

**ICONES
ROXBURGHIANAE
OR**

**DRAWINGS OF
INDIAN PLANTS**



BOTANICAL SURVEY OF INDIA

CALCUTTA

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1. AESCHYNOMENE PALUDOSA Roxb.

Annual, sub-ligneous, erect. *Leaflets* from ten to twenty pair. *Racemes* longer than the leaves, drooping, many-flowered. *Legumes* linear, pendulous.

Beng. Kathsola.

This is a very large annual species, it has the appearance of an elegant tree, often twelve feet high, is a native of wet marshy places about Calcutta; it appears during the rains.

Root annual, spindle-formed, with some few lateral branches. *Stem* erect, ramous; all the parts under water are much swelled and are there of an exceeding light spongy texture, but not piped; these parts emit numerous, ramous, filiform roots, from every part, and except for the insertions of those radicles the bark is continuous, smooth and green in most parts, the parts above the water contract to about a third the thickness of those that are immersed and are covered with smooth, shining, green bark; height of the whole plant from six to twelve feet, the relative proportion of the immersed and exposed parts depends on the height of the inundation. *Leaves* sessile, abruptly pinnate, linear, from six to twelve inches long, horizontal, courting the solar light through the day and drooping in its absence. *Leaflets* generally opposite, sessile, from ten to thirty pair, tapering a little from the base where they are broadest to the apex, rounded at both ends, with a bristle-like point, smooth above and having a few hairs below, from an inch, to an inch and a half long and three-eighth of an inch broad at the base. *Petioles* swelled at the glandular base, channelled; *channel* hairy. *Stipules* half lanceolate, falling; those of the leaflets subulate, permanent, minute. *Racemes* axillary, peduncled, solitary, drooping beautifully, from eight to twelve-flowered, longer than the leaves which they accompany. *Flowers* drooping, as large as those of Spanish broom, of a bright yellow, with the back of the banner spotted with distinct, round, purple dots. *Bracts*, those of the pedicel solitary, those of the calyx two, pressing on it laterally, all are boat-shaped and deciduous. *Calyx*; *corol* &c. as in *A. cannabina*.

(W. Roxburgh, *Flora Indica* 3: 333, 1832)



AESCHYNOMENE PALUDOSA Roxb.

2. AESCHYNOMENE PROCUMBENS Roxb.

Annual, diffuse, somewhat armed with inoffensive prickles. *Leaflets* minute, about twenty pairs. *Peduncles* axillary, short, from two to three-flowered. *Legumes* linear, erect, cuspidate.

Teling. Manchi Jelooga.

A native of Coromandel; appearing on wet pasture land, borders of rice fields, &c. in the rainy season.

(W. Roxburgh, *Flora Indica* 3: 337, 1832)



AESCHYNOMENE PROCUMBENS Roxb.

3. URARIA RUFESCENS (DC.) Schindler

Doodia hamosa Roxb. Fl. Ind. 3: 367, 1832.

Shrubby, diffuse. *Leaves* simple and ternate, sub-rotund, villous. *Racemes* axillary and terminal, before expansion strobiliform. *Legumes* from two to four-jointed.

A native of the interior parts of Bengal. Flowering time the end of the rains.

Stem scarcely any, but numerous, diffuse, variously bent, straggling, or creeping, woody branches; *young shoots* and racemes armed with shorter hooked bristles, intermixed with hairs. *Leaves* from simple to ternate. *Leaflets* from round to obovate, emarginate, downy underneath, from one to two inches long. *Stipules* of the petioles taper, long and subulate from a broad, semi-cordate base; those of the leaflets filiform, all are hairy. *Racemes* axillary and terminal, before the flowers appear strobiliform, but stretching out a great length by the time the seed is ripe. *Bracts* alternate, two-flowered, ovate, concave, with a long subulate point, ciliate and hairy, one-flowered, after the flowers decay they become rigidly incurved, pressing the legume against the rachis of the racemes, making what was the under division of the calyx the upper. *Flowers* numerous, pretty large, of a pale rose-colour, in the morning changing to lilac. *Calyx* very hairy. *Legume* of two, three or four round joints, united by slender pedicels.

Excepting the racemes and size of the plant, this species is very much like *lagopodioides* and if I had not both growing before me at the same time, it might be difficult to find out wherein they differ specifically. The lengthening raceme is one of the most conspicuous marks.

(W. Roxburgh, *Flora Indica* 3: 367, 1832)



URARIA RUFESCENS (DC.) Schindler

(*Doodia hamosa* Roxb.)

4. DENDROLOBIUM TRIANGULARE (Retz.) Schindler

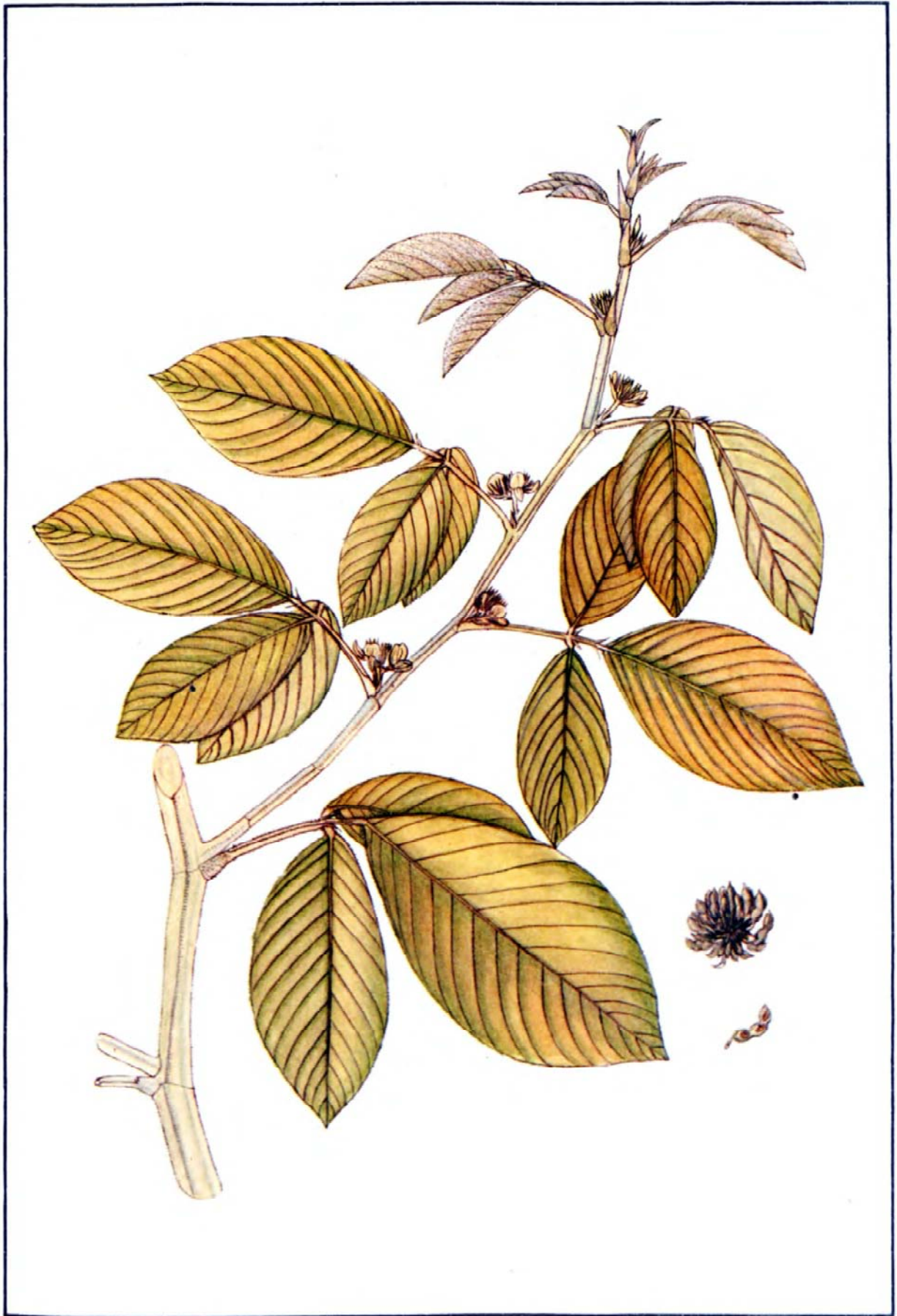
Hedysarum cephalotus Roxb. Fl. Ind. 3: 360, 1832.

Sub-arboreous, all the tender parts woolly. *Leaflets* oblong, ventricose, marked with many woolly, simple, parallel veins underneath. *Flowers* crowded on short-peduncled, axillary heads. *Legumes* flat, villous, incurved, from two to three-jointed.

A native of the interior parts of Bengal and from thence introduced by Dr. W. Carey into the Botanic Garden where it is in blossom most part of the year; the seed ripens during the cold season.

Stem ligneous, erect, often as thick as a man's leg. *Branches* spreading, with numerous, alternate, bifarious, three-sided, downy branchlets. *Leaves* alternate, bifarious, ternate. *Leaflets* elliptic, while young clothed with much, very soft, woolly hair, with numerous, parallel, woolly veins underneath and the margins entire and woolly, from two to four inches long and from one to two broad. *Petioles* deeply channelled and woolly, from one to two inches long. *Stipules* of the petioles ensiform, woolly on the outside, caducous, those of the leaflets filiform and also woolly. *Peduncles* axillary, generally solitary, woolly, scarcely one-third or one-fourth the length of the petioles, crowned with a simple, small head of small short-pedicelled white flowers. *Bracts* of the peduncles two at the base of the pedicels, solitary, one-flowered, those of the flowers opposite, pressing on the calyx laterally, all are clothed with soft woolly hairs and are like the stipules, though much smaller. *Calyx* woolly on the outside, four-cleft; the *upper segment* broad. *Legumes* flat, incurved, villous, two or three-jointed.

(W. Roxburgh, *Flora Indica* 3: 360, 1832)



DENDROLOBIUM TRIANGULARE (Retz.) Schindler
(*Hedysarum cephalotus* Roxb.)

5. DESMODIUM VELUTINUM (Willd.) DC.

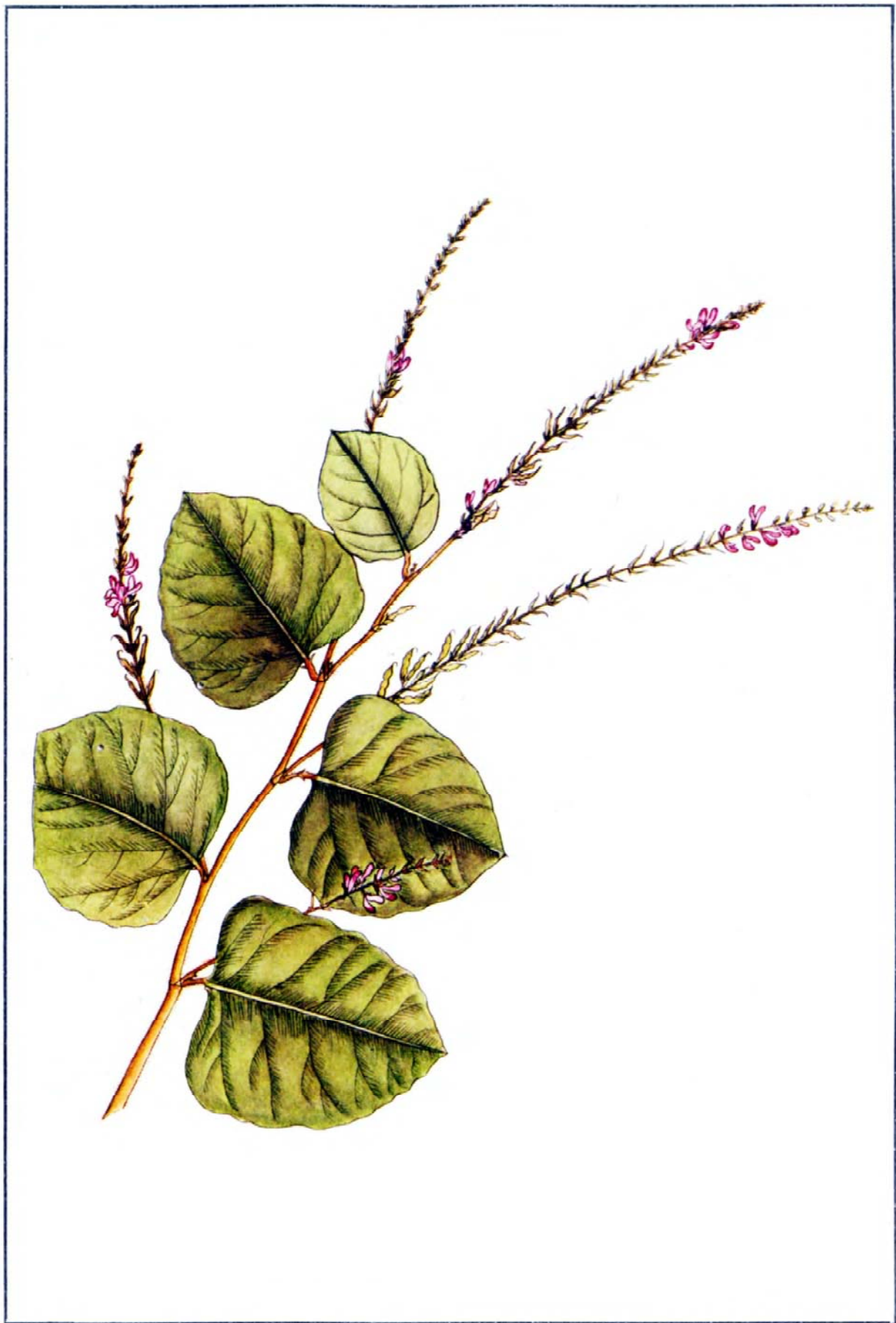
Hedysarum latifolium Roxb. Fl. Ind. 3: 350, 1832.

Shrubby, oblique. *Leaf* simple, round reniform-cordate, somewhat repand. *Stipules* semi-cordate, cuspidate. *Racemes* axillary, clothed with hooked bristles; *legumes* from three to five-jointed, notched on the under margin.

A native of the northern parts of Hindoosthan. Colonel Hardwicke brought the seeds to the Botanic garden, where the plants blossom during the rains.

Stem short, ligneous and pretty smooth. *Branches* oblique, almost horizontal or reclinate, the slender parts villous. *Leaves* alternate, bifarious, short-petioled, roundish cordate, downy underneath, scabrous above, about three or four inches long and nearly of the same breadth. *Stipules* of the petioles semi-cordate and cuspidate; those of the leaves subulate. *Racemes* axillary and terminal, horizontal, many times longer than the leaves, clothed with small hooked bristles. *Flowers* three-fold, the middle one last and they are small and of a bright purple colour. *Bracts* three-fold, triangular, acute. *Legumes* flat, clothed with hooked bristles, four or five-jointed and more deeply notched on the under margin.

(W. Roxburgh, *Flora Indica* 3: 350, 1832)



DESMODIUM VELUTINUM (Willd.) DC.
(*Hedysarum latifolium* Roxb.)

6. MUCUNA IMBRICATA DC. ex Baker

Carpopogon imbricatum Roxb. Hort. Beng. 54, 1814 nom. nud.

A woody climber, with slender glabrescent branches. *Leaflets* membranous with a few minute adpressed grey hairs below, glabrous above; the end one oblong-cuspidate, 5-6 in. long. *Racemes* few-flowered, lax, on drooping peduncles 2-12 in. long; pedicels $\frac{1}{4}$ - $\frac{1}{2}$ in. long; bracts large, roundish, soon deciduous. *Calyx* $\frac{3}{4}$ in. long, with a few irritating bristles; teeth all nearly as long as the tube. *Corolla* dull purple, 2-2 $\frac{1}{4}$ in. long; keel abruptly inflexed at the tip; wings $\frac{1}{2}$ in. broad; standard half as long as the keel, 1 in. broad. *Pod* oblong, 4-6 in. by 2 in., 2-4 seeded, clothed with abundant deciduous, irritating bristles; wings of sutures finally $\frac{1}{2}$ in. broad.

East Himalayas, Silhet, Sikkim, Assam, tropical region, 1-4000 ft., Wallich, Griffith, Hook.

N.B.: As there is no description of this species given by Roxb. in Fl. Ind., Baker's description is considered here as original.



MUCUNA IMBRICATA DC. ex Baker
(*Carpogon imbricatum* Roxb.)

7. MUCUNA MONOSPERMA DC.

Carpopogon monospermum Roxb. Fl. Ind. 3: 283, 1832.

Perennial, twining; umbels axillary, pendulous. Legume one-seeded and armed with very stiff ferruginous burning hairs.

Teling. Pedda or Enooga doola-gunda, which means the larger or Elephant's *scratch* wort.

This species is perennial and as large as any of the twining *Dolichoses* I know. It is a native of hedges and thickets, on the banks of rivers and water courses. Flowers during the cold season. Seeds ripen in April.

Stem woody, perennial, twining, branchy; *young shoots* covered with brown down. *Leaves* ternate. *Leaflets* ovate, acute, downy on the underside; when young they are covered with much rust-coloured down; about three inches and a half long and two broad. *Stipules* of the petioles lanceolate, hairy, falling those of the leaflets subulate. *Umbels* axillary, short peduncled, drooping from the weight of the flowers. *Bracts* and flowers as in *C. pruriens*. *Calyx* covered with burning hairs, unequally five-toothed, the undermost long and pointed, the rest scarcely appear above the margins of the cup. *Corol*, stamens and pistil as in *C. pruriens*. *Legume* semi-oval, deeply grooved on the back, as in *Lathyrus sativus*, very much wrinkled, pointed, about three inches long and two broad, covered with much, exceedingly stiff, brown hair, which produces a greater degree of pain and itching than that of *C. pruriens*. *Seed* solitary, kidney-formed, of the size of the first joint of the thumb, the convex side is entirely surrounded with the hilum.

I know of no use any part of this plant is put to. Cattle do not eat it.

(W. Roxburgh, *Flora Indica* 3: 283, 1832)



MUCUNA MONOSPERMA DC.
(*Carpopogon monospermum* Roxb.)

8. MUCUNA ATROPURPUREUM DC.

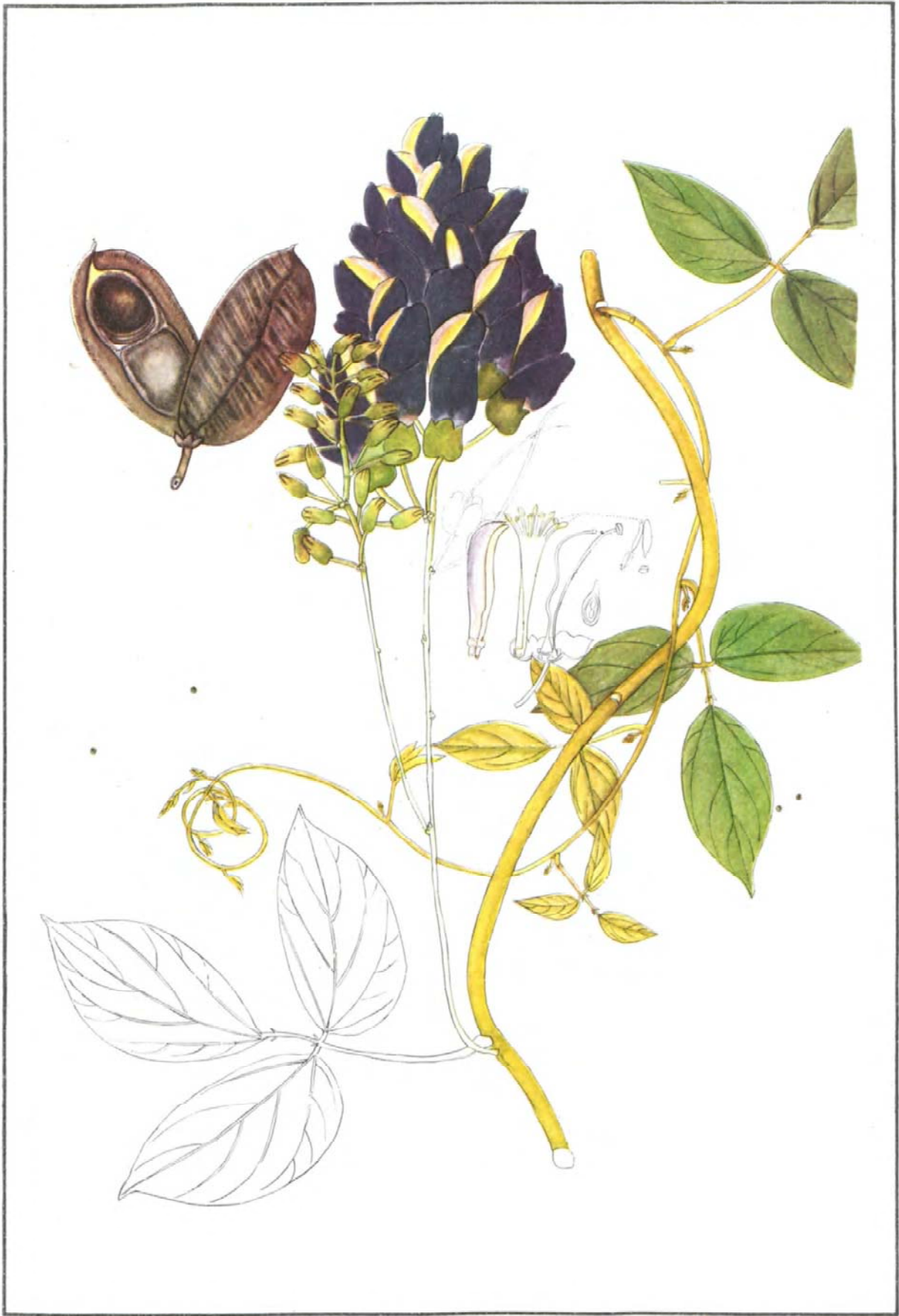
Carpopogon atropurpureum Roxb. Fl. Ind. 3: 287, 1832.

Perennial, twining. *Racemes* pendulous, often compound. *Legume* elliptic, one or two-seeded, deeply furrowed and armed with much brown burning hair.

Tam. Tilla-kodi.

An extensive twining permanent species, a native of Travancore, from thence introduced into the Botanic garden, where it flowers in February and March and the seed ripens in April and May.

(W. Roxburgh, *Flora Indica* 3: 287, 1832)



MUCUNA ATROPURPUREUM DC.
(*Carpogon atropurpureum* Roxb.)

9. MUCUNA GIGANTEA DC.

Carpopogon giganteum Roxb. Fl. Ind. 3: 287, 1832.

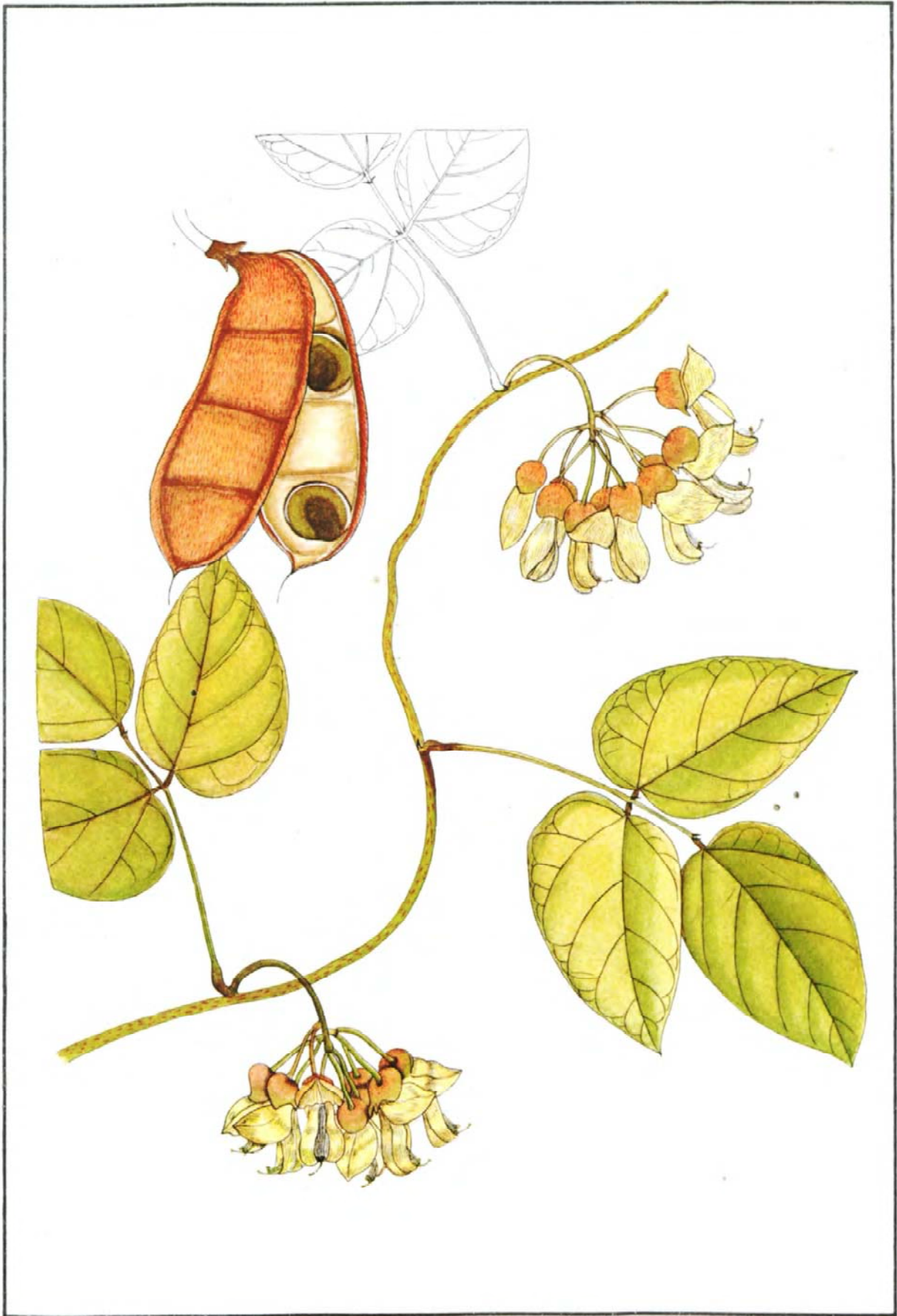
Perennial, twining. *Umbels* pendulous. *Legumes* from three to six-seeded; *surface* even and armed with stiff, ferruginous burning hairs.

Dolichos giganteus Willd. iii. 1041.

Kaku valli Rheed. *Mal.* viii. t. 36.

A very extensive, twining, perennial species, with large simple pendulous, globular corymbs of large beautiful sulphur coloured flowers, which appear during the rains and cool season and the seed ripens in March, April and May.

(W. Roxburgh, *Flora Indica* 3: 287, 1832)



MUCUNA GIGANTEA DC.
(*Carpopogon giganteum* Roxb.)

10. MUCUNA BRACTEATA DC. ex Kurz

Carpopogon bracteatum Roxb. Hort. Beng. 54. 1814 nom. nud.

Herba perennis, volubilis, novellis parce appresse pubescentibus; stipulae . . . ; folia pinnatim 3-foliolata, petiolo glabro V. subglabro 2-4 pollicari suffulta; foliola ovata V. subovata (lateralibus valde obliquis, terminali magis trapezoides), petiolulo brevi pubescenti suffulta, obtusiuscule apiculata V. cuspidata, mucronata, chartacea, supra glabra, subtus puberula V. sub lente appresse pubera; flores magni, atro-purpurei, pedicello canescenti-puberulo c. 2 lin. longo suffulti, 2-3 lin. V. solitarii pedunculatum secundarium 2-3 lin. longum terminates et in racemum bracteato-pedunculatum axillarem nutantem canescenti—V. fulvescenti—pubescentem dispositi; bractee ovatae ad lanceolatae, subulato-acuminatae, velutinae, florales valde deciduae, inferiores vacuae pedunculatum vestientes persistentes, majores, $\frac{1}{2}$ - $\frac{3}{4}$ poll. longae; bracteolae paulo minores, rotundatae, deciduae; calyx amplius, c. 4-5 lin. in diametro, dense canescenti-puberulus et setis fragilibus fulvescentibus aspersus; corolla c. $1\frac{1}{2}$ poll. longa, alae subduplo, carina vexillo subtriplo longiores; legumina oblonga V. suboblonga, compressa, $1-2\frac{1}{2}$ poll. longa, carinis longitudinalibus secus suturam superiorem destituta densissime urenti-setosa, 2-5 sprema; semina transverse oblonga, vulgo brunneo et atromaculata.—Pegu, Martaban, Ava.—species distinctissima, *M. prurienti* affinis.

N.B.: As there is no description of this species given by Roxb. in Fl. Ind., Kurz's Latin description is considered here as original.



MUCUNA BRACTEATA DC. ex Kurz
(*Carpogon bracteatum* Roxb.)

11. STIZOLOBIUM PRURIENS (L.) Medicus

Carpobogon pruriens Roxb. Fl. Ind. 3: 283, 1832.

Mucuna pruriens (L.) DC.

Annual, twining. Racemes pendulous. Legumes armed with stinging hairs.

Dolichos pruriens Linn. *Supp.* 657 & c.

Nai-corana. Rheed. *Mal.* viii. t. 35.

Teling. Doola gonda.

Sans. Murkuti. Atma goopta or Kupikuchoo.

Beng. Alkooshee.

Common in hedges, in most parts of India. Flowering time the cold season.

I have never been able to learn that the natives of these parts of India, make any use of any part of this plant, except the hairs of the legumes which they do not use as a medicine (vermifuge) but as an ingredient to help to poison wells. However its having been of late taken inwardly to destroy worms, proves that it is not that poison they take it for; and it is more than likely that the other plants employed for the same base end, are fortunately much less dangerous than those who employ them imagine. Indeed it is only the most ignorant, superstitious Poligar mountaineers who are known to attempt to poison water. Nor can it be done to any other than such as is confined in wells, or small tanks.

(W. Roxburgh, *Flora Indica* 3: 283, 1832)



STIZOLOBIUM PRURIENS (L.) Medicus
(*Carpopogon pruriens* Roxb.)

12. MUCUNA CAPITATA W. & A.

Carpopogon capitatum Roxb. Fl. Ind. 3: 284. 1832.

Annual, twining. *Heads* axillary, sub-sessile. *Legumes* armed with soft, velvet-like down.

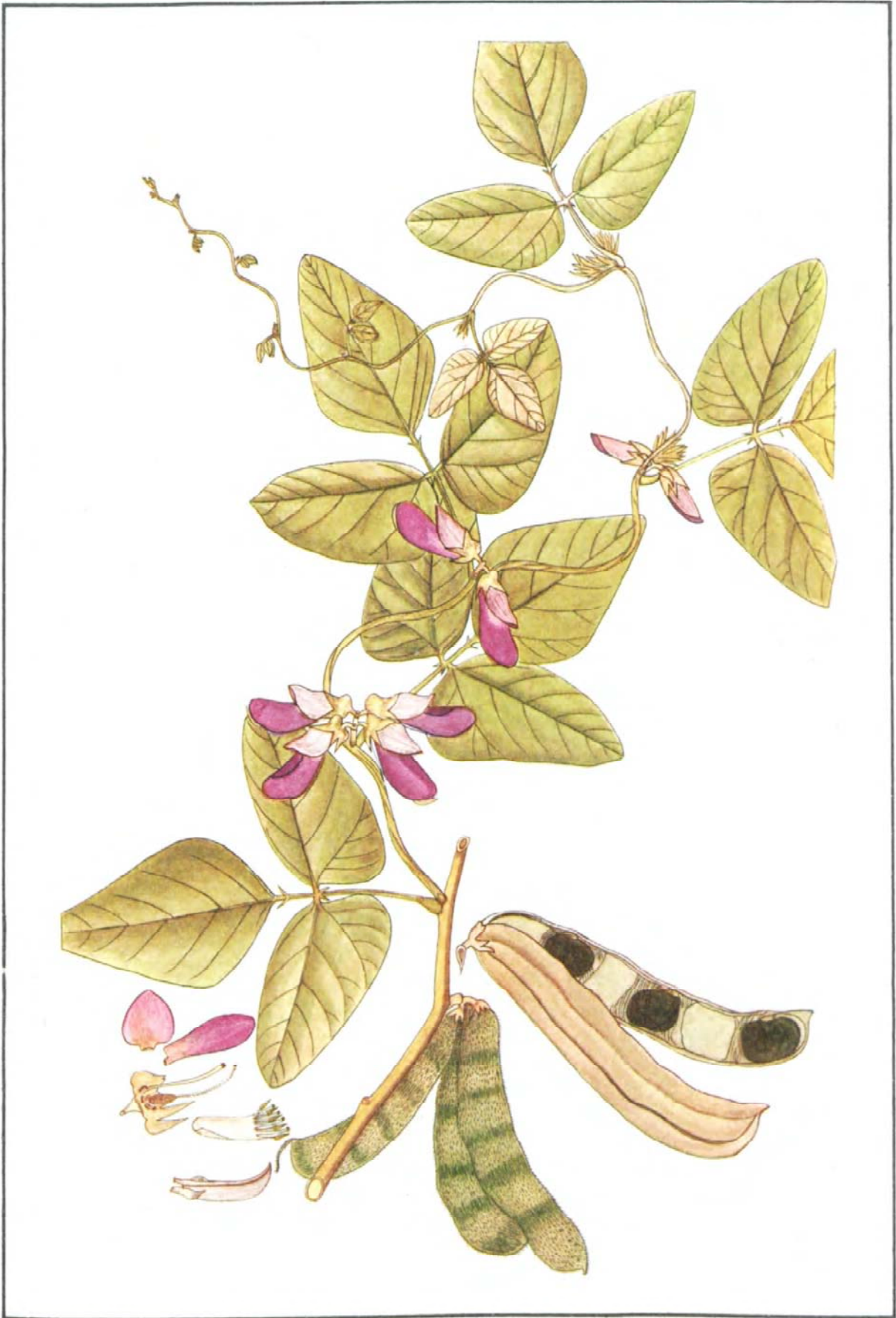
Teling. Soorootoo.

This I have only found in a cultivated state and that during the cold season, in the gardens of the natives. It is an annual.

Stem herbaceous, twining, branchy, running to an extent of ten or twelve feet, if supported; *young shoots* slightly downy. *Leaves* ternate. *Leaflets* equal in size, the *exterior* ones ovate, about three inches long and two broad, the lateral ones obliquely cordate, all are entire and obtuse, above smooth, a little downy underneath. *Stipules* of the petioles broad-lanceolate, of the leaflets subulate. *Peduncles* axillary, short, many-flowered. *Bracts, flowers, stamens* and *pistil* as in *C. pruriens*. *Legumes* cylindric, depending, a little curved, about as thick as the fore-finger or thumb and about six inches long, covered with soft, velvet-like down, when ripe wrinkled longitudinally. *Seeds* five or six, of the size of a small garden bean, smooth, shining, black.

The young pods like those of *Dolichos lignosus* and *lablab* are used by the natives in their curries, after rubbing off the down that covers them.

(W. Roxburgh, *Flora Indica* 3: 284, 1832)



MUCUNA CAPITATA W. & A.
(*Carpobogon capitatum* Roxb.)

13. MUCUNA NIVEA DC. ex Baker

Carpogon niveum Roxb. Fl. Ind. 3: 285, 1832.

Annual, twining. *Racemes* pendulous. *Legumes* from six to eight-seeded, while young downy; when old destitute of down and wrinkled.

Beng. Khamach.

Like *Carpogon capitatum*, I have only found this in a cultivated state and even then very uncommon, having seen it but in one or two gardens near Calcutta; however, if it is not indigenous in Bengal, it must have been long known to the natives, not only on account of their having a vernacular name for it, but because it is eaten by them, as a Hindoo requires a long and intimate acquaintance with any article before he makes it a part of his diet. *Potatoes* they must have known fifty years or more, before they began to admit them at their tables.

Be that as it may, the plant is cultivated during the cold season, when it blossoms and produces fruit in great abundance.

Root ramous, generally annual, though in some soils it lasts longer. *Stem* twining to an extent of some fathoms, very ramous and thick, but of a spongy, succulent nature; *young shoots* a little villous. *Leaves* ternate. *Leaflets* entire, the pair nearly semi-cordate, the terminal one rhomboidal; all have short acute points and are nearly equal in size, of a soft delicate texture and slightly villous on both sides; from four to ten inches long. *Petioles* round, slightly villous, from six to twelve inches long. *Stipules* lanceolate. *Racemes* axillary, solitary, pendulous, often as long or even longer than the leaves, bearing numerous, three-fold, pendulous, very large, white flowers. *Bracts* four-fold, a common one to each tubercle of the racemes, on which the three flowers are inserted and one to each of the proper pedicels, all are caducous, nearly lanceolate and villous. *Calyx* four-parted. The upper division broad and emarginate; the lower one narrowest and more lengthened than the lateral pair. *Corol* papilionaceous. *Banner* cordate, incumbent on the wings and keel and about half their length. *Wings* oblong, with a remarkable callous gland near the base of each. *Keel* one-petalled, linear, length of the wings, with a sharp, rigid, incurved point. *Nectary* a crenulate gland round the insertion of the germ. *Filaments* one and nine, alternately clavate and filiform, with long linear, sub-sagittate, anthers on the slender filaments and short-ovate ones on the clavate ones. *Germ* hairy. *Style* slender and villous. *Stigma* small. *Legume* linear, about six inches long, curved a little like an Italic *S* when ripe black, destitute of down and longitudinally wrinkled. *Seeds* generally from six to eight, oval, smooth, ash-coloured and separated by thin partitions.

By removing the exterior velvet-like skin of the large, fleshy, tender legumes, they are when dressed, like French beans (*Phaseolus vulgaris*), a most excellent vegetable for our tables and the full grown beans are scarcely inferior to the large garden beans of Europe.

(W. Roxburgh, *Flora Indica* 3: 285, 1832).



MUCUNA NIVEA DC. ex Baker
(*Carpopogon niveum* Roxb.)

14. ERYTHRINA STRICTA Roxb.

Arboreous, armed with innumerable white prickles. *Leaves* unarmed. *Racemes* terminal, horizontal. *Calyx* minute, spathaceous, entire. *Wings* subtriangular, minute. *Legumes* lanceolar, from two to three-seeded.

En-mouricou, the vernacular name at Anjenga and Pen-mouricou that of *E. indica*, which this resembles much.

A native of Malabar; from Anjenga the seeds were received into the Botanic garden, under the Canara name *En-mouricou*, at the same time, seeds of *E. indica* were received under the name *Pen-mouricou*. Both grew rapidly, for in two years the latter flowered in April, and in three, the former began to blossom early in March and ripened its seed by the middle of April.

Trunk perfectly straight, in our young trees eighteen inches in circumference, four feet from the ground; *branches* few and covered with smooth olive-coloured bark, all are well armed with numerous, short, sharp, light green prickles, height about twenty feet. On the Malabar coast it grows to be a tree of very considerable magnitude. *Leaves* ternate. *Leaflets* the pair unequally broad-cordate; the terminal one reniform-cordate, all are smooth, entire and pointed, from three to five inches each way. *Petioles* round, smooth, very rarely prickly, about six inches long. *Stipules* narrow-falcate, more permanent than the leaves. *Racemes* terminal, projecting horizontally at right angles from the apex of the new leafless branchlets. *Bracts* minute, caducous; one under each pedicel and two near their apices. *Flowers* tern, numerous and crowded, large, as in *E. indica* and the colour the same bright dazzling scarlet. *Calyx* minute, not above one-tenth part of the length of the banner, spathiform, entire, acute, opening on the upper side, withering. *Banner* oblong, erect. *Wings* minute, even shorter than the calyx, semi-obovate. *Keel* half the length of the banner and four or five times longer than the wings, two-petalled, but firmly united and in that state, when expanded ovate; colour pale greenish yellow, which is also the colour of the wings; with the addition of slight tinge of pink. *Filaments* seem one and nine, but the ten are united into one, a little above the base, alternately short. *Germ* pedicelled, villous, containing from four to six ovula attached to the upper margins. *Style* tapering. *Stigma* acute. *Legume* pedicelled, lanceolar, subulate, pointed, from three to five inches long, smooth, light brown. *Seeds* one, two or three, rarely more come to maturity, lodged equally distinct from the ends, oval, smooth, light brown, of the size of a French bean.

(W. Roxburgh, *Flora Indica* 3: 251, 1832)

Note: Notwithstanding the great similarity of this tree, to *E. indica*, *Mouricou* of Van Rheede, there can be no doubt of its being specifically distinct; the small, entire, spathiform, calyx and minute triangular wings, are sufficient marks by which to distinguish it from all our other Indian *Erythrin*as, exclusive of the colour of the prickles, which is, no doubt, the most obvious criterion. The contents of the germ furnish another proof; in that containing from ten to fifteen ovula, in this only from four to eight, generally about six.



ERYTHRINA STRICTA Roxb.

15. ERYTHRINA RESUPINATA Roxb.

Herbaceous. *Leaves* ternate, appearing after the flowers decay. *Racemes* radical, leafless; *corol* resupinate. *Filaments* one and nine.

A native of Hindoosthan. In the Botanic garden they blossom in March, at which time no part of the plant is visible but the raceme.

Root perennial. *Stem* nothing more than a single, from four to five inches high, scarce prickly, slightly villous shoot, which with the leaves, decays about the close of the rains. *Leaves* ternate, rather long-petioled. *Leaflets* nearly round, entire, smooth, from two to three inches each way. *Petioles* and *nerves* of the leaflets somewhat prickly. *Stipules* ovate. *Racemes* radical, short-peduncled, appearing long before the herbaceous stem, roundish-ovate, not six inches in height, but uncommonly interesting and beautiful. *Flowers* numerous, three-fold, pretty-large, bright scarlet. *Calyx* bilabiate. *Corol* resupinate. *Banner* oval-shaped, much longer and larger than the keel, bright scarlet. *Wings* obovate, minute and nearly colourless. *Keel* much longer than the wings, tinged with red. *Filaments* one and nine, alternately shorter than the banner but double the length of the keel.

(W. Roxburgh, *Flora Indica* 3: 257, 1832)



ERYTHRINA RESUPINATA Roxb.

16. ERYTHRINA SUBEROSA Roxb.

Arboreous, with corky, deeply cracked bark. *Leaves* white, with down, ternate, prickles three-fold and stipulary. *Petioles* armed. *Racemes* axillary, spreading. *Wings* most minute. *Keel* one-petalled.

Teling. Moonee, Maduga.

This species I have found in the Circar only; there it is much less common than the *E. indica*, but grows in every soil and situation. *Leaves* deciduous during the cold season. Flowers in February and March, soon after the leaves appear.

In the Ganjam district, a variety is found, with the exterior leaflets reniform and the apex perfectly rounded.

Trunk erect, generally from eight to twelve feet to the branches, covered with light gray, corky, deeply cracked bark; *branches* numerous, very crooked, spreading in every direction. *Prickles* stipulary, three-fold at the insertion of the leaves and no where else, recurved, sharp, falling off about the third or fourth year. *Leaves* alternate ternate. *Leaflets* the pair obliquely broad-cordate, the exterior one rhombiform, entire, above hairy; below covered with much soft, white down, three or four inches each way. *Petioles* pretty long, round, downy armed with a few small prickles. *Glands* a pair at the insertion of the lateral leaflets and another pair where the common petiole ends in the exterior leaflets. *Stipules* lanceolate. *Racemes* axillary, sometimes terminal, horizontal, & c. as in *indica*, but much smaller. *Flowers* as in *indica* but smaller. *Calyx* tubular, with a two-lipped mouth. *Corol*; *banner* as in *indica*. *Wings* minute, colourless, hid within the calyx. *Keel* one-petalled, cordate, many times longer than the wings. *Filaments* ten, all connected, alternately shorter. *Legume* pedicelled, containing generally two, though sometimes three remote seeds, the interstices filled with a gray, light spongy substance.

(W. Roxburgh, *Flora Indica* 3: 253, 1832)



ERYTHRINA SUBEROSA Roxb.

17. ERYTHRINA SUBLOBATA Roxb.

Arboreous, armed. *Leaves* ternate; *leaflets* sub-triangular, repand, downy underneath. *Petioles* unarmed. *Racemes* terminal.

Teling. Badadam.

An immensely large tree, a native of the inland mountains in the Circars. *Leaves* deciduous. Flowering time, & c. as in the former.

Trunk erect, frequently of very great size. *Branches* spreading, very numerous, the larger as well as the trunk without prickles and covered with thick bark, the inner stratum of which is fibrous, the middle yellow and farinaceous, the exterior a smooth, hard, yellow, firm crust, of vegetable gluten. *Prickles* strong, conical, very sharp, exceedingly numerous on the younger branches, covering them almost entirely; three of them and generally they are the largest, stand round the marks left by the insertions of the leaves; these were the only stipules. *Leaves* alternate, ternate, from twelve to eighteen inches long. *Leaflets* the pair obliquely cordate; the odd one rhombic, all variously lobate-sinuate or notched; above smooth, covered with soft, white down underneath, from five to six inches each way; while young covered with much rust-coloured down. *Petioles* long, round, downy, without prickles. *Glands* as in *E. suberosa*. *Stipules* three-fold, strong, conical, sharp, permanent, becoming prickles. *Racemes* terminal, erect, slender, a little downy. *Flowers* three-fold, spreading, otherwise in every respect very much like those of *E. suberosa*.

The wood of all these species is remarkably light, soft and spongy. It is generally employed, but chiefly that of *E. indica*, being the most common, by the people who make trunks, paint, varnish, & c. to make trunks, toys and other things that are to be varnished; its numerous, large pores admit and retain their priming or under coating better than almost any other wood; besides it is not liable to warp, contract or split and is, as before observed, exceedingly light. At the village of Kundupilla, near Masulipatam, they are particularly clever at varnishing upon these sorts of wood.

(W. Roxburgh, *Flora Indica* 3: 254, 1832)



ERYTHRINA SUBLOBATA Roxb.

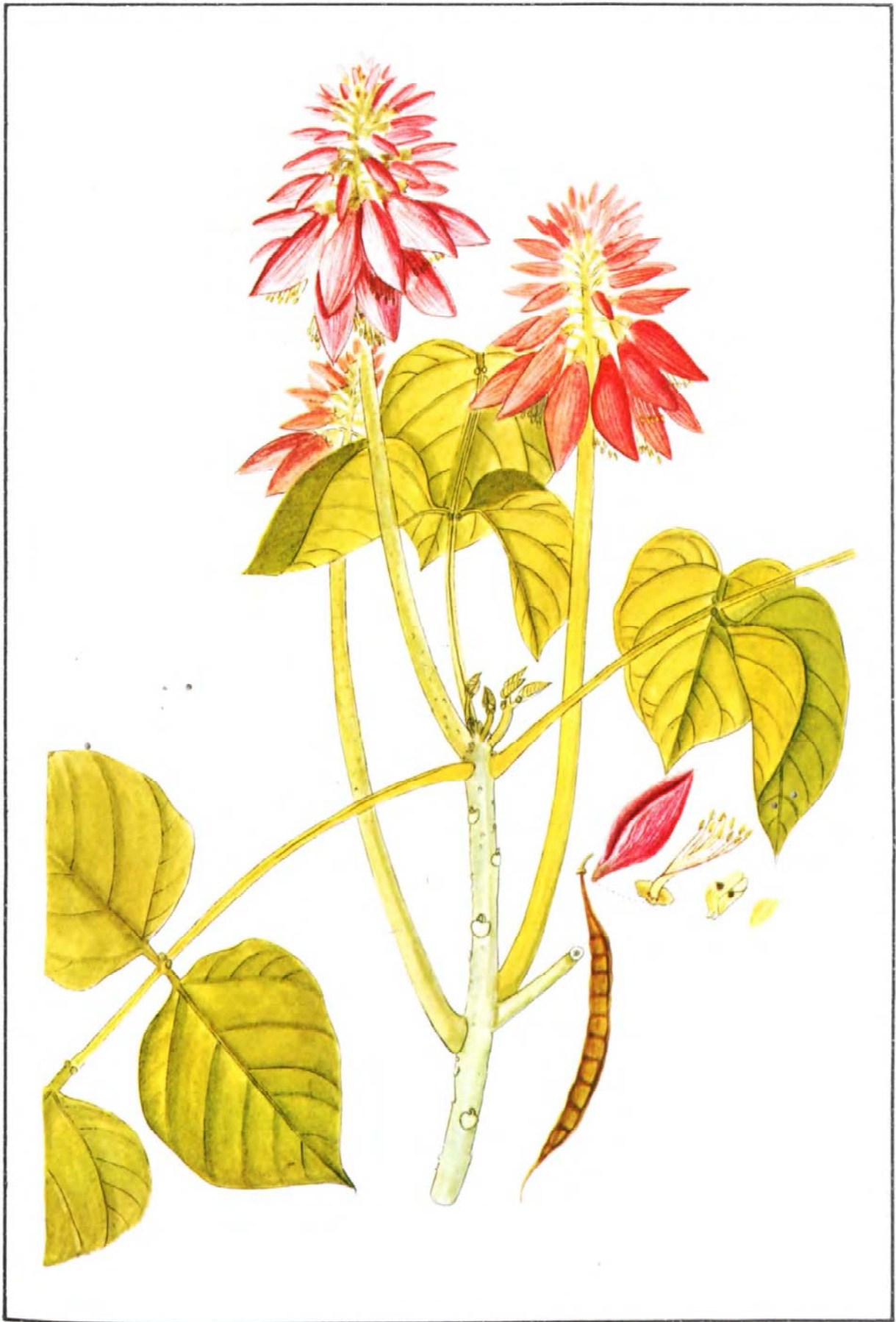
18. ERYTHRINA ARBORESCENS Roxb.

Sub-arboreous. *Trunk* and *longer branches* prickly. *Leaves* terminal, unarmed; *leaflets* reniform-deltoid, entire. *Racemes* straight. *Bracts* three-flowered. *Calyces* truncate, entire. *Legume* pedicelled, five-pointed, villous, from six to eight-seeded.

From Nepal, Dr. Buchanan sent the seeds to the Botanic garden where in one year the plants blossomed for the first time in October. In Nepal Dr. Buchanan observed it to be a small branchy tree ten or twelve feet high; here in seven years they are only five or six feet high and with but very few branches.

Trunk straight, with not more than two or three, simple, ascending branches, armed with a few scattered small, sharp prickles, otherwise smooth in every part. *Leaves* ternate. *Leaflets* entire, smooth above, whitish underneath, the exterior one nearly reniform, the pair obliquely broad-cordate. *Petioles* longer than the leaflets, round, smooth, perfectly destitute of prickles, a pair of glands at the insertion of the pair of leaflets and another pair at the apex of the long portion which supports the terminal one. *Stipules* oval, small. *Racemes* from the terminal axills, solitary, perfectly straight, longer than the leaves. *Bracts* solitary, three-flowered, ovate, within this common bract, there is a minute proper one at the base of each pedicel. *Flowers* numerous, large, of a vivid scarlet, three-fold, pedicelled, drooping over each other in an elegant imbricated form. *Calyx* entire, but campanulate, smooth, coloured. *Corol*; *banner* sub-ovate, boat-shaped, incumbent over the rest of the flower. *Wings* shorter than the keel, obliquely-obovate, greenish. *Keel* also greenish, two-parted at the base and apex, scarcely half the length of the stamens. *Filaments* rather shorter than the banner, united into one body near the base, alternately longer. *Germ* long-pedicelled. *Style* the length of the stamens. *Stigma* acute, ascending. *Legumes* pendulous, pedicelled, villous, cuspidate, torose at the seeds. *Seeds* from five to ten.

(W. Roxburgh, *Flora Indica* 3: 256, 1832)



ERYTHRINA ARBORESCENS Roxb.

19. SPATHOLOBUS PARVIFLORUS (Roxb.) O. Kuntze

Butea parviflora Roxb. Fl. Ind. 3: 248, 1832.

Shrubby, twining. *Panicles* axillary, and terminal; *flowers* small, and white. *Banner* emarginate.

A native of the mountainous parts of the Rajamundree Circar, from thence Captain Alexander Denton sent the seeds to the Botanic garden in 1797, where, when about ten years old, they began to blossom in December, and the seeds ripened in April and May.

When in flower, it is immediately known by its copious panicles of small, white flowers. In other respects it is so much like *Butea superba*, that I took it for that species until it blossomed.

Stem in plants twelve years old, as thick as a man's leg, ligneous, twining. *Bark* light brown, and somewhat spongy. *Branches* numerous, twining over trees, & c. to an extent of many fathoms.

Leaves alternate, ternate, about a foot long. *Leaflets* the pair obliquely oblong, the terminal one nearly round-obovate; all are entire, obtuse, or emarginate, both sides somewhat villous, particularly underneath; of a pale dull green, about six inches long, and nearly as broad. *Petioles* round, slightly channelled, when young, villous, from three to six inches long. *Stipules* of the petioles triangular, acute. *Panicles* terminal, with the smaller or single branches thereof in the axills of the exterior leaves, branches alternate, bifarious, diverging. *Flowers* numerous, short-pedicelled, small, white, in proximate fascicles of three. *Bracts* numerous, ovate-oblong, small, downy, a common one under each fascicle, one on the base of each pedicel, and two pressing each calyx laterally. *Calyx* bilabiate, the downy upper lip bidentate; the under one three-cleft. *Corol* papilionaceous. *Stamina* one and nine. *Anthers* round. *Germ* sessile, two seeded. *Stigma* large, smooth, pellucid. *Legume* pedicelled, linear, thin, clothed with a soft, brown, velvet-like down, apex one-seeded. *Seed* round-reniform, compressed, its greatest diameter nearly an inch. *Integument* single, smooth, brown. *Perisperm* none. *Embryo* as in the other *Leguminosae*.

(W. Roxburgh, *Flora Indica* 3: 248, 1832)



SPATHOLOBUS PARVIFLORUS (Roxb.) O. Kuntze
(*Butea parviflora* Roxb.)

20. PUERARIA TUBEROSA DC.

Hedysarum tuberosum Roxb. Fl. Ind. 3: 363, 1832.

Shrubby, twining; *leaflets* downy. *Racemes* long; *flowers* three-fold. *Legume* hairy, pendulous, four-jointed; contracted at the joints.

Kadsumi. *Banks' Icon. Kaempf. tab.* 25.

Teling. Daree, Goomodee.

A rare species, a native of the valleys far up amongst the mountains. It flowers during the hot season, at which time it is perfectly naked of leaves, being deciduous about the beginning of the cold season.

Root tuberous, very large. I think one of the largest I ever saw. *Stems* twining, woody, running over high trees, & c. *Leaves* alternate, petioled, ternate. *Leaflets* roundish, pointed, entire, downy, from six to twelve inches each way. *Petioles* channelled, from six to twelve inches long. *Stipules* of the petioles cordate, those of the leaflets subulate. *Racemes* simple or branchy, as long as the leaves, from tuberosities caused by the cicatrices of the old leaves, erect, round smooth. *Flowers* numerous, three-fold, pretty large, blue. *Legumes* from two to six-jointed, pendulous, compressed, pointed, much contracted at the joints, very hairy.

The root peeled and bruised into a cataplasm is employed by the natives of the mountains where it grows to reduce swelling of the joints.

(W. Roxburgh, *Flora Indica* 3: 363, 1832)



PUERARIA TUBEROSA DC.
(*Hedysarum tuberosum* Roxb.)

21. PUERARIA PHASEOLOIDES (Roxb.) Benth.

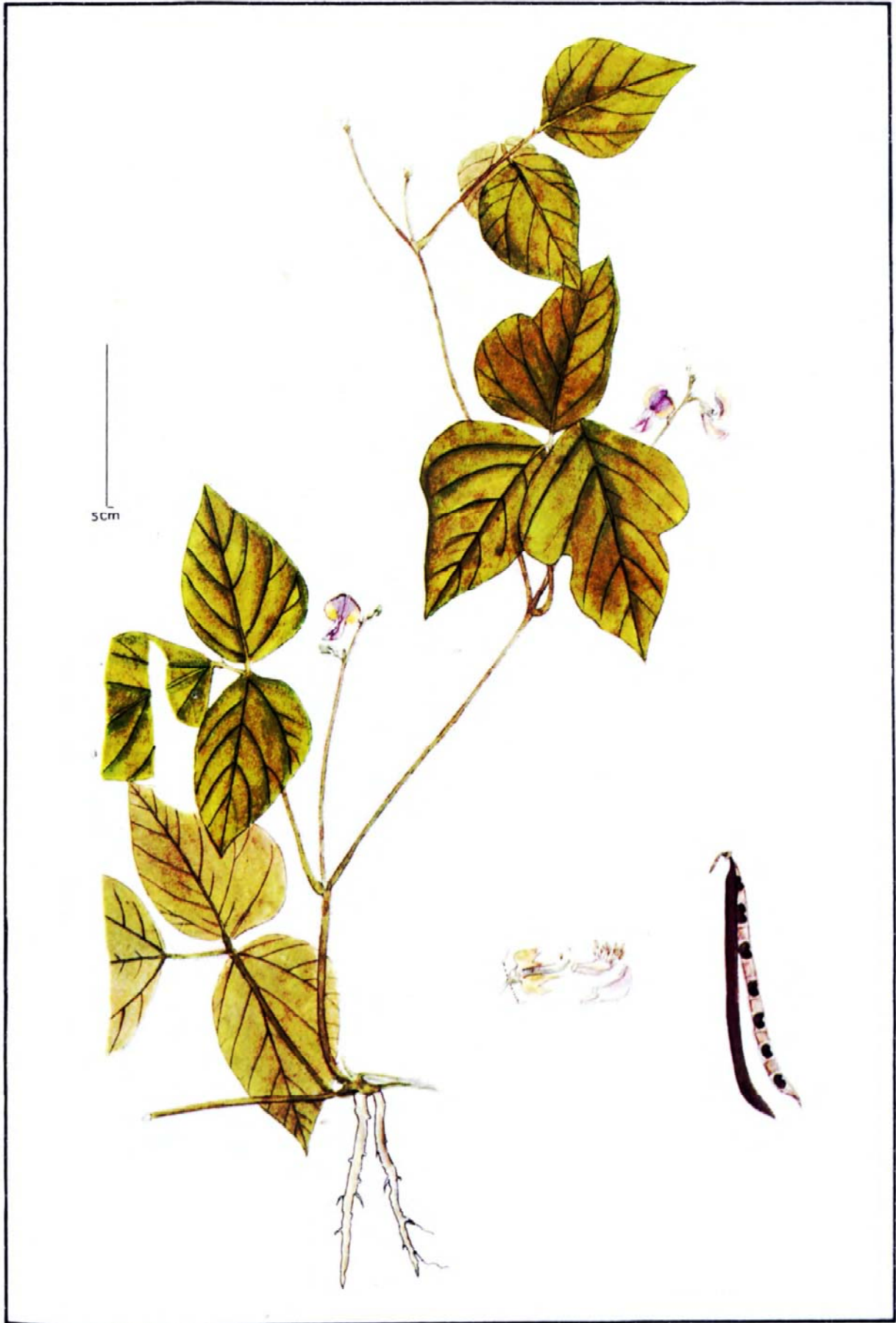
Dolichos phaseoloides Roxb. Fl. Ind. 3: 316, 1832.

Perennial, twining, clothed with diverging hairs. *Leaflets* semi-cordate, and deltoid, or three-lobed. *Racemes* the length of the leaves. *Legumes* cylindric, towards the apex incurved from ten to twenty-seeded.

From Mr. Kerr at Canton in China, the seeds were received into the Botanic garden in 1804; where the plants thrive well, and blossom chiefly about the close of the rains, and the seeds ripen about the beginning of the cool season.

Stem and *branches* perennial, twining, when they do not meet with support, they run on the ground, and strike root, round, and clothed with distinct, brown, diverging hairs. *Leaflets* the pair sub-semi-cordate, sometimes the posterior margin projects into a large rounded lobe, the terminal one deltoid, or three-lobed, all are hairy like the branches, generally from two to three inches long, and from one to two broad. *Petioles* very hairy, hairs harsh and brown. *Stipules* of petioles triangular, of the leaflets subulate. *Racemes* axillary, solitary, about as long as the leaves. *Flowers* numerous, pretty large, violet-coloured, and collected in the bundles on alternate glands. *Bracts* of the gland three-fold, those of the flowers two-fold, all are very hairy, and ovate-lanceolate, the former caducous, the latter more permanent. *Calyx* somewhat bilabiate, the flower three-toothed, the middle tooth ends in a long filiform point, the upper bidentate. *Legumes* diverging, cylindric, towards the apex incurved, about as thick as a common quill, and from three to four inches long, black when ripe, and little hairy. *Seeds* from twelve to twenty, smooth, small, brownish gray.

(W. Roxburgh, *Flora Indica* 3: 316, 1832)



PUERARIA PHASEOLOIDES (Roxb.) Benth.
(*Dolichos phaseoloides* Roxb.)

22. PHASEOLUS GLABER Roxb.

Annual; *stipules* obliquely ovate, adnate. *Leaflets* sub-cordate, entire. *Heads* long-peduncled. *Spur* of the *keel* remarkably large. *Legume* straight, cylindrical, smooth, many seeded.

The seeds of the species were received into the Botanic garden, from the Mauritius, where I am informed the plant is cultivated under the name *Lentille De Creole*.

Stem scarcely any, but numerous, short, ramous, ascending, round, smooth branches; height of the whole plant, in our rich soil of Bengal, about two feet, and spreading fully as much. *Leaves* ternate. *Leaflets* of the pair obliquely cordate, the terminal one trapeziform, all are entire, and tolerably smooth on both sides. *Heads* solitary, short, on long, round, smooth peduncles. *Flowers* in pairs, short-pedicelled; one on each side of a large, roundish gland, large, of a bright yellow. *Bracts* of the pedicel solitary, lanceolate; of the calyx in pairs, lanceolate. *Banner* very broad, reniform. *Horn* of the keel remarkably long and pointed. *Legume* cylindrical, horizontal, straight, pointed, from three to four inches long, and about as thick as a goose-quill. *Seeds* ten or twelve, cylindrical, truncated at both ends, dark brown, with lighter coloured spikes.

(W. Roxburgh, *Flora Indica* 3: 291, 1832)



PHASEOLUS GLABER Roxb.

23. VIGNA DOLICHOIDES (Roxb.) Baker

Phaseolus dolichoides Roxb. Fl. Ind. 3: 290, 1832.

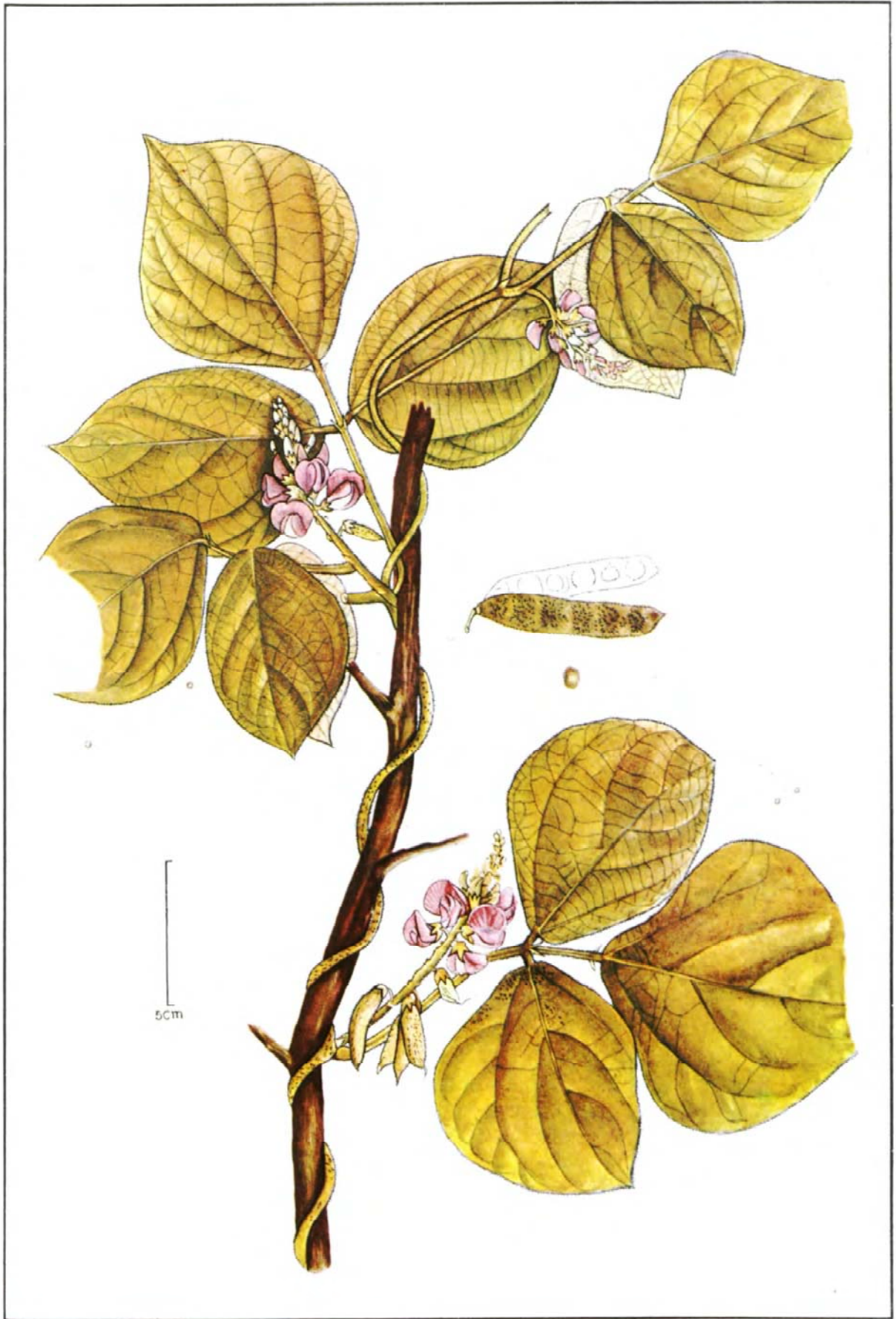
Perennial, hairy. *Leaflets* entire, broad-rhomboidal. *Stipules* ovate-lanceolate. *Racemes* axillary, longer than the petioles. *Flowers* in pairs, from numerous approximated glands. *Keel* hornless. *Legume* straight, cylindric, very hairy; *seeds* from six to eight, in very distinct cells.

A native of Chittagong, where it blossoms during the rains, and ripens its seeds in the cool season.

Root ramous, perennial. *Stem* and *branches* twining to an extent of some fathoms, round and hairy. *Leaflets* entire, hairy; the pair obliquely rhombiform, the single one much larger, and broad-rhombiform, being nearly as broad as long. *Petioles* slightly channelled, hairy. *Stipules* from oblong to ovate-lanceolate, hairy. *Racemes* axillary, solitary, erect, longer than the petioles, supporting numerous, large, short-pedicelled, dark purple flowers, inserted by pairs, on large approximated, smooth glands. *Bracts* oval, a single, caducous, common one at the base of each gland of the raceme; another more permanent one at the base of each pedicel, and lastly two pressing on the calyx laterally. *Keel* without a horn, and less twisted than usual. *Legume* straight, cylindric, as thick as a child's finger, and about three inches long, densely covered with soft light brown hairs, like plush, inwardly separated into as many very distinct perfectly round cells as there are seeds. *Seeds* six or seven, oval, of the size of a pea, speckled, with short, very dark-coloured hairs on a lighter coloured integument.

I do not find that any part of the plant is usefully employed, but its dark purple flowers render it ornamental.

(W. Roxburgh, *Flora Indica* 3: 290, 1832)



VIGNA DOLICHOIDES (Roxb.) Baker
(*Phaseolus dolichoides* Roxb.)

24. BUTEA SUPERBA Roxb.

Shrubby, twining.

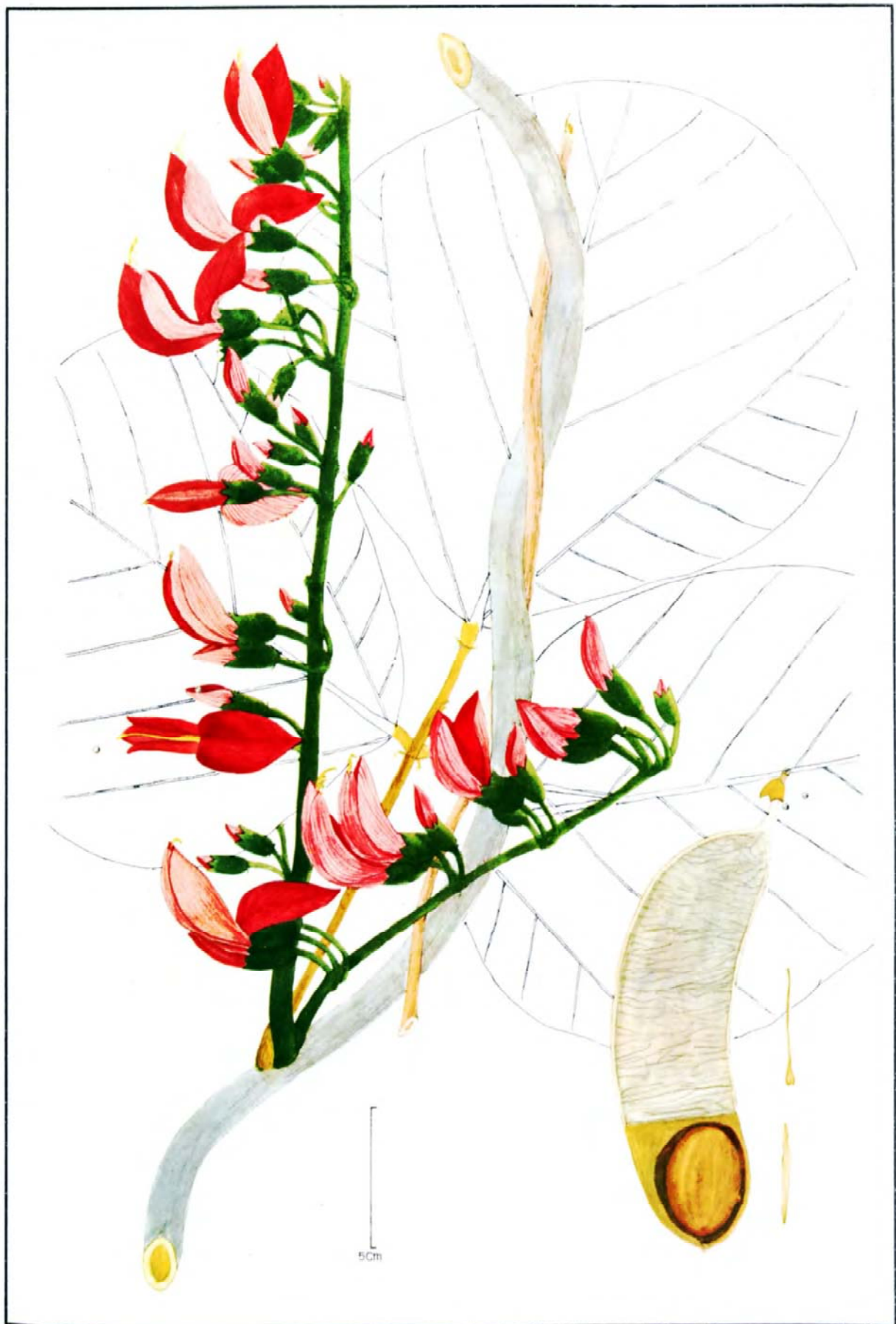
Teling. Tiga-muduga.

This is a very large, twining shrub, a native of the Circar mountains. Flowering time the beginning of the hot season and the seed ripens in June and July.

Root spindle-form, very large. *Stem* twining, as thick or thicker than a man's leg, woody, very long, running over large trees. *Bark* ash-coloured, pretty smooth. *Branches* like the stem, but with a smoother bark. *Leaves* alternate, terminal, remote, very large. *Leaflets* downy, in other respects as in *B. frondosa*, but much larger; the exterior one is often about twenty inches long, and broad in proportion, the lateral ones somewhat less. *Racemes* as in the former, but much larger. *Flowers* also the same, only much larger, and more numerous. *Calyx* divided as the other, but the divisions longer and much more pointed. *Corol* the same. *Legumes* and *seed* as in the former, but rather larger. When this species is in full flower, I do not think the vegetable world offers a more gaudy show. The flowers are incomparably beautiful, very large, and very numerous. The colours are so exceedingly vivid that my best painter has not been able, with his utmost skill, to imitate their brightness.

From fissures, & c. in the bark the same sort of ruby coloured astringent gum exudes as was noticed in the last species. The flowers also yield the same beautiful yellow dye and pigment.

(W. Roxburgh, *Flora Indica* 3: 247, 1832)



BUTEA SUPERBA Roxb.

25. BUTEA MONOSPERMA (Lamk.) Taub.

Butea frondosa Roxb. Corm. Pl. i No. 21. & Fl. Ind. 3: 244, 1832.

Arboreous.

Sans. Pulasa.

Beng. Pulas

Teling. Maduga.

Plasa. Rheed. *Mal.* vi. t. 16 and 17.

A middle-sized or rather a large tree, not very common on the low land of the coast, but much more so among the mountains and still more in Bengal. *Leaves* deciduous, during the cold season; they come out again, with the flowers, about the months of March and April; *seed* ripe in June and July.

Trunk generally crooked, covered with ash-coloured, spongy, thick, scabrous bark; the middle stratum of which contains a red juice, hereafter to be mentioned. *Branches* very irregularly bent in various directions. *Young shoots* downy. *Leaves* alternate, spreading, ternate, from eight to sixteen inches long. *Leaflets* emarginate or rounded at the apex, leathery, above shining and pretty smooth; below slightly hoary, entire, the pair are obliquely oval, from four to six inches long and from three to four and a half broad, the exterior one obovate and considerably larger than the lateral ones. *Common petioles* round, when young downy, as long as the leaflets. *Stipules* of the petioles small, recurved, downy, those of the leaflets subulate. *Racemes* terminal, axillary and from tuberosities over the naked woody branchlets, rigid, covered with a soft, greenish-purple down. *Flowers* papilionaceous, pendulous, numerous, pedicelled, fasciated, very large, their ground colour a beautiful deep red, shaded with orange and silver-coloured down, which gives them a most elegant appearance. *Pedicels* round, about an inch long, articulated near the apex and covered with the same greenish, velvet-like down. *Bracts* lanceolate, caducous, one below the insertion of each pedicel and two smaller, pressing on the calyx. *Calyx* campanulate, leathery, two-lipped; the *upper lip* large, scarcely emarginate; the *under one* three-toothed, covered with the same dark green down that the racemes and pedicels are covered with. *Corol*; *banner* reflected, ovate, pointed, very little longer than the wings. *Wings* ascending, lanceolate, the length of the keel. *Keel* two-parted, ascending, large, semilunate, the length of the wings and banner. *Filaments* one and nine, ascending in a regular semi-circle, about as long as the corol. *Anthers* equal, linear, erect. *Germ* short, thick, pedicelled, lanceolate, downy. *Style* ascending, a little longer than the filaments. *Stigma* small, glandular. *Legume* pedicelled, pendulous, linear, thin, downy, about six inches long. *Seed* one, lodged near the point of the legume, oval, much compressed, smooth, brown, about an inch and a half long and about one broad.

From natural fissures and wounds made in the bark of this tree, during the hot season, there issues a most beautiful red juice, which soon hardens into a ruby-coloured, brittle, astringent gum; but it soon loses its beautiful colour, if exposed to the air. To preserve the colour, it must be gathered as soon as it becomes hard and kept closely corked up in a bottle.

This gum held in the flame of a candle swells and burns away slowly without smell or the least flame into a coal and then into fine light white ashes. Held in the mouth it soon dissolves; its taste is strongly, but simply astringent. Heat does not soften it, but rather renders it more brittle. Pure water dissolves it perfectly; the solution is of a deep, clear red colour. It is in a great measure soluble in spirits, but this solution is paler and a little turbid; the watery solution also becomes turbid when spirit is added and the spirituous more clear by the addition of water; diluted vitriolic acid renders both solutions turbid and caustic; vegetable alkali changes the colour of the watery solution to a clean deep, fiery blood red.* The spirituous, it also deepens, but in a less degree. Sal martis changes the watery solution into a good durable ink.

Contd.



BUTEA MONOSPERMA (Lamk.) Taub.
(*Butea frondosa* Roxb.)

These are, I think, proofs that a very small proportion of resin is present in this substance. In this it differs essentially from the gum-resin called *Kino* or *Gummi rubrum astringens Gambiense*, which the Edinburgh College has taken into their *Materia Medica*†, but as this can be most perfectly dissolved in watery menstrum it may prove of use, where a spirituous solution of the former, being the most complete, cannot be so properly administered; consequently it may prove a valuable acquisition also. I have used the recent gum in making my experiments, which may make some difference.

Infusions of the flowers, either fresh or dried, dyed cotton cloth, previously impregnated with a solution of alum, or alum and tartar, of a most beautiful bright yellow, which was more or less deep, according to the strength of the infusion. A little alkali added to the infusion, changes it to a deep reddish orange. It then dyed unprepared cotton cloth of the same colour, which the least acid changes to a yellow or lemon. These beautiful colours I have not been able to render perfectly permanent.

Amongst numberless experiments, I expressed a quantity of the juice of the fresh flowers, which was diluted with alum water, and rendered perfectly clear by depuration. It was then evaporated by the heat of the sun, into a soft extract; this proves a brighter water colour than any gamboge I have met with. It is now one year since I first used it and it remains bright.

Infusions of the dried flowers yielded me an extract very little, if any thing, inferior to this last mentioned. They yield also a very fine durable yellow lac and all these in a very large proportion.

The *Lac* insects are frequently found on the small branches and the petioles of the leaves of this tree. Whether the natural juice of its bark contributes to improve the colour of their red nidus or colouring matter, I cannot say. It would require a set of experiments accurately made on specimens of *lac* gathered from the various trees it is found on, at the same time and as nearly as possible from the same place, to determine this point.

I do not find that the natives make any use of the gum or flowers, although they promise to be valuable the former as a medicine; and the latter as a pigment and dying drug.

(W. Roxburgh, *Flora Indica* 3: 244, 1832)

*With an alkalized decoction of this gum, I tried to dye cotton cloth prepared with alum, with sugar of lead and with a solution of tin in aqua-regia; but the reds procured thereby were bad; that where alum was employed, was the best.

†A specimen of the tree which produces this African substance in the Banksian herbarium, convinces me that it is a species of *Elaeocarpus*.