterior one only cartilaginous.—Corol three-valved, valves membranaceous. Nectary, two triangular bodies embracing the base of the stamens and germ.—Stamens three.—Styles two; stigmas plumose.

Spikes solitary, secund. Polygamous flowers on the front with neuter ones on the sides.

Beng. Bura-swooate.

Teling. Konda panookoo.

A native of mountains.

Root consisting of strong woody fibres.—Culms erect, ramous, a little compressed, inwardly of a spongy nature, from six to ten feet high, and as thick as the little finger near the base, were they are armed with strong and short, white hairs.—Leaves large and numerous, smooth on the outside, and hairy on the inside; margins hispid, sheaths very hairy; hairs elevated on glandular points, very stiff and sharp.—Spikes terminal, and from the exterior axills, generally solitary, cylindric, &c.—Flowers of three sorts, hermaphrodite, male, and neuter, the first and second occupy alternate pits or one side of the spike, while the neuter stand on each side of them, so that the spike may be called secund.—Calyx of the hermaphrodite and male floret two-valved.—Corol as in the last.—Stamens, &c. as in the genus.—Calyx of the neuter flower two-valved, valvelets oblong.—Corol, glumes two, membranaceous.


Polygamous, erect, smooth, from three to five feet high. Spikes fascicled, terminal and axillary; rachis jointed; flowers alternate, on opposite sides of the spike. Calyces generally two-flowered.

Teling. Pedda-panookoo.


Aegilops eraltata. Retz. Obs. ii. 27.

A native of low rich pasture ground, grows in erect tufts.

Culms many, straight, mostly naked, the sheaths of the leaves being short and covering but a small part of them; round and smooth, from three to five feet high, and like those of the last species, very firm, and not piped.—Leaves a few, from six to twelve inches long; margins sometimes fringed with a few hairs; sheaths short.
and smooth.—Spikes terminal and from the exterior axils several, peduncled.—Peduncles filiform, curved, jointed near the base and there bracted, besides there are chaffy, filiform bractes at their insertions.—Flowers alternate in two rows; one row on each side of the spike.—Calyx two-flowered, two-valved.—Corol, one hermaphrodite within, and one male without, each has two valves, sometimes there is only one hermaphrodite floret, in which case it has three valves.


Culms erect, smooth, from three to five feet high. Spikes solitary, below the flowers are opposite, and the rachis perforated. Calyx generally two-flowered; one flower male, the other hermaphrodite.

Kong. Kurki.

Teling. Panookoo.

This species is rather scarce, it grows on low rich pasture ground.

Culms many, erect, simple, round, smooth, jointed, but not piped; from three to five feet high, and about as thick as a crow quill.—Leaves small for the size of the grass, slender and smooth; margins hispid; mouths of the sheaths and a little way up the base of the leaves woolly.—Spikes terminal, and from the exterior arills, solitary, peduncled, round, smooth, as thick as a crow quill, and from three to six inches long; where the flowers are opposite, there is an oblong perforation of the rachis, so that the backs of the inner glumes of the calyx touch one another.—Flowers in pairs, nearly opposite on the lower half or more of the spike; above alternate, sometimes all hermaphrodite, sometimes hermaphrodite and male mixed.—Calyx one or two-flowered, two-valved; valvelets simple; the exterior one rigid, the interior one firm and white, both obliquely linear-oblong.—Corol, when single, hermaphrodite, and three-valved; when double the exterior one is male, in which case the two have four valves, viz. two valves each; all membranaceous, in shape conforming to that of the calyx, but smaller.

Erect, setaceous, smooth, from two to six inches high. **Spikes** solitary, terminal, unilateral; **rachis** not joined. **Calyces** one-flowered. **Corol**s two-valved, hermaphrodite.

Grows on old walls.

Culms many, erect, ramous, filiform, smooth, from two to six inches high.—**Leaves**, inside a little hairy, in size proportioned to the plant.—**Spikes** terminal, solitary, awled, secund, about an inch, or an inch and a half long. **Rachis** excavated on one side, but not joined.—**Flowers**, they are all hermaphrodite, imbricated transversely on the excavated side of the rachis.—**Calyx** one-flowered, two-valved; **valvelets** equal, membranaceous margined.—**Corol** two-valved, membranaceous, hairy.—**Stamens** three.—**Styles** two.


Erect, compressed, about two inches high. **Spikes** solitary, terminal, two ranked. **Rachis** not jointed. **Calyces** one-flowered. **Corol** two-valved.

R. Thomaea and pilosa. Linn. Sp. Pl. ed. Willd. i. 464. 5. are, I suspect this very species.

Grows, with the last species, on old walls.

Culms minute, erect, compressed, about an inch high, exclusive of the spike, and two with it.—**Leaves** bifarious, numerous.—**Spikes** terminal, solitary, subulate, distichous, compressed. **Rachis** waved, excavated on the opposite side, not articulated.—**Flowers** all hermaphrodite, disposed alternately in the excavations of the rachis. —**Calyx** one-flowered, two-valved; **exterior** valvelet rigid, linear; **interior** boat-shaped, and less rigid.—**Corol** two-valved, membranaceous, hairy.—**Stamens** three.—**Styles** two.

8. R. biflora. R.

Setaceous. **Spikes** simple, subulate; **rachis** not articulate, but bifariously excavated for the reception of the two-flowered spikelets.

A native of the peninsula of India; and in size and appearance ve-
ry like R. Thomasa and setacea; and were they not two-flowered in
the same calyx I should no doubt have taken it for R. incurvata,
Linn.

Culms scarcely more than may be called the scapes of the spikes,
the whole plants being but two or three inches high.—Leaves ma-
ny, filiform; rachis rigid, and with the sheaths somewhat pilose.—
Spikes terminal, solitary, subulate, about two inches long. Rachis
not jointed, but alternately excavated on the opposite sides for the
reception of the flowers.—Calyx two-valved, two-flowered; valves
very unequal, the exterior being many times larger than the inner
one, which is a minute scale in the bottom of the excavations of the
rachis, and not readily detected.—Florets two in each calyx, both
hermaphrodite, one-sessile and the other short pedicelled, each with
a corol of two equal membranaceous, smooth valves.


Calyx lateral, two-valved, valves narrow, acuminate, distant, al-
together forming a six-leaved involucre, one-flowered, by threes at
each toothlet of the rachis.


All the flowers hermaphrodite and awned, placed regularly in six
rows.

Sans. यृत; Yuva, सितशृङ्खऽ; Situshooka.
Beng. Juba.
Arab. She-eer.

This species is much cultivated in most of the temperate parts
of Hindoostan during the cool season.

Obs. I have had specimens and abundance of seeds of this and al-
so of what I consider to be Siberian Barley (H. coeleste) both ga-
tered in 1818 in Tartary, the latter in Dapa, by my highly esteem-
ed friend Capt. W. S. Webb, surveyor at Kemaoon, who has favored
me with the following observation on them: "These two sorts of
Barley are called Oo-a, and deserve to be particularly examined.
They are not known in the low lands of India, produce the hardiest
of all grains, and are most nourishing, as the lusty Tartars almost exclusively live upon them and Tea. The grain cleared from the husk resembles no kind of Barley that I am acquainted with, and if they should prove new species might from their defiance of cold and many good qualities be a valuable acquisition in the Highlands of Scotland.”—N. W.

**TRITICUM.** Schreb. Gen. N. 130.

*Calyx* two-valved, solitary, generally three-flowered.

*Calyces* four-flowered, ventricose, smooth, imbricate, awned.
*Sansk. गोदहोम, Godhooma, सुमन, Soomuna.*
*Beng. Gom.*
*Hind. Gion.*
*Pers. Gundum.*
*Arab. Burr.*

Two varieties are very generally cultivated in the interior and northern parts of Hindoostan during the cool season.

*Calyces* four-flowered, ventricose, even, imbricated, with little or no awn.

Two varieties of this species are also cultivated in the northern parts of Hindoostan during the cool season.

**TRIGYNIA.**

**MOLLUGO.** Schreb. Gen. N. 139.

Annual, diffuse. *Leaves* verticelled cuneate-lanceolar; *flowers* panicled.
*Hind.* and *Beng.* Khet-papara.
*Teling.* Veri Shadrasi.
A common weed in gardens throughout India.

Annual, diffuse; *branches* angular, smooth. *Leaves* sub-verticilled, lanceolate, unequal. *Panicles* of long dichotomous racemes of alternate flowers; *seeds* dotted.
*Beng.* Jul-papara.
*Mullugo stricta*. Linn. *Syst.* 129. is probably the same plant, if so, the specific name is a very improper one. Is also a weed in gardens all over India.

Annual, diffuse, dichotomous, smooth. *Leaves* sub-verticelled, sessile, cuneiform peduncles inserted amongst the leaves, one-flowered. *Seed* furrowed along the back.
*Obs.* Found over most parts of India, and a common weed in our gardens during the dry season chiefly.

**HOUTTUYNIA.**


A native of the valley of Nepala, where it grows in very great abundance, blossoming during the hot and rainy seasons, and producing ripe *seed* from August to the end of February. The Hon.
Mr. Gardner has likewise sent me specimens gathered in the vicinity of Gossein Than (also called Neel-kuntha) in Nepal. I have been favored with specimens found by Dr. G. Gowan, the superintendent of the Botanic Garden at Saharunpore, on his tour to the Sewalic mountains.

Name in Nepal, Kala or Kullum-Soa.

An erect, slender, pretty smooth, from two to three feet high, annual plant; rising from a long, thin, somewhat creeping root, with many short, capillary, verticilled fibres.—Stem round, slightly zigzag, about the thickness of a common goose quill at its base, with obscure, remote, pubescent, leaf-bearing joints; generally simple, though sometimes sending forth several short undivided branchlets toward its summit.—Leaves petioled, alternate, spreading, broad-cordate, with rounded distant lobes, acuminate, entire, from two to three inches long, dotted with copious semi-pellucid points, glaucous, and while young slightly furfuraceous below, reticulated, five-nerved, the three middle nerves generally uniting near the petioil.—Petiol stipulary slender, channelled, about half as long as the leaf, into the base of which it gradually widens.—Stipules membranaceous, flaccid, oblong, obtuse and rounded, slightly ciliated and sometimes marked with a few toothlets, scarcely stem-clasping at the base, having their petiol inserted about the middle of their back, persistent, the lowermost forming remote bractes on the base of the stem.—Peduncles leaf-opposed and terminal, naked, solitary, club-shaped, generally longer than the petiol, sometimes reaching to the middle of the leaf.—Spathe consisting of four equal, white, spreading, persistent, obovate or cuneate, obtuse, smooth, veined leaves, during the aestivation imbricating in the shape of a cone, about six lines long.—Spadix cylindric, much lengthened as the flowers decay, generally twice as long as the spathe and when fruit bearing sometimes measuring an inch and a half. Flowers very numerous and small, close together, covering entirely the spadix, which they render oblong and obtuse, sub-verticilled, destitute of both calyx and corol.—Filaments invariably three, subulate, somewhat longer than the pistils, inserted
on the angles of their ovarium, a little above its base.—**Anthers** erect, oblong, two-celled, bursting lengthways along their margins.—**Ovarium** round, three-cornered, most slightly pubescent, one-celled, many-seeded; **ovula** attached to the sides of the cavity. **Styles** three, persistent, rising from the apex of the angles on the ovarium, above the insertion of the filaments, leaving its vertex naked and somewhat depressed; they are spreading awl-shaped, acute, marked along the upper part and the furrowed inside (the stigmas?) with numerous short papillae.—**Capsule** about the size of a mustard seed, brownish green, of the same shape as the ovarium, membranaceous and unilocular, bursting at the top, with a triangular opening reaching half way up the styles.—**Seeds** about eight, brown, smooth, striated, oblong, acute at each end, somewhat darker coloured at their bases, which are attached to three parietal, oblong, elevated placentae alternating with the angles of the cavity. **Integument** single, crustaceous. **Embryo** minute, lodged in a copious milk-white, mealy perisperm, towards the umbilicus, centrifugal.

**Obs.** In the numerous spadices which I have examined I have with Father Loureiro invariably found three stamens and as many styles attached to each ovarium, the former above the base, the latter at the apex of its angles; I have therefore not hesitated continuing this most interesting plant in the very class and order where it has been placed in the flora of Cochinchina. As there is no reason for considering it at all different from the original Japan plant I am at a loss to account for the difficulty which the celebrated Chevalier Thunberg experienced in determining its station in the sexual system; nor can there at present be any doubt of its neither belonging to Heptandria, Polyandria, or Monoecia.

The seeds are so small and their embryo proportionably minute that I have not been able to ascertain the structure of the latter; they appear to me however, to bear great resemblance to those of Tacca and Aristolochia, to which family the plant is still further allied by the epigynous insertion of the stamens. But its chief affinity seems to be to the Aroidce, forming an additional connecting link between the two mentioned families. The leaves are
much like those of *Aristolochia Clematitis*, as has been justly remarked by the illustrious author of the article *Houttuynia*, in Rees's *Cyclopædia*.

The plant is used while young as a potherb by the inhabitants of *Nepala* as well as those of *Cochinuchina*. *Loureir. l. cit.*—N. W.
Class 4th.

TETRANDBRIA MONOOGYNIAS.

RHOPALA. Schreb. Gen. N. 144.

Calyx none. Corol four-petalled, bearing the stamina above the middle. Nectary four-scaled. Germ one-celled; ovula two, attached to one side of the cell.


Leaves alternate, sub-sessile, oblong, entire, racemes axillary, and from the branchlets, longer than the leaves. Nectarial scales naked.

A native of Pulo-pinang.

As my description is taken from dry specimens I cannot say whether it be a tree or shrub, but the large woody specimens evidently show it to be perennial.—Leaves short-petioled, alternate, obovate, oblong, obtuse-pointed, entire and smooth on both sides, six or more inches long and less than three broad.—Stipules none. Racemes generally solitary, from the naked woody branchlets below the leaves, very long and completely clothed to the base with numerous beautiful, diverging, pretty large, delicate flowers.—Bractes minute.—Calyx none.—Petals four, very long and slender, near the apex they expand into a concave lanceolate shape for the reception of the stamens, they first open in the middle then at the apex, and soon after become revolute. Nectary, four scales embracing the lower part of the germ.—Filaments four, short, inserted into the petals above the middle. Anthers linear, curved in an opposite direction.
to the petals.—Germ above, ovate, style long and slender. Stigma clubed.

Leaves alternate, sub-sessile, oblong, serrate. Racemes axillary; pedicels two-flowered. Nectarial scales ciliate.
A native of the Malay Archipelago.
My description and drawing being from dry specimens, I cannot say whether it is a tree or shrub.—Young shoots clothed with ferruginous down.—Leaves alternate, short-petioled, oblong, acute, tapering at the base, serrate, firm and smooth on both sides; from four to six inches long, and from one to three broad.—Spikelets none.—Racemes axillary, solitary, shorter than the leaves, clothed with ferruginous down.—Pedicels two-flowered.—Bractes minute, cordate, one at the base of each common pedicel.—Calyx none.—Petals few, long, slender, clavate; from the middle downwards, their sides touch, and form a slender tube.—Nectarial scales four between the base of the petals and germ, obcordate, ciliate.—Filaments four, inserted on the petals, about one-third below their apices. Anthers ovate.—Germ superior, very hairy. Style as long as the corol. Stigma clavate.—Seed vessel not seen.

3. R. excelsa. R.
Leaves alternate, short-petioled, cuneate-oblong, obtuse, pointed, smooth, with a few large blunt serratures near the apex.—Racemes axillary and terminal, as long as the leaves, downy.—Nectarial scales four, distinct, and naked.
A large timber tree, a native of the forests of Chittagong, where it flowers in March and April.
Trunk of the full-grown trees about four feet in circumference, covered with dark-coloured, scabrous bark; branches numerous, spreading far, and dividing much; young shoots clothed with ferruginous down.—Leaves alternate, short-petioled, cuneate-oblong, obtuse-pointed; interior margins generally with one, two, or three
large, blunt serrature on each side, texture firm and polished; length from four to six inches, by two or three broad.—*Racemes* axillary, and terminal, but chiefly the former, one, two, or three together, nearly as long as the leaves, straight and simple, densely clothed with ferruginous down. *Pedicels* short, two-flowered.—*Bractes*, a small oval one at the base of each common peduncle and one about the middle of each pedicel.—*Flowers* numerous, crowded, small, yellowish green.—*Calyx* none. *Petals* four, linearly spatulate, revolute. *Nectary* scales four, rounded, smooth and distinct.—*Filament* short, inserted on the petals. *Anthers* linear.—*Germ* oblong, very completely covered with long, reddish brown hairs, one-celled and containing two ovula attached a little to one side of the bottom of the cell. *Style* filiform. *Stigma* clavate, entire.

4. R. robusta. R.

*Leaves* alternate, sessile, cuneate-oblong, smooth, remotely serrulate. *Racemes* axillary, and below the leaves, smooth. *Nectary* a smooth four-toothed cup.

Jowea, the vernacular name in Silhet where it is indigenous, and grows to be a large, stout timber tree. Flowering in June.

Young shoots smooth.—*Leaves* alternate, sub-sessile, cuneate-oblong, obtuse-pointed, remotely and acutely serrulate, smooth on both sides, about twelve inches long, by five or six broad.—*Racemes* axillary, and below the leaves, one, two, or three together, about half the length of the leaves, smooth. *Pedicels* short, two-flowered.—*Bractes* smooth, one at the base of each common pedicel, and one about the middle of each of the proper ones.—*Flowers* numerous, pale, greenish yellow, and fragrant.—*Calyx* none. *Petals* four, linearly spatulate, smooth, revolute.—*Nectary* one-leaved, cup-shaped, obtusely four-toothed, with the margins somewhat ciliate.—*Germ* superior, oblong, smooth, one-celled; ovula two, attached to one side of the cell. *Style* filiform. *Stigma* clavate, entire.*

* Both this and the preceding species are distinct from *R. cochinchinensis*, Brown. Linn. Trans. x. p. 192.—N. W.
DIPSACUS.

Common calyx many-leaved; proper superior, single. Receptacle chaffy.

1. D. inermis. Wall.

Leaves oblong, serrate, villous, petioled, sub-lobate; caudine connate; heads globular, villous; chaff cuneate, subulate-acuminate, scarcely longer than the tube of the corolla.

Grows wild at Katmandu and Gossain Than, from whence Mr. Gardner has sent me specimens and seeds. Dr. Gowan has likewise found it to the Northward of Saharanpore. Blossoms during the rainy season.

Nepal name, Barberi and Gooja.

Root strong, fibrous, ash-coloured.—Stem erect, slender, fusiform, four or more feet high, many-sided, brachiate, the lower half densely clad with reflexed soft hairs, the upper sparingly beset with inoffensive bristles, chiefly along its ribbed corners. Leaves unequally and doubly serrated, soft and villous on both sides, with a few scattered bristles; radical about a foot long, three inches broad, acute, tapering much downwards and sub-decurrent on their equally long slender petiol; sometimes with a deep lobe on one or both sides of their base; those of the stem consisting of two or three remote pairs, five or six inches long, acuminate, undivided, generally more bristly than the others, connate at their base and forming there a short cup.—Peduncles very long and slender, few, erect, mostly with a pair of narrow short leaves at their middle.—Heads nearly round, obtuse, an inch in diameter; involucre consisting of six or eight linear channelled recurved ciliate leaves, an inch long.—Receptacle ovate, marked with square impressions for the insertion of the flowers, beset with membranaceous pale, hairy, cuneate, concave spreading scales, with a rounded apex ending in a straight ciliate purple-coloured lanceolate acute point, which is as long as the lemma itself. Corolla yellowish white, pubescent, with four almost
equal laciniae.—Stamina spreading, long.—Seed precisely as in D. laciniatus. Gart. Carp. ii. p. 40. t. 86.

Obs. The plant is approaching to D. pilosus, but seems to differ sufficiently in the form and size of the leaves, and involucrum. I am doubtful whether the variety suggested above may not form a distinct species. It seems on the whole to be smoother, its leaves deeply pinnatifid or pinnate at the base, with acuminate lanceolate segments.—N. W.

**HEDYOTIS. Schreb. Gen. N. 153.**

Calyx four-parted. Corol one-petalied, funnel-shaped. Capsule inferior, two-celled, many-seeded. Receptacles adhering to the partition their whole length. Embryo centripetal, and furnished with a perisperm.


Diffuse, four-sided, rooting at the joints. Leaves sessile, lanceolate, with hispid margins. Flowers axillary, crowded.

It sprung up and blossomed in December in the Botanic Garden, amongst plants introduced from the Moluccas, in 1798-9.

Stem none, but several square, creeping branches, with their floriferous extremities ascending.—Leaves opposite, sub-sessile, lanceolate; margins hispid, and entire, smooth, from two to three inches long; the connecting membrane divided into many subulate portions.—Flowers axillary, sessile, small, white.—Capsule roundish, two-celled.—Seeds numerous.

2. *H. geniculata.* R.


A native of the Malay Islands.
3. H. scandens. R.

Perennial, scandent, round, smooth. Leaves broad lanceolate. Panicles corymbiform, terminal; mouth of the tube of the corol and apex of the style bearded.

Gujee, the vernacular name in Silhet, where it is indigenous; flowers and ripens its seed during the hot and rainy seasons.*

Stems and branches perennial, round, smooth, scandent.—Leaves short-petioled, broad-lanceolate, smooth, entire.—Stipules cup-shaped, connecting the leaves, with a short process on each side between the leaves.—Panicle corymbiform, terminal, sub-globular, throughout trichotomous, all the ramifications a little villous.—Bractes linear, spreading.—Calyx four-toothed.—Corol with the tube longer than the calyx, its mouth and the base of the four linear segments of the borders of the corol very woolly.—Germ oval, two-celled; ovula numerous, attached to the sub-globular receptacles, rising from the middle of the partition. Style longer than the corol, apex woolly; stigma two-cleft.—Capsule ovate, two-celled, many-seeded.

4. H. lineata. R.

Annual, diffuse, hairy. Leaves sessile, ventricose-lanceolar, longitudinally marked with simple, parallel veins. Peduncles axillary, two or three together, pretty long, many-flowered. Capsula round, hairy.

Native of Chittagong, where it blossoms during the rains.


A native of Silhet and Nepal, where the plant blossoms during the hot and rainy seasons. From the former place the plant was

* It is very common about Katmandu where it blossoms from December to March. Native name Goohee.—N. W.
introduced in 1815 in the Botanic Garden near Calcutta, by Mr. Smith.

_Beng. Mutitia-lata._

_Root fibrous._—_Stem short, woody, divided into many slender generally once or twice dichotomous roundish or slightly four-sided branches, measuring a foot in length, densely villous sometimes rooting at the base._—_Leaves lanceolate, tapering and acute at both ends, an inch or an inch and a half long, even above, with several oblique villous nerves underneath, margins scabrous; pairs approximate and exceeding in length their interstices._—_Petiols very short, the uppermost somewhat longer, hispid, uniting into a membranaceous, villous, stipulary membrane, which is terminated by long hispid ciliæ._—_Flowers small, crowded into sessile, globose, axillary, copious, villous, verticils, concealing, but scarcely longer than the petiols and rendering their stipules reflexed._—_Lacinia of the calyx linear._—_Tube of the corolla scarcely longer than the calyx._—_Lacinia lanceolar acute._—_Throat pubescent._—_Stamina exserted, erect, shorter than the limb of the corolla, with pubescent filaments._—_Style barbate._—_Stigma oblong._—_Capsule small, round, slightly furrowed._—_Dissepiment entire._—_Seeds many, three-cornered, shining, brown.

_Obs._ I took this plant to be _H. nervosa_, Lam. or _hirsuta_ of the same author, until I discovered that Sir J. E. Smith had proposed them as varieties only of _H. Auricularia_; Rees’s _Cyclop._ in _loco._—The branchy dichotomous habit of my plant, its hairy petiols and capsules are wanting in them all and may perhaps be deemed sufficient to form it into a new species, which I am unwilling at present to add to this difficult genus. It differs very little, perhaps only in the rounded branches from the species described by Roxburgh as Retzius’s _hisipda._

I have not cited Burman’s _Valerianella palustris_, Thes._Zeyl._227. p. 108. _f._ 1. because it does not well agree with Rheede’s or my plant.—N. W.

6. _H. ulmifolia._ Wall.

_Decumbent, hispid with short spreading dense hairs._ _Leaves
Hedysotis. Tetrandria monogynia.

Ovate-lanceolate, nerved and plaited. Corymba peduncled, aggregate, axillary, opposite, shorter than the leaves, open. Flowers pedicelled, mostly ternate. Calycine segments very long.

Sent to me from Nepal by the Hon. Mr. Gardner; time of blossoming the rainy season.

Root fibrous, strong.—Stem short, woody, divided into several simple, long, very hairy branches, rounded, smoother, and jointed towards the base, somewhat flattened at their upper-ends. Leaves in approximate pairs, from two to three inches long, somewhat more than an inch broad, acute at the base, attenuate and acuminate at their end, rough and hairy on both sides, with many approximate, parallel, downy nerves, deeply furrowed and plaited above, acquiring on being dried, as well all the younger parts, a yellow appearance. Petiols half an inch long, broad and slightly margined, furrowed. Stipulae broad-lanceolate or triangular, as long as the petiols, adpressed, tapering into a very long, sometimes bifid, or trifid, hispid acumen. Peduncles slender, an inch long, several in each axil, erect, once or twice trichotomous, with subulate bracte under each division. Flowers rather large, pedicelled, mostly in threes. Calyx round, hispid, with four lanceolate persistent laciniae, almost as long as the smooth tubular corolla, the segments of which are linear-lanceolate, acute. Stamina short. Filaments and style pubescent. Stigma two-lobed. Capsule globose, as large as a Coriander seed, crowned, hispid, many-seeded.

Obs. In general appearance and in the leaves this species agrees with H. capitata, Lam.; but it differs in having opposite aggregate corymba, and in the flowers not being capitate.

7. H. gracilis. Wall.


A native of the Turrace and of Nepal; sent to me from the
former place by Mr. Assistant Surgeon William Jack, from the latter by Mr. Gardner. Flowering time the hot season.

Nepala name Goshega-soa.

Obs. I take this opportunity of correcting an error which I committed in the description referred to above by calling my plant H. strieta: a name which had already previously been given to a different species from Sierra Leone, by Sir J. E. Smith, in Rees’s new Cyclopædia, and which therefore I have altered to gracilis.


A native of moist places amongst the Circar mountains. Flowers during the rainy season.

Stem erect, woolly, obsolescently four-sided. Branches opposite, four-sided.—Leaves opposite, spreading, short-petioled, lanceolate, downy; size very various.—Stipules connecting, membranous, two or three-toothed.—Umbel compound, terminal.—Flowers white, very small.—Calyx four-leaved.—Corol with short, gibbous tube.—Capsule oblong, two-celled, two-valved, two-partible from the base.—Seed solitary.

Obs. This species ought to be carefully compared with Hedyotis fruticosa, Retz. Obs. ii. 8; and the capsule of the same species in Linna. Flor. Zeyl. N. 63. should be well examined.* The stipules seem the chief difference. In my plant they are always a lacerated connecting membrane.

* The reader is requested to consult the observation on this plant in Rees’s Cyclopædia, Vol. xvii.—N. W.
Spermacoce.  

Knoxia corymbosa, Linn. Sp. Pl. ed. Willd. i. p. 582, which he considers as Gartner's K. stricta, appears to me to be this plant. Indeed the two genera Spermacoce and Knoxia differ so little from one another as to induce me to think one of them might be spared.

2. S. teres. R.

Shrubby, erect, round, villous. Leaves opposite, remote, lanceolate, entire, villous. Corymb terminal, decompound, alternate; divisions becoming spikes when in seed. Stamens erect, but hid in hairs. Style twice the length of the corol.

Knoxia umbellata, Banks. Herb.

Found by Dr. Buchanan in the woods of Koorg, from whence he sent the seed to the Botanic Garden, where the plants thrive well, and blossom during the rainy season.*

Stem erect, perennial, round, while young villous. Branches opposite, a little inflected, round and villous, height of the whole plant about three feet.—Leaves opposite, short-petioled, lanceolate, downy, entire; length from two to four inches high.—Connecting membrane with several erect, filiform divisions; when they accompany the divisions of the inflorescence, they are more numerous, and may be called an involucre.—Corymb terminal, brachiate, with the ultimate divisions lengthened into short spikes by the time the seeds are ripe.—Corol, mouth of the tube shut with much long white hair, which entirely conceals the large, erect anthers lodged amongst it.—Style erect. Stigma two-cleft with divisions involute.

Obs. This has much the habit of Hedyotis fruticosa, but differs widely in the stipules, (even if the pericarp of that plant should be that of a Spermacoce,) and in the form of the stem and branches. It is also very like S. sumatrensis, but there the branches are four-sided, here perfectly round; there the tube of the corol is smooth, short and gibbous, here cylindric, and shut with hairs; finally the capsule is there bipartible, opening from the base, with oblong brown seed, in

* I have received specimens of this and the preceding species from Nepal, varying, however, a little in their character from those described above.—N. W.
reality it is that of a Knoxia; here it does not open spontaneously, and has black round seed.

3. S. exserta. R.
Shrubby, straight, tender parts villous. Leaves remote, opposite, petioled, lanceolate; corymb terminal, decompound. Stamina and the bifid stigma exsert. Capsule oval.
A native of the Circars, where it blossoms in October and November.
Obs. Is nearly allied to S. teres, farther examination may prove them the same.

4. S. glabra. R.*
A native of Pulo-pinang, has much the habit of a strong grass or slender bamboo, the situation of the leaves excepted.

Branches round, smooth, straight, jointed, in the dry specimens fistulous.—Leaves opposite, sub-sessile, linear-lanceolate, smooth, entire, length from four to six inches; connecting membrane with unequal awned processes from its mouth.—Peduncles axillary, bearing several cross-armed, minute umbellets or headlets of small cream-coloured flowers.—Bractes minute.—Corol bell-shaped, mouth of the tube hairy.—Style longer than the corol, hairy. Stigma clavate, grooved.—Capsule globular, smooth, size of a large pin's head.

5. S. levis. R.
A native of the interior of Bengal; in the Botanic Garden it

* This name was previously given to an American distinct species by Michaux. —N. W.
blossoms and ripens its seed from September till February and is by far the prettiest Spermacoce I have yet met with.

**Stems erect, perfectly straight, round, smooth.** Branches opposite, and like the stems, whole height about three feet.—Leaves opposite, sub-sessile, lanceolate, smooth, entire; from one to three inches long.—Connecting membrane divided into several subulate segments.—Corymbs terminal, compound and decompound.—Flowers numerous, large, pale pink.—Bractes small, and at the divisions of the corymbs chiefly.—Calyx one of the four segments large, all the segments permanent.—Corol funnel-shaped, before expansion the apex is large, with four-horns; after expansion these projections form a conical knob under the apex of each segment. Mouth of the tube bearded.—Filaments short; anthers linear, just within the tube.—Germ two-celled, with one seed in each, attached to the top of the partition; style longer than the tube of the corol; stigma bifid, segments revolute.—Capsule oblong, crowned, two-celled, two-valved; valves keeled on the back. Seed solitary, longitudinally grooved on the middle of the inside.

*Obs.* It may be readily distinguished from *S. teres* (the only species known to me that it can be mistaken for) by its smoothness, greater size of the flowers, and the segments of their border being enlarged with a conic knob on the outside of their points.

6. *S. lineata.* R.


A native of the Moluccas. The lineate, hairy, very acute, tapering leaves, long shaggy triangular stipulae; and small peduncled heads of axillary flowers readily distinguish this species from all the other East Indian species known to me.

7. *S. nana.* R.

Erect, simple, nearly round and smooth; leaves petioled, lanceolate, entire, smooth; flowers axillary and terminal, sessile, crowded.
A very small species, less than six inches high, a native of the Island of Honimoa.

Annual, erect, four-sided. Leaves sessile, linear-lanceolate; flowers in dense, globular, axillary verticils; capsules scabrous, gaping at the apex.

Teting. Sookukada.

An annual, a native of wet rice fields, appears and flowers during the rainy season.

Stem erect, branchy, four-sided, about a foot high, angles acute and scabrous. Branches decussated, stem-like, but slenderer.—Leaves opposite, sessile, lanceolate, entire, a little scabrous.—Stipule, a connecting membrane, ciliate.—Verticils globular.—Involucres leaf-like. —Flowers most numerous, minute, white.—Tube cylindric.—Stigma globular.—Capsule, two-celled, opening at the apex.—Seed solitary.

9. S. costata. R.
Diffuse, very downy. Leaves broad-lanceolate, or oblong, ribbed. Flowers crowded on little axillary, proliferous umbellets. Stamina protruded.

Hedyotis Auricularia, Linn.*

Supposed to be a native of the Moluccas, as the plant sprung up in the Botanic Garden, from some earth brought with the spice plants from those Islands in 1800. It blossoms and ripens its seed during the greatest part of the year.

Root biennial, if not perennial.—Stems or rather branches many, diffuse, round, from one to three feet long, clothed with long, soft diverging hairs.—Leaves opposite, sub-sessile, broad-lanceolate, entire, ribbed with numerous large, simple, parallel veins; downy on both sides, from two to three inches long, and about one broad;

* This is unquestionably a distinct plant from that described here, which in habit and leaves resembles my Hedyotis umbellata. See above, p. 370.—N. W.
connecting membrane with generally three, unequal, slender, subulate divisions.—*Flowers* axillary, numerous, pale pink, very small, crowded together into small round heads, on short peduncles, and pedicels the whole forming little, proliferous, villous umbels.—*Involucru* and *Involucels* annular, villous, from three to six-parted.—*Calyx*, divisions equal, acute, hairy.—*Corol* funnel-shaped, hairy on the outside and in the throat of the tube; divisions of the border recurved.—*Stamens* protruded beyond the mouth of the corol.—*Germ* beneath, broad-turbinate. *Style* about as long as the tube of the corol. *Stigma* two-cleft, villous.—*Pericarp* with two seeds.

10. *S. semierecta*. R.


A native, I suppose, of Sumatra, as the plant from which this description is taken sprung up in a bed, where earth from that Island had been thrown, and in one year was about a foot and a half high.

The lower branches brachiate; the superior often solitary, they are all very exactly four-sided with angles sharp and somewhat hispid; in other respects they are very smooth.—*Leaves* opposite, with smaller ones in their axills, short-petioled, ovate, acuminate, entire, very slightly scabrous, particularly the margins, with nerves and veins on the underside.—*Connecting* membrane divided into several filiform portions.—*Flowers* numerous, very small, white, sessile, collected into small compact, round verticils.—*Corol*, divisions of the border bearded in the centre.—*Anthers* within the tube.


Annual, diffuse, round, hairy. *Leaves* opposite, sessile, round, obovate, the hairy margins much curved, and somewhat curled. *Flowers* axillary, sessile. *Stamens* and *style* erect.

Stem short and generally annual. Lower branches opposite, superior alternate, round, coloured, very hairy, somewhat scabrous, weak, spreading and variously curved — Leaves opposite, sessile, round, obovate, or nearly oval, somewhat acute; hairy on both sides, edges recurved and more or less curled. — Connecting stipule with three, four, or five filiform processes. — Flowers axillary, generally in pairs; though often several together, but expanding in succession, sessile, small, purple. — Calyx; the four divisions or in this species rather leaflets, lanceolate, nearly as long as the tube of the corol. — Corol sub-campanulate, half four-cleft. — Stamens as long as the segments of the corol. — Style as long as the stamens. Stigmas two, two-lobed, segments revolute. — Capsule oval, two-celled. Partition membranaceous. — Seed solitary, oval, equally obtuse at each end.

Annual, diffuse, four-sided. Leaves opposite, sessile, broad-lanceolate; connecting stipules from three to five-bristled. Flowers verticelled. Corol infundibuliform, four times longer than the calyx. Stamens and style erect.

A native of the sandy soil on the Coast of Coroma; delt near the sea, and in flower the greatest part of the year.

Root generally annual. — Stem scarcely any, but many diffuse straggling, four-sided, alternate, hispid branches from one to two feet in length. — Leaves opposite, sessile, lanceolate, a little hairy; veins simple, from one to two inches long, and half an inch broad. — Connecting stipules cup-shaped, with from three to six bristles from each side. — Flowers axillary, sessile, two, three, or four expanding in succession from the same axill. — Calyx with slender, linear divisions. — Corol infundibuliform. Tube slender, three or four times longer than the calyx. — Stamens erect. — Stigma erect, bised; lobes broad, and revolute. — Capsule two-celled, partition membranaceous. — Seed solitary, oval, furrowed on the flat side.
Annual, with diffuse, absolutely four-sided, hairy branches. Leaves obovate, cuneate, waved, scabrous. Flowers verticilled, two, three, or four in each axil. Tube of the corol twice the length of the calyx. Stamens and style erect.

Teling. Madana-buntha-kada.

Galeopsis zeylanica. Burm. Zeyl. t. 20. f. 3. agrees pretty well with my plant except in the numerous pedicelled flowers.

Common on the sandy lands near the sea on the Coast of Coromandel.


Erect, simple, four-sided, scabrous, with short hairs.—Leaves sessile, linear, smooth and silvery beneath, rather shorter than their interstices. Stipulary ciliae very long. Verticils capitate. Stamina exerted. Capsule villous at the top and bursting there in two bifid valves.

Native of the Valley of Nepal; discovered by Mr. Gardner during the rains.

Root small, fibrous.—Stem single, undivided, four-sided, filiform, from four to six inches high, as well as the upper surface of the leaves, rough with short, whitish, subulate hairs; erect, somewhat ascending at the base.—Leaves about an inch long, spreading, tapering into a point, dark-green above, smooth and of a silvery white colour below, with an elevated hairy rib; nerveless; above the base they are a little contracted, thence they widen into an ample membranaceous truncated stipula which is crowned with five capillary long ciliae. Flowers very small, pale, sub-sessile, crowded together into four or five dense axillary verticils, of which the uppermost are larger and capitate and supported by four reflexed floral leaves.—Segments of the calyx erect, linear, as long as the filiform, smooth tube, deciduous. Throat of the corolla wide; laciniae lanceolate, equalling the spreading filaments. Ovarium oblong, slightly compressed, with a longitudinal furrow on each side, smooth at the base, villous at the top.—Cap.
sulc ovate, chartaceous, bursting at the apex in two bifid slightly recurved valves. Dissepiment evanescent. Seeds two, linear, with a ventral furrow.

Obs. The description of Crateogonum (amboinicum) minus s. ve-rum, Hort. Amb. vi. p. 25 agrees well with this plant; but it has been quoted under Spermacoce stricta of the younger Linneus, which differs in having lanceolate lineate leaves and a branchy stem. The same plant has been cited by Sir J. E. Smith under his Hedyp-otis verticillata (Oldenlandia, Linn. Mant.) in Rees's Cyclopaedia. On these grounds I conclude that Rumphius's plant is different from mine, which approaches to S. linifolia, Vahl, and remota, Lam.—S. nana of Roxburgh differs in being smooth on all its parts, and in having petioled leaves.—N. W.


Calyx four-parted; corol compsanulate. Germ two-celled, one-seeded, inferior. Capsule inferior, angular, two-celled. Seed solitary; embryo erect, and furnished with a perisperm.

Sarissus anceps. Gært. carp. i. p. 118. t. 25. f. 4.

A native of the sand hills along the shores of Coromandel and Malabar, where it is in blossom most part of the year.

Root perennial.—Stem none, but many long, slender, variously bent, stragling, round, coloured branches running over the sand and often striking root from the joints.—Leaves opposite, approximate, short-petioled, from a deep, stem-clasping, dentate cup.—Flowers axillary, sub-sessile, one or two together, of a pale pink colour.—Calyx above, four-parted; divisions ensiform, permanent.—Corol compsanulate, tube hairy on the inside near the bottom, the four divisions of the border ovate, spreading, with their apices somewhat revolute.—Filaments four, erect, shorter than the corol, and inserted on the mouth of its tube, opposite to its fissures. Anthers purple.—Germ oblong.
**Galium.**

**TETRANDRIA MONOGYNIA.**

*Galium.*

**GALIUM.**

**Corolla** of one petal, flat, superior. *Seeds* two, roundish.

1. *G. asperifolium.* Wall.

*Leaves* in sixes, cuneate-oblong, retuse with a subulate point, very spreading, short-petioled, scabrous above, with hispid rib and margins; *stem* villous, four-sided, branchy, flaccid; *panicles* slender; *corolla* awned; *ovarium* smooth.

A native of *Nepala* from whence this and the following species were introduced into the Botanic Garden at Calcutta in 1818, by the Hon. Mr. Gardner.

*Stem* four-sided, strong, clad with copious soft recurved hair; *branches* numerous, weak and leaning; *joints* slightly swelled.—

*Leaves* mostly six in each whorl; those below remote, oblong-cuneate, an inch and more long, those above smaller and closer together, almost reflexed, cuneate; all are tapering at the base into a very short petiol, retuse or rounded at the end and invariably terminated by a short triangular withering greyish point; above dark-green, shining, scabrous, with short stiff hair, below pale and soft, except along the recurved, entire margins, and elevated rib, which are beset with stiff hair. *Panicles* lengthened, with ternate or opposite, copious, small floral leaves. *Flowers* fuscicled. *Corolla* large, expanding; each lanceolate segment ending in a capillary point. *Style* half-cloven. *Stigma* capitate. *Ovarium* perfectly smooth.

*Obs.* This species has much of the habit of *G. Mollugo.* The stem and branches are very soft, while the leaves possess a considerable harshness on account of their stiff hair; the epidermis separates partly from their upper surface when dry, assumes a greyish
shining colour and has the peculiar roughness of some of the species of Cordia.—N. W.

2. G. Aparine.


In the Botanic Garden at Calcutta it blossomed freely in March, 1819.

The description of this well-known species, which Miller and Lamarck have given, agrees well with the Nepala plant. It measured when in flower about two feet in length, with abundance of weak opposite or alternate branches, by which it supported itself on the nearest plants. The stem-leaves in whorls of six or seven, from an inch to two long, about two lines broad at their middle, and from thence much tapering. The upper ones smaller, generally in sixes or fives, but all equalling their interstices, upper surface scabrous, the margins and keel as well as the sharp angles of the stem and branches beset with pellucid recurved prickles.—Peduncles axillary, mostly opposite and three-flowered.—Calyx imperceptible.—Corolla exceedingly small, of a yellowish tint.—Styles two.—Fruit thickly beset with hooked bristles.—N. W.


Leaves in fours, ovate or round-ovate, obtuse, three-nerved, soft, hairy with villous nerves; stems diffuse, hairy; panicles trichotomous; seeds beset with hooked bristles.

A native of Nepala, from whence I received specimens in 1818 from Mr. Gardner.

Root slender, creeping, red, with verticilled fibres.—Stems weak, elongated, four-cornered, two or more feet long, very villous while young, afterwards smoother, having only some roughish slightly recurved hair along the corners; with a few alternate branches.—Leaves about half an inch, sometimes an inch long, sessile, entire, mostly shorter than their interstices, slightly tapering towards the base, dotted and hairy above, smoother below; the recurved mar-
gins and elevated nerves very villous.—*Panicles divaricate*, terminal or axillary, generally opposite, with some pairs of opposite small leaves. *Ramifications divaricate, trichotomous, filiform, with minute bractes at their base.—Division* of the *corolla* lanceolate, acute, one-nerved.—*Seeds* round, covered with copious soft, hooked bristles.—N. W.

**RUBIA. Schreb. Gen. 164.**


1. **R. Munjista. R.**


Sans. मून्जिस्त, Munjisha, विकुस्ता or विकुष्ठा. Vikusa, जिंगी Jinge, सतंगा, Sumanya, कालमेचिस्ता or कालमेहिस्ता Kalamechishta, मंदुरे खृष्टी, Mundookari, रंडरौरो or भंगिरो Bhundere or Bhundiree, स९ हीं, Bhundee, दोन्खवली, Yozanuvallée.

Beng. Munjit or Munjista.

A native of Nepal, and other mountainous countries, north and north east of Bengal. It grows in the Botanic Garden at Calcutta, but requires uncommon care to keep it alive during the rainy season and has never blossomed there.

**Root** perennial.—*Stems* woody, scandent, climbing over trees and bushes. *Branches* cross-armed, from the axill of the large pair of leaves, jointed, swelling at the joints, hairy for a little distance below them, four-sided; angles sharp and armed with small, recurved prickles; the exterior cortex, which forms these angles, drops off by age, leaving the longer branches and stems round, and covered with a soft reddish somewhat downy bark.—*Leaves* four-fold, petioled, one of the pairs always much larger, viz. about double the size of the other, and with longer petioles, all are beautifully cordate, entire,
acute, pointed, generally five or seven-nerved, though in the largest there are sometimes nine, and in the smallest three, or even sometimes obliterated; these nerves are armed with small recurved prickles, like those on the angles of the branchlets; both sides channelled.—**Panicles** terminal, oblong, composed of numerous, opposite, small, sub-globular, trichotomous panicles from the axill of the floral leaves. —**Peduncles** and **pedicels** four-sided, smooth.—**Bractes** opposite, sessile, long, cordate.—**Flowers** numerous, minute.—**Calyx**, if any, so minute as not to be visible.—**Corol** flat, five-parted; divisions lanceolate, acute, with points inflected.—**Stamens** five, shorter than the corol.—**Germ** beneath, twin. **Style** scarcely any, stigma large, two-cleft.—**Berries** two, or one; the second not always coming to maturity, globular, size of a small grain of pepper, smooth.—**Seed** single, round, smooth, with a deep pit on one side.

**Obs.** It differs from *R. cordifolia* in being pentandrous.* The roots, stems, and larger branches are used to dye red with.

2. *R. alata.* Wall.

**Leaves** lanceolate, three-nerved, petioled, quatern, very scabrous. **Stem** and **branches** four-winged prickly. **Flowers** pentandrous, hispid in trichotomous, elongated, straight, axillary, and terminal corymbs.

A native of Nepal, from whence Mr. Gardner sent me specimens. * It blossoms in June.

**Root** red.—**Stem** several feet long, apparently leaning, strong, together with the opposite or verticilled **branches** four-cornered, and four-winged, the wings beset with short, recurved prickles, otherwise pretty smooth; joints remote.—**Leaves** spreading, quatern, unequal, from an inch to an inch and a half long, much shorter than their interstices, rough on both sides, especially along their margins, fur-

* I strongly suspect that *R. cordifolia*, Linn. Mant. is this very plant, especially as Lamarck observes in his description that the flowers are four and five-cleft; *Encycl. Bot.* ii. 606. The plants agree in every respect. In the numerous specimens which have been sent to me by Mr. Gardner from Gossain-Than and Katmandu, and by Sir Robert Colquhon from Almora I have always found the flowers pentandrous.

—N. W.
rowed above, tapering towards the apex and pointed, rounded at the base, the lowermost small whorls ovate, sub-sessile.—Petiols about one-third the length of their leaves, deeply furrowed, smooth above, the sides margined, almost winged and with the keeled base prickly, apex contracted and jointed.—Peduncles lengthened, straight, four-winged, twice or thrice trichotomous, hispid. Bractes mostly ternate, lanceolate, sessile, hispid; the uppermost opposite, very small. —Flowers in peduncled fascicles. Calyx imperceptible. Corolla flat, white, hairy on the outside; segments five, lanceolate, acuminate. Stamina and style very short. Stigma capitate.—Ovaria slightly hispid.—N. W.


Calyx four-toothed. Corol one-petalled, funnel shaped. Tube long, with the stamina in its mouth. Germ two-celled, one-seeded, lateral. Berry inferior, two-seeded. Embryo erect, curved, and furnished with a perisperm.


Shubby. Leaves oblong, cordate, sessile, acute, smooth, entire. Segments of the corol ovate-lanceolate, acute. Berry crowned with the shut segments of the calyx.

Schetti. Rheed. mal. ii. p. 17. t. 12. is a pretty good figure of it, but the description of the colour of the flowers does not so well agree.


In the Tanjore country and in China I have found this most beautiful shrub in great abundance in its wild state. In a cultivated state it flowers all the year round. I have had it eight years in my garden, and it is not more than three or four feet high, with many erect branches, but scarcely any thing like a trunk.

* Sir William Jones observes (Asiat. Res. iv. 251), that no Indian god was ever named IXORA; he adds at the same time that ISWARA, which is indeed a title of SHIVA would be a very improper appellation of a plant which has already a classical name.

W w
Leaves opposite, sessile, approximated, decussate, oblong, pointed, entire, smooth, shining, from three to four inches long, and one and a half broad.—Stipules within the leaves with an awled process on each side.—Corymb terminal, three-forked.—Bractes small, rigid. —Peduncles and pedicels short, coloured.—Flowers numerous, pretty large, bright scarlet, inodorous.—Calyx four-toothed; divisions acute.—Corol, stamens and pistil as in the genus.—Berry size of a small cherry, red, juicy, two-celled.—Seed solitary, convex on one side, and flat on the other.

Obs. Flamma sylvarum. Rumph. amb. iv. p. 105. t. 46. is a very bad representation of this species, and much more like my Isora fujigens. I have therefore doubtfully quoted it for that plant.

2. I. Bandhuka. R.

Shrubby, spreading. Leaves oval, stem-clasping. Corymbs crowded; segments of the corol ovate, obtuse. Berries crowned with the open calyx.


Sans. रुक्तक, Ruktuka, बंझुक, Bundhooka, or बंधुक, Bundhoo-ka, बंधुजीवङ्क, Bundhoojeevuka.

Beng. Rungün, Rujuna.

A very elegant, uncommonly ramous, bushy shrub, a native of Hindoostan. Sir William Jones observes that the flower is often mentioned by the best Indian Poets. It is in flower the whole year but chiefly during the rains, when it is highly ornamental.

Stem none, but branches innumerabile, which divide much and spread close on the ground, forming a large hemispherical bush.—Bark of the large branches dark brown, and rather scabrous; that of the young shoots, smooth, and green.—Leaves opposite, stem-clasping, oblong, obtuse, with a small point, entire, firm, smooth on both sides.—Stipules interfoliaceous, annular, with a subulate process on each side.—Corymbs terminal, crowded, divisions many, but short. —Flowers numerous, when they first open scarlet, changing afterwards to crimson.—Bractes opposite, conic, acute.—Calyx su-
perior, four-toothed, coloured, permanent.—Corol with a very long slender tube; segments of the border four, ovate, rather obtuse, spreading.—Filaments four, short, inserted without the mouth of the tube, spreading; anthers linear, spreading.—Germ two-celled, with one seed in each, attached to the middle of the partition. Style length of the tube of the corol. Stigma bifid.—Berry spherical, size of a large pea, smooth, fleshy, when ripe purple, two-celled.—Seed solitary, oval, convex on the outside, flat, with a deep pit on the inside. Integuments two; exterior nuciform, inner membranaceous. —Perisperm conform to the seed, cartilaginous.—Embryo erect, curved, nearly as long as the perisperm. Cotyledons reniform, cordate. Radicle cylindric, longer than the cotyledons, inferior.

Obs. This species is nearly allied to I. coccinea, but differs in the following respects:

1st. This is a very ramous spreading bush, that much less so, and nearly erect.

2d. In this the leaves are stem-clasping, and obtuse; in that sessile and acute.

3d. In this the segments of the border of the corol are ovate, and rather obtuse; in that ovate-lanceolate, and acute; and lastly,

4th. The calyx on the fruit is open in this species, in that shut into a conical point.

3. I. fulgens. R.*
Shrubby. Leaves sub-sessile, lanceolate, acute. Corymbs terminal, highly coloured. Segments of the calyx cordate. Tube of the corol long and filiform, with smooth contracted mouth; segments lanceolate, and larger than the erect stamens. Berries two-lobed.


This elegant, highly ornamental shrub is a native of the Moluccas, and from thence was introduced into the Botanic Garden, where it blossoms most part of the year.

* I. longifolia, Sir J. E. Smith in Rees's Cyclopædia.—I. lanceolata, Lam. Encycl. Bot. iii. 343, exclus. omn. synon. praeter Rumphium.—N. W.
Trunk short, soon dividing into many straggling weak branches, covered with smooth dark-brown bark. Leaves opposite, short-petioled, lanceolate, entire, acute, smooth on both sides; from six to eight inches long, and from one to three broad. Stipules connecting, with an acute point on each side. Corymbs terminal, composed of short, decussate, highly coloured branches, and branchlets, supporting numerous, short-peduncled, long-tubed, pretty large, scarlet flowers, with the four segments of their border acute, and broad-lanceolate, stamens erect. Berry two-lobed, size of a narrow flat pea, smooth, when ripe of a deep purple, two-celled. Seeds solitary, nearly round, convex on the back, with a deep cavity on the inside, and from thence attached by a thick short cord to the centre of the partition. Integuments two, the exterior corresponding with what Gärtner calls the arillus in Coffea, ash-coloured, and firm like parchment; the inner membraneous, and darker coloured.—Perisperm conform to the seed, pale blue, and of a soft cartilaginous consistence. Embryo erect, one-third shorter than the perisperm, curved. Cotyledons two, cordate. Radicle sub-clavate, inferior.

4. I. stricta. R.*


Flamma sylvarum peregrina. Rumph. amb. iv. 107. t. 47.
This beautiful plant was brought to the Botanic Garden from the Moluccas in 1798, where it is in constant blossom the whole year round; but rarely ripens its fruits. The plant, when in flower is highly ornamental, though by no means so gaudy as I. coccinea and Bandhucea, which are certainly two of our most showy Indian shrubs.

Trunk scarcely any, but a few perfectly straight branches, covered

* I. flammea, Salis. Hort. 62, according to Sir J. E. Smith, l. cit. I. chinensis, Lam. l. cit. 344.—N. W.
with dark-brown smooth bark; height from three to four feet.

-Leaves opposite, sub-sessile, oblong, entire, smooth on both sides.

-Stipules interfoliaceous, long, taper, acute-pointed.—Corymbs terminal, very dense, sub-hemispheric, primary divisions brachiate, and short, extreme divisions trichotomous; all smooth and of a bright, deep red colour.—Flowers numerous, colour at first a lively orange approaching to scarlet, becoming deeper and deeper from the time of expansion.—Calyx bright red, fleshy; divisions short and obtuse.—Corol, tube cylindric. Border of four round spreading segments.—Filaments without the tube, short, spreading, flat, with their linear acute anthers over the divisions of the border of the corol.—Stigma two-cleft, elevated a little above the mouth of the tube. Berry spherical, smooth, succulent, red, two-celled, with a single rugose seed in each

Obs. In the Botanic Garden at Calcutta there is a more ramous variety of this charming plant introduced from China where it is called Hong-mou-tang, with pale pink flowers which it bears in abundance all the year. *


Leaves sessile, broad lanceolar. Corymbs decompound, dense, sub-hemispheric; laciniæ of the corol obovate and reflexed.

Until I came to Bengal I had not an opportunity of seeing this elegant plant. I have found it only in gardens. Flowering time the hot and rainy seasons. The shrub itself is much like Ixora coccinea.

Ramous, erect, and smooth in every part. Leaves opposite, sessile, broad-lanceolar, smooth, a little waved, from three to six inches long.—Stipules within the leaves.—Corymbs terminal, compound, or decompound, dense, often hemispheric; divisions or sub-divisions by threes.—Flowers very numerous, inodorous, white, with a straight, rather longer and more slender tube than in Ixora coccinea; divisions of the border reflexed, obovate.

Obs. This is probably nothing more than a variety of I. stricta,

• I. incarnata, Roxb. Mss: according to Sir J. E. Smith, l. cit.—N. W.

† This species is widely different from I. alba, Linn.—N. W.
or that of this. It was originally brought from China where it is called Ta-mou-tang.

6. *I. cuneifolia* R.


A native of the country about Dacca, from thence the late Colonel Peter Murray sent seeds to the Botanic Garden, where the plants grow freely, blossom in March, and ripen their seed in August and September.

*Trunk* short. *Branches* opposite, nearly erect, round, and covered with smooth brown bark; young shoots smooth, and green.—*Leaves* opposite, short-petioled, broad, cuneate, lanceolate, recurved, entire, taper, obtuse-pointed, firm and polished, somewhat bullate; length from four to six inches, by one and a half or two broad.—*Stipules* tapering, subulate, pointed.—*Corymb* terminal, long-peduncled, trichotomous, alternate divisions ending in fascicles of sub-sessile, crowded, pure white flowers, with a slight tinge of pink on the outside.—*Bractes* in opposite pairs, at the various divisions of the corymb and under the calyx subulate.—*Flowers* very numerous, pure white, fragrant.—*Calyx* four-cleft to the base, divisions long, narrow and acute.—*Tube* of the corol cylindric, very slender, three quarters of an inch long; the four segments of the border oblong and obtuse.—*Filaments* from the inner edge of the fissures of the border of the corol.—*Anthers* narrow, sagittate.—*Germ* oval, two-celled, with one seed in each, attached to the middle of the partition. *Stigma* of two linear lobes, elevated considerably above the mouth of the tube. —*Berry* round, turbinate, size of a small cherry, when ripe bright red, and smooth, two-celled.—*Seed* solitary, round, oval, convex on the outside, with a large deep pit on the inner. *Integuments* two; *exterior* nuciform; *inner* membranaceous, and greenish.—*Perisperm* conform to the seed.—*Embryo* erect, curved like the convex seed, —*Cotyledons* reniform. *Radicle* cylindric, length of the cotyledons, inferior.
Obs. Vahl's figure of *I. parviflora*, *Symbol. Bot.* iii. t. 52, is much like this plant; his description however agrees better with what I have always considered to be his *parviflora* and which is so labelled in Sir Joseph Banks's herbarium. They differ in the following respects. That (*I. parviflora*) is a tree, this a shrub; in that the leaves are linear oblong with a cordate base, of a much firmer texture, and more polished; in this they taper for two-thirds of their length to the base (hence the specific name *cuneijolia*.) In that the segments of the calyx are short and obtuse, in this long and acute. In that the berries are round and black; in this short, turbinate and red. The corymbs also differ somewhat. In both species the flowers are white, but in this much larger.

7 *I. brachiata*. R.


A stout shrub, a native of the forests of Bengal. In the Botanic Garden it flowers in March, and the seeds ripen in May.

*Trunk* erect. *Branches* opposite, spreading much, but they are not so numerous as in *I. parviflora*. *Bark* brown, and pretty smooth.—*Leaves* opposite, short-petioled, lanceolar, obtuse, smooth, of a hard texture, from four to six inches long, by less than two broad.—*Stipules* triangular, acute.—*Panicles* terminal, brachiate; *ramifications* few, remote on long, round, smooth peduncles.—*Flowers* numerous, minute, much smaller than in *I. parviflora*.—*Calyx* small, deeply four-toothed, coloured.—*Corol* with a filiform tube; *segments* of the border obovate, emarginate.—*Filaments* none. *Anthers* linear, attached by their backs to the bottom of the fissures of the border of the corol.—*Germ* turbinate, two-celled, with one seed in each, attached to the partition. *Style* scarcely longer than the tube. *Stigma* large, two-lobed.—*Berry* the size of a large pea, smooth, succulent, dark brown purple, two-celled.—*Seeds* solitary, round, convex, on the outside concave, with a pit on the inner. *Integuments* two, *exterior* white, hard, thin, and elastic; *inner* tender and thin.—

*Obs.* A handsome shrub, and nearly allied to Vahl's *I. parviflora*, though very different from the plant so labelled in the *Banksian herbarium*, which grows in abundance in this garden.

1st. In the shape of the leaves, which in that species are sub-sessile, and generally have a broad stem-clasping base; in this the petiole is about half an inch long, and the leaves taper more towards the base than at the exterior end.

2d. In the thinness of the panicle, (though of the same configuration), and the size of the flowers, which in this species are much smaller, and every way more delicate, and also in their shape, which in that species is oblong before expansion, but in this round.

3d. In this the authors are sessile, in that they have short filaments.

8. *I. villosa*. *R.*

Shrubby. *Leaves* broad-cuneate, lanceolar, villous underneath. *Corymb* super-decompound to the sixth or seventh degree, divisions trichotomous, villous. *Calyx* segments oblong and ciliate.

*Beng.* Choonaree.

This species is a native of Silhet, where it grows to be an elegant middling sized shrub with large crowded corymbs of fragrant white flowers, which appear in May and June.

Young shoots straight and villous.—*Leaves* opposite, short-petioled, broad-cuneate, lanceolar, entire, acuminate, underneath soft with very short down; from six to ten inches long, by from two to four broad.—*Stipules* downy, with the ends subulate.—*Corymb* terminal, from four to eight times trichotomous, all the divisions downy, and the last three-flowered.—*Bract* opposite, downy; two slender small ones pressing the base of each calyx.—*Calyx* four-parted, segments oblong, ciliate.—*Corol* with a very long, smooth, filiform tube; segments of the border four, oblong, spreading; in the oblong obtuse bud they are imbricated.
9. I. acuminata. R.


A very charming shrubby species, a native of the forests near Sylhet, where it blossoms during the hot season, and perfumes the air with the fragrance of its flowers.

Addition by N. W.

The shrubs in the Botanic Garden have acquired a height of five to six feet. Bark scabrous, ash-coloured. Branchlets roundish, smooth, pale. Leaves lanceolate-oblong, acute at their base, from six to eight inches long, from two to three broad, of rather a thin but firm texture, pale and glaucous, opaque, slightly bullate above, whitish and scabrous beneath, with copious, opposite, parallel nerves unifying into sub-marginal arches; veins reticulated. Petiol short, roundish. Floral pair of leaves smaller than the rest, ovate-oblong, rounded at the base. Stipules broad, triangular, acute, purplish. Corymb large, sub-sessile, round, with snow-white, most fragrant, crowded flowers. Peduncles twice or thrice trichotomous, very short, pubescent, with opposite linear-lanceolate bractes under each division. Calyx ovate, with white lanceolate straight laciniae supported by a pair of bractes. Tube of the corol slender, an inch and a half long. Laciniae spreading, ovate-oblong, obtuse, with recurved sides; mouth surrounded with a series of silky long hairs. Filaments reflected between the laciniae. Anthers linear. Stigma elevated above the mouth, club-shaped, bifid.

The opaque remarkably pale and glaucous leaves, the sub-sessile crowded corymb of large white blossoms, with white calyces, sufficiently distinguish this elegant shrub from I. barbata, R. and all the other species.


*Beng.* Gundhal-rangum.

*Teling.* Tadda-pullu.

Among the mountains of the Coast of Coromandel this species grows to be a pretty large tree; in the low lands it is much smaller, seldom exceeding fifteen or twenty feet in height. Flowering time February and March.

*Bark* dark-coloured, scabrous.—*Leaves* opposite, short-petioled, linear-oblong, pointed at the base, often cordate; smooth, shining, firm, entire, from three to four inches long, and from one and a half to two broad.—*Stipules* as in *I. coccinea*.—*Panicles* ovate, terminal, erect, cross-armed; *divisions* always three-forked.—*Bractes* at the principal divisions stipulaceous, with four subulate processes; the rest are small, one below each ramification.—*Flowers* small, white, fragrant. The style is hairy.—*Berry* generally two-seeded, somewhat two-lobed, size of a pea, black.

11. *I. barbata.* R.*

*Tube* of the corol long; mouth bearded. *Leaves* opposite, short-petioled, oblong, entire, smooth, shining; *floral* leaves round, cordate, sessile. *Panicles* open.

This elegant, densely ramous, large shrub, or small tree, I have found only in the Botanic Garden. Flowering time the hot season.

*Trunk* scarcely any, branches numerous, opposite.—*Leaves* opposite, short-petioled, oblong, entire, smooth, and shining on both sides, from six to nine inches long.—*Stipules* within the leaves as in the other species.—*Corymbs*, or rather panicles terminal, decom-pound, large, diffuse, always trichotomous, smooth in every part.—*Bractes*, the lowermost pair embracing the base of the common peduncle, large, and cordate, (they may be called *floral leaves*;) the

* This plant must not be confounded with *Pavetta barbata* of Sir J. E. Smith in Rees's Cyclopædia, in loco.—N. W.
rest gradually decrease in size till they become very minute at the ultimate divisions.—Calyx as in the genus, with acute divisions.—Tube of the corol long and slender, its mouths crowned with long white hairs.—Style the length of the corol. Stigma clubbed, just without the mouth of the tube, apex slightly bifid.—Berry red, smooth, size of a pea, two-seeded.


12. I. undulata. R.


Beng. Paluka-Jooi.

A famous shrub, a native of forests in Bengal, flowering time the hot season.

Leaves opposite, sub-sessile, spreading, broad-lanceolar or oblong, pointed, margins much waved, smooth on both sides but not shining. —Stipules within the leaves, with a long awled process on each side. —Corymbs or rather panicles terminal, decompound, &c. as in I. barbata, but much smaller.—Bractes as in the other species.—Flow- ers numerous, small, white.—Calyx, divisions acute.—Corol, divisions of the border reflexed, rather shorter than the tube.—Filaments from the fissures of the corol, pretty long, spreading and variously bent. Anthers as in the genus.—Style rather longer than the tube. Stigma two cleft; divisions recurved.

13. I. Pavetta. R.


*Beng.* Kookooracheora.

*Teling.* Nooni-papoota.

A middle sized shrub, common on road sides, hedges, uncultivated lands, &c. where there is a good soil.

Branches cross-armed, ascending. Bark ash-coloured.—Leaves opposite, petioled, oblong, entire, pointed, always smooth on both sides, which forms the chief difference between this and the next species; from four to six inches long, and two, or two and a half broad.—Stipules as in the former species.—*Corymbs* compound, terminal, large, nearly level-topped, cross-armed.—*Peduncles* and *pedicels* round, and smooth.—*Bractes* as in the former species.—Flowers white, somewhat fragrant.—*Calyx*, divisions obtuse.—*Style* twice the length of the tube. *Stigma* clubbed.—*Berry* globular, size of a pea, one or two-seeded.

14. *I. tomentosa.* R.*


*Beng.* Jooi.

*Teling.* Nam-papoota.

A large shrub, native of the same places, but not so common as the last described. Flowers the beginning of the hot season.

Branches cross-armed, ascending. Bark ash-coloured.—Leaves opposite, petioled, ovate, pointed, entire, both sides very downy, from four to eight inches long, and from three to five broad.—Stipules as in the former species.—*Panicles* terminal, globular, cross-armed, divisions always three-forked.—*Peduncles* and *pedicels* round, downy. —*Bractes* as in the former species.—*Flowers* numerous, white,

* Consult Rees's *Cyclopædia* under *Pavetta.* I have had the species from Katmandu and Almora.—N. W.
faintly fragrant.—Style twice the length of the tube. Stigmaclubbed.—Berry generally two-seeded.

Obs. In all the foregoing species the berries are two-seeded, though it often happen that but one comes to perfection. I never met with any that had three or four.—I do not find that the inhabitants of these parts make use of any of the trees, except for fuel.

15. I. tenuiflora. R.

Leaves short-petioled, oblong, obtuse, smooth; panicles terminal, corymbiform, contracted. Segments of the calyx cordate, and obtuse, tube of the corol long, and most slender; segments of its border oblong, obtuse, and longer than the erect style, or stamina.

A native of the Moluccas, and with flowers infinitely more delicate than I. fulgens which it most resembles.

16. I. congesta. R.

Shrubby. Leaves short-petioled, oblong, strongly veined. Corymb terminal, short, dense. Flowers sub-sessile. Segments of the calyx obscurely reniform; those of the border of the corol oblong, and obtuse.

A native of the Moluccas, and differs from I. fulgens in the firm somewhat coriaceous leaves, with stronger parallel veins.


Shrubby, smooth; branches slender, pendulous, sub-dichotomous. Leaves in approximate pairs, very long, linear-lanceolate, acuminate short-petioled. Corymb terminal, sub-sessile, small, with coloured scaly, crowded peduncles. Tube of the corol filiform; lacinie linear-oblong. Anthers linear with deeply bifid base.

A native of Travancore. Introduced into the Botanic Garden by Dr. A. Berry in 1808. Time of blossoming the hot season; the fruit ripens towards the close of the rains.

An erect shrub, five, six, or even more feet high, with trichotomous, very little spreading, ash-coloured branches. Branchlets very
slender and twiggy, hanging, green, with numerous compressed widened joints, like all the other parts of the plant smooth.—Leaves spreading, from five to seven inches long and almost as many times exceeding their interstices, an inch or less broad a little above their acute base, from thence tapering into a sharp acumen, opaque and somewhat glaucous above, pale beneath, with a slender white rib and very fine sub-opposite nearly transversal nerves which communicate with each other in sub-marginal arches.—Petiols about two lines long, channelled. Stipules adpressed, lanceolate, as broad as the interstices between the insertion of the two opposite leaves, tapering into a subulate point which generally exceeds the petiols in length.—Corymb small, supported by a pair of very short leaves, consisting of twice or thrice trichotomous, reddish, pubescent peduncles, with opposite linear, subulate bractes under each division, having a stipuliform, fimbriated process between their bases. Pedicels ternate or fascicled, two or three lines long, with three pairs of reddish fleshy subulate scales, the uppermost adpressed to the calyx.—Calyx very small, oblong, reddish, with erect subulate teeth; at the bottom, within, there is a series of fleshy, subulate, withering and sphaelated cilia as in the family of Asclepiadaceae and Apocynaceae. Corolla white; tube slender, half an inch long; limb spreading, equalling the tube, with linear oblong-fatcate, slightly pubescent laciniae. —Anthers linear and long, the base bifid and ending in two whitish processes; filaments short, exserted. Style clavate; stigma two-lobed, subulate, spreading, elevated above the mouth of the corolla. Berry as large as a marrow-fat pea, red, smooth, crowned with the four subulate, erect teeth of the calyx.—Seeds cup-shaped, hemispherical.

Obs. This species is so distinct from all the others as to be easily known. Its slender hanging branches, palid and glaucous leaves, and the small corymbs of crowded flowers contribute to render it a very ornamental plant in the shrubbery.—N. W.


Shrubby. Leaves oblong, acute with contracted sub-emarginate
base, pubescent beneath; sub sessile. Corymbbs super-decompound, open and large, terminal and from the exterior axils. Laciniae of the corol oblong-cuneate, acute.

Khasee name, Mattia-Chandia.

A native of the hilly parts on the borders of Bengal about Silhet, from thence introduced, in 1815, into the Botanic Garden at Calcutta, by Mr. M. R. Smith. It blossoms most freely during the hot and rainy seasons.

An erect, strong, branchy shrub, about four feet high, with scabrous, brown bark. The younger branches pubescent, slightly compressed towards the insertion of the leaves, ash-coloured.—Leaves sub-decussate, spreading, leathery and firm, five or six inches long, about two broad, tapering towards the base and there rounded or slightly emarginate, dark green, bullate, smooth and shining above, pale and pubescent beneath, especially along the elevated rib and copious nerves.—Petiols thick and woody, scarcely more than a line long.—Stipules broad ovate, pubescent ending in a long subulate adpressed point, connected and stem-clasping by means of a narrow membrane, continuing within the base of the petioles, and concealing a series of small rust-coloured cilia.—Corymbbs round, as large as the leaves, mostly elevated on a peduncle, with trichomatous brachiate spreading pubescent reddish peduncles, the lower ones an inch long; the whole forming an ample terminal inflorescence of innumerable, most beautiful, pale, rose-coloured, ternate, sessile flowers.—Bractes opposite, lanceolate, connected by a ciliated margin.—Calyx very small, oblong with four reddish lanceolate ciliated teeth, supported by two adpressed bractes.—Ciliae as in the preceding species.—Corolla pubescent; tube slender, a little more than an inch long; laciniae smooth, spreading, at last reflected, equalling one-fourth of the tube in length.—Filaments reflected. Anthers linear-sagittate.—Stigma reddish.

Obs. This shrub is exceedingly elegant on account of its large round corymbbs which for eight months of the year are produced in a constant succession. The colour of the flowers is a pale pink, gradually be-
coming reddish as they grow old, beautifully contrasting with the shining dark green leaves, which are not unlike those of I. Bandhuca. The colour of the flower resembles that of the pink variety of I. cuneifolia; it is paler than the variety of I. stricta, which Roxburgh formerly used to call I. incarnata. — N. W.

GARDNERIA.


1. G. ovata Wall.

A native of the mountains in the district of Silhet in Bengal, and of Nepal. It blossoms in the hot and rainy season, and ripens its fruit in the cold.


A strong climbing smooth shrub, with long slender round branches; the new twigs have a green bark and are obscurely four-sided. — Leaves opposite, approximated, spreading, petioled, ovate or lanceolate, acuminate, pointed at the base, entire, smooth on both sides, very dark and shining above, pale underneath, with elevated rib and transversal sub-opposite very fine nerves, which unite with each other and with the reticulated veins in sub-marginal arches. They measure from three to four inches, and are generally twice as long as their interstices. — Pedicels round, channeled above, slightly curved, half an inch long, widening at the base and surrounding the branch with an elevated, fleshy, narrow, erect margin, concealing in their axils a series of short subulate fleshy withering cilia. — Stipules no others than the appendices just described. — Corymbs axillary, opposite, equalling or somewhat exceeding the leaves in length, slender, with one or two pairs of small lanceolar leaves under their primary divisions. Peduncles slender, opposite, an inch or an inch and a half long, three-flowered, pedicels clavate with two lanceolate minute bractes at the base, and generally a pair above their middle; the intermediate ones shorter. — Calyx very small, cup-shaped, persistent,
divided into four-concave, orbicular, ciliated, alternately imbricating \textit{laciniae}.—\textit{Corol} thick and leathery, yellow, deeply four-parted; \textit{laciniae} ovate, acute, slightly concave, very spreading, almost recurved, about two lines long, alternating with those of the calyx and with the insertion of the stamens, covered above, particularly towards the thickened apex with a sericeous down, margins broad and flat; during the \textit{aestivation} they are valvate.—\textit{Tube} none.—\textit{Stamens} four, erect, somewhat shorter than the corol. \textit{Filaments} scarcely perceptible, inserted at the bottom of the corol just below the fissures. \textit{Anthers} ovate, acute, and free at both ends, fleshy in the middle; the sides uniting into a ventricose, pervious, four-toothed tube; within, towards their margins, they are two-celled; the cells separated by a longitudinal partition, which becomes free and keel-formed at their bursting.—\textit{Ovarium} above, and perfectly distinct from the calyx, ovate, minute, two-celled, two-seeded: ovula attached to the centre of the partition.—\textit{Style} filiform, shorter than the tube of the anthers.—\textit{Stigma} simple, acute.—\textit{Berry} superior, round, somewhat depressed, smooth, crowned with the persistent base of the style, supported by the calyx, scarlet, about the size of a large currant, fleshy, two-celled, two-seeded. \textit{Pulp} pale red.—\textit{Dissepiment} very thin, membranaceous, marked on each side with some vessels disposed in the form of a cross.—\textit{Placenta} fleshy, short, originating from the centre of the dissepiment, entering the cavity of the seed and filling it entirely with a soft pulp.—\textit{Seed} solitary in each cell, very thin, bullate and excavated in the shape of a hemispherical cup with a flat somewhat widened, exactly circular margin, gibbous at the back, smooth on both sides, of a grayish brown colour.—\textit{Integument} single, coriaceous, closely adhering to the horny, pearl-coloured \textit{Perisperm}, which has exactly the form of the seed.—\textit{Embryo} dicotyledoneous, erect, cylindrical, ascending, from above the inferior portion of the margin, about one-third the length of the seed, slightly curved, milk-white.—\textit{Cotyledons} leafy, lanceolate, flat, parallel to the sides of the seed. \textit{Radicle} cylindric, inferior and slightly centripetal, twice as long as the cotyledons, its apex situated im-
Immediately within the margin of the seed at its lower part.—Plumula inconspicuous.

Obs. The general habit and structure of the fruit of this interesting shrub are those of the family of Rubiaceae, especially its primary sub-divisions, with a single two-celled, two-seeded fruit; while its superior free ovarium is irreconcilable with the character of that most extensive tribe. In this point, to which may be added the connate anthers and stipulation, the genus agrees with Apocineae. But it differs from them both in the aestivation of its flowers, forming with the axillary subulate bodies a more remote affinity with Asclepiadaceae, among which Mr. R. Brown has recorded a solitary instance of a valvate corolla in his Leptadenia.*

The difficulty thus encountered in assigning my plant to its proper station in the natural arrangement has fortunately been lessened by M. Savigny, who concludes his description of Pagamea of Aublet, inserted in Lamarck’s Encyclop. Bot. by suggesting that it might be united with Gaertnera of Lamarck; under a distinct order; and finally removed by Mr. R. Brown who, having on a previous occasion pointed at the existence of an intermediate family between Rubiaceae and Apocineae, afterwards confirmed its existence in his interesting observations on the plants collected in the vicinity of the River Congo by my lamented friend and fellow student the late Professor Christian Smith. To this connecting group my plant necessarily belongs, requiring a separate section in addition to those proposed by Mr. Brown. The fruit appears to agree with Gaertnera of Lamarck, with Pagamea, especially if the doubts of Jussieu respecting the latter should be verified, and with Baconia of Decandolle. Its general structure, as well as the horny and copious perisperm which, during germination, is raised up with the young plant and remains a considerable time in that state, and the relative posi-

|| Narrative of Capt. Tuckey’s Expedition to the River Zaire; Appendix. p 482.
tion of the Embryo are perfectly like those of *Psychotria, Coffea and, *Ixora. It has the excavation of the seed in common with *Pavetta indica* and several species of *Ixora*; the ventral aperture is however much larger here and circumscribed by a somewhat widened margin.—The younger parts of the plant as well as the dark-coloured shining leaves contain a yellowish juice, from which probably the Silhet name is derived; indeed they are not unlike those of *Guttifera*.

My Nepala specimens differ in some degree from the others; their leaves are smaller, lanceolate and more narrow; the segments of the corolla lanceolate and more villous, the berries large and crowned with the persistent long style; stigma bifid.

I have dedicated this new genus to the Hon. Edward Gardner, late resident at the court of the Raja of Nepala, by whose indefatigable exertions and liberality the Botanic Garden at Calcutta has been enriched by the most splendid additions of growing plants, seeds, and specimens of the interesting and hitherto mostly unknown vegetable productions of that country, of which ample and frequent collections have been transmitted to Great Britain.—N. W.


*Calyx* four-toothed. *Corol* with cylindric tube, and four-cleft border. *Drupe* inferior, with as far as eight, one-seeded nuts.

1. *P. hexasperma*. R.

*Leaves* opposite, short-petioled, oblong, acute, entire. *Corymb* axillary, and also within the cuspidate, hairy, stipules, dichotomous. *Drupe* six-seeded.

A native of the Island of Honimoa.

*Tender-shoots* clothed with brown hairs.—*Leaves* opposite, approximate, short-petioled, oblong, acute, entire, a little hairy; from three to four inches long.—*Stipules* within the leaves cuspidate, hairy.—*Peduncles* opposite; with the stipules many times longer than the petioles, each ending in a small twice dichotomous, corymbiform.

* Gaertn. Carp. i. p. 113. t. 25.
TETRANDRIA MONOGYNIA. Salvadorá.

panicle of recurved second spikes.—Bractes subulate, one-flowered.
—Flowers rather small, hairy.—Calyx four-toothed.—Corol with a slender, cylindric, villous tube, and contracted, four-parted border.
—Filaments none. Anthers linear in the mouth of the tube of the corol, and affixed to it by their backs.—Germ beneath. Style shorter than the corol. Stigma simple.—Drupe round, six-ribbed; size of a pea.—Seeds or nuts regularly six, sub-cylindric.


Calyx four-toothed. Corol one-petalled, four-cleft. Style none or short. Berry inferior, one-seeded.


A middle sized tree, a native of most parts of the Circars though by no means common; it seems to grow equally well in every soil. Produces flowers and ripe fruit all the year round.

Trunk generally crooked, from eight to ten feet high, to the branches, and one in diameter. Bark very scabrous, and deeply cracked. Branches exceedingly numerous, spreading, with their extremities perfectly pendulous, like the weeping Willow.—Leaves opposite, petioled, oval or oblong, entire, very smooth, and shining on both sides, without veins; from one to two inches long, and about one broad.—Stipules none.—Panicles terminal, and from the exterior axills.—Flowers minute, very numerous, greenish-yellow. —Bractes minute.—Calyx inferior, four-toothed, permanent.—Corol one-petalled. Tube short, border four-cleft; segments oblong, revolute.—Filaments four, inserted into the tube of the corol under its fissures, and rather shorter than the border. Anthers oval.—Germ globular, style none. Stigma scabrous.—Berry very minute, much smaller than a grain of black pepper, smooth, red, juicy.—Seed one.

Obs. The berries have a strong aromatic smell, and taste much like garden cresses. The bark of the root is remarkably acrid,
bruised and applied to the skin, it soon raises blisters; for which purpose the natives often use it. As a stimulant it promises to be a medicine possessed of very considerable powers.

**CALLICARPA. Schreb. Gen. N. 175.**

*Calyx* four-toothed. *Corol* one-petalled, tubular, four-parted. *Germ* four-celled, cells one-seeded; *ovula* attached to the middle of the axis. *Berry* four-seeded. *Embryo* erect, and furnished with a perisperm.

1. **C. arborea.** 

Arboreous. *Leaves* long-petioled, oblong, ventricose, tapering much toward both ends, entire, hairy underneath. *Panicles* axillary, sub-globular, throughout dichotomous.

A stout tall tree; a native of Chittagong.* Flowers at various times through the year.

*Trunk* nearly erect, and in trees nine years old, thirty-three inches in circumference four feet above the surface of the soil. *Branches* spreading. *Branchlets* obtusely four-cornered, and mealy.—*Leaves* opposite, long-petioled, oblong, ventricose, tapering equally at each end, entire, smooth above, hairy underneath, while young and unexpanded very mealy on both sides; length from six to twelve inches, petiole included, which may be reckoned one-fourth of the whole.—*Panicles* axillary, solitary, or paired, the largest on a peduncle as long as the petioles, sub-rotund, from six or eight times dichotomous, all the ramifications somewhat four-cornered and mealy.

—*Flowers* small, very numerous, lively purple, or lilac, small, rather offensive.—*Bractes* minute.—*Calyx* companulate, obscurely four-toothed, mealy on the outside.—*Corol* with the tube much longer than the calyx, one of the segments of its border smaller. —*Filaments* twice the length of the corol. *Anthers* brown.—*Germ* superior, round, four-celled, with one ovula in each, attached to the middle of the axis. *Style* as long as the stamens, and bent in an opposite direction. *Stigma* headed.—*Berry* superior, round, polish—

* It is very common also about Katmandu in Nepal.—N. W.
ed, lively purple, succulent, size of a small grain of black pepper, one-celled.—Seeds four, convex on the outside, with two flat faces on the inner, rough; interior integument hard like the shell of a nut.—Perisperm oval, soft, amygdaline.—Embryo straight, erect, nearly as long as the perisperm. Cotyledons oblong. Radicle oblong, the length of the cotyledons, inferior.


Arboreous, all the young parts mealy. Leaves opposite, oval, entire, downy. Corymb axillary, dichotomous throughout. Corols oblique.


A pretty large tree, a native of the Circar mountains, and of the valleys between them.

Trunk perfectly straight, and of a considerable height.—Bark smooth, ash-coloured. Branches few, and near the top, forming but a small head for so large a trunk. Young-shoots somewhat four-sided, and covered with grey farina.—Leaves opposite, petioled, ovate, tapering to a point, entire, downy, below whitish with much down; from nine to ten inches long, and five or six broad.—Petioles round, two or three inches long, covered with down.—Corymb axillary, erect, two-forked throughout; every part covered with grey farina.—Bractes small.—Flowers very numerous, small, purple.—Calyx short; border four-sulcated, permanent.—Corol, tube bent to one side. The other parts as in the genus.—Style descending.

Obs. The wood of this tree is white, spongy, and of course not fit for much use.


This shrub was introduced into the Botanic Garden from the
Moluccas in 1798, and in three years had attained to the height of from four to eight feet high, considerably ramous, with the young parts downy, and the ligneous ones covered with smooth, pale ash-coloured bark. They are in blossom in March and April chiefly, though more or less the whole year.

Leaves opposite, short-petioled, from broad cordate to oblong, reticulated with margins glandular-dentate-serrate; upper side soft and of a deep green colour, but very downy, and pale underneath.—Cymes axillary, dichotomous, scarcely longer than the petioles, villous.—Flowers numerous, small, pale red colour.—Bractes subulate, caducous.—Calyx woolly, four-toothed.—Corol complanulate; divisions sub-cordate.—Filaments longer than the corols, and inserted into the base of its tube, ascending.—Style declined, length of the filaments. Stigma two-cleft.—Berry small, round, smooth, deep purpli; seeds four.

Obs. It differs from C. americana, Willd. in having a woolly, toothed calyx, two-lobed stigma and in the form of the leaves.

4. C. incana. R.

Shrubby, young shoots hoary. Leaves lanceolate, obtusely serrulate, fine- and entire-pointed, hoary underneath.


Beng. Matrim, Mutramja.

A stout shrub, with all the tender parts and the under surface of the leaves densely clothed with long, soft, white, stellate pubescence: common in the vicinity of Calcutta, where it is in flower and seed nearly the whole year.

I long considered this to be Vahl’s macrophylla, but on rearing what I also took for the same species from Silhet and Chittagong, in the Botanic Garden, I could plainly observe a striking difference when growing near each other, and as the Chittagong and Silhet sort agrees much better with Vahl’s figure and description, I must consider it to be his macrophylla. In the Calcutta plant, which I now call incana, the leaves are never so broad in proportion to their length,
more round at the base; much more pointed, with the long taper points entire; all the rest of the margin, except what may be called the base, obtusely-serrulate. In *macrophylla*, the leaves are crenate, more obtuse, and the margins cut to the very apex: the two are however very nearly allied, though I think sufficiently distinct to authorize their being considered as different.


Native of Sylhet and Chittagong.

A shrub, from four to eight feet in length. *Trunk* scarcely any, but several, round, erect branches, covered with white down.—*Leaves* opposite, petioled, lanceolate, or oblong lanceolate, fine-pointed, finely serrate, wrinkled, above soft, and a little downy, below covered with much whitish soft down, from six to nine inches long, and two or three broad.—*Stipules* none.—*Petiols* about an inch long, downy.—*Corymbs* axillary, peduncled, two-forked, nearly globular, downy, many times shorter than the leaves.—*Peduncles* as long as the petioles, round, downy.—*Bracteae* lanceolate, one under each division of the corymb.—*Flowers* very numerous, small, rose-coloured.—*Calyx* woolly, the four divisions distinct and acute.

6. *C. acuminata*. R.

Shrubby, tender parts hoary with a stellate pubescence. *Leaves* broad-lanceolar, acuminate, remotely repand, denticulate. *Panicles* axillary, long-peduncled, dichotomous, shorter than the leaves.

A native of Sylhet, flowers in May. In this species the panicles are elevated on longer peduncles than in the other species, the leaves and young parts very hairy, except the upper surface of the former when fully expanded, which is then naked and reticulate; from four to five inches long by nearly two-broad.
Shrubby, with erect weak branches. Leaves rather long-petioled, broad lanceolate, serrulate, smooth above, downy underneath. Pannicles axillary, dichotomous, length of the petiols. Berries white.
A native of Prince of Wales Island, where it blossoms in June, July, and August.

8. C. cuspidata, R.
Shrubby, all the tender parts, and the under surface of the short-petioled, elliptic, dentate, cuspidate. Leaves woolly. Corymbs axillary, their division and the calyces clothed with minute grains under the wool.
A native of the Moluccas; the leaves are always acutely dentate, and end in a long taper, acute point. The Berries are very small, smooth, and purple.

9. C. lanceolaria, R.
H. Koamoora.
A pretty, shrubby species, with narrower leaves than any of the other species I have yet met with in India, they taper most toward the base, are nearly smooth on the upper surface, but very hoary underneath; as are all the other tender parts. Flowers numerous, minute, purple.
A native of the forests of Silhet, where it is in flower most part of the year.

10. C. pentandra, R.
Shrubby, tender parts meally. Leaves opposite, with an alternate one between, oblong, entire, cuspidate. Corymbs axillary. Flowers pentandrous. Stigma from three to four-lobed.
A native of the Moluccas.
11. C. purpurea, Juss.

Shrubby; branchlets and younger parts slightly scaly. Leaves sub-sessile, lanceolate, acuminate, serrate, with sub-whole cuneate base, smooth above, glandular-dotted below. Corymb axillary, very small, dichotomous; flowers glandular.


A native of China. Introduced in 1812, into the Botanic Garden, at Calcutta, where it thrives extremely well, has attained a height of from four to six feet, and blossoms from April to September. The berries ripen at the close of the rainy season.

Shrubby, spreading, with roundish branches, covered with scabrous gray bark. Branchlets very slender, slightly scabrous, and beset with ferruginous stellate and somewhat scaly pubescence; new shoots almost mealy. Leaves from lanceolar to oval, two inches long, tapering at both ends, but more so at the base, and only three entire: the rest of the margin serrulate; without any hair or down, but scabrous below, from a great number of minute brown shining glandular dots which impart on being rubbed, a faintly aromatic smell; nerves and ribs elevated and slightly scaly. Petioles very short. Corymb axillary, or rather supra-axillary, small, round, two or three times dichotomous, many times shorter than the leaves; peduncles short, divaricate, beset with mealy pubescence, with minute lanceolate scales under each sub-division. Flowers fragrant, purple, marked with glandular dots. Calyx turbinate with very small obtuse teeth. Corol about three times longer than the calyx, infundibuliform; lobes oval, obtuse. Filaments almost twice as long as the corolla, purple; anthers large, orange-coloured, covered with many glandular dots. Stigma sub-capitate, elevated above the anthers. Berry very small, purple, at last red, with one or two fertile seeds.

Obs. I cannot but consider this as Loureiro's plant quoted above, which Jussieu has justly placed among the genus Callicarpa. It seems to be nearly allied to C. japonica, but differs chiefly in wanting the smoothness, the short stamina and pistillum, and the acute stigma of the latter. Its flowers are besides of a beautiful purple
Buddleia: Tetrandria Monogynia

colour, especially within, while those of Thunberg's plant are white. —N. W.


1. B. Neemda, Buchanan.

Arborescent. Leaves lanceolate, sub-serrate, hoary underneath. Spikes terminal, lengthening, with flowers three-fold.

Ninda the vernacular name at Chittagong, where the plant is indigenous, and from thence introduced into the Botanic Garden by Dr. Buchanan, where it begins to blossom about the close of the cold season. Seeds ripe in March and May.*

Trunk erect; branches numerous, opposite. Bark of the longer woolly parts ash-coloured, young shoots covered with white down. Height of the tree, in two years, about fifteen feet. —Leaves opposite, short-petioled, lanceolate, slightly hairy; from four to eight inches long. —Petioles short, their bases joined by a connecting membrane. —Spikes terminal, generally three-fold, there being a larger, and longer in the centre, with a smaller on each side; long, slender, hairy, lengthening, and blossoming for three months. —Flowers generally three-fold, sub-opposite, sessile, very numerous, small, pure white, and of a pleasant smell. —Bractes lanceolate, one under each flower. —Calyx inferior, four, rarely five-toothed, villous. —Corol one-petalled, hypocrateriform. Tube the length of the calyx; mouth villous, border of four, rarely five, rounded, equal segments. —Filaments short, inserted near the base of the tube of the corol. Anthers broad, sagittate, hid in the tube. —Germ conical. Style short. Stigma large, oblong, bisulcate, even with the tops of the anthers. —Capsule ovate-oblong, two-celled, two-valved. Seeds minute, numerous, imbricated, compressed.

* I have received specimens of this charming plant collected by my friend Dr. Govan at Saharanpore. —N. W.
Obs. The whiteness of the leaves, and young shoots of this plant, independently of its numerous, beautiful small, fragrant, pure white flowers, makes it highly ornamental, particularly amongst plants with darker foliage.

2. B. paniculata, Wall.

Leaves lanceolate, acuminate, entire, acute at the base, villous above, densely hoary beneath; racemes short, hoary, sessile, crowded into terminal panicles; flowers fascicled.

A native of the valley of Nepal, from whence the Honorable E. Gardner sent me specimens in 1818. Flowering time February to April.

A small ramous tree with round spreading branches, covered with smooth fibrous separating bark.—Branchlets slightly compressed, and, as well as the leaves and inflorescence, covered with dense white stellate easily separating tomentum; especially while young.—Leaves lanceolate, tapering into an acumen, quite entire, acute at the base, from four to five inches long, rugose above, soft and hoary below, with conspicuous sub-opposite nerves and reticulated veins.—Petioles half an inch long, obscurely furrowed above, connected by an elevated line running across the branch.—Racemes short and stout, obtuse, the lowermost from the terminal axils about two or three inches long, the others shorter and more simple, until they become a terminal elongated raceme; the whole forming an elegant crowded attenuated sessile panicle or thrysus. Common peduncle about six inches long, and, as well as the outside of the flowers, hoary; partial one very short, and supported by opposite narrow linear acuminate floral leaves or bractes.—Flowers fragrant, white, numerous, sessile, crowded into approximate sub-sessile fascicles, each with a pair of subulate elongated bractes, besides some smaller ones under the exterior calyces.—Calyx with ovate teeth.—Tube of the corolla cylindric, three times longer than the calyx, slightly hairy within. Laciniae short, oval, obtuse.—Anthers linear, sub-sessile below the mouth, enclosed.—Ovarium and base of the short style villous. Stigma clavate.—N. W.


1. E. bicolor, R.
Annual, erect, four-sided. Leaves sessile, ovate, five-nerved. Flowers axillary, apices of the segments of the corol blue, the rest white. Anthers erect.

A native of Cuttack, where it appears during the cool season.

Root almost simple.—Stem erect, branchy, four-sided; angles somewhat winged, from one to two feet high.—Leaves sub-sessile, opposite, oval, five-nerved, smooth, size very various. Floral leaves small and narrow.—Flowers axillary, solitary, short peduncled, large, of a beautiful white and blue colour.

2. E. tetragonum, R.
Annual, simple, erect, four-sided. Leaves sessile, lanceolate, five-nerved. Flowers numerous, terminal. Stamens and style decline.

Beng. Koochuri.

A native of Bengal, where it grows among long grass; and flowers during the rains.

Stem erect, simple, exactly four-sided, smooth; from two to three or even four feet high.—Leaves opposite, decussate, sessile, lanceolate, five-nerved, smooth and shining, from two to four inches long.—Flowers terminal, numerous, large, of a most beautiful blue colour, inodorous.—Calyx divided nearly to the base into four, daggered segments.—Corol; segments oblong, acute, spreading.—Filaments on the tube of the corol, short. Anthers linear, bending to one side, with two pores at the top, for the discharge of the pollen, as in Cassia.—Germ oval. Style projecting obliquely with the stamina; stigma enlarged.—Capsule two-celled, two-valved.—Seeds numerous.

Obs. This is one of the most elegant plants I have met with, the flowers being not only numerous, large, and beautiful, but retaining their beauty and expansion for many days, which is a rare circumstance in an Indian plant.
3. E. teres, Wall.

Stem round. Leaves linear-lanceolate, acuminate, tapering at the base, and sub-csessile, three-nerved. Peduncles opposite, three-flowered, forming a terminal corymb. Segments of the Corolla lanceolate, acuminate.

Communicated by Mr. M. R. Smith from Silhet, where it blossoms during the rainy season.

This plant is nearly allied to the preceding species (which I have also received from the Hon. E. Gardner from Katmandu, where it is called Kashwa son, and from Mr. William Jack, who discovered it in the Turayce, bordering on the Nepal mountains). Both agree in habit and beauty; but my species differs in the following point. It is smaller and more slender, the whole height not exceeding two feet; the stem perfectly cylindric, as thick as a small goose-quill, with a few branches at the base. The leaves are three or four inches long, and about half an inch broad at the middle, from thence tapering towards both ends, narrow at the base and almost petioled, finely acuminate; like the whole plant, smooth. Peduncles almost as long as the leaves. Pedicels slender, about half an inch to an inch long, terminated by a dark blue large flower. Lacinia of the Corolla narrower and more acuminated than in E. tetragonum. In other respects the plants are very much like each other.—N. W.

4. E. zeylanicum, R.

Annual, pentandrous. Leaves opposite, subsessile, lanceolate, three-nerved. Flowers five-cleft. Calyx with five, broad membranaceous wings with subulate points.


A native of Ceylon.

Stem erect, somewhat four-sided, smooth, annual.—Leaves opposite, short-petioled, lanceolate, entire, smooth on the sides, three-nerved, from one to three inches long.—Racemes terminal, and opposite from the exterior axils, the whole forming an expanded co-
Escarum.  

TETRANDRIA MONOGYNIA.  

Ryumbiform panicle.—Peduncles and pedicels four-sided, smooth.

Flowers numerous, large, of a violet colour.—Calyx five-cleft; divisions with a broad membranaceous wing on the back, and a long subulate point.—Corolla tube gibbous, length of the calyx, some short filaments amongst the insertions of the stamens crown the mouth of the tube. Border of five, obovate, beautiful, violet-coloured divisions.—Filaments on the mouth of the tube, erect. Anthers linear, with two pores at the top, and also opening on the sides.—Style declining, rather longer than the filaments.—Stigma headed.

Capsule oblong, two-celled.

Obs. The anthers remain straight, and hard, with two pores at the top, and also bursting by two longitudinal openings on the sides, I have for that reason removed this plant from the genus. Chironia, the essential mark of which consists in its spiral anthers.

5. E. carinatum, R.


A native of Ceylon.

Root ramous, annual.—Stem erect, with one or two opposite pairs of branches about the middle; above these dichotomous, somewhat four-sided, smooth, from six to twelve inches high.—Leaves opposite, short-petioled, lanceolate, entire, three-nerved.—Flowers terminal, numerous, pretty large, yellow, collected on dichotomous corymbs, with a long peduncled one in each of the divisions.—Calyx four-parted, each division augmented by a broad membranaceous keel on the back.—Corolla four-parted.—Filaments short, inserted on a membranaceous rim round the inside of the mouth of the tube. Anthers erect, yellow, opening on the sides.—Style longer than the stamens, declined. Stigma ascending, simple.

6. E. sulcatum, R.

Annual, erect, ramous, sulcated on the opposite sides of the stem.
and branches. *Leaves* sub-sessile, lanceolate, fleshy, three-nerved. *Calyx* with four ridges; *stamens* erect; *capsules* globular.

A native of Bengal; blossoms during the cool season; the seeds ripen in March.

*Root* fibrous, annual.—*Stem* erect, from six to twelve inches high, smooth, sulcated on opposite sides. *Branches* opposite, their flower-bearing extremities two, and three times two-cleft.—*Leaves* opposite, sub-sessile, lanceolate, fleshy, entire, three-nerved; from one to two inches long.—*Flowers* terminal, numerous, of a bright blue colour, those in the divisions of the branchlets long-peduncled.—*Pedicules* four-sided.—*Bractes* ovate, recurved.—*Calyx* deeply four-parted; divisions with an ample keel.—*Filaments* short, inserted in the mouth of the tube of the corol. *Anthers* ovate, oblong, touching at the sides, apices perforated.—*Style* longer than the stamens, declined; stigma two-lobed.—*Capsule* globular, two-celled, two-valved.—*Seeds* numerous.

*Obs.* This is a very beautiful small plant.

**Pladera.** Solander's Mss.*


1. *P. sessiliflora*, R.

Annual, erect, four-sided; *angles* winged. *Leaves* opposite, sessile, ovate, entire. *Flores* sessile.


*Gentiana heteroclita*, Mant. 560.

A native of Coromandel and Bengal, appears on moist pasture ground during the rains and first part of the cool season.

*Stem* erect, with two or three pairs of opposite branches, which are again once or oftener dichotomous, all are four-sided, with a thin

*Cansera*, Linn. — N. W.
wing to each angle; height of the whole plant about a span.—Leaves opposite, sessile, ovate, entire, three-nerved; differing much in size, the largest rarely an inch long.—Flowers solitary, in the divisions of the plant, sessile, small, pale red.—Calyx sub-cylindric, four-toothed; teeth acute.—Corol with the tube as long as the calyx. Border three-cleft, two of the divisions equal, oblong, and crowded at the apex, the third divided half way down.—Filaments four; three longer, and inserted in the mouth of the tube; the fourth just below the fissure of the bilab segments of the corol. Anthers equal, oblong.—Germ linear-oblong. Style as long as the stamina. Stigma two-lobed; lobes large, obovate, thin.—Capsule sub-cylindric, nearly as long as the permanent calyx, and hid in it, one-celled, two-valved. Receptacles consist in the incurved margins of the valves, (parietal, and two-lobed.) Seeds numerous, angular, very small.

2. P. virgata, R.*

Annual, erect, four-sided, branches opposite, alternate. Leaves sessile, lanceolar, three-nerved. Flowers terminal, sub-panicled.


Gentiana diffusa, Vahl. Symbol. iii. 47.

A beautiful erect, ramous annual; growing on the banks of water courses, and on low fallow lands. Flowering time the wet season.

Stem about a foot, or sometimes two feet high, erect, four-sided, ramous, smooth; inferior branches opposite, above alternate, very slender and twiggy.—Leaves opposite, sessile, the lower lanceolate, the upper broader, all are pointed, and three-nerved, entire, smooth; size various.—Flowers numerous, terminal, peduncled, small, rose-coloured.—Calyx four-toothed, permanent.—Corol funnel-shaped. Border irregular, three-parted; the two upper segments equal, and orbicular, the lower one two-parted; with a deep groove; in the groove is lodged the fourth or large stamen.—Filaments four, inserted into

the mouth of the tube, the lowermost longer than the other three, and bearing an orange-coloured, and longer anther, which when shedding its pollen, is bent over the fissure of the stigma; anthers of the other three filaments equal, pale yellow.—Style single, length of the short filaments. Stigma two-cleft, segments recurved.—Capsule one-celled, many-seeded.

3. *P. decussata, R.*
Annual, erect, four-winged, branches cross-armed. Leaves ovate-lanceolate, three-nerved. Flowers terminal, three-fold, peduncled.

Beng. Dunkoni.
This species resembles *P. virgata*, but is a little more robust, and seldom so high. It is a native of the same places. Flowering time the same.

Stem about a foot high, perfectly erect, four-sided; angles very sharp, or rather membrane-winged, smooth, ramous, branches always opposite, cross-armed, in other respects like the stem.—Leaves opposite, spreading, sessile, lanceolate, sharp-pointed, entire, smooth, three-nerved, size various.—Flowers terminal, and axillary, peduncled, the terminal flowers three-fold; the axillary single, larger than those of the last species, and white.—Peduncles four-sided, like the stem and branches.—Calyx large, four-toothed, four-sided, four-winged.—Corol, stamens, &c. exactly as in the last species.

4. *P. perfoliata, R.*
Annual, erect, four-winged. Cauline leaves lanceolate, three-nerved; floral leaves (or bractes) perfoliate.

Canscora, L'amarek's Encyclop. Bot. i. 601.
Kansjan-Cora, Rheed. Mal. x. p. 103. t. 52.
A native of India, where it delights in a low moist soil. Flowering time the rainy season.

Root ramous, annual.—Stem erect, somewhat four-sided, with

* Exacum alatum, Roth. Linn. Syst. Veg. ed. Roem. et Schult. iii. 169.—N. W.
four broad membranaceous wings. Branches opposite, and like the stem; all are smooth. Height of the whole plant about eighteen inches.—Leaves of the stem opposite, sessile, lanceolate, three-nerved. Floral leaves perfoliate, all smooth and entire.—Flowers terminal, peduncled, numerous, pretty large, pale rose colour.—Calyx four-toothed, striated, permanent.—Corol irregular, somewhat two-lipped; the upper one larger and deeply two-parted, the lower one consisting also of two lobes, but smaller.—Filaments four, three of them rather shorter, and inserted on the upper side of the tube; the third larger, and inserted below the fissure of the lower lip. Anthers oblong.—Style as long as the stamens. Stigma two-parted. Segments recurved.—Capsule oblong, one-celled, two-valved.

5. P. pusilla, R.

Annual, from one to two inches high. Leaves sessile, sub-cordate. Flowers terminal, sessile, three-fold, monandrous. Corol hid in the calyx. Capsule globular.

Compare with Hopea dichotoma.* Vahl. Enumer. i. p. 3; also with Exacum sessile, Willd. i. 635.

A beautiful minute plant, a native of Coromandel.

Stem erect, four-sided, branchy; from one and a half to two inches high.—Branches cross-armed.—Leaves opposite, sessile, cordate, minute, smooth.—Flowers terminal, sessile, three-fold, small, yellow.—Calyx one-leaved, sub-cylindric, as long as the corol, four-toothed, permanent.—Corol one-petalled. Tube a little gibbous, mouth four-toothed.—Filaments four within the tube of the corol, and inserted into it near the base. Anthers, three minute, and abortive; one large and fertile.—Germ globular. Style short. Stigmas two, globular.—Capsule oval, covered by the calyx, one-celled, two-valved. Seeds numerous, black.

* Sir J. E. Smith has confirmed the identity of this plant (which Dr. Roxburgh formerly referred to Exacum) with Hopea of Vahl. See that Article in Rees’s Cyclop. —N. W.
MIRASACME, Labillard.

**Calyx** angular, four, seldom two-cleft. **Corolla** deciduous, with angular tube, and four-cleft equal border. **Style** single, bifid at the base. **Capsule** bursting between the divisions of the style.

1. **M. capillaris**, Wall.

**Stem** erect, hairy; **leaves** lanceolate, hairy above, connected at the base by means of a narrow ciliated membrane, the uppermost approximated, sub-quatern; **umbel** peduncled, mostly compound; **calyx** half the length of the corolla, its segments villous at their apex; **stigema** almost entire; apex of the **capsule** exserted.

A native of the valley of Nepal, where it blossoms in September. Specimens were communicated by the Hon. E. Gardner.

**Root** fibrous. **Stem** erect, capillary, from three to six inches high, mostly undivided, slightly compressed.—**Leaves** spreading, acute, ciliate, three-nerved, sessile, smooth below, four or five lines long, exceeding their interstices; the uppermost two pairs so close together as to appear almost verticilled.—**Umbel** terminal, divided into three or four rays, which are again sub-divided into several slender pedicels. Two or three lanceolate, minute, connate bractes under the primary divisions.—**Calyx** four-cleft; its segments lanceolate, acute, united at the base by a small membrane. **Corolla** sub-campanulate, slightly pubescent, white, with ovate laciniae.—**Stamina** inclosed; **anthers** oblong, attached to the back of the filaments.—**Ovarium** ovate, bi-cuspidate. **Style** capillary, persistent; when the capsule ripens, the division at the base extends almost up to the slightly two-lobed, sub-capitate stigma.—**Capsule** ovate, smooth, bursting at the top with a roundish aperture between the divisions of the style; **valves** very short, scarcely equalling one-third of the capsule, acute, incurved. **Seeds** minute, whitish.

**Obs.** This little plant comes near to **M. connata**, Brown, *Prodr. Flor. Nov. Holl.* i. 454; it differs in the shorter limb and the ovate segments of the corolla, and the style not being entire when the flower opens.—N. W.

Calyx four-cleft. Corol four-cleft, with border reflexed. Stamina very long. Capsule superior, two-celled, cut transversely.


Ispagool, the Hindee and Persian name, and that by which it is most generally known in Bengal and on the coast of Coromandel.

Native place uncertain, but it is cultivated during the cool season.

Root ramous, annual.—Stem, if any, very short, soon dividing into three or four ascending, round, villous branches, which are a few inches in length.—Leaves alternate, linear-lanceolate, three-nerved, luxuriant, in young plants remotely denticulate, somewhat woolly, toward the base channelled, and stem-clasping; length from six to eight inches by a quarter or half an inch broad.—Peduncles axillary, solitary, naked, erect, round, a little villous, the length of the leaves.—Spikes solitary, terminal, before the flowers expand ovate, afterwards cylindric; when in seed about an inch or an inch and a half long and erect.

—Flores numerous, imbricated, small, dull, white, withering.—Bractes one-flowered, ovate, concave, with the keel green, and the sides membranaceous.—Calyx four-leaved. Leaflets oblong, ovate, with broad membranaceous margins.—Corol. Tube gibbous. Segments ovate, acute.—Filaments oblong, two-celled, four, much larger than the segments of the corol.—Germ oblong, two-celled, with one seed in each, attached to the middle of the partition. Style rather longer than the corol. Stigma subulate, villous.—Capsule circumscissa, ovate, two-celled.—Seeds solitary, ovate-elliptic, convex on the outside; concave on the inner. Integument single, rather thick, smooth, tough, and brown.—Perisperm conform to the seed.—Embryo sub-cylindric, erect. Cotyledon long, linear. Radicle inferior, one-fourth the length of the cotyledon.

Obs. From the seeds a mucilaginous drink is prepared, and often
prescribed by our medical gentlemen in India, where emollients are wanted. They are also used by the native practitioners in medicine and are to be met with for sale in the Bazars of India under the Persian name *Uspagool*.

2. *P. attenuata*, Wall.

*Leaves* lanceolate, ending in a bluntish acumen, tapering at both ends, with a few remote toothlets, smooth, five-nerved, decurrent on their short petiole, the base of which is woolly. *Scape* five-sided, sulcate, much longer than the leaves, with adpressed hairs. *Spike* cylindric, dense; *bractes* acuminate; *calyx* four-leaved, ciliate.

Specimens collected along the fields about Katmandu were communicated to me by the Hon. E. Gardner. Flowering time the hot season.

*Root* thick, sending forth a number of long ash-coloured fibres; immediately within the insertion of the leaves and on the inner surface of the base of their petiols there is a quantity of long whitish wool.—*Leaves* from three to four inches long, nearly an inch broad, slightly oblique, terminating in a short cylindric, somewhat thickened point, with a few unequally remote obtuse sub-glandular toothlets, quite smooth, decurrent on the short flattish striated petioles, the base of which widens a good deal and is woolly within.—*Scapes* several, erect, slender, several times longer than the leaves, from one to three feet high, five-cornered, striated, while young thickly beset with greyish adpressed hairs, becoming much smoother when old.—*Spike* from one to three inches long, cylindric, densely covered with ash-coloured flowers.—*Bractes* membranaceous, ovate, acuminate, smooth, keeled.—*Calyx* unequally four-leaved, nearly transparent, slightly ciliated and tipped with a few white hairs. *Corolla* tubular, with reflected ovate acute laciniae and a prominent mouth.—*Style* very long and villous.

*Obs.* This tall and slender species comes very near to *P. eriostachya* and *altissima*, Jacqu.; from the former it differs in the smoothness of its leaves and form of the spike, and smooth bractes; from
the latter, in its hairy scape, acuminate bractes, and ciliate calyx. It is also akin to *P. lanceolata* and *eriophora*.—N. W.

3. *P. crosa*, Wall.

Leaves ovate-lanceolar, acute, grossly and unequally repand-dentate, smooth, sub-ciliate, five-nerved; petioles short with woolly base. Scape adscending, compressed, slightly angular and hairy, nearly equalling the leaves. Spike slender, equalling the scape in length, with distinct flowers, which are somewhat remote towards the base.

A native of Nepal, growing with the preceding species.

Root consisting of numerous sub-simple fibres, from the head of which issue several tufts of scapes and leaves.—Leaves almost smooth, about three inches long, tapering towards the base; their margins remotely and unequally sinuate, with large, unequal, triangular, acute teeth.—Petioles shorter than the leaves; their base widening, membrane-marginated and woolly within.—Scape slender, adscending, somewhat compressed, when young, villous.—Spikes much lengthened, round, erect.—Flowers distinct, becoming somewhat remote downwards, mostly geminate.—Bractes ovate, membrane-marginated, with a green thick rib, shorter than the calyx.—Style villous.—Capsule ovate-oblong, with numerous flattish brown seeds.—N. W.

**CISSUS. Schreb. Gen. N. 192.**

Calyx four-toothed. Corol four-petalled. Germ two-celled; ovula two, erect. Berry superior, from one to four-seeded. Embryo erect, in the base of an ample perisperm.

1. *C. adnata*, R.

Leaves round-cordate, bristle-serrate, acuminate. Stipules orbicular, adnate, with gibbous centre, and scariose margins. Cymes flat, flowers drooping.

A native of the country about Dacca, from thence the late Colonel Peter Murray sent it to the Botanic Garden, where it thrives well, blossoms in May and June, and ripens its fruit in September.
Stem and large branches ligneous, climbing over trees to a considerable extent, young shoots round, a little downy and slightly furrowed.—Leaves alternate, round-cordate, and often obliquely so, acuminate, bristle-serrate, the largest sometimes slightly repand; pretty smooth above, but downy underneath, particularly the veins, from two to six inches long, one-fourth less in breadth.—Peduncles half the length of the leaves, downy.—Stipules nearly oval, adnate, elevated, and of a deeper green in the middle; margins scariose, and brown.—Tendrils opposite to the leaves where there is no cyme.—Cymes opposite to the leaves, on villous peduncles, as long as the petioles, very ramosus, flat.—Flowers numerous, small, drooping. The germ has two cells, in each of which are two seeds attached from their lower end to the partition at the bottom of the cell.—Berry succulent, size of a pea, when ripe black, and smooth, generally one-celled.—Seed for the most part solitary, obovate, lower end pointed.—Integuments two, exterior nuciform, and rugose; inner a very thin, white membrane, which adheres firmly to the perisperm.—Perisperm conform to the seed, dull white, cartilaginous, divided by two fissures into three, nearly equal parts.—Embryo scarcely half the length of the perisperm. Cotyledons reniform. Radicle oblong, inferior.

Leaves cordate-serrate. Cymes decompound. Berries one or two-seeded.

Hind. and Beng. Guali-lata.
Teling. Maratta-tiga.

This species is a native of forests, mountains, and way sides in uncultivated places.

Trunk woolly, branchy, climbing over trees and shrubs to a great extent. Tendril opposite to the leaves, two-cleft.—Leaves alternate, petioled, cordate, serrate, or dentate, pretty smooth on both sides, from four to six inches long, and from three to four broad.—Stipules cordate.—Cymes peduncled, leaf-opposed, more than compound.
Cissus.

TETRANDRIA MONOGYNA.

Flowers small, red.—Germ superior, half immersed in the four-sided, fleshy nectary.—Berry small, black, one or two seeded.

3. C. glauca, R.


This species is still larger than the last, and a native of the same or similar places; the shoots, the tendrils, petioles and peduncles are all quite smooth and somewhat glaucous, which does not admit of my considering it to be either repanda, or latifolia.

Tendrils leaf-opposed, undivided.—Leaves alternate, petioled, broad-cordate, more or less acuminate, sometimes when large slightly lobed, bristle-serrate, smooth, from four to eight inches each way. Stipules broad-sulcate, apex rounded, caducous.—Cymes with from three to five primary branches; ultimate divisions umbelliferous.—Berry nearly round, size of a pea, smooth, succulent, purple, rarely more than one-seeded—Seed obovate. Integument a double membrane, with a spongy silver-coloured substance between.—Perisperm and embryo as in the genus.

4. C. cordata, R.*


Funis crepitans major, Rumph. Amb. v. p. 446. t. 164. f. 1.

A native of Amboyna, from thence introduced into the Botanic Garden, in 1796—7. Flowering time in Bengal, the rainy season.

Stem and branches long, slender, climbing over bushes to a considerable extent. Bark smooth; on the young parts polished and purplish.—Leaves alternate, petioled, cordate, remotely and slightly serrulate, serratures acute, both sides smooth, length from four to six inches.—Tendrils leaf-opposed, simple, coloured.—Stipules adjoin-

* C. repens, Lam. Encycl. i. 21; et Poiret in ejusd. Suppl. i. 105.—N. W.

B b b.
ed, oval, coloured.—Cymes leaf-opposed, first divisions trichotomous.—Flowers small, dull purple.—Taste of the leaves very acrid, and continuing long.

Perennial, scandent, jointed, four-winged. Leaves reniform-cordate, serrate. Berries spherical, one-seeded.
Beng. Harjora.
Funis quadrangularis, Rumph. Amb. v. p. 83. t. 44. f. 2.
This plant is one of the most common over every part of India; blossoms during the rains; and ripens its seed in the cool season.
Root fibrous.—Stem and branches perennial, scandent, and often of very great length, smooth, succulent, jointed, contracted at the joints, four-winged, wings large, and sharp, young parts succulent, tender, and very smooth. These are very generally eaten by the natives in their curries.—Leaves alternate, one at each joint, short-petioled, reniform, cordate, serrulate-dentate, smooth on both sides, an inch or an inch and a half each way.—Stipules lunulate, entire.—Tendrils solitary, simple, leaf-opposed.—Umbels solitary, opposite to the leaves, occupying the place on which the tendril would otherwise grow, compound. Umbellets generally three or four, sub-globular.—Involucre and involucels scarcely any.—Germ ovate, immersed in the nectary, two-celled, with two ovula in each, attached to the bottom of the partition; style short. Stigma simple.—Berry round, size of a small pea, smooth, red, succulent, one-celled.—Seed solitary, obovate, covered with a double, dark brown, spongy integument. —Perisperm conform to the seed, a double, dark-coloured fissure runs down the middle.—Embryo small, erect, lodged on one side of the bottom of the double fissure just mentioned. Cotyledons with minute points. Radicle oblong, inferior.

6. C. pentagona, R.
Young shoots lucid, with five rounded angles and grooved sides. Leaves cordate, rarely sub-lobate, serrulate, acuminate, smooth.
An extensive perennial climber, a native of the forests of Chittagong.
7. *C. angustifolia, R.*


A delicate, scandent, perennial species, a native of Sumatra. Flowers in February; seeds ripen in November.

*Stem* scandent, slender, flat like a piece of tape. — *Tendrils* simple. — *Leaves* ternate. *Leaflets* petiolate, lanceolate, remotely serrate, acuminate, smooth on both sides, from three to six inches long, and from one to one and a half broad. — *Petioles* shorter than the leaflets, channelled, smooth. — *Stipules* triangularly ovate, acute, smooth. — *Cymes* axillary, solitary, nearly round, small, and shorter than the petioles. — *Flowers* small, greenish yellow, male on one plant and female on another.

**Male.** — *Calyx*, *Corolla* and *Stamina* as in the genus. — *Pistil* no other than a small abortive roundish body on the centre of a four-lobed gland.

**Female.** — *Calyx* and *Corolla* as in the male. — *Germ* round, two-celled, with two seeds in each. *Style* none. — *Stigma* large, obscurely four-lobed, and somewhat lacerated. — *Berries* spherical, smooth, size of a pea, white, one or two-seeded, when cut or bruised very fetid. — *Perisperm* conform to the seed. — *Embryo* lodged in the lower half of the perisperm. *Cotyledons* nearly round. *Radicle* cylindric, inferior.


*Stem* flattened, perennial. *Leaves* petiolcd, ternate; *leaflets* oval, serrate. *Berries* four-seeded.

*Tsjori-Valli, Rheed. Mal. vii. p. 17. t. 9.*

*Folium Causonis, Rumph. Amb. v. p. 450. t. 166. f. 2.*

*Teling.* Kanapa-tiga.

Is common in hedges and forests. Flowering time the rainy season.

*Stem* perennial, flat like a piece of tape, climbing to an extent of
many fathoms, young shoots, villous. *Tendrils* leaf-opposed, from two to three cleft.—*Leaves* alternate, petioled, ternate. *Leaflets* oval, grossly serrate, downy, from two to three inches long.—*Petioles* round, downy.—*Stipules* oblong, caducous.—*Cymes* as in the former species.—*Flowers* small, white.—*Berry* black, four-seeded.

9. *C. setosa*, R.


_Teling_. Barubutsali.

A native of forests and hedges in the Rajamundree Circar. Flowering time the rainy season.

*Root* fusiform, perennial.—*Stems* herbaceous, succulent, round, straited, and covered with distinct, glandular, round-headed, white bristles, as is every part of the plant, even to the fruit.—*Tendrils* leaf-opposed, generally two cleft.—*Leaves* alternate, sessile, ternate, rarely quinate. *Leaflets*, the lateral two (or four, when there are five) are sessile, the middle one is short-petioled; all are oval, waved, fleshy, irregularly and grossly bristle serrate, both sides armed with the forementioned bristles, size various, from one to five inches long.—*Stipules* cordate.—*Cymes* as in the former species.—*Petals* revolute.

_Obs_. Every part of the plant is exceeding acrid. I unfortunately tasted both the roots and berries.

The leaves toasted and oiled, are applied to indolent tumors to bring them to suppuration.

10. *C. feminea*, R.

*Leaves* digitate; *leaflets* petiolate, broad-lanceolar, entire. *Style* none. *Stigma* from four to five-lobed.

A large scandent woody species, a native of woody mountains. Flowers during the wet and cold seasons.

*Stem* woody, climbing over trees. *Branches* flexuose from leaf to leaf.—*Tendrils* simple, opposite to the leaves.—*Leaves* alternate, petioled, digitate. *Leaflets* oblong, and lanceolar, a little crenulate,
pointed, smooth, shining, from four to six inches long, and one or two inches broad.—Pétioles round, smooth, from one to two inches long.—Cymines short-peduncled, axillary.—Bractes small, falling.—Flowers small, green—Calyx small.—Coroll four or five-petalled, generally four. Nectary scarcely any.—Stamens none, or at most a small seemingly sterile one.—Germ superior, globose. Style none. Stigma four, or five-lobed, according to the petals in the corol. I have not seen the ripe fruit.

11. C. elongata, R.  
Tender shoots succulent, polished. Leaves digitate; leaflets peltate, oblong, acute, remotely serrate, smooth.

Beng. Dhemna, which is also the name of a long serpent.

Found amongst the mountains of the Coast of Coromandel, as well as in the forests of Bengal. Flowering time the hot season.

Stem very long, running up and over the highest trees, a little compressed, and until many years old smooth, polished, succulent, deep green. Branches few or one, until the plant arrives at a great height, and is several years of age.—Leaves alternate, petioled, digitate. Leaflets five, petioled, oblong, the lower pair obliquely so, serrate, smooth on both sides, from two to six inches long, and from one to three broad.—Pétioles round, smooth, from four to five inches long. Petiolets channelled.—Stipule cordate, small, sub-adjoined.

—Tendrils leaf-opposed, simple.—Cymines trichotomous, and dichotomous; the last divisions short, and ending in small umbellets.—Bractes cordate, permanent.—Calyx four-toothed.—Coroll, petals four, inserted in a belt which surrounds the body of the germ. Nectary a four-lobed, coloured elevation between the stamina and the insertion of the style.—Filaments four, inserted opposite to, and just within the petals. Anthers incumbent.—Germ oval. Style short. Stigma simple.—Berry the size of a cherry, round-turbinate, smooth, when ripe black.—Seed single, large, somewhat rugose.
12. *C. auriculata*, R.


A native of Mysore, from thence sent to the Botanic Garden in 1802, by Mr. B. Heyne, where it flowers and ripens its fruit through the whole year.

*Stem*, in five years old plants, as thick as a man's wrist, and of great length, even up to the tops of high trees. *Stem* spungy, and deeply cracked, young shoots succulent, round, and villous.—*Leaves* alternate, remote, long-petioled, quinate. *Leaflets* petioled, oblong-obovate, or rhombic, acute, serrate, smooth and shining above, villous underneath; the *superior* from two to three inches long, and two-thirds of that in breadth, the *exterior* much larger.—*Petoioes* nearly as long as the leaflets, round, and villous.—*Stipules* ear-shaped, recurved.—*Tendrils* leaf-opposed, two or three-cleft.—*Cymes* axillary, or terminal; dichotomous or trichotomous, these again several times divided.—*Germ* conical, containing four seeds in one cell, attached to its bottom.—*Berry*, the size, shape, and appearance of a red cherry, one-seeded.—*Seed* obliquely obovate, a little compressed, somewhat pointed at the base, and there attached to the bottom of the cell. *Integument* single, nuciform, rugose, covered with the green pulp of the berry, which adheres to it, and may, when dry, be considered a second integument.—*Perisperm* conform to the seed, cartilaginous, grey; from the inner edge two-fissures penetrate deeply, and divide it nearly into three portions.—*Embryo* erect, white, lodged in the base of the perisperm.—*Cotyledons* two; pedicelled, reniform. *Plumula* minute. *Radicle* oblong, inferior, a little curved, with the apex to the umbilicus.

13. *C. lanceolaria*, R.


A native of the mountains along the eastern frontier of Bengal. In the Botanic Garden it blossoms in February and March.

Trunk scandent, stout, ligneous, in six year-old plants as thick as a man's wrist, flattened, and grooved on the two flat sides. Bark dark brown, rough or deeply cracked. Branches and Branchlets climbing, or pendulous when not supported; young parts round, green and generally smooth; extent of the whole plant several fathoms.—Tendrils leaf-opposed, generally undivided.—Leaves alternate, petiolate, pedate. Leaflets generally five, lanceolar, recurved, most remotely and sharply serrulate, long, taper, acute-pointed, both sides polished; texture rather fleshy, length from three to six inches, and from one to two broad.—Pettioles and petiolaris clothed with short, reddish hairs.—Stipules large, of a narrow conic shape.—Cymes sub-axillary, or close by the side of the base of the petioles, shorter than the petioles, or when most luxuriant much shorter than the leaves, the ultimate divisions each supporting a small globular umbellet, of small pale yellow flowers.—Bractes round the base of the peduncles, cordate.

Male.—Calyx scarcely any.—Corolla and stamens as in the genus. —Pistil none, an umbilicate, yellow, round, convex gland occupying its place.

Perennial, scandent. Tendrils simple, or two-cleft. Leaves pedate; leaflets broad-lanceolate, serrate. Berries four-seeded.
C. heptaphylla, Retz. Obs. v. 22.
Brig. Gwalia.
This is another very extensively climbing species, as indeed they all are; a native of forests, hedges, &c. Flowering time the rainy season.

Stems woody, climbing over trees, &c. young parts covered with soft down.—Tendrils leaf-opposed, simple or two-cleft.—Leaves alternate, petiolate, pedate. Leaflets oblong, irregularly serrate, downy,
size various, the intermediate one is from four to six inches long, and
the lowermost of the lateral ones from two to three inches long, the
rest between these sizes.—Petioles common, round, downy, from
three to five inches long.—Stipules cordate, pointed, falling.—Cymes
leaf-opposed, or axillary. Peduncles half the length of the petioles,
jointed, and bracted a little above the middle.—Berries white, four-
lobed, depressed, four-seeded.

15. C. serrulata, R.
Perennial, scandent, smooth. Leaves pedate-quinate; leaflets ob-
long, serrulate.
A native of Chittagong, where it blossoms in April and May.

CORNUS.

Calyx superior, four-toothed. Petals four. Drupe with a two-
celled nut.

1. C. oblonga, Wall.
Leaves oblong, acuminate, acute at the base, glaucous and sca-
brous beneath, with many excavated glands along the axils of the
rib and nerves. Cymes spreading, panicked.
Native of Nepal, where it is pretty common about Katmandu;
blossoming during the first half part of the year.—Specimens and
seeds communicated by the Hon. E. Gardner, in 1818.
A midling sized tree with copious spreading branches; the young
shoots covered with short adpressed hair.—Leaves in approximate
pairs, spreading, from four to six inches long, acute at the base, an
inch or an inch and a half broad, finely acuminate, beset with short
adpressed hairs, dark-green and shining above, glaucous and sca-
brous beneath, with elevated rib and sub-opposite arched nerves,
the latter having in the axils at their base and along their outer side
numerous ciliated glandular excavations which, when the leaves are
dry, become slightly visible on their upper surface.—Petioles from
half an inch to an inch long, slender, channelled, rough.—Cyme ter-
Cornus.

**TETRANDRIA MONOGYNA.**

minal, sessile, broad-ovate with opposite spreading ramifications, which terminate in fascicles of short-pedicelled, crowded, sub-racemmed white or pale-purplish, fragrant flowers.—Bractes opposite, ovate, acute, deciduous.—Calyx small, four-toothed, as well as the pedicels and petals clothed with adpressed, short, silvery hairs.—Petals linear-oblong, even, four times longer than the calyx, at last revolute.—Anthers purple.—Ovarium three-celled.—Style deciduous.—Drupes ovate-oblong, with an elevated umbilicus, smooth. Putamen two, sometimes three-celled.

*Obs.* Dr. G. Govan has favored me with fruit-bearing specimens collected to the Northward of Saharunpore of a tree, which in general appearance and leaves comes very near to this species; the latter are however larger and less glandular. The chief difference consists in the peduncled cymes with umbelled ramifications and the unripe fruit being compressed, oval, and resembling that of a *Viburnum*. I have not seen its flowers.—N. W.

2. C. *macrophylla*, Wall.

Leaves broad-ovate, acuminate, rounded at the base, smooth, glaucous and soft beneath, with axils slightly glandular. Cymes sub-umbelled; flowers racemmed.

Communicated by Dr. Govan who found the tree to the Northward of Saharunpore.

Branches smooth.—Leaves six inches long, by four broad, very pale and glaucous below, slightly pubescent, soft and dotted; nerves copious, sub-opposite, oblique.—Petiols an inch and a half long, with a few hairs in their axils.—Cyme ample, terminal, sessile, flat-tish; the divisions terminated by several racemes of unilateral flowers.—Calyx with acute teeth.—Petiols linear-oblong, hairy on their outside.—Ovarium sulcate, hairy.—Style shorter than the stamina. Stigma capitate.—Drupes round, smooth, as large as a black pepper corn, with a two-celled nut.

*Obs.* This tree differs from all the species of *Cornus* in the size of its broad-ovate leaves.—N. W.
S. C. capitata, Wall.

Arborescent. Leaves lanceolate, acuminate, short-petioled, scabrous with adpressed hair. Flowers sessile, densely aggregate, forming a round head supported by a very large, four-leaved, scabrous involucre.

Specimens communicated by the Hon. E. Gardner from Gossain-Than in Nepal, where the tree is called Chungrea; by Sir Robert Colquhoun from Sirinagur, where it is called Bhumoxera; and by Dr. G. Gowan who gathered them between the Sutlej and Jumna.

It grows to be a small tree, which according to Sir R. Colquhoun's observation has much of the habit of the Custard-apple.—Branches woody, spreading, opposite, like all the other parts covered with short stiff adpressed hairs; the younger ones slightly compressed.—Leaves opposite, coriaceous, tapering at both ends, entire, about two inches long, scabrous, covered on both sides with reflexed hairs, which on being rubbed off leave an impression on the surface; glaucous, very pale beneath with elevated, sometimes pink-coloured, sub-longitudinal arched nerves, having each a minute gland in their axils.

—Petioles very short, furrowed. Head terminal, solitary, round, as large as a moderate-sized cherry, thickly covered with flowers, supported by a sulcate; club-shaped peduncle, which widens at the upper end into a convex ligneous receptacle for the insertion of the flowers.—Involucre consisting of four spreading, somewhat unequal, cariaceous, yellow, obovate-cuneate, sometimes broad-ovate, veined, scabrous leaves, an inch long, rounded at their ends, with a short slightly grooved point.—Calyx cylindric, pubescent, with four oblong, erect, obtuse segments.—Corol twice as long as the calyx, consisting of four spreading cuneate leaflets; their upper surface slightly keeled.—Stamens equaling the petals, sulcate, recurved. Anthers ovate. Ovarium immersed in the receptacle, oblong, two-celled, with a pendulous ovulum in each cell. Style thick, clavate, striated, shorter than the stamens, surrounded at its base by a short, cylindric fleshy, crenulate nectary. Stigma truncate.

Obs. This beautiful tree is very distinct from all the other spe-
cies. It approaches a little to *C. florida* and *canadensis*, but is easily recognised by its copious, harsh, adpressed hairs, its stature, which is that of a large shrub or small tree, and the position of its leaves.—N. W.

**SAMARA. Schreb. Gen. N. 195.**

*Calyx* four-parted. *Corol* four-petalled. *Stamina* inserted opposite to the centre of the insertions of the petals. *Drupe* superior, one-seeded.

1. *S. paniculata*, R.


A tree, a native of the Circar mountains.

*Leaves* opposite, petioled, broad-lanceolate, tapering to a sharp narrow point, entire, smooth, from three to five inches long, and one and a half or two broad.—*Corymb* axillary, small, peduncled, shorter than the leaves, divided by three-forked divisions.—*Drupe* dry, oblong.—*Nut* one-celled.

2. *S. polygama*, R.

*Leaves* opposite, short-petioled, broad-lanceolate, firm and polished. *Panicles* axillary and terminal. *Filaments* short, and inserted in a notch near the edge of the base of the petals.

A native of the Moluccas.

**BLACKBURNIA. Schreb. Gen. N. 199.**


1. *B. monadelpha*, R.

A large erect timber tree, a native of the mountainous parts of the Circars. Flowering time the beginning of the hot season.

**Trunk** erect. **Bark** thin, firm, yellowish green on the outside; on the inside deep red, tinged the spittle with that colour. It is a strong astringent. **Branches** numerous, forming a large shady head. **Leaves** alternate, short-petioled, linear-oblong, smooth, below a little whitish, entire, waved, pointed; five or six inches long, and one and a half or two broad.—**Stipules** none.—**Racemes** axillary, small, erect, frequently compound.—**Bractes** small, subulate.—**Flowers** small, yellow.—**Calyx** four-toothed.—**Petals** four, oblong, expanding, apices revolute.—**Nectary**, a ring surrounding the base of the germ, staminaliferous.—**Filaments** four, shorter than the petals, hairy, inserted into the margin of the nectary. **Anthers** oval.—**Germ** superior, globular. **Style** short, stigma headed.—**Berry** vertically compressed, succulent, the size of a large cherry, when ripe it has a deep purple bloom, which makes it very inviting to the eye. **Seed** one, arilled, seemingly two-lobed, of a lively purple throughout.

**Obs.** The wood of this tree is white, close-grained, and durable, the natives employ it for a variety of purposes.

**FAGARA.** Schreb. Gen. N. 196.

*Calyx* four-parted, or four-leaved. *Corol* four-petalled. *Germ* superior. *Capsule* superior, two-valved, one seeded. *Embryo* inverse, with but little perisperm.

   **Leaves** opposite, ternate; leaflets oblong, entire. *Panicles* axillary, brachiate.

*Ampacus angustifolia*, Rumph. Amb. ii. p. 188. t. 62.

Found indigenous, by Mr. W. Roxburgh, on the Island of Pulopenang, and from thence sent to the Botanic Garden, where in several years it has only reached the height of four-feet, and for these last three years has blossomed regularly during the dry season.

**Stem** erect, ligneous, as thick as a walking cane, smooth, ash-co-
Fagara.  Tetrandria Monogynia.  437

Loured. Branches opposite; the tender parts round and slightly villous.—Leaves opposite, long-petioled, ternate. Leaflets lanceolar or oblong, entire, smooth on both sides, length from two to ten inches, and from one to four-broad.—Panicles axillary, and in our single young individual, shorter than the petioles, brachiate, villous. —Flowers numerous, minute white, inodorous. Bractes triangular, solitary below the divisions of the panicle.—Calyx small, one-leaved, four-toothed.—Petal four, oblong, white, smooth, spreading; length of the pistil, and four times longer than the calyx.—Filaments four, length of the petals. Anthers oblong, incumbent.—Germ superior, roundish, woolly, four-grooved for the filaments to rest in, four-celled, with two ovula in each cell, attached to the middle of the thickened axis. Style as long as the germ. Stigma large, four-lobed.

Capsule from one to four, distinct, obovate, smooth; size of a field bean, one-celled, two-valved, opening along the upper and inner margin, and round the apex; a portion on the back does not separate spontaneously.—Seeds generally two, roundish, size of a grain of black pepper, shining, blackish-chestnut colour, as in the allied Xanchoxylum alatum.

2. F. Budrunga, R.

Arboreous, armed with small incurved aculei. Leaves pinnate; leaflets five or six pair, unequally ovate, lanceolate, entire, acuminate; panicles crowded.

Budrun the vernacular name in Silhet, where it grows to be a large tree. Blossoms in March and April, and the seeds ripen in July and August; they are used medicinally by the natives, being of a warm spicy nature with the fragrance of Lemon peel.

Trunk straight, while young armed, but by age the aculei fall off. Branches and branchlets armed with innumerable, small, white, sharp, incurved prickles.—Leaves crowded, from six to ten inches long. Leaflets five or six pair, opposite or nearly so, unequally ovate-lanceolate, entire, finely acuminate, smooth, from three to four inches long, by one and a half broad.—Panicles terminal, much crowded, long-
peduncled, trichotomous, the whole forming one large, very ramous globular panicle, which is shorter than the leaves.—Calyx four-toothed.—Petals four, elliptic, spreading.—Stamina four, much longer than the petals.—Germ ovate. Style short.—Capsule the size of a pea, drupaceous, one-celled, two-valved; the exterior tunic is marked with cells filled with a fragrant balsam.—Seed solitary, attached to the apex of the suture of the valves, round, smooth, polished, shining black. Integuments three; the exterior one thin and brittle, between it and the second is spread a quantity of dark orange-coloured pulpy matter, the second thick and hard, a perfect nut, and of a dull black-colour, the third or innermost membranaceous.—Perisperm in small quantity.—Embryo inverse. Cotyledons obovate. Radicle ovate, pointing to the umbilicus.

3. F. Rhetsa, R.

Arborescent, round. Leaflets from eight to sixteen pair, lanceolate, falcate, smooth, entire. Panicle terminal.

Telinn. Rhetsa-maun.

Rhetsa means a committee, or select number of men assembled to settle disputes, &c. and maun, means trees of the largest size. Under the shade of this tree the Hill people assemble to examine, agitate, and determine their matters of public concern, deliver discourses, &c.

It is a very large tree, a native of the mountainous parts of the Coast. Leaves deciduous during the cold season, they come out again, with the flowers about the beginning of the hot season.

Trunk straight. Bark corky, deeply cracked, light grey. Branches numerous, spreading to a great extent. Prickles very numerous, scattered over every part of the tree, small, very sharp, incurved; on the old wood they acquire a conical solid base. Leaves about the extremities of the branchlets, abruptly pinnate, from twelve to twenty inches long. Leaflets opposite, from eight to sixteen pairs, short-petioled, oblong or lanceolate, waved, attenuated to a narrow point, entire, smooth, about five or six inches long, and two broad, all near-
ly equal in size, with nerves which divide them unequally, the exterior division being twice as broad as the interior.—Petiols round, smooth, a little channelled.—Stipules none.—Panicles terminal, and from the exterior arils, frequently cross-armed, particularly the extreme ramifications.—Peduncles and Pedicels smooth, sometimes compressed.—Bractes minute, falling.—Flowers very minute, yellow. —Calyx four-leaved.—Filaments shorter than the petals.—Style thick, length of the filaments. Stigma tapering.—Capsule round, size of a pea, dry, one-celled, two-valved; seed one, round, glossy black.

Obs. The unripe capsules are like small berries, they are gratefully aromatic, and taste like the skin of a fresh orange. The ripe seeds taste exactly like black-pepper, but weaker; from this circumstance I conceive this may be F. Piperita, yet I have always found the leaflets entire. The bark, I mean the inner laminæ, is also-acrid, with a mixture of bitter.

4. F. nitida, Roxb.

Shrubby. Branchlets, petiols and ribs armed. Leaflets two or three pairs, with a terminal odd one, oblong, lucid, remotely gland-crenate, apex rather long and emarginate. Racemes axillary.

Tchenm-tsew of the Chinese.

Introduced from Canton into the Botanic Garden by Mr. W. Kerr in 1812, and in January of the following year one of the plants blossomed abundantly.

The flowers as in the other species, but the pistillum is three or four-lobed, each to be appearing to end in a recurved style with a two-lobed stigma. The shrub, therefore, approaches nearer than any of the preceding species to Zanthoxylon.

Additional Remarks.

The shrubs have continued to blossom yearly, without producing any fruit. Branches long and slender, rambling over the nearest bushes, covered with shining brown bark; the younger ones pubescent. Aculei numerous, compressed, purple, recurved. Leaves
petioled, from six to twelve inches long, with pointed, prickly petals. Leaflets almost sessile, lanceolate-oblong, rounded and nearly equal at the base, apex tapering into a narrow acumen, about three inches long, with undulated margins, entire or notched with remote glandular indentures, especially while young, shining above, with numerous sub marginal, glandular, transparent dots; pale beneath, with a more or less prickly rib.—Racemes from one to three, fascicled in the exterior axils, a couple of inches long, erect, cylindric, on short villous round peduncles, covered with numerous white, fragrant, short-pedicelled flowers. Calyx flat, with very small ovate acute segments. Petals lanceolate, slightly concave, four times longer than the calyx, ending in a short point. Stamina twice the length of the petals, spreading.—Pistilla? four, ovate, small, ending in a short recurved style; stigma acute, marked above with a short tooth.

It appears to be the same as Loureiro's Fagara piperita, Flor. Cochinch. ed. Willd. i. 101, differing from Linneus's plant, as has been justly remarked in Roem. and Schult. Syst. Veg. iii. 296. It has also some resemblance to Tetradium, Lour. l. cit. 115. which Sir J. E. Smith considers as related to Fagara.—I have not been able to discover any ovula in the four bodies in the centre of the flower, which therefore may be considered as nectaries or abortive pistils, a supposition which is much strengthened by the circumstance that none of the shrubs in the garden have produced any fruit. This dioicous species ought therefore to be referred to Zanthoxylon as suggested by Dr. Roxburgh.—All its younger parts and leaves have a slightly pungent aromatic taste and smell.—N. W.

**LUDWIGIA.** Schreb. Gen. N. 204.


1. _L. parviiflora, R._

A small, ramous plant, a native of Bengal; flowering time the rainy season; seed ripe about October.

*Root* ramous, annual. *Stem* short, round, in young plants erect. *Branches* many, diffuse, slightly striated; the whole plant of a dark-ferruginous colour. *Leaves* alternate, short-petioled, lanceolate, entire, smooth, length from one to three inches. *Flowers* axillary, small, sessile. The leaves about the ends of the branches are so small, and crowded, as to make the extremities of the branchlets appear like leafy spikes. *Bractes*, a most minute one on each side of the insertion of each flower. *Calyx*, the divisions taper to most acute points, and equal the oblong petals. *Capsule* beneath, linear, obsoletely four-sided, smooth, four-valved. *Seeds* coloured, numerous, very small.

2. *L. prostrata*, R.

*Lower branches* creeping. *Leaves* alternate, petioled, lanceolar. *Flowers* axillary, sessile. *Capsules* filiform, with one row of seeds in each cell, attached immediately to the axis.

A native of Pegu, from thence introduced into this garden, where it blossoms and ripens its seed during the rainy season.

*Root* annual. *Stem* leaning much to one side, from one to two feet long. *Branches* numerous, the lower ones longer than the stem, spreading flat on the ground and striking root, smooth, striated, generally coloured with red. *Leaves* alternate, short-petioled, lanceolar, entire, smooth, size various, the largest from three to five inches long. *Flowers* axillary, sessile, from one to several on the same axis, very small much elevated on the four-sided peduncle-like germ. *Petas* lanceolar, longer than the calyx, yellow. *Filaments* four, length of the style. *Anthers* roundish, two-lobed, always after expansion found adhering to the large clammy stigma. *Capsules* slender, sub-filiform, more or less curved, smooth, four-cornered; angles rounded, sides grooved; four-celled. *Seeds* oval, minute, pink-coloured, disposed in one vertical row and attached immediately to the axis, without the intervention of any thing like a receptacle.
Oldenlandia.

Obs. This species is so much like my L. parvislora as not to be distinguished, except by attending to the germs, or capsule. In that plant it is shorter, thicker, always straight, and with numerous crowded seeds in each cell, attached to a projecting receptacle, as in L. alternifolia, Gært. Carp. i. 158 t 31. In this there is only one vertical row in each cell attached to the axis.


Calyx four-parted, permanent. Corol one-petalled, four-parted. Capsule inferior, two-celled, many-seeded. Receptacle free, fastened to the partition by the base only.

Obs. Would it not be better to omit this Gærtnerian part of the generic character, and unite our Indian species of Hedyotis to Oldenlandia? For except the attachment of their respective receptacles I can find no other mark by which the two genera are to be distinguished, and surely this is too minute and inconspicuous for the travelling Botanist to be able at all times to discover.


Much cultivated on the light sandy lands near the shores of Coromandel; where the root is employed to dye the best, and most durable red on cotton cloth.

2. O. alata, König's Mss.

Erect, four-sided. Leaves opposite, sub-sessile, elliptic, smooth. Panicles terminal; corol campanulate; mouth shut with hairs. Capsules turbinate.

Beng. Gundha-baduli.


* Hedyotis, Lam.—N. W.
Oldenlandia.  TETRANDRIA MONOGYNIA.

Annual, a native of the borders of rice lands and moist places; appears and flowers during the rainy season.

Stems several, erect, with few branches, four-sided, smooth, about a foot or eighteen inches high. — Leaves opposite, sub-sessile, oblong, smooth, entire, succulent, about two inches long. — Stipules, connecting membrane broad, toothed. — Umbels terminal, few-flowered. — Flowers white, small. Pedicels four-sided. — Capsules turbinate, smooth; receptacle clubbed, free, affixed by the small end into the partition near its base.

3. O. paniculata, Burm. Fl. Ind. 38. t. 15. f. 1.

Biennial, creeping. Leaves ovate-lanceolate. Pedicels three-flowered, or three times that number.

Introduced into the Botanic Garden from the Moluccas, in 1798, where it blossoms the greatest part of the year.

Stems none; but numerous diffuse, four-sided, smooth, ramous branches, spread close on the ground in every direction, and strike root from their joints, their general length about twelve inches. — Leaves opposite, sessile, ovate-lanceolate, smooth, and of a firm thick texture, the largest about an inch long. Connecting membrane with subulate divisions. Pedicels axillary, and terminal, longer than the leaves, smooth, four-sided, with generally three, small, white flowers, on pedicels of unequal length. — Corol; Tube gibbous, mouth shut with fine white hairs. — Stamens, in the belly of the tube below the hairs which shut its mouth. — Stamina entire.

4. O. crystallina, R.

Annual, very ramous. Pedicels solitary, shorter than the leaves, generally two-flowered. Leaves sessile, lanceolate, oblong, underneath marked with crystalline dots.

Beng. Punki.


A small, very ramous, diffuse, annual plant, a native of Bengal; appearing in the rainy season.
TETRANDRIA MONOGYNIA. Oldenlandia.

Stem none; branches numerous, diffuse, about six inches long, somewhat four-sided.—Leaves opposite, approximate, sessile, oblong, and lanceolate-oblong, smooth and marked with beautiful crystalline specks underneath, length about half or three quarters of an inch.—Peduncles, from within the stipulary sheaths, about half the length of the leaves, generally bearing two minute, white flowers on their proper pedicels.—Coroll, mouth of the tube hairy.—Capsules much compressed laterally.

Obs. It is readily distinguished from O. biflora by the general habit of the plant, this being short, diffuse, very ramous, with oblong or lanceolate-oblong leaves, while the other is slender with long straggling branches, and linear-lanceolate leaves. I place less confidence in the crystalline appearance of the underside of the leaves, as soil, &c. may remove it.

5. O. diffusa, R.
Annual, round, flaccid. Leaves sessile, linear-lanceolate, acute. Peduncles axillary, solitary, one-flowered; capsules sub-globular, smooth.

Hedyotis diffusa, Linn. Sp. Pl. cd. Willd. i. 566.
Round growing in boxes, which were sent with Nutmeg plants to the Botanic Garden at Calcutta from Banda.

Root ramous, annual.—Stems short, flaccid, spreading, round, most slightly scabrous, from six to twelve inches long.—Leaves opposite, sessile, linear-lanceolate, acute, smooth on both sides.—Connecting membrane, from entire to many-cleft.—Peduncles axillary, solitary, four times shorter than the leaves, one-flowered.—Flowers pretty large, pure white, smooth.—Stigma deeply two-cleft.—Capsule roundish, smooth.

Obs. The Linnean definition of O. capensis would lead one to imagine this to be that plant; but the observation simillima O. repenti, at capsula glabra, in the Suppl. Plant. p. 127, convinces me it
cannot be so; as this plant has not the smallest resemblance to *Oldenlandia repens*, now *Dentella.*


*Peduncles* solitary, two-flowered, shorter than the narrow lance-oliar sessile leaves.

Sans. लूकरपुर्पाटी, Kshetra-purpurea.

Annual; native of most parts of India. A small weak straggling delicate plant, appearing in the rainy season.

7. *O. herbacea*, R.


Telting. Vieri-nella-venoo.

A native of road sides under thin bushes, &c. Flowering time the rainy season.

*Stem* erect, four-sided, smooth, short, ramous. *Branches* always two-cleft; from six to twenty-four inches high.—*Leaves* opposite, sessile, linear-lanceolate, spreading, smooth.—*Stipules*, connecting membrane, finely-toothed.—*Peduncles* axillary, always two from the small axils, with a branchlet, or the rudiments of one between them, round, nearly as long as the leaves, one-flowered.—*Capsule* smooth.

8. *O. ramosa*, R.

Diffuse, ramous. *Leaves* narrow-lanceolate. *Peduncles* axillary, with from one to several flowers.

A native of Pegu, from thence introduced into this Garden by Mr. F. Carey, where it blossoms and ripens its seed during the rains, and the early part of the cool season.

*Conf.* II. *capersis* in *Rees’s Cyclopedia*. The reader is also referred to the history of the genus *Hedyotis* in that work for an elucidation of several of the above species of *Oldenlandia*.—N. W.
Root annual.—The Stems and numerous branches diffuse, somewhat four-sided, pretty smooth, spreading to the extent of one or two feet.—Leaves opposite, narrow-lanceolar, smooth, entire, whiter underneath; length about an inch.—Connecting membrane many-toothed.—Peduncles axillary, from one to many-flowered.—Flowers small, white.—Calyx, the divisions conical.—Corol with gibbous tube, mouth bearded.—Filaments short. Anthers within the tube, blue.—Germ, &c. as in the genus.


Corol four-petalled, or none; when present inserted in the plaited mouth of the calyx which is from four to eight-toothed. Capsule superior, from one to four-celled; seeds numerous.

1. *A. rotundifolia*, Buch.


Plants sent from Lukshmee-poora and Malda, where they are indigenous, flowered in the Botanic Garden during the cold season of 1797.*

Stems several, creeping, with ascending apices, round, smooth, and succulent; whole plant spreading from six to eight inches.—Leaves opposite, sub-sessile, orbicular, entire, smooth, and succulent.—Spikes terminal and axillary, the terminal often compound.—Bractes opposite; exterior cordate; interior lanceolate, and often very small, one-flowered.—Flowers numerous, small, pink-coloured.—Calyx four-parted, divisions obtuse.—Corol of four, large, oval, sessile, pink-coloured withering petals.—Capsule hid in the bottom of the remaining calyx, and corol, four-lobed.—Seeds numerous.


* I have had this elegant plant from Mr. Wm. Jack, who gathered it at the Turmaye, where it is called *Thumultrea* and *Mirkosa*; also from Nepals in the vicinity of Nathmanda, from the Hon. E. Gardner.—N. W.
Ammannia.  

Annual, erect, brachiate, four-sided. *Leaves sessile, narrow-sagittate; peduncles from two to three-flowered, flowers octandrous. Capsule four-celled.*

*Ammannia octandra, Suppl. Plant. p. 127.*

Annual, native of moist places; appearing in the rainy and cold seasons.

*Root fibrous. Stem straight, four-sided, smooth; from one to three feet high. Branches numerous, cross-armed, and like the stem. Leaves opposite, sessile, linearly-sagittate, smooth, margins a little revolute, from one to two inches long, and about a quarter of an inch broad. Peduncles axillary, very short, from two to three-flowered. Flowers small, colour a beautiful bright red. Bracteae minute. Calyx and corol as in the genus. Filaments as long as the corol. Anthers incumbent.*

3. *A. multiflora.*

Erect, four-sided, ramous branches simple. *Leaves sub-sagittate, stem-clasping. Peduncles from three to seven-flowered; petals large; capsule one-celled.*

A native of open lands about Calcutta, annual, from six to twelve inches in height, appearing in the wet and cold seasons.

*Stem straight, four-sided; angles sharp; sides convex. Branches cross-armed. Leaves opposite, decussate, horizontal, sessile, linear with enlarged cordate, stem-clasping base, size very various. Peduncles axillary, almost always solitary, about as long as the smaller leaves, generally three-flowered, though in the luxuriant plants there are often two or three, with one between, the lateral flowers have pretty large long pedicels. Calyx as in the family. Petals large, roundish, red. Capsule one-celled, one-valved, receptacle globular, affixed at the base only.*

4. *A. vescicatoria, R.*

Beng. Daud-maree.
Teling. Aghundra-pakoo.

An annual species; found in wet cultivated ground during the rainy and cold seasons.

Stem erect, from six to thirty-six inches high, obsoletely four-sided, very branchy. Branches, below opposite, decussated; above frequently alternate.—Leaves opposite, sessile, lanced, smooth; floral leaves many times smaller than those below.—Corol none.—Pericarp one-celled, one-valved, half covered with the calyx.

Obs. It differs from A. baccifer a in having a capsule of one cell, in being evalvular, and in the leaves being lanced, in that species they are linear-cordate at the base, and embrace the stalk.

This plant has a strong muriatic smell, but not disagreeable. Its leaves are exceedingly acrid; they are used universally by the natives to raise blisters in rheumatic pains, fevers, &c. The fresh leaves bruised and applied to the part intended to be blistered perform their office in the course of half an hour or a little more, and most efficaciously.

5. A. pentandra, R.

In the lower part of the plant creeping and simple, erect portion ramous; four-sided; branches simple. Leaves sessile, lanceolate. Flowers axillary, solitary, sessile, pentandrous. Capsule one-celled.

A native of moist places; flowering in the rainy and cold seasons. Stems creeping near the base, above erect; the erect part is branchy, four-sided, smooth, and coloured; from six to eight inches high.—Leaves opposite, sessile, lanceolate, smooth, entire.—Flowers axillary, solitary, sessile.—Bractes two, lanceolate, pressing the calyx laterally.—Calyx ten-toothed, alternately smaller and inflected.—Corol, petals five, very minute.—Stamens five.

6. A. nana, R.

Base creeping, erect portion ramous; branches compound. Leaves wedge-shaped, sessile. Flowers solitary. Capsule one-celled.
**Trapa.**

A native of such places as the last described, it is considerably smaller than that species, but more branchy.

*Stems as in A. pentandra.*—*Leaves* opposite, sessile, wedge-formed, smooth, entire.—*Flowers* axillary, solitary, sessile.

**TRAPA.** Schreb. Gen. N. 208.

*Calyx* four-parted, or four-leaved.  *Corol* four-petaled.  *Germ* inferior, two-celled; cells from one to two-seeded, attachment of the ovulum superior.  *Nut* turbinate, armed with two or four horns, (which were the leaflets of the calyx.) *Embryo* simple, lodged in the apex of the ample perisperm.

1. **T. bicornis.**

*Nuts* with two, opposite, recurved, very obtuse horns.

*Chin. Lin-ko.*

A native of China, where it is carefully cultivated in lakes, ponds and other receptacles of water.

2. **T. bispinosa, R.**

*Nut* with two opposite, straight, barbed, spinous horns.  *Nectary* cup-shaped, curled.

*Shringata, Asiat. Res. vol. iii. p. 253.*

*Sans. श्रंगट, Sringata, रतनबल, Julukantaka.*


*Panover-tsjerana, Reed. Hort. Mal. vol. xi. p. 64. t. 33.* (evidently intended for this plant, and not **T. natans**.)

Found floating on sweet, standing water in Bengal and many other parts of India.  Flowering time the rainy season.

*Root* consisting of numerous, simple, capillary fibres which issuing from the under margins of the cicatrices of the fallen leaves —*Stems* stoloniferous, often several feet long, floating.—*Leaves* petioled, alternate, approximate round the apex of the shoots, of a rhomboidal-reniform shape; with the posterior margins entire, and the anterior ones serrate-dentate, smooth above, of a deep green, villous and pur...
ple underneath; from three to four inches broad, and nearly as long.

—Petiolo\es villous, lengthening with the age of the leaves, towards the apex much smaller, this part contains many inflated vesicles, which render the whole plant very buoyant.—Stipules two pair, the superior ones simple, semi-lanceolate, and caducous, the inferior pair at first simple and filiform; but becoming ramous by age, permanent. —Peda\cles axillary, solitary, shorter than the petioles, one-flowered, incurved until the blossoms begin to decay, after which they bend down under the surface of the water, where the fruit grows, and comes to maturity.—Flowers pure white, expanding above the surface of the water late in the afternoon.—Calyx four-leaved, in opposite pairs, leaflets lanceolate, villous, one of the pairs permanent.—Corol contracted; petals four; contracted into a tube at the base by the firmness of the calyx, above much broader, and expanding; margins much curled.—Nectary cup-shaped, on the top of the germ, round the swelled base of the style, eight-grooved, with the margins minutely lacerate, and curled.—Filaments four, incurved. Anthers oval, incumbent.—Germ inferior, obconical, two-celled, with one ovulum in each attached to the top of the partition.—Nut inferior, of a turbinate triangular shape, a hard ligneous texture, and a blackish-brown colour, armed with two, strong, straight, conic, barbed spines, from the upper angles; elegantly embossed, one-celled, not opening, but having a perforation in the top for the Embryo to pass, which is guarded with a circle of stiff converging bristles from its margin, forming a conical roof over the aperture. Seed single, conform to the nut. Integument single, of a slightly brown colour, thin, but rather tough, and adhering firmly to the perisperm.—Perisperm conform to the seed, white, and of a firm cartilaginous texture. Embryo in the apex of the perisperm.

Obs. This is evidently a species perfectly distinct from nutans, and bicortis. From the former it differs in having only two horns, and from the latter in the horns being straight, very sharp, and barbed.

The nuts are sold in the markets when in season, their kernels being much esteemed by the Hindoos.
3. T. quadrispinosa, R.

Nut with two opposite pairs of straight, acute, spinous horns.

A native of Silhet, where it is found floating on lakes, and pools of fresh water, its kernels are also esculent.


Spathe sub-cylindric. Spadix covered with florets. Calyx none, or four-petalled; corol none. Stamina indefinite. Germ one-celled, from one to three-seeded; attachment of the ovula inferior (in heterophylla superior.) Berry one-celled, rarely many-seeded. Embryo unicinate, without perisperm.


Parasitic, rooting. Petioles as broad as the lanceolat leaves. Flow-
ers axillary; spadix globular, reflex.


Adpendix duplo folio, Rumph. amb. v. 490. t. 184. f. 2.

A native of Chittagong, Malabar, Amboyna, and other eastern Islands. Flowering time in the former country, the month of April.

Stems as thick as a slender ratan, often ramous, rooting upon trees in the most shady forests, round, smooth, and less succulent than any other species which I have yet met with, except P. gracilis.—Leaves alternate, petioled, lanceolate, entire, smooth; length from two to four inches, breadth about an inch.—Petioles most amply winged, so as to be nearly as broad as the leaves themselves, almost as long, equally entire, smooth and marked with similar veins.

—Peduncles axillary, solitary, clothed with many small, ovate, bra-
tiform scales up to the spathe, where they are completely recurved.

—Spathe boat-shaped, erect.—Spadix globular, reflex.—Calyx, or corol, some roundish scales mixed amongst the germs, and of nearly the same length, the exact number to each germ not ascertained.—

Stamina, about four obovate scales to each germ, with two pollini-
ferous pits on the inside under the retuse apex.—Germs many, ob-
long, one-celled, with one, two, or three ovula attached to the bot-
torn of the cell, and immersed in a clear gelatinous liquid.—Style none. *Stigma,* an umblicated elevation on the apex of each germ. — *Berries* oblong, size of a French bean, red, pulpy, one-seeded.—Seed solitary, or two, conform to the berry.

2. *P. officinalis,* R.


Beng. Guj-pippul.

A native of Bengal, and common in some parts of the Midnapore district, where it is cultivated for its fruit, which, cut into transverse pieces and dried, is an article of some importance in the Hindoo *materia medica,* called Guj-pippul, and sold by the druggists under that name. Flowering time the rainy season; seed ripe in January.

*Stem* perennial, creeping up to the top of large trees, and like the *ivy,* taking firm hold with its innumerable roots; about as thick as the little finger, smooth, except the cicatrices of the fallen leaves, and the roots from the side next the tree which supports it. — *Leaves* alternate, sub-bifarious, petioled, oblong-cordate, entire, filiform, pointed, smooth on both sides; from six to ten inches long, and from three to six broad. — *Petioles* sheathing, channelled, smooth, shorter than the leaves. — *Peduncles* terminal, solitary, round, smooth, scarcely half the length of the petioles; when in flower erect, but often drooping, from the increasing weight of the fruit. *Spathe* sub-cylindric, opening a little on one side; when in flower, smooth on both sides; greenish without, and of a pale yellow colour within, apex filiform, and a little twisted; length about six inches. — *Spadix* sub-cylindric, obtuse, equalling the spathe; colour a pale greenish yellow, dotted with the dark-coloured stigmas of the numerous fruc-
tifications which every where cover it.—Perianth none.—Corol none.—Filaments; I conclude there are about eight to each germ, two on each face; but the want of both perianth and corol, renders it difficult to assign the exact number of stamens to each floret, they are very short, and seem inserted on the base of the germ. Anthers sub-sagitale, four-lobed. Germs numerous, parallelopiped, truncate, vertically attached to, and completely covering every part of the common cylindric receptacle, one-celled, with one seed attached in an oblique manner to the bottom of the cell. The substance of the germs is replete with rigid, sharp, vertical bristles, which are readily detached, and stick in the skin, causing pain and itching. The virtue of the drug may reside in these, as it does in the short stiff hairs of the legumes of *Carpopogon prurienus.* Style none. Stigma, a channel filled with gelatinous matter, running from the cell of the germ to the centre of the truncate apex, where it ends in a small slit, embraced by two darker-coloured, somewhat callous lips.—Pericarps (*capsulae circumscisae*), as numerous as the germs, and of the same form, only larger; a few only are fertile, of a soft fleshy texture, one-celled, one-valved; when the fruit is ripe they detach themselves from the receptacle, and drop off, leaving the seed behind still attached to it.—Seed single, ovate-cordate, somewhat two-lobed, covered at the base with a thin, red, succulent aril. Integuments two, exclusive of the aril, exterior pale yellow, polished, thin, hard, and elastic; inner membranaceous. Perisperm none. Embryo uncinate, white, very succulent. Radicle inferior, thickened, and in other respects exactly as in Gaertner's figures of *Potanageton natans,* vol. ii. p. 23. t. 84.

Obs. The plant described by Sir William Jones by the name of Guj-peeput, (see *Asiatic Researches,* vol. iv. p. 303.) is my *Tetranthera apetala.* He, however observes, that it was from a native gardener he obtained the Sanscrit name of his plant, but as he mentions that Valli means a creeper, he suspects in some degree, the accuracy of his information.
Chavica, or Chavya, mentioned under the same head is a new species of Piper.

3. P. Peepia, R.
Perennial, sub-parasitic, rooting on trees. Leaves long-petioled, oblong, acuminate. Flowers sub-terminal; florets apetalous, tetrandrous.

Peeplee of the Hindoos in the Silhet district, where the plant grows. Flowering time, April and May.

Stem rooting on trees, like the common Ivy of Europe, scarcely so thick as the little finger, round and smooth, somewhat contracted between the leaves.—Leaves petioled, alternate, oblong, entire, smooth on both sides, dagger-pointed; length from four to twelve inches.—Petioles as long as the leaves, channelled, smooth.—Peduncles sub-terminal, round, smooth; the base inserted in sheaths from three to four inches long.—Spathe sub-cylindric, opening on one side, smooth, acute; length of the spadix.—Spadix cylindric, obtuse, length of the inside of the spathe; colour pale yellow, every part completely covered with the fructification, without any proper perianth, or corolla.—Filaments about four to each germ, and about half its length. Anthers linear.—Germi numerous, of a square, wedge shape, truncate, the whole of their substance replete with small pellucid, sharp bristles, which readily enter the skin, and produce pain and itching.—Style none. Stigma sub-rotund.

4. P. gracili, R.*
Scaundent. Leaves lanceolate, entire, on short, round petioles above their sheaths. Spadix peduncled, cylindric, scarcely equalling its linguiform spathe.

A native of Amboyna; it has a great resemblance to Rumphius's Adpendix arborum, Hort. Amb. vol. v. t.181. f. 2.

* This name being pre-occupied by a species described in Rudge's excellent work, Plantae Gojanae may be changed to tenera.—N. W.
5. *P. gigantea, R.*


This is the stoutest of these parasitic Aroidae that I have met with. It is a native of Prince of Wales Island; from thence introduced into the Botanic Garden by Mr. W. Roxburgh. Flowering time in Bengal the close of the rains in October. It has not yet produced ripe seed there.

Stems perennial, creeping on the ground, or upon trees and plants; in a very thriving state, of six years growth, not more than three and four feet long, and about four inches in circumference, round, and strongly marked with the circular scars of the fallen leaves.—Leaves alternate, sub-bisarious, petioled, approximate, oblong, cordate, entire, smooth; length from one to two feet high, and about two-thirds thereof in breadth.—Petioles as long as the leaves, channelled, smooth, much enlarged at the base, and stem-clasping.—Peduncles axillary, solitary, very short.—Spathe sub-cylindric, short-pointed, opening a little on one side about the time that the anthers discharge their pollen, smooth on both sides, of a dirty dull purple colour, length about six inches.—Spadix cylindric, length of the spathe, obtuse, every part most closely covered with the sessile fructifications; colour a pale lively yellow, beautifully dotted with the dark linear stigmas.—Filaments about seven to each germ, short, broad, and thin. Anthers two-lobed.—Germes very numerous, parallelopiped, truncate, much flattened, vertically one-celled, with generally two ovula, obliquely attached to the bottom of the cell. Style none. Stigma a vertical, linear, grooved, dark-coloured projection on the middle of the truncate germ, as in the last species; the substance of the germ and spathe also abound in short stiff bristles, which readily enter the skin, causing pain and itching.—Calyx and Corol none.

6. *P. pertusa, R.*

Scandent, sub-parasitic, rooting on trees. Leaves cordate, perfo-

A very large perennial, sub-parasitical species, so much like Dracontium pertusum, that they may be readily taken for the same plant. It is a native of the mountainous parts of the Coast of Coromandel, running up, and over the highest trees, to which it adheres like Ivy by roots issuing from the joints.

Leaves alternate, petioled, cordate, smooth, generally perforated with linear oblong holes on one side, and on the other passing through the margins as in the pinnatifid leaves; their length from twelve to eighteen inches long. —Petioles nearly as long as the leaves, deeply channelled, wanting the stipule-like processes at the apex, which Miller's figure represents, in which particular this plant differs from that in the first instance. —Scape short. —Spathe gibbous, pointed, a little longer than the spadix, cylindric, obtuse, every where covered with the fructifications. —Corol none. —Filaments intermixed amongst the germs, (the number to each germ cannot be determined, but I think about four,) compressed; apex bilob. Anthers oval, two to each filament. —Pistils mixed with the membra- naceous filaments, four-sided, lobed. Style none. Stigma, a knob on the centre of the lobed germ.


Sub-parasitic, rooting on trees, the apices of the shoots clothed with fibres. Leaves pinnatifid. Flowers terminal.


Found in forests in the Malay countries, rooting up and running over trees of great size. It is readily distinguished from my decursiva, by the abundance of brown fibres which are found on the young shoots, and the lower part of the petioles.

8. P. decursiva, R.

Perennial, rooting on trees, smooth. Leaves sub-decursively pin-
TETRANDRIA MONOGYNIA.

Plots.

Guj-pippul is the vernacular name of this very large, powerful species, in the Silhet district, where it is indigenous, and blossoms during the hot season.

Stems as thick as a stout cane, rooting on, and ascending trees like the common Ivy; round, smooth, and rather contracted between the leaves.—Leaves approximate, alternate, petioled, pinnatifid, or completely pinnate; from two to six, or seven feet long, including the petioles; segments, or leaflets, linear-falcate, cuspidate, entire, smooth, sometimes from three to four-nerved or triple-nerved; length from six to eighteen inches, and two broad.—Petioles from six inches, to three feet long, round, smooth, stem-clasping, and the lower portion more deeply channelled.—Peduncles solitary, axillary or lateral, about six inches long, substantially thick, round, smooth, and replete with the same while bristly spicula that are found in the germ and seed vessels.—Spatha sub-cylindric, length of the peduncle.—Spadix cylindric, length of the spathe, completely covered with the innumerable fructifications.—Calyx none. Corol none, nor any thing like either.—Filaments about four to each germ, and nearly of their length. Anthers cordate, appearing beyond the germ.—Germus numerous, the most general form a four-sided wedge, apex truncate. Style, scarcely any. Stigma, an elevated vertically oblong opening.

9. P. heterophylla, R.

Caulescent, creeping, armed. Leaves from cordate-sagittate to pinnatifid. Spathe erect, spiral, many times longer than the short cylindric spadix. Florets tetrapetalous, tetrandrous.

Can it be Dracontiun spinosum, Flor. Zeyl. 328?

A native of Bengal, delighting in a rich, moist soil; it flowers, though rarely, during the cool season.

Root fibrous.—Stems and branches creeping, armed with short, sharp prickles.—Leaves until the plants are old, and begin to flower, simple-sagitate, and cordate-sagittate, afterwards pinnatifid, with
long lanceolate, acuminate segments, smooth above, nerve and larger veins armed on the under side; length from six to fourteen or sixteen inches.—*Petioles* completely armed; base sheathing; above round, generally shorter than the leaves.—*Scapes* axillary, solitary, one-flowered, length of the petioles, and armed like them.—*Spathe* sub-cylindrical, acute, spirally twisted above the spadix; colour a dark dull reddish purple; length from eight to twelve inches long, and as thick as the little finger, opening at the base only where the spadix is lodged while the pollen is discharging, after which it shuts, as before that period.—*Spadix* cylindric, obtuse, completely covered with hermaphrodite florets; length little more than one inch.—*Calyx* none.—*Petals* four, obovate, concave.—*Filaments* four, broad, length of the petals. *Anthers* two-lobed.—*Germ* oblong, one-celled, containing one *ovula*, attached to the top of the cell. *Style* none. *Stigma* glandular, flat.

10. *P. Lasia, R.*


*Telig.* *Moda-sari.*

*Beng.* *Kanta-kutchoo.*

A native of boggy, or wet places among the Circar mountain.

*Leaves* radical, petioled, pinnatifid; *segments* lanceolate, smooth shining, the nerves on the under side armed with prickles; length about two feet, breadth about a foot and half.—*Petioles* erect, from two to four feet long, round, every were thickly armed with sharp prickles.—*Scape* the length of the petioles, round, and equally covered with prickles.—*Spathe* very long, erect, below gaping; above the spadix twisted, leathery, dull red colour.—*Spadix* about one-sixth of the length of the spathe, cylindric, every where covered with the fruifications.—*Corol,* stamens, and *pistil* as in the genus.—*Berries,* (or rather capsules,) wedge-formed, somewhat four-sided, murexed, one-seeded.—*Seed* two-lobed.
ELÆAGNUS. Schreb. Gen. 1730.*

Calyx none. Corol, a three-lobed, unilateral antheriferous petal on the outside of the pistillum. Germ semi-superum one-seeded; attachment of the ovulum superior. Drupe one-seeded.


Tcheu-lan, of the Chinese.

From Canton it has been received into the Botanic Garden at Calcutta, where it grows freely to be a small upright shrub, with many straight sub-simple smooth branches, of about two feet in height, with oblong opposite serrulate smooth leaves. Flowering time in Bengal the rainy season. It has not yet ripened its seeds there.

1. E. triflora, R. 

Shrubby, scandent, armed. Leaves oblong, obtuse, scaly. Flowers axillary, three-fold, peduncled.


A native of Sumatra, from thence introduced into the Botanic Garden in 1804, where it blossoms in December. Seeds ripen three or four months afterwards.

Stems and branches of considerable size, and great extent, climbing; bark of the ligneous parts a beautiful dark purplish colour, and smooth. The short lateral branchlets which issue from the young climbing shoots are more or less recurvate and answer the end of tendrils; when old, they become stout thorns. Bark of the tender

*Nigrina, Thunb. Creodus, Loureir.—N. W.
part most beautifully clothed with numerous ferruginous, stellate scales.—Leaves alternate, short-petioled, oblong, entire, obtuse, above smooth; underneath ornamented with numerous stellate, ferruginous and silver-coloured scales; from two to three inches long, and from one to two broad.—Stipules none.—Flowers axillary, threefold, small, white.—Peduncles longer than the corols, one-flowered.—Calyx with a short, four-sided tube; and border of four cordinate segments, on the outside a little scaly; on the inside smooth.—Filaments none. Anthers four, sessile in the mouth of the tube of the calyx.—Germ superior, oblong, embraced by the contracted bottom of the calyx, one-celled, one-seeded. Style as long as the calyx.—Stigma oblong, glandular, oblique.—Berry oblong, succulent, when ripe pale orange colour, pulp soft, of rather a pleasant astringent taste, and not acid like E. conferta; one-seeded.—Seed sub-clavate. Integuments two; exterior eight-ribbed, soft, and lined with much wool; inner membranaceous.—Perisperm none.—Embryo erect. Cotyledons conform to the seed, amygdaline. Plumula two-lobed. Radicle oval, inferior.

2. E. conferta, R.


Beng. Guara.

This is a very large and ramous, scandent shrub; a native of the mountains near Silhet, in Bengal.* Flowering time, the cold season. Seed ripe in March.

Young shoots covered with innumerable rust-coloured scales.—Leaves alternate, short-petioled, generally erect, oblong-pointed, entire, with innumerable small silver coloured scales, particularly underneath, which gives them a bright colour; from three to four inches long, and from one and half to two broad.—Petioles short, scaly.

* Also Nepala, Sirinagur, Sirmore.—N. W.
Peduncles axillary, crowded, short.—Flowers small, straw-coloured. Calyx; tube somewhat gibbous, four-sided; outside scaly; border of four cordate segments; its mouth marked on the inside with four curved lines, on their pointed junctures the filaments sit.—Style hairy.—Drupes oblong, succulent, when ripe red.

Obs. The calyx of my plant cannot be said to be placed on the germ; it has, as it were a lower tube which envelopes the germ only, this part grows with the fruit, and finally becomes the pulpy part thereof as in the Nyctagineae of Jussieu.

3. E. arborea, R.

A large tree, native of the Garow Hills and there called Sheu-Shong. Flowering time December. The fruit shaped like an olive, but much larger; it is eaten by the natives when ripe, which it is generally in March and April.


Calyx large, gibbous, four-toothed. Corol none. Nectary four-petalled, embracing the germ, and of the same length. Berry superior, one-seeded.

Shrubby, scandent. Leaves alternate. Spikes axillary.

Tsjeru caniram, ibid. p. 3. t. 2. appears to be the same plant.

A large woody climbing shrub; a native of the Circar mountains. Leaves alternate, two-faced, short-petioled, broad-lanceolate, smooth, entire, about three inches long, and one broad.—Spikes axil-
lary, generally single, short, every were covered with flowers.—Bractes solitary, small, oval, one-flowered.—Flowers small, sessile, yellow. —Calyx inferior, one-leaved, gibbous; mouth four-toothed.—Corol none, except the calyx, or nectary be accounted one.—Nectary four-leaved; leaflets cordate, acute, half the length of the calyx, inserted round the base of the germ and embracing it.—Filaments four, inserted into the base of the calyx, and rather shorter than it. Authors, ovula within the calyx.—Berry oblong, smooth, red, juicy, size of a pea, one-celled.—Seed single, shaped like the berry.


Leaves oblong.
Sandalum album, Rumph. Amb. ii. 42. t. 11.
Santalum verum, Linn. Mat. Med. 102.
Sans. गुड़सार, गुन्धसार, गुलबसार, Muluyuju, संत्रेक, Bhudrshree, चुंबन, Chanduna.
Beng. Chundun.
Pers. Sundul-safed.
Sandal-wood, Buchanan's Journey i. 186, and 202. ii. 117, 192, and 536. iii. 192.

A native of the mountainous parts of the Coast of Malabar. That of Timor, and the neighbouring Islands is most probably the same species. In the Botanic Garden near Calcutta, the trees reared from seeds brought from the former country, thrive luxuriantly, and produce flowers and ripe seed nearly the whole year round.

Trunk in trees of twelve years growth in the Botanic Garden, only a few feet high, when they divide into branches; and there from two
and a half to three feet in circumference. Bark brownish, and scabrous, with longitudinal fissures. Branches numerous, dividing much, spreading, and rising in every direction, forming nearly a spherical head. Young shoots round and smooth; extreme height of our largest twelve or thirteen year-old trees, about twenty-five feet.—Leaves opposite, petiolated, oblong, generally obtuse, smooth, entire, glaucous underneath: length from one and a half to three inches.—Petioles scarcely one-fourth the length of the leaves, smooth.—Stipules none. Thyrsi axillary and terminal, much shorter than the leaves. Pedicels opposite, the lower pair of each thyrsus generally three-flowered.—Flowers numerous, small, when they first expand straw-coloured, changing to a deep ferruginous purple, inodorous, as are all the exterior parts of the growing plant, even when bruised.—Calyx one-leaved, campanulate; border four-parted; segments ovate, smooth, base of the bell only permanent.—Coroll none, except the calyx, or nectarial glands are so called.—Nectar of four, roundish, sessile, thick, fleshy glands, on the mouth of the bell of the calyx, alternate with the segments of its border, and when the flower first expands, the most coloured part, entire. In Sirium (now Santalum) myrtifolium, they are lobate.—Filaments four, alternate with the nectarial scales, and of the same length, smooth, but behind each there rises a tuft of white hairs from the disk of the segments of the calyx, perfectly distinct from the stamina, but of the same length, the ends of these long, white, woolly hairs adhere to the back of the small, two-lobed anthers.—Germ semi-supercum, one-celled, containing one conical seed, attached to the bottom of the cell. Style, length of the tube of the calyx.—Stigma three-nerved, four-lobed. Berry pyrenous, round, smooth, when ripe black, and succulent, size of a cherry, and crowned with the remaining calyx, one-celled.—Nut solitary, spherical; three small, equidistant elevations from the apex run a little way down the sides.—Seed conform to the nut. Integument single, soft, white, spungy, lining the nut, and adhering to it and the seed also.—Perisperm conform to the seed, white, amygdaline.—Embryo inverse, subulate, nearly as long as the vertical diameter of.
the perisperm. **Cotyledons** two, unequal, linear-lanceolate. **Plumula** minute, semilunate. **Radicle** tapering, superior.

**Obs.** The descriptions and original figures of the following species, *Sirium myrtifolium*, Corom. Plants, vol. i. t. 2. were taken from the plants which grow wild, on the mountains north of the Rajamundri Circar, on the coast of Coromandel, where the trees are but of a small size scarcely more than a large shrub, or bush; with lanceolate leaves; and the wood of little value. It is now nearly twenty years since that description, and the drawings were made, and I have reasons to think the tree which produces the sandal wood of Malabar,* and Timor, to be different, and having had an opportunity of cultivating the former, viz. that of the Malabar mountains in the Botanic Garden for these thirteen years past, I do not hesitate to say, that the Circar tree it is at least a strongly marked variety of the Malabar sort. For that reason I have thought it advisable to give the foregoing full description, of the true **sandal wood**, which I hope will tend to clear up the botanical history of this celebrated tree, and its associate *Sirium myrtifolium*. They evidently belong to one genus, to which I have thought it necessary to assign a new essential character, and whether I consider them to be distinct species of that genus, or varieties of one species, must be of very little consequence. For my own part I think it nearer the truth to consider them distinct species. I therefore call the narrow-leaved one *Santalum myrtifolium.*

The nature and history of the wood, white and yellow Saunders, or **Sandal** are now too well known to require any thing in addition from me.

2. **S. myrtifolium**, R.

*Leaves* opposite, lanceolate.


A native of the Circar mountains, where it is but of a small size, and the wood of little or no value.

* I include however the other Islands thereabout, because the leaves of our tree grow particularly well with Rumphius's figures above quoted.
GYROCARPUS. Jacq. Gart.

Calyx superior, four-leaved, unequal. Coroll none. Nectary of four clavate glands, alternate with the stamens. Berry dry, one-seeded, ending in two long wings. Embryo erect, spirally rolled up; no perisperm.


Polygamous. Panicles dichotomous.


Teling. Tanukoo.

Grows to be a very large tree, is chiefly a native of the mountainous parts of the coast of Coromandel. Leaves deciduous about the end of the wet season. Flowers during the cold season when the trees are naked; the leaves come out soon after.

Trunk generally erect. Bark smooth, greenish, ash-coloured. Branches thin, irregularly spreading in every direction. Leaves approximated, about the extremities of the branchlets petioled, broadcordate, three-nerved, often slightly lobed, above smooth, below downy, with two pits on the upper side of the base; length and...
breadth various, but in general about five or six inches each way.—
Petioles round, downy, three inches long.—Panicles terminal, um-
bel-like; divisions two-forked.—Flowers very small, yellow.

_Hermaphrodite_ Flowers solitary, sessile in the divisions of
the panicle.—Calyx superior, four-leaved; leaflets unequal; exterior
pair small, oval, bractiform, caduceous; interior pair large, wedge-
shaped, three-toothed, permanent, increasing in size with the peric-
carp into two long, membranaceous wings.—Corol none.—Nectary
consisting of four clavate, yellow glands.—Filaments four, longer
than the calyx, inserted alternately with the nectarial glands into a
perforated receptacle. Anthers quadrangular, opening on each side
with an oval lid.—Germ inferior, ovate. Style none. Stigma small,
immersed in the perforation of the receptacle of the filament and
nectarial glands.—Capsule globular, wrinkled, one-celled, one-valved,
not opening spontaneously; size of a cherry, ending in two long, ob-
tuse, lanceolate, membranaceous wings.—Seed one.

Obs. The wood of this tree which is white and very light, is em-
ployed to make _Catamarans_ (floats), when to be had, in preference
to any other.

**DIGYNIA.**


_Calyx_ four or five-leaved or parted. Corol one-petalled. Germ
two-celled, one or two-seeded, attachment inferior. _Capsules_ supe-
rior, two-celled, circumcised. _Embryo_ spiral, rolled round the peris-
perm, with an inferior radicle.


Parasitical; flowers racemedit, pentandrous. _Scales_ of the nectary
bearded. _Capsules_ four-seeded.

_Beng._ Huldi algusi-luta.
_Teling._ Sitama-poorgonooloo.

This plant is parasitical, appearing on any bush in the cold season.
Cuscuta.

TETRANDRIA DIGYNIA.

Stems or branches filiform, succulent, twining, very ramous, leafless, smooth, yellow.—Racemes numerous.—Flowers white, short pedicelled.—Calyx five-leaved; leaflets cordate, permanent.—Corol; tube cylindric; mouth five-parted; division reflexed.—Nectary of five scales, which surround the germ, and are inserted into the bottom of the tube.—Filaments five, very short. Anthers oval, appearing half above the mouth of the tube.—Style scarcely any. Stigma two, large, fleshy, expanding, pointed.

2. C. aggregata, R.

Head round, sessile, composed of ten or twelve perfectly sessile, aggregate, pentandrous flowers.

Accidentally introduced into the Botanic Garden amongst Flax seed from Bagdad. When the Flax plants were a few inches high, this little delicate, leafless, filiform, round, yellow parasite began to make its appearance, adhering in such quantities to their stems and leaves, as to destroy whole beds in a very short space of time.

3. C. sulcata, R.

Peduncles in fascicles, each bearing a few pentandrous, sessile flowers, with a fleshy furrowed calyx. Capsule two-seeded, surrounded by the deeply grooved calyx.

A native of Bengal, appears adhering to Amaranthus oleraceus, and some other plants, during the cool season. Is a plant of small size, of a pale yellow colour, throughout perfectly smooth.

Peduncles generally collected in small, remote fascicles of two three, four, or more, each supporting from two to four, small, sessile, white flowers.—Bractes ovate.—Calyx five-toothed, permanent, becoming fleshy, and deeply ribbed, with from six to ten ribs, length of the tube of the corol.—Corol. Tube short. Border five-cleft; divisions oval, obtuse, reflexed.—Nectarial scales five, below the insertion of the filaments, divided nearly to the base, into many, fine, filiform segments.—Filaments five, inserted a little below the fissures of the corol.—Germ round. Styles two. Stigma headed.—Capsules two-celled.—Seeds solitary.

Gg 2
4. C. capitata, R.

Heads round, sessile, bracted, with from ten to twenty pentandrous flowers. Calyx and corol papillose, pellucid and white.

Hind. and Beng. Alcusi.

A most beautiful, small parasite, found in great abundance growing on the lower part of the stems of Crotolaria juncea, during the month of February and March.

Stems numerous, filiform, smooth, except at the parts where it grows to the stalks of its supporter, there tuberculate; extent from one to two feet high; colour pale yellow.—Leaves none.—Flowers from ten to twenty, forming most beautiful, round, sessile, white, pellucid heads.—Bractes a single one under each head, which is white, membranaceous, and oblong.—Calyx and corol five-cleft, swelled with pellucid cells, like the Ice-plant.—Nectarial scales reniform, ciliate.—Stamens five.—Germ two-celled, with two seeds in each, attached to the bottom of the cells. Styles two. Stigma simple.


A small annual, spreading flat on the ground and in general very common on dry rice-fields during the cold season; but never to be seen from the beginning of the periodical rains till they are completely over.

TETRAGYNIA.


Calyx four-parted. Petals four. Germs four, one-seeded, attachment inferior. Berries four, superior, one-seeded. Embryo inverse, with scarcely any perisperm. Sometimes a fifth part is added.
1. B. sumatrana, R.*

Shrubby. Leaflets serrate. Racemes axillary, generally compound.
Lussa-Radja, Rumph. Amb. Auctuar. 27. t. 15.
Mal. Ampadoo-Barrowing.

A native of Sumatra. From thence Mr. Ewer sent the seeds to
the Botanic Garden, where in one year the plants were about four feet
high with a straight ligneous stem; and few branches. They then
began to flower in May, and continued to blossom and ripen their
seed all the year.

Leaves scattered, unequally-pinnate, from twelve to eighteen in-
ches long. Leaflets from four to six pair, opposite, short-petioled,
obliquely ovate-lanceolate, grossly and obtusely serrate, pointed, vil-
lous underneath, from three to six inches long, very bitter, and some-
what foetid.—Pettioles common, round, and villous.—Stipules none.
—Racemes axillary, solitary, from one to six, or eight inches long,
somewhat compound, dark purple, and clothed with a few white
hairs.—Flowers numerous, very minute, dark purple, and in all the
Sumatra plant completely hermaphrodite.—Bracte subulate, hairy,
very small, and caducous.—Calyx four-leaved, or deeply four-parted.
Segments small, ovate-lanceolate, deep purple, hairy on the out side
and with the corols becoming reflexed.—Petals four, longer than the
calyx, lanceolate, dark purple, and hairy on the outside.—Nectary a
dark purple, four-lobed, fleshy cup surrounding the insertion of the
germs.—Filaments four, short, purple, inserted under the margin of
the nectary. Anthers oval, large, and deep purple till they discharge
their pollen.—Germs four, superior, one-celled, with one ovulum in
each attached to the upper and inner side of the cell.—Styles a sin-
gle, short, recurved, one to each germ. Stignatus simple.—Drapes
four, when all come to maturity, size of a small grain of black pep-
per smooth, dark purple, one-celled.—Nut conform to the drupe,
rugose, one-celled, inner edge thinner, and the upper half of it marked
with a white line, (the umbilicus).—Seed conform to the nut. In-
teguments single, adhering to the perisperm, thin and white.—Peris-
perm in very small quantity, indeed it may be called a fleshy inner

* Gonus amarissimus Lour. Cochinch, ed. Will. ii. 869.—N. W.

*Obs.* Since I first described this tree, and only from plants that were completely hermaphrodite I have found some plants perfectly male, and others as completely female. In this plant, therefore, we have another instance of Triocious Polygamy.

From the sensible qualities of the green parts of this plant, being somewhat fecund, and simply, though intensely bitter, it promises to be as good an antidesyntical medicine as *Bruce's Abyssinian Woolginos* itself. As soon as the plants arrive at greater maturity the bark shall be tried, and compared with Angustura bark which has by some been thought that of *Brueca antidesyntica* of *Bruce's Travels*, &c. vol. v. p. 69. also of *I. F. Miller*, Tab. 25. and still better described and figured by L. Heritier under the name *Brueca ferruginea*, Stirp. Nov. 19. t. 10. See also *Linn. Sp. Pl. ed. Will*. iv. 742.

**MYRIOPHYLLUM.** Schreb. Gen. N. 1440.


1. *M. tetrandrum*, R.

*Leaves* verticilled, all *filiform-pinnatifid*. *Flowers* axillary, verticilled, tetrandrous. *Calyx* four-leaved.


It grows in sweet water; appearing during the rains.

*Stems* round, articulate, spongy below the water, length various, above the water from four to six inches, about the thickness of a crow-quill.—*Leaves* verticilled, pinnatifid, below the water they are much larger, with capillary segments; above the water they are small.—*Flowers* very small, white, verticilled, i. e. one in the axil of each leaf.—*Calyx* above, four-leaved; *leaflets* permanent.—*Petals* four, oblong.—*Filaments* shorter than the petals.
2. M. tuberculatum, R.

Leaves verticillate, pinnatifid. Flowers axillary, verticillate, tetrandrous; fruit tetracous, tubercled.

A native of borders of lakes, and other moist places near Calcutta. Is in blossom most part of the year, and very much like M. tetran- drum.

Stems creeping, round, jointed, length various, the erect extremi- ties about five or six inches.—Leaves verticillate, pinnatifid, or acutely serrate.—Flowers verticillate, sessile, one in the axil of each leaf, small, pink-coloured.—Calyx none.—Corol; petals oblong, ex- panding, pink-coloured.—Filament short. Anthers linear.—Seeds united in the form of a four-lobed, tubercled pericarp.


1. P. indicum, R.

Creeping. Leaves alternate, from narrow-lanceolate to ellipti- cally oval, opaque, glossy, many-nerved. Anthers four pair, attach- ed to the claws of the round concave petals.

A native of the borders of fresh water lakes and ditches in the vi- cinity of Calcutta. Flowers in February and March.

Stems creeping. The small simple roots which issue from the joints are all I can discover, for while the plant advances from the apex, it decays at the opposite end, so that I do not think any part of them exists for one year. Branches few and like what I call the stems; they are all round, smooth and jointed at various distances.—Leaves alternate, except next to the flowers, and there often opposite, petioled, from narrow lanceolate, to elliptically oval, opaque, even, and very smooth, or rather glossy, entire, obtuse, obscurely many- nerved; size very various. Those that remain immersed are narrow- er, longer, more strongly marked with nerves, and subtransparent.—Petioles simple, not sheathing, length various, in plants left by the
water much shorter than the leaves.—*Stipules* solitary, axillary, sheathing, length of the petioles, slit halfway or more on the inside.

*Peduncles* solitary, axillary, or opposite to a leaf, round, rather thicker, smooth, and nearly as long as the cylindric spike, which each supports.—*Flowers* small, numerous, green.—*Calyx* none.—*Petals* long-clawed, nearly round, incurved, fleshy; concave within, convex on the back, permanent.—*Filaments* none. *Anthers*, four pairs attached to the claws of the petals on the inside.—*Germ* four, ovate-oblong, one-celled, with one ovula in each. *Styles* short, and thick. *Stigmas* a dark speck on the apex of the styles.—*Drupes* obovate, smooth. *Nut* conform to the drupe, one-celled.—*Embryo* curved, as represented by *Garten* in *P. natans*, vol. ii. t. 84.

2. *P. tuberosum*, *R.*

*Leaves* alternate, and only opposite at the floriferous forks, sessile, linear, much waved, entire, clear, when dry membranaceous.

Found immersed in extensive masses, in Ponds, Lakes, and receptacles of fresh water in Bengal, during the dry season, chiefly when in flower in February, it rises so near to the surface as to allow the little spikes of flowers to emerge completely.

*Root* of long simple fibres, brown, &c. according to the colour of the mud they enter; on the creeping joints are generally found small roundish-lobate, viviparous tubers.—*Stems* and branches of various lengths, according to the depth of the water, &c. a groove on each side gives them the appearance of being compressed, thick as a pack-thread, smooth, at the bottom of the water creeping, towards the extremities when in flower dichotomous; previously to that period the branches are alternate and axillary.—*Leaves* sessile, alternate, except at the floriferous fork of the branches, where they are opposite, linear, rather obtuse, much waved, finely and acutely serrulate, with two slender nerves near the margin, pellucid, from two to three inches long, by little more than a quarter of an inch broad.—*Stipules* sheathing, short, smooth, greenish like the other parts of the plant, and scarcely to be distinguished from them.—
Spikes solitary in the fork of the branches, rather long-peduncled, from four to eight-flowered, when in blossom emerged, afterwards immersed.—Corol, stamina, and germ as in the genus, but here there certainly is a style with four large, obliquely truncated stigmas.—Seed as in P. natans, Gært. sem. ii. 23 tab. 84.

**ILEX.**

Calyx four-toothed. Corolla rotate, four-cleft. Style none. Berry from two-to four-seeded.

1. I. dipyrena, Wall.

Leaves oblong, acuminate, short-petioled, smooth, scarcely undulated, remotely serrate, serratures spinous; flowers sessile in axillary fascicles; berries two-seeded.

A very large tree, native of Nepala, where it is called Caulah. Blossoms from April to July, and produces fruit during the rainy season. I have also received specimens gathered by Dr. Govan about Saharanpore, and by Capt. W. S. Webb, on the confines of Chinese Tartary, where he informs me the tree is called Kundar.

Branchlets angular, with cinereous bark; young shoots pubescent.—Leaves alternate, copious, approximated, oblong, sometimes lanceolate-oblong, attenuated into an acumen, sharp at the base; margins slightly undulated, while young repand-serrate with strong spines, when old more remotely and slightly serrated, sometimes almost entire; of a firm and leathery texture, perfectly smooth and polished; rib very prominent, furrowed above; nerves short, nearly transversal, divided towards the margin into ridged veins; from three to nearly five inches long, one to one and a half broad.—Petioles not above two lines long, pubescent, deeply furrowed.—Flow-ers sessile, collected into rounded axillary subsessile fascicles.—Pedicels very short, each supported by a couple of minute rounded concave ciliated bractes.—Calyx divided into four broad-ovate, acute, ciliate teeth.—Corolla deeply four-cleft, flat and spreading; segments ovate, four times longer than the calyx, obtuse, smooth.—Filaments
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 streams in the Purgunna Choudans; it is called Gumshing in the Bhootea 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 toothlets, read toothlets.
— 47, —— 23, for zerumbet, read Zerumbet.
— 97, —— 17, for lanceolaria, 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 dichotomous.
— 116, —— 6, for sub-bilabiate clavate, read sub-bilabiate. Capsule 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 involucels) linear, oblong, cordate, unequal: the uppermost being larger and incumbent over the fascicle of flowers. Calycine bractes small.
— 125, line 13, for quoted, read quoted.
— 136, —— 15, for rol. read vol.
— 163, —— 5, from the bottom, for three-coloured, read three coloured.
— 167, —— 7, for leaflets, read leaflet.
— 3, from the bottom, for permament, 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, — 29 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.
— 288, — 21, dele P.
— 292, — 22, for grass, can, read grass. Can.
— 293, — 23, for the, read The.
— 292, — 11, for dactylon, read Dactylon.
— 293, — 9, for dactylon, read Dactylon.
— 292, — 7, for the, read A native of Nepala. In the:
— 436, Immediately before P. pinnata, insert:

P. candata, 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.
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