STUDIES IN LEGUMINOSAE

1. A TAXONOMIC REVISION OF THE GENUS DERRIS LOUR. IN INDIA

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ABSTRACT

The taxonomic revision of the genus Derris Lour. in India is a preliminary step towards the revision of the tribe Dalbergieae of the order Leguminosae. The tribe is represented in India by the following genera—Dalbergia, Pterocarpus, Pongamia, Derris and Euchestia.

Twenty five species of Derris are described in this paper which include 2 species (Derris pseudo-robusa, D. macrocarpa), 3 varieties (D. robusta Benth. var. assamica, D. cuneifolia Benth. var. longipedicellata, D. elliptica Benth. var. chittagongensis) and 2 forms (D. elegans Benth. f. andamanensis, D. cuneifolia Benth. f. assamica) described for the first time.

Derris heyneana Benth. var. paniculata Baker is raised to the status of a species with a new name D. bakeri; while D. eulata Beld. and D. wallitchi Prain are reduced to varieties of D. thyrsiflora Benth. (D. thyrsiflora Benth. var. eulata, D. wallitchi). The nomenclature of Derris laxiflora Haines is changed, the correct name being D. hainesiana. D. thyrsiflora Benth. is reported for the first time from the Andaman Islands.

INTRODUCTION

The genus Derris was established by Joao de Loureiro in 1790 (Fl. Cochinch. 2: 432, 1790) and comprises nearly 120-150 species (Ind. Kew. 1895-1955) distributed in tropics, chiefly tropical Asia. The name Derris Lour. (1790) has been conserved (Ind. Kew. Suppl. 10: 72, 1936-40; Stand. Pl. Names, 159, 1942; Int. Code Bot. Nom. sub no. 3838, 1956; Taxon 8: 295, 1959) against Aublet's Deguelia (Pl. Gui. 2: 750, t. 300, 1775) which has been adopted by Tauber in Engl. and Prantl. Nat. Pfl. fam. 3(2): 345, 1891.

Baker described 24 species from India in Fl. Brit. Ind. 2: 240-48, 1878, while David Prain (J. Asiat. Soc. Beng. 66: 99-361, 1897) added 3 more, namely Derris andamananica, D. wallitchii and D. monticola. Haines described one new species, D. laxiflora (Bot. Bihar and Orissa 2: 299, 1922), but the specific epithet being preoccupied, a new name, namely D. hainesiana is given. Derris discolor Benth. is conspecific with D. cuneifolia Benth. Derris wallitchii Prain is treated only as a variety of D. thyrsiflora Benth. and so it is merged with the latter. Derris eulata Beld. and D. platypetra Baker were wrongly placed (Baker in Fl. Brit. Ind. 2: 244-45, 1878) under the section Dipteroderris which is characterised by monadelphous stamens, while the stamens in the above two species are distinctly diadelphous. Derris platypetra Baker is again same as D. eulata Beld. while the latter itself is treated as a variety of D. thyrsiflora Benth. Derris heyneana Benth. var. paniculata Baker is raised to the status of a species and a new name, namely D. bakeri is given to it.

David Prain (J. Asiat. Soc. Beng. 66: 361, 1897) considered Derris secunda Baker and D. monticola Prain to be conspecific. The flowers of Derris monticola Prain are rather larger than those of D. secunda Baker (Dunn in J. Linn. Soc 41: 237-38, 1922). Further the two species differ in texture and venation of leaflets and are therefore kept separate under the section Euderris. Derris benthamii Thw. is removed from the section Euderris and is placed under the section Dipteroderris next to D. heyneana Benth. as the inflorescence and other characters of the former closely conform to D. heyneana Benth. and D. brevipes Baker. The description of Derris brevipes Baker var. coriacea Baker (Fl. Brit. Ind. 2: 244, 1878) is emended, giving the characters of the pod for the first time. Derris thyrsiflora Benth. is a new record for the Andaman Islands, although its occurrence from the Nicobars has been reported earlier.

Baker (in Fl. Brit. Ind. 2: 247, 1878) placed 6 species of Derris under doubtful category as they lacked either the flowers or pods and this is cleared as far as practicable in the present investigation. In the present paper, 25 species are altogether described which include 2 new species (Derris pseudo-robusa, D. macrocarpa), 3 new varieties (Derris robusta Benth. var. assamica, D. cuneifolia Benth. var. longipedicellata, D. elliptica Benth. var. chittagongensis) and 2 new forms (Derris elegans Benth. f. andamananensis, D. cuneifolia Benth. f. assamica).

The root of Derris elliptica Benth. constitutes the 'Derras' or Tuba root of commerce, used as an agricultural and horticultural insecticide and a fish poison: this species is cultivated in Assam, Kerala, Myssore, Madras and Punjab on experimental scale. D. ferruginea Benth., which occurs wild in Assam and Eastern Himalayas is the source of 'Indian Tuba root'. D. malaccensis Prain is also cultivated in our country on a small scale for the same purpose. The wood of D. robusta Benth. is used for making tea-chests, posts and ploughs. The bark of D. trifoliata Lour. is used as alternative in rheumatism. D. scandens Benth. is used as fish poison.


Sakken Adans. Fam. 2: 322, 1763.
Soleri Adans. Fam. 2: 327, 1763.

Clyziona Neck. Elem. 3: 33, 1790.


Aganope Miq. Fl. Ind. Bat. 1: 151, 1855.

The genus is divided into 5 sections [Benth. in J. Linn. Soc. 4 (Suppl.): 101-103, 1860] as follows:
1. Bradypterus plants with comparatively small leaflets; flowers medium, fasciculate on tumid nodes in axillary panicles; stamens monadelphous; base of vexillum without callosities; pod thin, strap-shaped, narrow, pointed at both ends, winged only along the upper suture.
2. Euderris Benth. Robust climbers with medium to large leaflets; flowers rather large, fasciculate on tumid or produced nodes in axillary panicles; stamens monadelphous; base of vexillum without callosities; pod thin, broadly oblong or suborbicular, obtuse, winged only along the upper suture.
3. Dipteroottucces Benth. Robust climbers with large leaflets; flowers medium, on tumid or produced nodes in terminal and axillary panicles; stamens monadelphous; base of vexillum without callosities; pod winged down both the sutures.

4. Paradererris Miq. Robust climbers with large leaflets; flowers large, on usually produced nodes in axillary panicles; stamens monadelphous; base of vexillum with two callosities extending along the claw; pod winged down the upper suture.

5. Aganope Miq. Robust climbers with large leaflets; flowers in ample thyrsoid panicles, the nodes not produced into stalks; stamens diadelphous, the upper stamen quite free from the others down to the base; base of vexillum without callosities; pod winged down one or both the sutures.

**GENERIC CHARACTERS**

Climbing shrubs, rarely erect trees; a few, like *Derris trifoliata* Lour. and *D. sinuata* Thw., are mangrove plants. Leaves alternate, imparipinnate, mostly stipulate; leaflets opposite, stipellate or extispellate. Flowers in fascicles, rarely solitary, on the rachis of axillary or terminal racemes or panicles; bracts small, caducous; bracteoles ovate or orbicular, usually small, often caducous. *Calyx* tube campanulate, nearly truncate, teeth usually very short. *Corolla* much exserted; standard obovate to orbicular, not auricled, rarely callose; wings obliquely oblong, often spurred above the long claw; *keel* ovate, its petals corolla-like. *Stamens* usually monadelphous, the vexillar filament free below, diadelphous in the section *Aganope*, anthers versatile. *Ovary* sessile or shortly stipitate, few-ovuled; style incurved; stigma minute, capitate. *Pod* usually thin, sometimes rigid, flat, indehiscent, oblong, elongate or obliquely orbicular, distinctly winged along the upper or both the sutures; seeds solitary or few, compressed, reniform or orbicular; hilum small.

**Type species:** *Derris trifoliata* Lour. (Herb. PIN)

**Distribution of species in India** The Indian species of *Derris* have certain features of interest in their distribution. Only very few species, such as *Derris scandens*, *D. trifoliata*, and *D. thyrsiflora*, are widely distributed throughout India, while certain others are fairly distributed but only in definite areas. For instance, *Derris cuneifolia*, *D. marginata* and *D. ferruginea* are found in abundance in Eastern India as well as Eastern Himalayas, while *D. andamanica* occurs in plenty in Andaman and Nicobar Islands. The rest of the species are confined only to small areas in definite zones. The distribution of these species is therefore very restricted and some are quite rare and probably endemic. For instance *Derris elegans* and *D. andamanica* are found only in the Andaman and Nicobar Islands and the latter is probably endemic to those islands. *Derris sinuata* has so far been reported only from Bengal. A good number of species, such as *Derris brevipes*, *D. benthamii*, *D. bakeri*, *D. canarensis*, *D. ovatifolia* and *D. heynema* are restricted to Peninsular India, while...
**Key to the Species**

A. Inflorescence a raceme or a panicle with nodes either tumid or produced into stalks; stamens monadelphous.

B. Standard petal without calleolises at the base of the limb.

C. A tree, up to 24 meters high; leaflets about 23 in number, thin and apiculate.

D. Scandent shrubs and climbers.

E. Pod winged along the upper surface.

F. Pod narrow, thin, strap-shaped, much longer than broad, 2-4 seeded.

G. Pod glabrous, ovate to obliquely orbicular, reticulately veined

H. Pod clothed with fine silky hairs, oval to oblong.

I. Pod more or less turgid against the seeds, smaller, reticulation over the pod either faint or almost absent; leaflets smaller.

J. Leaflets larger in size, hairy beneath especially on the nerves, stipules present; pod sparsely brown silky.

K. Leaflets smaller than above, glabrous. stipules absent; pod persistently and densely silky.

L. Pod winged along the upper and lower surfaces.

M. Pod glabrous.

N. Pod puberulous.

O. Leaflets obovate to obovato-oblanceolate, shortly acuminate, hairy beneath; pod rigid.

P. Leaflets elliptic to oblong, glabrous; pod thin, starp-shaped.

Q. Standard petal with two calleolises at the base of limb.

R. Leaflets 13-19, smaller and narrower, usually oblong to oblong- lanceolate, rigidly subcoriaceous.

S. Leaflets 5-11, larger and wider, usually obovato-oblong, base cuneiform.

T. Inflorescence shorter than leaf, nodes of raceme produced into short stalks.

U. Leaflets thin; pod obovato-elliptic to oblong, 3.5 cm. long, 2.2-3.3 cm. wide, reticulately veined, wing on the lower surface obscurely developed.

V. Leaflets thick; pod oblong, very long, 3-12.4 cm. long, 2.2-2.7 cm. wide, faintly veined, winged on both the surfaces.

W. Inflorescence longer than leaf, nodes of raceme not produced into stalks; pod firm; leaves distinctly cuspidate.

X. Leaflets thinly brown silky beneath; flowers larger; calyx cup densely silky; petals silky.

Y. Inflorescence an ample thyrsoidal panicle with nodes either tumid or produced into stalks; stamens diadelphous.

Z. Pod up to 19.5 cm. long, sinuate between the seeds, narrowly winged on the upper surface.

**D. monticola, D. microptera, D. elliptica, and D. secunda** occur only in Eastern India. *Derris pseudo-robusa* and *D. macrocarpa* are reported only from type localities.

Ecology: *Derris trifoliata* grows near the sea coast and on the edge of muddy salt water creeks; *D. sinuata* is found only on the banks of tidal rivers in Sundarbans, Bengal. They are, therefore, mangrove plants in their habitat. *Derris andamanica* is a littoral shrub, found growing in the beach forests of Andaman and Nicobar Islands. *Derris heyniana* and *D. canarensis* occur in the thick rain forests of Western Ghats.

**Section I. Brachypterium Wt. & Arn.**


6-8.5 cm long, rarely up to 10 cm long, 2.5-3.5 cm wide, rarely up to 4 cm wide (Bombay, Santapau 18462), glabrous above, minutely puberulous below, rigidly subcoriaceous, entire, retuse, base rounded, at times cuneate, lateral nerves 8-10 pairs: stipels linear and hair-like, very prominent (Andaman and Chittagong): leaf rachis grooved above, petiolule clothed with stiff hairs, 2-4 mm long. Inflorescence a raceme, axillary, rarely terminal, usually simple, at times branched below (Khudada, Santapau 11047-49); No locality or sion number 132139 (CAL); without any locality (Central Province) --Donald 2169 (CAL).

**BIHAR:** Chotanagpur, cultivated, Aug. 1917--Haines 4693 (DD); Mayurbhanj--Deuli, Apr. 1941--Collector? 798, 882 (DD).

**ORISSA:** Barkulpuri, on rocky hill by the edge of Chilka lake in scrub jungle, May 1948--Mooney 3058 (DD); Barkuda Island, Chilka lake, Aug. 1919--Anandale 1238 (CAL).

**UTTAR PRADESH:** Saharanpur, without precise locality--Collector? 592 (DD); Dehra Dun, Kaulagarh (cultivated), Aug. 1929--Parker s.n. (DD).


**CAL:** Central National Herbarium, Calcutta.

**DD:** Herbarium of the Forest Research Institute and Colleges, Dehra Dun.

**BLAT:** Blatter Herbarium, St. Xavier's College, Bombay.

**MH:** Regional Herbarium of the Botanical Survey of India, Coimbatore (Formerly Madras Herbarium, Coimbatore).

**B.S.I.:** Shivlinga--Regional Herbarium of the Botanical Survey of India, Shivling (Formerly Forest Herbarium, Assam).

**B.S.I.:** Poona--Regional Herbarium of the Botanical Survey of India, Poona (Formerly Agricultural College's Herbarium, Poona).
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10552 (BL AT): M al a b a r Hill, Dapoli church yard, Jun. 1922—Acland 410-11 (BL AT); Aug. 1917—Collector? 10707 (BL AT); M a h a b a l e s h w a r, Feb. 1956—Asran 3741 (BL AT); Trombay, Oct. 1925—Acland 412 (BL AT); Sept. 1917—Collector? 12651 (BL AT); V i c t o r i a G a r d e n, Jan. 1917—Collector? 11783 (BL AT); Jul. & Aug. 1954—Panthaki 1445, 11-12 (BL AT); C h a n d i p, Aug. 1960—Das 1903 (BL AT); M a l a d, south of Quarry hills, Jul. 1955—Shah 4578-79 (BL AT); B h a n d u p, Dec. 1919—Nana 50686 (BL AT); C o l a b a, Feb. 1917—Collector? 11575 (BL AT); R a t n a g i r i, Vetora, May 1918—Collector? 11520, 11534 (BL AT); C u t c h, without precise locality—Gokuldaakshiam 4 (DD); without any locality (Bombay), 1930—Hemanvar 10454 (DD); without any locality (Bombay)—Dalzell s.n. (DD); No locality or details (Bombay)—Bhide s.n. (B.S.I. Poona); No locality or details (Bombay)—Ryan s.n. (B.S.I. Poona); W as ind, Aug. 1840—Bhitwa s.n. (B.S.I. Poona).

PENINSULAR INDIA: R a m p a, Chiruvupalayam, Sep. 1920—Narayanaswami 334 (CAL); V i s a k a p a t n a m, Dharakonda, 1923—Collector? 17077 (MH); Palconda R.F., 1923—Jacob 17258 (MH); G a n j a m, Rajabari and Depharia Islands, Aug. 1913—Hooper 395132, 39569 (CAL); Rukeekonda, 1931—Narayanaswami 6082 (MH); G o d a v a r i, Adattigala range, Feb. 1947—Narayanaswami & party 672 (MH); C h o d a r a m, 1916—Collector? 12590 (MH); R a m p a—Chodavaram, Feb. 1956—Wagh 1844-46 (BL AT); Adattigala, Sept. 1956—Wagh 3889 (BL AT); Adattigala, May 1956—Santapau & Wagh 20891, SKW 2980 (BL AT); K r i s h n a, Kondapalli hill, Jul. 1907—Barber 8123 (MH); G u n t u r, Vinukonda, 1924—Collector? 17398, 17400 (MH); C u d d a p a h, Mudumpad, 667 m, 1899—Gamble 21269 (MH); C m a l a p a r a m, Sept. 1910—Meebold 11281, 12603 (CAL); Ballipalle, 1866, 333 m—Gamble 18238 (MH); K o n d u r, Mar. 1957—Wagh 5933 (BL AT); without precise locality, Oct. 1938—Krishnan s.n. (DD); A n a n t a p u r, Narasapally, Jul. 1884, 833 m—Gamble 15251 (CAL); N e l l i o r e, Veligondi hills, Jul. 1914—Ramaswami 1404 (MH); Shivavad, Aug. 1917—Wagh 6783 (BL AT); M a d r a s, without precise locality, Jul 1897—Roure 257 (CAL); Vandalur, 1914—Collector? 11072 (MH); C h i t t u r, Chandragiri, 1914—Collector? 10023 (MH); S o u t h A r c t o n Pou nellie, Gingee, Feb. 1882—Brandis s.n. (CAL); Shani culam, 1899—Barber 908 (MH); S a l e m, V e e r a b h a d r a s w a m i beiliah, Kollegal, Jul. 1930, 1400 m—Narayanaswami 3575 (DD); Kollegal, 1930—Narayanaswami 20058 (MH); Hoganakhal, 1927, 2666 m—Jacob 18024 (MH); C o m b a t o r e, Boluvampatti valley, May 1916, 500 m—Fischer 1929 (CAL); without precise locality, Jan. 1906—Fischer 853 (CAL); Near Siruvani foot, May 1957—Subramanyam 3082 (MH); N o r t h K a n a r a, Karwar, Aug. 1883—Talbot s.n. (DD); Sirsi Kunta road, May 1956—Mahajan 1656 (B.S.I. Poona); Katgal, Aug. 1883—Talbot s.n. (B.S.I. Poona); Karwar, June 1883—Talbot 494 (B.S.I. Poona); N i l g i r i s and C o o r g, without precise locality—Hooker & Thomson s.n. (MH); M a d u r a i, Periyathopu near Allampatti, Melur, Sept. 1957, 200 m—Subramanyam 4319 (MH); Lower and Middle Pulneys, May & Sept. 1918, 533-1333 m—Rodrigues 1828, 2051 (CAL); Bottom of the ghat leading to Kodikanal and Pulney hills, 1884—Collector s.n. (MH); Kodikanal Ghat, Pulneys, 1897—Bourne 898 (MH); Sirumalai, 1920—Collector? 16692 (MH); T i r u n e l v e l i, Courtallam, Jun. 1901—Bar ber 3248 (CAL, MH); Mundundurai, Feb. 1913—Hooper and Ramaswami 39304 (CAL); Courtallam, 1901 Barber 3375 (MH); Courtallam, 1915—Collector? 12164 (MH); without precise locality, 1880—Beddome s.n. (MH); T r a v a n c o r e, Shencottah to Aranyakau, Sept. 1913—Calder and Ramaswami 674 (CAL); without precise locality—Lawson 189 (CAL); Quilon, Jun. 1894—Bourold 241 (CAL); Malayathur, Mar. 1913—Rama Rao 979 (CAL); Puliyera, Sept. 1913—Rama Rao 1711 (CAL); Quilon, Nov. 1910—Meebold 12603 (CAL, B.S.I. Poona); Quilon, Jun. 1836—Wight 835 (CAL); Travancore boundary, 1886—Bourold s.n. (MH); M a l a b a r, Kannoth, 1913—Collector? 9384, 9467 (MH); Pen. Ind. Or—Wight 922, 833 (CAL, MH), 921, 923 (CAL); Northern Deviation—Cleghorn s.n. (CAL).

A N D A M A N S: S o u t h A n d a m a n Port Blair, Sep. 1904—Rogers s.n. (CAL); without precise locality, Oct. 1897—Heinig s.n. (CAL); Narcondam Island 1891—Prain s.n. (CAL); Bajajadagah hill jungle, Dec. 1894—King’s collector s.n. (CAL); Ranguchang hill jungle, Nov. 1893—King’s collector s.n. (CAL); Tylha Ghut near Port Mouat, Jul. 1890—King’s collector s.n. (CAL); Cadellgunj creek, Sep. 1893—King’s collector s.n. (CAL); Bajiejuck near Port Blair, Aug. 1884—King’s collector 215 (CAL); Shaitum Khoru near Port Blair, Jul. 1884—King’s collector 353 (CAL); Tusunanbad, Sept. 1893—King’s collector s.n. (CAL); Wimmerlygunj, Dec. 1896—Heinig 10871 (CAL); without precise locality, Nov. 1901—Heinig 75 (DD); Dhani leaf creek, Jun. 1890—King’s collector s.n. (DD); without precise locality, Aug. 1896—Heinig 63 (DD); without precise locality—Kurz s.n. (CAL); Smith point—Kurz s.n. (CAL); Flag point, 1858—Kurz s.n. (CAL); Mithakhari hill jungle, Aug. 1894—King’s collector s.n. (CAL); Mangultan hill jungle, Jul. 1892—King’s collector s.n. (CAL); Port mouat hill jungle, Aug. 1892—King’s collector s.n. (CAL); M i d d l e A n d a m a n, Long Island, Jul. 1915—Parkinson 671 (CAL); Middle straits—Kurz s.n. (CAL); N o r t h A n d a m a n, Great Cocos Island, Dec. Jan. 1889-1390—Prain s.n. (CAL); Mangrove bay—Kurz s.n. (CAL); without any locality (Andamans)—Helfer 1772 (CAL); without any locality (Andamans), Sept. Oct. 1900—Prain’s collector 42, 95, 131 (CAL), 97,116 (DD), 65 (CAL, B.S.I. Poona); No details regarding collector and locality (Andamans)—Accession number 132215-16 (CAL).
**NICOBARS**: Great Nicobar, Kondul Island, Apr. 1903—Rogers s.n. (CAL); K a m o r t a, without precise locality, 1875—K u r z s.n. (CAL).

The presence of hair-like stipels is very prominent in some of the Andaman as well as Chittagong specimens, a fact not mentioned by earlier workers (Bentham 1860; Baker 1878; Prain 1897).

Pittier in his monograph on the Middle American species of Lonchocarpus (Contrub U. S. Nat. Herb. 20: 41, 1917) made a new combination for *Derris scandens* Benth., namely *D. timorenis* (DC.) Pittier. According to him the Guiana plant, known as *D. guianensis* Benth. [J. Linn. Soc. 4 (Suppl.): 106, 1860] should be known as *D. scandens* (Aubl.) Pittier, as the same has been published under the name *Deguelia scandens* Aubl. (Pl. Gui. 2: 750, t. 300, 1775) and thus has priority over *Dalbergia scandens* Roxb. (Pl. Corom. t. 192, 1805).

Benjamin described *Derris scandens* [J. Linn. Soc. 4 (Suppl.): 103, 1860] based on *Dalbergia scandens* Roxb. and it is the oldest validly published name under *Derris* for the East Indian species. *Deguelia scandens* Aubl., though published earlier (Pl. Gui. 2: 750, t. 300, 1775) for an entirely different plant from Guiana, is oldest only under *Deguelia*. So, Pittier's new combination *Derris scandens* (Aubl.) for the Guiana plant becomes a later homonym and hence is not valid. Incidentally *Derris timorenis* (DC.) Pittier, proposed for the East Indian species under discussion, is also not valid.


An erect tree reaching 10-24 m. high. trunk 1-2 m. in girth; stem terete with faint ridges and furrows. Leaf imparipinnate, alternate, stipitate, 6.5-21.5 cm. long; stipule ovate, deciduous; leaflets 7-23, opposite, elliptic-oblong to oblong-lanceolate, 4.3-5.5 cm. long, 1.5-2.3 cm. wide, minutely puberulous on both surfaces when young and only on the lower surface when mature, entire, acuminate, base often unequal, narrow to rounded; lateral nerves 6 pairs, faint; stipules 2, very minute; rachis and petiolule hairy, grooved above, petiolule 1.2 cm. long. Inflorescence a raceme, axillary, nodes produced into short stalks which bear 2-3 flowers. 21.5 cm. long. Flowers white, bracteate and bracteolate; bracteoles 2, minute, hairy, situated under the calyx-cup; pedicels 3.5 mm. long. Calyx cup widely campanulate, finely silky, mouth 4 toothed. Corolla standard ovato-oblanceolate, 6 mm. long, wings and keels distinctly clawed. Stamens 10, monadelphous. Ovary silky pubescent, style curved upwards, stigma minute, ovules 5-7. Pod narrow, strap-shaped, 3.8-5 cm. long, 0.6-1 cm. wide, base narrow, apex pointed, distinctly winged on the upper suture, reticulately veined, clothed with silky brown hairs, 2-6 seeded; seed black, ovato-elliptic, 2 mm. long.

Flower: April to June; Fruit: August to September.

Distribution: Eastern Himalayas, Assam and Chittagong; also cultivated in other parts.

**WALL. CAT**: Sylhet—5849B. (CAL).

**ASSAM**: C a c h a r, Langting, 167 m., May 1915—Upendra Nath Kanjilal 5577 (CAL); Mahoo, Sept. 1903—Shailk Mokim 314 (CAL); Halong, 833 m., Aug. 1908—Crab 550 (CAL), without precise locality— Dy. Conservator of Forests s.n. (DD); across the Muku river on the march to Cachar from Manipur, 667 m., May 1882—Wat 6930 (CAL); Khans and Jaintia. Dawki forest, Aug. 1935—Ram Sarma 12148 (B.S.I. Shillong); without precise locality—Jenkins s.n. (CAL), without precise locality, 1333 m.—Hook. j. & Thomson s.n. (CAL); No details regarding locality—Collector 6 (CAL); G a u h a t i, without precise locality—Collector s.n. Accession number 132252 (CAL); K a m u r p, Kulsi river—Mein 388 (CAL); M i k i r h i l l s, without precise locality, May 1957—Panighri 9737 (B.S.I. Shillong, CAL); N o w g u n g, Lecleka forest, 1884—M ann s.n. (CAL); N e f a, Mokokchung, May 1895—Reporter Exon. Prod. Govt. India 11790 (CAL); T r i p u r a, Rangamati reserve, Mar. 1935—Macalpine R. II (DD); N a u n a, Beat house to Bhutan, 383 m., Apr. 1958—Nath 13302 (B.S.I. Shillong, CAL), without any details regarding locality (Assam)—Royle 6317 (DD).

**CHITTAGONG**: Kodla hill, Sept. 1885 & May 1887—Badul Khan 133 & 435 (CAL); Agonia hill. Apr. 1886—Badul Khan 493 (CAL); Tongoooria, May 1885—Ellis 32 (CAL); Tinillia, Mar. 1940—Dent 70 (DD).

**UPPER GANGETIC PLAIN**: D e h r a D u h, New forest (cultivated), May 1934—Ratizada s.n. (DD); Saharanpur Garden collection, May 1845—Collector s.n. (DD).


Derris robusta Benth. var. assamica Thoth. var. nov. (Fig. 1).

*Foliola sat majora, 4.5-5.5 cm. longa, 2.2-4 cm. lata, alterna, subopposita vel opposita, viridissima supra, pallide glauca et minute puberula infra. Legumen breuis et latius quam in varietate typica, 4.5 cm. longum, 1.1-4.5 cm. latum, gibrum vel minute puberulum, tenuiter reticulatum. Typus, Carter 1696, lectus in herbario Calcuttensi.*

Leaflets fairly larger in size, 4.5-5.5 cm. long, 2.2-4 cm. wide, alternate, subopposita to opposite, green above, light glaucous beneath, minutely puberulous below. **Pod**
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U: D. robusta Benth. var. assamica Thoth. var. nov.

shorter and broader than in the typical plant, 4-5 cm. long, 1-1.4 cm. wide, glabrous to minutely puberulous, faintly reticulated.

Distribution: Assam.

ASSAM: Upper Shillong, planted at the farm, 1933 m., Jun. 1920—Carter 1696A (Holotype in Herb. CAL. 1696 B; Isotype in Herb. Cal).

Dalzell mentioned this species (Dalz. & Gibbs. Bombay Fl. 77, 1861) as indigenous to Bombay Presidency, basing his conclusion on Stock's herbarium. This was followed by Cooke in Fl. Bombay 1: 403, 1902. In Hooker's Fl. Brit. Ind. 2: 241. 1878 this species has been reported from the Western Peninsula. Talbot (For. Fl. Bomb. Pres. & Sind 1: 76, 1909) says that he had never come across this species. The author has not seen any collections of this species from Western Peninsula. It is doubtful whether D. robusta Benth. occurs in Western Peninsula at all.

3. Derris pseudo-robusta Thoth. spec. nov. (Fig. 2).

Fruit volubilis usque ad 5m. altus: ramuli juveniles minutissime puberuli; trunco lenticellato. Folia alterna, imparipinnata, stipulata, ad 21 cm. longa; rachis supra sulcata, minute puberula; foliola 15, opposita, ellipticoblonga, nonnumquam obovata, 4-6.5 cm. longa, 1.5-3 cm. lata, integra, rotundata ad basin, breviter acuta ad apicem, sustentatione, minute puberula infra praesertim in nervis; rachis 6-8-jugi; foliolum 2-3 mm. longi, puberuli. Inflorescens racemosa nodis aliquantum producta. Flores haud observati. Legumen oblongum, planum, februlaeforme, 6.4-11.8 cm. longum, 1.4-1.8 cm. latum, distincte alatum in sutura superiore tantum,alis 2-3 mm. latis, vestibium caillii brevibus brunneolis, reticulato nervosum, angustum ad basin, apice curvato et acuto, 3-8-sporum; semina distincte notata. Typus, Panigrahi 14550, lectus in Kheti-Tincha. Tirap F. D. in NEFA Assamia et positus in the herbário Calcuttensi. Accedit da D. robusta Benth. a qua tamen differt habitu, foliis, leguminibus.

A scandent shrub up to 5 metres high, young branches very minutely puberulous; stem lenticellate. Leaves alternate, imparipinnate, stipulate, up to 21 cm. long; rachis grooved above, minutely puberulous; leaflets 15, opposite, elliptic-oblong, obovate at times, 4-6.5 cm. long, 1.5-3 cm. wide, entire, base mostly rounded, apex shortly acute, subcoriaceous, minutely puberulous below especially on the nerves; lateral nerves 6-8 pairs; peti- lulae 2-3 mm. long, puberulous. Inflorescence a raceme with nodes slightly produced. Flowers not known. Pod oblong, flat, strap-shaped, 6.4-11.8 cm. long, 1.4-1.8 cm. wide. distinctly winged on the upper suture only, wings 2-3 mm. wide, pod clothed with short brownish hairs, reticulately veined, base narrow, apex curved and pointed, 3-8 seeded; seed visibly marked.

Distribution: North East Frontier Agency.


The above species is distinctly a new one, even though it lacks the flowers. It is close to D. robusta Benth. but markedly differs from it in habit, leaf and pod characters. It is placed in the section Brachyptema next to D. robusta Benth.

Section II. EUDERRIS BENTH.

PLATE 2: *D. pseudo-robusta* Thoth. spec. nov.

A climber found along the sea coast and on the edge of muddy salt water creeks. Leaves imparipinnate, alternate, 10.4-25 cm. long; stipule minute; leaflets 3-5, opposite, ovate, ovato-oblong and at times oblong-lanceolate, 4.5-13 cm. long, 2.5-6.4 cm. wide, glabrous, rigidly subcoriaceous, entire, shortly acuminate, apex obtuse, base rounded, exstipellate: lateral nerves 8-9 pairs; leaf rachis and petiolo groove above, glabrous, petiolo 3-4 mm. long, rarely 5 mm. long, much wrinkled. Inflorescence a raceme, axillary, 2-24 cm. long, nodes of rachis produced into short stalks which bear 1 or more pedicellate flowers, pedicels slender, subequal. Flowers 1-1.2 cm. long, pink, bract minute, ovate, bracteoles present; pedicels slender, 2-3 mm. long, not fascicled. Pedicels and rachis glabrous. Calyx cup truncate, teeth obscure, margin of the cup fringed with minute hairs. Standard ovato-ovibcular, 1 cm. long, 0.9 cm. wide, apex retuse. Stamen 10, monadelphous, anthers versatile. Ovary clothed with silky hairs, style long, stigma minutely peltate, ovules 7-8. Pod obliquely rounded, rarely oblong, 2.5-2.2 cm. long, 2.5-3.8 cm. wide, glabrous, winged on the upper suture, reticulately veined, 1-2 seeded; seed ovato-ovibcular, reddish brown to black with radiating lines, 1.2 cm. long, 1.5 cm. wide.

*Flower*: April to July; *Fruit*: September to October.

Distribution: Assam, Bengal, Orissa, Bombay, Peninsular India, Andaman and Nicobar Islands.

**WALL. CAT.** Madras—5879 H & I (CAL); Singapore 1822—5880 (CAL); cultivated in Botanic garden. Calcutta—5879 D (CAL); without any locality—3879 (CAL).

**ASSAM**: Dawki forest, Khasi and Jaintia Hills, Mar. 1936—Deku 15366 (B.S.I. Shillong).

**BENGAL**: 24 Paragana, on an island off Kakdwip, Aug. 1961—Sen Gupta 106 (CAL); Sundarbans, Isodhara, Jul. 1902—Prajn s.n. (CAL); Satkhira, Aug. 1902—Prajn s.n. (CAL); Pathuria, Apr. 1894—Heinig 49 (CAL); Tiger point, Bajurghat reserve, Feb. 1894—Heinig 28 (CAL); Khurma Khal, 1893—Heinig s.n. (CAL); Satkhira, Khulna, May 1883—Clarke 34001 B (CAL); Thakuran, Oct. 1957—Mukerjee 1625 (CAL); Berigang, Sep. 1913—Bhattocharaya 2 (DD); Chandpoo, Jun. 1932—Basu s.n. (CAL); Rampora, Mar. 1895—Heinig and Gammie 8 (DD); Bijabaj, Nov. 1856—T.T. s.n. (CAL); without any precise locality, Dec. 1887—Gamble s.n. (CAL); without any precise locality, Apr. 1894—Heinig 33 (CAL); without any precise locality, Apr. 1883—Clarke 33369 A (CAL); without any precise locality, Jul. 1902—Lace 2518 (DD); reserve forests, May 1917—Banejee 6 (DD); without any precise locality, Jul. 1891—Collector s.n. (CAL); Malta, without any precise locality, Jun. 1889—Janamithan s.n. (CAL); without any precise locality, Oct. 1856—Kurz 5644 (DD); Cox's Bazar, without any precise locality, Sept. 1932—D. F. O. s.n. (CAL); Magoora, Barisal, Mar. 1872—Clarke 16940 (CAL); Calcutta, Salt lakes, Apr. 1861—Kurz s.n. (CAL); no locality or collector (Bengal)—Accession number 132301 (CAL).

**ORISSA**: Cuttack, in the mud on the bank of tidal creek. Jambu. Mahanadi delta, Jun. 1949—Mooney 3370 (DD); Bar kal Puri, without any precise locality, Apr. 1917—Haines 4123 (DD).


**PENINSULAR INDIA**: Godavari, Coringe, Feb. 1956—Wagh 1479 (BLAI); Krishna, Kondapalli, Jul. 1907—Barber 8123 (CAL), Nelluru, Tummulapenta, Sept. 1922—Fischer 4771 (CAL); Madras, Ayag, Aug. 1901—Bourns 2429 (CAL); North Kanara Karwar, Jun 1918—Sedgwick & Bell 4078 (CAL); Karwar, Jun. 1885—Talbot 1240 (CAL); Karwar, Mar. 1957—Jain 16456 (B.S.I. Poona); Karwar, 1881—Talbot s.n. (B.S.I. Poona); South Kanara, Neelaswar, Jun. 1947—Rajatekarsharma mudhattar 93052 (MH); Wudne urkwarla, 1910—Collector 1245-40 (MH); Madurai, Shembaganur, Oct. 1918—Sauliere 664 (CAL); Malabar, Kurumathur near Taliparamba, 1915—Collector 11924 (MH); in backwaters, Calicut, 1887—Collector s.n. (MH); Kuppam river, Taliparamba, 1913—Barber 8784 (MH); Travancore, Quilon, Nov. 1910—Meebold 158 (MH); Jadambati sudavalli, Mar. 1873—Rama Rao 969 (DD); Quilon, 1894—Collector s.n. (MH); Kurapizhak, Nov. 1904—Barber 6784 (MH); without any locality (Fl. Madras); Mar. 1904—bourdillion 133 (CAL); Pen. Ind. Or.—Wight 812 & 935 (CAL).

**ANDAMANS**: South Andaman, North Cinque Is. Apr. 1915—Parkinson 481 (CAL); Anikhet hill jungie, Jun. 1891—King s.n. (CAL); Hobdaypur, Feb.
Derris elegans Benth. f. andamanensis Thoth. f. nov. (Fig. 3).

*Inflorescencia* folio longior, 16.5-20 cm. longa, laxa; *pedicellus* usque ad 6 mm. longi; *stipella* eminentes, usque ad 4 mm. longae. Typus lectus in silva ad Manpur in Andaman australi e a *Kingii* collectore et positus in Herbario Calcuttensi sub accessionis numero 132395.

*Inflorescencia* longer than leaf, 16.5-20 cm. long, lax; *pedicels* up to 6 mm long; *stipels* prominent, up to 4 mm long.

**Distribution:** Andaman Islands.

**PLATE 3: D. elegans** Benth. f. *andamanensis* Thoth. f. nov.

Manpur-hill jungle, South Andaman, Feb. 1894—"King's collector s.n.: Accession number 132395 (Holo-type CAL: 132396 Isotype CAL)."

**SECTION III. DIPTERODERRIS BENTH.**


A large climbing shrub. *Leaf* imparipinnate, alternate,
stipulate, 16.5-19.3 cm. long; stipule ovate, acute; leaflets 7, elliptic to oblong, usually 6-7.5 cm. long, 2.5-3.2 cm. wide, rarely up to 10.7 cm. long, 4.5 cm. wide, glabrous, shortly cuspidate, entire, base rounded to narrow, apex obtuse to subacute, exstipulate; lateral nerves 6-8 pairs, rachis and petiole mostly glabrous, rarely silky hairy, petiole 4.8 mm. long. **Inflorescence** a panicle with densely pubescent branchlets, axillary and terminal, 12.7-27.5 cm. long. **Flowers** fairly large, panicle, pedicellate. Stamens 10, monadelphous. Ovary densely pubescent callose, shortly clawed, standard and wing with a few campanulate laterally, densely silky, calyx teeth 4, broadly terminal, 12.7-27.5 cm. long. Flowers large, 1-1.4 cm. long, pedicellate. **Pod** narrowly oblong, much turgid against the seeds, 2.5-4.5 cm. long, 2-2.5 cm. wide, clothed with brown pubescence, narrowly winged on the upper suture with a minute one on the lower. **Distribution:** Nilgiris, Pulneys, Malabar and North Canara in Peninsular India.


Omnia ut apud Baker l.c. quibus addite: *Levomen* late oblongum, tumidum contra semina, 2.5-4.5 cm. longum, 2-2.5 cm. latum, pubescentia brunnea vestitum, ala angusta ad superiorem suturam, angustissima vero ad inferiorem ornatum.

Leaflets larger in size, 8-13 cm. long, 4.5-5.8 cm. wide, thick, coriaceous; lateral nerves comparatively more than in var. *brevipes*: 8-10 pairs. **Pod** broadly oblong, much turgid against the seeds, 2.5-4.5 cm. long, 2-2.5 cm. wide, clothed with brown pubescence, narrowly winged on the upper suture with a minute one on the lower. (Description of the pod given for the first time; not reported by earlier workers.)

**Distribution:** Nilgiris, Pulneys, Malabar and North Canara in Peninsular India.

**Peninsular India:** Nilgiris, Coonoor ghat, 1884—Collector s.n. (MH); Naduvattam, 1884—Collector s.n. (MH); without precise locality—Collector s.n. (MH); Naduvattam, May 1881—Beddome s.n. (CAL); Naduvattam, 1890—Collector s.n. (MH); Malabar, Attapadi Hills, Muthukulam, 1000 m., May 1911—Fischer 2615 (CAL); Pulpneys, without exact locality, Apr. 1898—Bourdillon 1085 (CAL); Travan core, without any exact locality, 67 m., Jul. 1894—Bourdillon 444 (MH); North Kanara, Devimani, Feb. 1805—Talbot 4400 (B.S.I. Poona).


A climber; stem leuticellate, young parts grey. **Leaf** imparipinnate, alternate, stipulate, 21-28.5 cm. long; leaflets 9-11, mostly 11, oblong, 6.5-9.3 cm. long, 2-3 cm. wide, thin, glabrous, entire, shortly cuspidate, base narrow; rachis and petiole minutely hairy, petiole 3-4 mm. long. **Inflorescence** a raceme, axillary, up to 14 cm. long (Indian specimens), rachis and pedicels pubescent, flowers crowded at nodes which are not produced. **Flowers** large, 1.1-1.4 cm. long, pedicellate; pedicels 3-4 mm. long; bract ovate, bracteoles 2, situated at the base of the calyx cup. **Calyx** cup narrowly oblong, brown silky, mouth distinctly toothed, teeth deltoid. **Standard** ovato-ordinal, shortly clawed, glab-
Distribution: Assam and Bengal.


BENGAL: Duttabong, Darjeeling, Aug. 1876, 2000 m—Collector? 692B.
Martaban, Burma—Kurs 1776 (Type in Herb. CAL)


A climber; stem lenticellate. Leaf imparipinnate, alternate, stipulate 15.5-26.2 cm. long; leaflets 5-7, obovate-oblong to oblong, 8-15.5 cm. long. 3.5-6.9 cm. wide. Shortly acuminate, entire, base narrow, apex obtuse, glabrous, subcoriaceous; lateral nerves 8-9 pairs; rachis and petioloie glabrous, petioloie grooved above, 5-6 mm. long. Inflorescence a copiously branched panicle, axillary, branches of the inflorescence grey downy, 19.5-24 cm. long. Flowers crowded on branchlets arising from nodes of the panicle, smaller than D. brevipes, pedicellate; pedicels 3-4 mm. long; bracts and bractsaoles present. Calyx cup campanulate, silky, faintly toothed, pubescence of the calyx not so dense as in D. brevipes. Standard obovate to ovato-orbicular, long clawed, apex obtuse to retuse, keels slightly silky on the back at the top. Stamens 10. monadelphous. Ovary clothed with silky pubescence, ovules 4, oblong to suborbicular. Pod falcately oblong, strap-shaped, 5.5 cm. long. 2.3 cm. wide, glabrous, upper margin distinctly winged, lower one minutely winged, reticulately veined, 1-seeded.

Flower: December to March.

Distribution: North Kanara, Mysore and Konkan in Peninsular India; a rare plant.


A slender, glabrous climber. Young branches terete, lenticellate, glabrous. Leaf imparipinnate, alternate, stipulate, 9.5-14.3 cm. long; stipule ovate; leaflets usually 5-7, rarely up to 9, oblong, up to 4.4 cm. long, 2.3 cm. wide, glabrous, subcoriaceous, entire, base rounded, tip obtuse; lateral nerves up to 8 pairs; leaf rachis and petioloie glabrous, petioloie 3 mm. long. Inflorescence copiously panicked, rachis rusty pubescent, 20.6 cm. long. Flowers small; bracts and bractsaoles ovate, pubescent; pedicels 3-4 mm. long. Calyx cup broadly campanulate, 4 mm. long, mouth 4 toothed, finely grey silky. Standard obovato-orbicular, distinctly clawed without callosites. Stamens 10, monadelphous, 5 longer; alternating with 5 shorter ones, anthers
versatile. **Ovary** silky, style linear, stigma minute, ovules 3-4. **Pod** oblong, 3-3.4 cm. long, 1-1.6 cm. wide, persistently brown silky, narrowly winged on the upper suture with an obscure one on the lower, faintly veined, turgid against the seeds, 1-2 seeded; **seed** oblong, bluish black, 1.8 cm. long and 0.8 cm. wide.

**Fruit:** September to November.

**Distribution:** South India.

**SOUTHERN INDIA:** **Tirunelveli,** Sivagang Hills— **Wight** 834 (Isotype of *D. wightii* Baker, CAL); way to Naterikal, 1916—Collector? 13352 (MH): **Travanccore,** Kulkundal, 1667 m., Dec. 1909 (Pod only)— **Meebold** 13096 (CAL); Courtallam, Nov. 1913— **Rama Rao** 1984 (CAL, MH); **M ad u rai,** High way mountains, May 1917—Collector? 194 (BLAT).

Ceylon Province— **Thwaites** 2925 (Isotype in Herb. CAL).

10. **Derris bakeri** Thoth. nom. nov. **Pongamia heyneana** Wt. & Arn. Proc. 1: 263, 1834, (nom. Grabs), **Derris heyneana** Bent. var. **paniculata** Baker in Brit. Ind. 2: 244, 1878, (Fig. 6).

A **climber:** stem lenticellate. **Leaf** imparipinnate, alternate, stipulate, 13.2-21 cm. long, young parts minutely silky; leaflets 5-9, oblong to ovato-elliptic, rarely obovate, 7.5-12.5 cm. long, 3-6 cm. wide, glabrous, subcoriaceous to coriaceous, entire, base rounded to cuneate, apex obtuse, cuneolate; lateral nerves 6-8 pairs, ascending and then marginally united; petiole 4-5 mm. long, grooved above, hairy. **Inflorescence** lax. **Axillary,** a much branched panicle with long, slender, branchlets, all covered with minute, brown, silky hairs, up to 29.5 cm. long. **Flowers** 9-11 mm. long, 4-5, on short, bracteated, partial peduncles, peduncles 8-9 mm. long; pedicels long, slender, hairy, up to 7 mm. long, stouter above the bracteoles than below and appear as jointed; bract minute, bracteoles 2, minute, ovate, hairy, situated opposite on the pedicel just below the calyx cup. **Calyx** cup truncate, toothed, finely silky, 1.5-2.5 mm. long. **Standard** ovato-orbicular, apex cleft, wings and keels distinctly clawed, standard, wing and keel petals all glabrous. **Stamens** 10, monadelphous, anthers versatile. **Ovary** silky, style curved, stigma minute. ovules 2-4, oblong. **Pod** broadly ovate, flat, 5.2 cm. long, 3.5 cm. wide, glabrous, distinctly winged on both the sutures, base cuneate, reticulately veined, 1-seeded.

**Flower:** February to May; **Fruit:** June.

**Distribution:** Western Peninsula.

**WESTERN PENINSULA:** **North Kanara,** Ainshi ghat, Jun. 1885— **Talbot** 1223 (CAL); Ainshi, Feb. 1894— **Talbot** 3144 (CAL, B.S.I. Poona); **Dodmune,** Mar. 1896— **Talbot** 3587 (CAL, B.S.I. Poona); Ainshi ghat, May 1883— **Talbot** 1195 (CAL), without any locality (Western Peninsula)— **Wight** 920 (Isotype in Herb. CAL, MH); without any locality (Bombay)— **Woodrow** s.n. (CAL); Amboli Ghat. Apr. 1902— **Gammie** 15055 (BLAT, B.S.I. Poona).

Bentham [J. Linn. Soc. (Suppl.) 4: 110, 1860] treated Wall. 5916 and *Wt.* 920 as synonymous and placed both under *Derris heyneana* Bent.

Baker (Fl. Brit. Ind. 2: 244, 1878) placed Wall. 5916 under *D. heyneana* Benth. var. *heyneana* and *Wt.* 920 under *D. heyneana* Benth. var. *paniculata* Baker.

Prain (J. Asiat. Soc. Beng. 66: 461, 1897) considered the two varieties as deserving of specific rank. This opinion has been confirmed by examination of the types. The new species cannot be called *D. paniculata* on account of the name being pre-occupied by *D. paniculata* Benth. based on a different type. Therefore, a new name, *Derris bakeri* is given in honour of J. G. Baker, who wrote the Leguminosae in Hook. f. Fl. Brit. Ind. 2: 56-306, 1876-78.

*D. bakeri* Thoth. differs from *D. heyneana* Benth. in having lax and longer inflorescence, longer pedicels and glabrous petals.


A **climber:** stem lenticellate, branches glabrous. **Leaf** imparipinnate, alternate, 15-31.6 cm. long; stipule present; leaflets mostly 5, occasionally 7, odd terminal one usually larger than others, elliptic to oblong, usually 6-14.7 cm. long and 3-5.5 cm. wide, rarely up to 16.5 cm. long and 7.7 cm. wide, subcoriaceous, entire, shortly cuspidate, base rounded to cuneate; lateral nerves 8-10 pairs; rachis and petirole glabrous, petirole 9 mm. long. **Inflorescence** a panicle, copiously branched with slender branchlets, axillary or terminal, nodes of the inflorescence absent. **Flowers** large, long pedicelled; pedicels 1-1.5 cm. long, filiform; bracts and bracteoles present, bracteoles 2, arranged one above the other on the pedicel just below the calyx cup. **Calyx** cup broader than deep, mouth toothed and fringed with silky hairs. **Standard** ovato-orbicular, apex notched. **Stamens** 10, monadelphous. **Ovary** clothed with silky hairs, ovules 2. **Pod** strap-shaped, oblong, rarely elliptic, normally 6-14 cm. long, rarely up to 21 cm. long. 2.5-4 cm. wide, glabrous, distinctly winged on both the sutures, small on the upper suture well developed, base narrow, tip acute, reticulately veined, 1-2 seeded; **seed** large, brownish black, kidney shaped.

**Flower:** October to May; **Fruit:** March.

**Distribution:** Assam, Bengal, Chittagong, Eastern Himalayas and Sylhet.
PLATE 6: *D. bakeri* Thoth. nom. nov. (From *Wight* 929—*Pongamia paniculata* Wt. & Arn.)
Fig. 1. A portion of branch; Fig. 2. Flower; Fig. 3. Corolla showing wing, standard and keel petals; Fig. 4. Monadelphous stamens; Fig. 5. Pistil; Fig. 6. Pod.
and wrinkled, mature ones with glabrescent hairs, reticulately veined minute, younger pods densely ferrugineo-tomentose, cm. long, rarely up to 9 cm. long, 2-3.6 cm. wide, distinctly winged on the upper suture, the wing on the lower campanulate, mouth toothed. Standard broadly ovate, ovules 4-5. Pod oblong, rigid, usually 4.5-7.8 cm. long, rarely up to 34.5 cm. long. stipulate lateral nerves 5-8 pairs, more prominent beneath calyx the nerves, entire, shortly cuspidate, base cuneate rusty pubescent. Leaf imparipinnate, alternate, usually monadelphous. Ovary densely silky, style bent, stigma ferruginous, axillary or terminal and petiolules covered with brown pubescence, petiolule wing and standard clothed with glabrescent, brownish bracteoles 2, linear, one above the other just below the lateral nerves 6-8 pairs, more prominent beneath rachis and petiolules covered with glabrescent, brownish yellow hairs while keel is more hairy. Stamens 10, monadelphous. Ovary densely silky, style bent, stigma minute, ovules 4-5. Pod oblong, rigid, usually 4.5-7.8 cm. long, rarely up to 9 cm. long, 2.6 cm. wide, distinctly winged on the upper suture, the wing on the lower minute, younger pods densely ferrugineo-tomentose, mature ones with glabrescent hairs, reticulately veined which varies in degree, apex pointed, base rounded, 1-2 seeded, rarely 3- seeded; seed brownish black, elliptic and wrinkled.

Flower: March to May; Fruit: June to August.

Distribution: Eastern Himalayas, Assam and Sylhet.

WALL. CAT: Sylhet—5885 (Isotype in Herb. CAL). BENGAL: Cultivated in Botanic garden, Calcutta—Accession number 132635 (CAL); Alipore Duars, without precise locality, Oct. 1891—Heawood s.n. (CAL).

EASTERN HIMALAYAS: Sikkim, Mungpoo, May 1900—Prain’s collector s.n. (CAL); Bhutan Duars—Haines 534 (CAL).

ASSAM: Khasi, without any definite locality, 334-1000 m.—Hooker & Thomson s.n. (CAL); Khasi and Jaintia, Cherrapunji, 1000 m., Oct. 1878—Galloway 692 (CAL); Nongkla, Dec. 1915—Upendra than Kanjilal 6364 (DD); Cachar, Monier Khal on the Sonai river, Aug. 1903—Gage s.n. (CAL); Kamrup, Near Doi-mari, Jan. 1915—Upender than Kanjilal 5046 (B.S.I. Shillong); Gauhati, without any definite locality, Aug. 1850—Collector s.n., Accession number 132594 (CAL); without any locality (Assam) —Jenkins s.n. (CAL); Assam depiction collection, 1825—Jenkins s.n. (CAL).

BENGAL: Cox’s Bazar, Kelatuli sorra, May 1945—Sinclair 4297 (CAL); Cultivated in Botanic garden, Calcutta—Accession number 132588 (CAL).

CHITTAGONG: Demagiri, Mar. 1876—Lister 195 (CAL); Hazarikhiil, Aug. 1935—Rao 5636 (DD); Hazarikhiil, Feb. 1934—Parkinson 4347 (DD); without any definite locality, Sept. 1933—D. F. O. 1 (DD).
the calyx cup. *Calyx* cup wide, campanulate, densely silky, margin subentire. *Standard* ovato-oriicular, long clawed, clothed with caducous, brown, silky hairs on its tip at the back, more prominent in buds; pubescence of the petals varies, in young buds, standard has pubescence which fall away in mature stage, while keels retain the same and wings have less pubescence (not mentioned by Fram 1857). *Stiunens* io, monocarpicous. *Ovary* distinctly stalked, brown silky, style bent, stigma minute, ovules 4. *Pod* strap-shaped, oblong, 3.5-11 cm. long, 1.8-2 cm. wide, unequally winged on both the sutures, the wing on the upper suture more prominent, clothed with brown, silky hairs, recticulately veined, apex pointed, base narrow, 2-3 seeded.

The plant grows on rocky soils in mangrove creeks near sea shore.

**Flower:** December to March; **fruit:** February.

**Distribution:** Andaman and Nicobar Islands.

**Andamans:** South Andaman, Wimmerlygunj, Feb. 1916-Parkinson s.n. (DD); Rutland Island, Jan. 1916-Parkinson 879 (CAL) without precise locality, Nov. 1901-Heintig 332 (CAL); Putatang creek, Feb. 1904-Rogers 67 (CAL); Bajajadagah jungle, Feb. 1895-King's collector s.n. (CAL); Port mount hill jungle, Mar. 1893 & 94-King's collector s.n. (CAL); Hobdaypur, Jan. 1891-King's collector s.n. (CAL); Cadellgunj jungle, Aug. 1894-King's collector s.n. (CAL); North Corby's cove hill jungle, Jan. 1895-King's collector s.n. (CAL); Chiriatopu, Jan. 1916-Parkinson 889 (CAL); Jungli's house hill jungle, Jul. 1895-King's collector s.n. (CAL); Middle Andaman, Bomlunga, Feb. 1916-Parkinson 511 (CAL); Raugai, Mau. 1915-Kirsi Rann 3637 (DD); Hoamray cove, Baratang island, Feb. 1915-Parkinson 313 (DD); without any locality (Andaman)-Alfred 9586 (DD), Feb. 1899-Prain's collector s.n. (CAL); North Andaman, Great Cocos Island, Dec. 1889-Prain's s.n. (CAL).

North Corby's cove hill jungle, South Andaman, Jan. 1895-King's collector s.n., Accession number 132565 (Lectotype designated—Herb. CAL).

**Nicobars:** Car Nicobar, Sea-shore hill jungle, Feb. 1894-King's collector s.n. (CAL) without precise locality, Jan. 1893-King's collector s.n. (CAL).

**Section IV. Paraderris Miq.**


A climbing shrub; branches terete, glabrous. *Leaf* imparipinnate, alternate, up to 35.5 cm. long, stipulate, base of the peduncle slightly swollen and wrinkled; stipule prominent, ovate, broad based and minutely hairy; leaf rachis striate, markedly grooved above; leaflets 13-19, oblong to oblong-lanceolate, rarely cuneate, up to 11.8 cm. long, 3.4 cm. wide, entire, base rounded, apex obtuse, subcoriaceous, glaucous, young leaflets minutely hairy below, but older ones glabrous; petiole 3.4 mm. long, glabrescent, wrinkled; lateral nerves 6-8 pairs. *Inflorescence* a raceme, axillary, 15-17 cm. long. Nodes of the inflorescence produced into short stalks which bear mostly 3 and rarely 5-6 flowers: rachis, node and pedicels hairy, *Flowers* large, up to 1.3 cm. pedicels filiform, 3-4 mm. long; bract ovate, bracteoles 2, minute, just below the calyx cup. *Calyx* cup broadly truncate, toothed, minutely hairy, mouth as well as inner side of the calyx cup fringed with silky hairs, *Standard* ovato-oriicular, with 2 minute callosites at the base, long clawed, 1.1 cm. long. *Stamens* 10, monadelphous. *Ovary* hairy, upper portion of the ovary thin, style short, stigma minute, ovules 2, oblong. *Pod* flat, oblong, 3.6-8.3 cm. long, 2-2.6 cm. wide, winged on both the sutures, the wing on the lower suture less developed, clothed with glabrescent, soft, grey hairs in young pods, absent in mature ones, faintly and reticulately veined, apex curved into a mucronate tip, 1-3 seeded; *seed* bluish-black, oblong, 1 cm. long, 0.8 cm. wide, micropylar side curved inwards with a ridge and furrow on either side.

**Flower:** February to April; **fruit:** September.

**Distribution:** Peninsular India; rare plant.

**Peninsular India:** North Karnataka, Kasarle, May 1853-Ritchie 1720 (CAL): Ainshi ghat. 1885-Talbot 1184 (CAL, B.S.I. Poona); Supa, May 1881-Talbot 1846 (B.S.I. Poona); Devimani ghat, Nov. 1908-Kulkarni s.n. (B.S.I. Poona); Yeole forest, May 1956-Mhajan 16/5 (B.S.I. Poona); Devimani ghat, May 1911-Girade s.n. (B.S.I. Poona); Castlerock, Oct. 1902-Garande 15778 (B.S.I. Poona); Hill below the falls on the Kola Naddi, Dec. 1852-Ritchie s.n. (CAL); Castlerock, 534 m., Aug. 1917—Sedgwick 2821 (BLAT); without precise locality, 600 m., May 1919-Bell 5969 (BLAT); Sampkhanda. Apr. 1939—Bor 11319 (DD); Kumta. Apr. 1939—Bor 11319 (DD): Konkan, without precise locality—Stocks s.n. (CAL); Coorg, without precise locality, 1925—Forest Officer 1690? (MH); Travancore, Quilon, Nov. 1909—Meenbol 12621 (CAL); Aryanad, Feb. 1913—Roma Rao 902 (CAL); Raja pur, Kodawali, May 1904—Bhide s.n. (B.S.I. Poona); Jugglep (Peninsular India), Apr. 188—Taibor s.n. (DD).

**Bengal:** Cultivated in Botanic garden, Calcutta, Apr. 1899 & Sept. 1900—Lane s.n. (CAL, B.S.I. Poona), Apr. 1902—Accession number 132408 (CAL).
1961 THOTHATHRI: A TAXONOMIC REVISION OF THE GENUS DERRIS LOUR. IN INDIA


A climber; young branches sparsely puberulous. Leaf imparipinnate, alternate, 20-30 cm. long, stipulate; stipules prominent, ovate, tip acute, base broad and clasping, margin hairy; leaflets mostly 5-9, rarely up to 11, obovate to obovato-oblong, at times cuneate-oblong, mostly 8-10 cm. long, 3-5 cm. wide, rarely up to 13-5 cm. long and 9 cm. wide, glabrous, thin to subcoriaceous, entire, distinctly cuneate at base, apex obtuse; lateral nerves 8-11 pairs, not prominent; rachis grooved above, petiolule 4-5 mm. long. Inflorescence a raceme, 7-16 cm. long, shorter than leaf, nodes of racemes produced into branchlets which bear 2-3 flowers; bract ovate, bracteoles 2, minute; pedicels 3-4 mm. long, inflorescence rachis and pedicels slightly puberulous. Flowers large, rosy red, 1-1.3 cm. long. Calyx cup broadly campanulate, mostly glabrous, mouth fringed with hairs, toothed. Standard ovate to ovato-orbicular with 2 callosites at its base, 1.2 cm. long, clawed. Stamens 10, monadelphous, 5 longer alternating with 5 shorter ones. Ovary hairy, style linear, stigma minute, bushy, ovules 1-2. Pod thin, flat, ovato-orbicular to oblong, 3-5 cm. long, 2-2.3 cm. wide, upper suture distinctly winged while the lower one obscurely winged, reticulately veined, young pods clothed with minute, glabrescent hairs which are absent in mature ones, apex curved, 1-2 seeded; seed oblong, slightly curved towards the micropylar side.

Flowers: April to May; Fruit: June to July.

Distribution: Sikkim Himalayas, Nepal, Assam, Sylhet, Bengal and Chittagong.

WALL. CAT: Nepal. Noakote. 1820-5887 (Isotype in Herb. CAL); Noakote, 1820-5886 (CAL); Sylhet, without precise locality 5896, 5896B (CAL).

SIKKIM HIMALAYAS: Sikkim, Silake, 667 m., May 1900—Prain s.n. (CAL); Sivoke, Tista Valley, Apr. 1914—Modder 150 (CAL); without precise locality, 1-1334 m.—Hooker s.n. (CAL); Sivoke, Tista Valley, Apr. 1914 Safdar Hussain 150 K (DD); Tista Valley, May 1895—Talbot 3328 (B.S.I. Poona).

NEPAL: Without any locality—Brown s.n. (CAL).

ASSAM: Lakhipur, Kheto plantation, May 1938—De 16631 (B.S.I. Shillong); Jokai. 1947—Deka 22252 (B.S.I. Shillong); Kamrup, Jalukhuri. Apr. 1915—Upendranath Kanjilal 5468 (DD); Sibsagar, Nasira, Apr. 1885—Clarke 38004 A (CAL), Cachar, across the Muklu river on the march to Cachar from Manipur, 667 m., May 1882—Watt 6929 (CAL); Khasi, without any details regarding locality and collector—Accession number 132434 (CAL); Goalpara, Halthogon, Jun. 1902—Chatterjee 570 (CAL); Padumari (Assam), 1946—Deka s.n. (B.S.I. Shillong); without any locality (Assam)—Masters 195 (CAL), Jenkins s.n. (CAL).

BENGAL: Mymensingh, Halooaghat, Jul. 1872—Clarke 17266 (CAL); Kurseong, without precise locality—D. F. School 181 D (DD); Darjeeling, Tondu forest, May 1896—Haines 622 (CAL); without any details regarding locality or collector—Accession number 132422 (CAL); cultivated in Botanic garden, Calcutta, 1856—Accession number 132421 (CAL).

CHITTAGONG: Kodla hill. May 1886 & Apr. 1887—Badul Khan 515, 593 (CAL).

Derris cuneifolia Benth. var. longipedicellata Thoth. var. nov. (Fig. 7).
Foliola majora, 13 cm. longa, 9 cm. lata; racemi breviores quam in variatete typica; pedicelli florum tenues et longiores quam in var. typica, 1-1.2 cm. longi. Typus, Ribu 760, lectus ad Sivoke, in Sikkim et positus in Herbario Calectenti.

Leaflets larger in size, 13 cm. long. 9 cm. wide; raceme shorter than in the typical plant; pedicels of the flowers slender and longer than in the typical plant, 1-1.2 cm. long.

Distribution: Sikkim Himalayas, Nepal and West Duars in Bengal.

WALL. CAT: Morang hills, Apr. 1810—5897 (CAL).

SIKKIM HIMALAYAS: Sikkim, Sivoke, April 1908—Ribu 760 (Holotype in Herb. CAL); Sikkim, 1878—Lister s.n. (CAL); Dumison, Apr. 1878—Lister s.n. (CAL).

NEPAL: Pabirgswald, Apr. 1894—Hierozinu 423 (CAL).

BENGAL: West Duars, Apr. 1896—Haines 613 (CAL).

Derris cuneifolia Bentih. f. assimica Thouh. f. nov. (Fig. 8).

Foliola coriacea; legumina ovato-ornicularia vel oblonga, turgida, 4.3-5.5 cm. longa, 2.4-2.8 cm. lata, glabra, seminibus singulis. Semina magna, oblonga, tenue et curvata introrsum in itaete micropyrari, 2.4 cm. longa, 1 cm. lata. Typus, U. Kanjilal 4835, lectus ad Bishnapur, Cachar in Assamia anno 1914, et positus in Herbario Calcuttensi.

Leaflets coriaceous; pod ovato-ornicular to oblong, turgid, 4.3-5.5 cm. long. 2.4-2.8 cm. wide, glabrous, one seeded. Seed large, oblong, slightly curved inwards on the micropylar side, 2.4 cm. long, 1 cm. wide.

Distribution: Assam

ASSAM: Cachar, Bishnupur, Dec. 1914—Upendranath Kanjilal 4835 (Holotype in Herb. CAL); Barak, Nov. 1914—Upendranath Kanjilal 0289 (CAL).

16. Derris macrocarpa Thouh. spec. nov. (Fig. 9).

Frutes volubils. Folio alatema, imparipinnata, stipulata, 19.5-21.4 cm. longa; rachide glabra, sulcata supra; stipulae parvae, ovatae; felicis 7, opposita, obovata, 6-11.3 cm. longa, 3.5-5.5 cm. lata, integra, cuneata ad basin, obtusa ad apicem, spice ipso nonnumquam breviter cupulata, subcoriacea vel coriacea, glabra supra, pallide glauca infra, estipellata; nervi laterales 8-10-iugi, distinctiores infra quam supra; petioluli 5-6 mm. longi, rugosi. Inflorescentia racemosa, nodis productis in stipites breves qui supportant 2-3 legumina pedicellata, rachide inflorans coriaceae, flores igniti. Legumen planum, oblongum, longissimum, 5-12.4 cm. longum, 2.2-2.7 cm. latum, alatum in utraca sutura, ala in sutura interiore minore evoluta quam in superiore, glabrum, tenuer nervum, nonnumquam angustum ad apicem, 1-3 sporum. Typus, Sri Ram 2667, lectus ad Nishangara, in Bahraich Dist. U. P. die 27 Aprilis 1920 et servatus in herbario Dehara Dun. Nova species accedit ad D. cuneifolium Bentih. folionum charactere, infloransae naturae et calycis tubo glabro, differt vero charactere leguminis, quod in nova specie est oblongum, longissimum, tenuer nervum et distincte alatum in utraca sutura. Propter affinitatem cum D. cuneifolia Bentih. nova species posita est in sect. Paraderris.

A climbing shrub. Leaves alternate, imparipinnate, stipulata, 19.5-21.4 cm. long.; rachis glabrous, grooved above; stipile small, ovate; leaflets 7-9, opposite, obovate, 6-11.3 cm. long. 3.5-5.5 cm. wide, entire, cuneate at base, obtuse at apex, tip occasionally shortly cupulata, subcoriaceous to coriaceous, glabrous above, light glaucous beneath, estipellate; lateral nerves 5-10 pairs, more clearly visible on the back than above; petiolule 5-6 mm. long. wrinkled. Inflorescence racemose, nodes produced into short stipples which bear 2-3 pedicellated pods, inflorescence rachis glabrous. Flowers not known. Pod flat, oblong, very long. 5-12.4 cm. long. 2.2-2.7 cm. wide, winged on both the sutures, the wing on the lower suture less developed than the upper, glabrous, faintly veined, apex narrow at times, 1-3 seeded.

Fruit: April.

Distribution: Uttar Pradesh.

UTTAR PRADESH: Nishangara, Bahraich district, Apr. 1920—Sri Ram 2667 A (Holotype in Herb. DD; 2667 B Isotype in Herb. DD).
PLATE 9: D. macrocarpa Thoth. spec. nov.
Fig. 1. A portion of branch; Fig. 2. Inflorescence rachis showing arrangement of pods;
Fig. 3. Pod.
This species is closely related to *Derris cuneifolia* Benth. in leaf characters, nature of the inflorescence and the calyx cup being glabrous etc.; but markedly differs from it in pod characters. The pod here is oblong, very long, faintly veined and distinctly winged on both the sutures. Because of its close affinities to *D. cuneifolia* Benth. this species is placed in the section *Paraderris*.


A climbing shrub. Leaves imparipinnate, alternate, 18-30 cm. long, stipulate; stipule ovate to ovato-orbicular, apex acute to acuminate; leaflets 9, mostly oblanceolate, at times ovate to cuneate, 8-10.2 cm. long, 3.3 cm. wide, glabrous, thin, entire, base cuneate, apex distinctly and shortly cuspidate; rachis grooved above, petiolule 3-5 mm. long, glabrous. Inflorescence a raceme, axillary, lax, nodes slightly produced, carrying 3-5 flowers, 20-33 cm. long. Flowers purple, 1-1.3 cm. long; pedicels glabrous to minutely hairy, 4-6 mm. long; bract ovate, bracteoles 2, minute, at the base of calyx cup. Calyx cup 3-4 mm. high, faintly toothed, mouth of the cup fringed with minute hairs. Standard ovato-orbicular, silky rounded, apex obtusely pointed, 1-2 seed; seed large, reniform, bluish black, 1.8-2.4 cm. long, 1.5-1.8 cm. wide.

*Flower*: May to June; *Fruit*: September to October.

**Distribution**: Sikkim, Bengal and Assam.

**SIKKIM**: Tonghoo, 1000 m., Jun. 1862—Anderson 458 (CAL); Mungpoo, 1334 m., Jun. 1914—Cousins 58 (CAL); Labdah, May 1907—Ribu s.n. (CAL); Gouk, 1334 m., Jun. 1862—Anderson 457 (CAL); Dungbo, 1000 m., Nov. 1875—King s.n. (CAL); Rungho, 334 m., Oct. 1878—King s.n. (CAL); Tisti, May 1908—Ribu 830 (CAL); without precise locality, 1666 m., Sept. 1881—Gamble 9815 (CAL), Gamnie s.n. (CAL), Kurz s.n. (CAL), King s.n. (CAL); Khuswal—Collector? Accession number 132496 (CAL).

**BENGAL**: Jalpaiguri, on the way to Tobgaon, 1000 m., May 1949—Nayaranwami & party 2690 (CAL); Darjeeling Rishap, 1000 m., May 1870—Clarke 11785 D (CAL); Silliguri, without precise locality, May 1870—Clarke 11865 B (CAL).

**ASSAM**: Khaisi, Nungkao, 1000 m. May 1886—Clarke 44043 A (CAL); without precise locality—Collector? 8 (CAL); Khaisi and Jaintia, Pynurula gargae, 1334 m., Oct. 1938—Sarma 17129 (B.S.I. Shillong); without any locality (Asam)—Gamble 2239 A (DD).


A large climbing shrub; young parts rusty tomentose. *Leaf* imparipinnate, alternate, 23.8-38.7 cm. long; rachis grooved above, its base swollen; stipule triangular, brown hairy; leaflets mostly 9-13, rarely up to 15, obovate to obovato-oblong, lower leaflets smaller than the upper, 8-13.5 cm. long, 3.5 cm. wide, entire, base cuneate, apex acute to shortly acuminate, submembranous to coriaceous, sparsely puberulous above, brown silky below especially on the nerves; lateral nerves 8-10 pairs, more prominent on the lower side; petiolule 3-6 mm. long, rachis and petiolule brown hairy. *Inflorescence* a raceme, axillary, terminal, 19-26 cm. long, densely ferruginous, nodes produced into short stalks which bear mostly 3, pedicellated flowers. *Flowers* large, whitish pink to red in colour, 1.5-1.8 cm. long; pedicels usually shorter than the stalk, up to 1.2 cm. long; bracts and bracteoles present, bracteoles 2, prominent, situated at the base of the calyx cup. *Calyx* cup broadly campanulate, densely ferruginous, faintly toothed, 4-7 mm. long. *Standard* ovato-orbicular, silky on the back with 2 prominent callosites at its base, wings and keels distinctly clawed. *Stamens* 10, monadelphous. Anthers versatile. *Ovary* densely silky, style bent, stigma minute, ovules 4-5. *Pod* flat, mostly oblong, rarely elliptic, up to 13 cm. long, 3.3 cm. wide, winged on both the sutures, wing on the upper suture being well developed, minutely puberulous with deciduous hairs, faintly veined, apex curved and pointed.

*Flower*: April; *Fruit*: April to May.

**Distribution**: Assam and Chittagong hill tracts.

**WALL. CAT.**: Cultivated in Botanic garden, Calcutta—5881 A (Isotype in Herb. CAL); Attran, Burma, 1827—5881 B (Paratype in Herb. CAL); cultivated in Botanic garden, Calcutta—5889 (CAL).

**ASSAM**: Umsaw, Khaisi and Jaintia hills, Apr. 1945—Deka 22037 (B.S.I. Shillong).

**CHITTAGONG**: Without precise locality—*Brandis* s.n. (DD).

This species has been reported from Chittagong (Prain 1903, *Brandis* 1906, Heinig 1907) and Assam (Kamill & Day 1938). The specimens in the Calcutta Herbarium, collected by King's collector from the Chittagong hill tracts in turn prove to be a variety.
Derris elliptica Benth. var. chittagongensis Thoth. var. Nov. (Fig. 10).

Foliola 11-15; pedunculus primarius brevior, 5-8 mm. longus; pedicelli longiores, usque ad 1 cm. longi. Calyx hau ductatus. Legumen planum, magnum, 4.5-13 cm. longum, 2-3.3 cm. latum, minute puberulum. Typus, Badul Khan 450, lectus ad Kodla, 30 mill. pas. a Chittagong, anno 1887 et positus in Herbario Calcuttensi.

Leaflets 11-15; primary peduncle of the inflorescence shorter, 5.8 mm. long while pedicels of the flowers longer, up to 1 cm. long. Calyx cup not toothed. Pod flat, large, 4.5-13 cm. long, 2-3.3 cm. wide, minutely puberulous.

**Fruit**: May.

**Distribution**: Assam and Chittagong hill tracts.

**CHITTAGONG**: Kodla, in hills, 30 miles from Chittagong, May 1887—Badul Khan 450 A (Holotype in Herb. CAL); 450 B-E Isotypes in Herb. CAL); without precise locality, Sep. 1933—D.F.O. Macalpine 2 (Paratype in Herb. DD).

**Assam**: Shilla forest, Khasi and Jaintia hills districts, May 1937—Deka 14064 (Paratype in Herb. B.S.I. Shillong).

**SECTION V. AGANOPE MIQ.**


A strong climber on the banks of tidal rivers. Leaf imparipinnate, alternate, very long, up to 34 cm. long; rachis faintly striated; leaflets 5-7 (Indian specimens), ovate to oval-oblong, 6.8-11.6 long, 5-7 cm. wide. Glabrous, coriaceous, entire, base rounded, obtuse at apex; lateral nerves mostly 6 pairs; petiolule 5-7 mm. long. Inflorescence a thyrsoide plant, axillary and terminal, up to 39.5 cm. long, rachis clothed with minute hairs. Flowers white, pedicellate; pedicels 2-3 mm. long. Calyx cup urn-shaped, softly pubescent. 4-5 mm. long, faintly toothed. Standard erect, orbicular without callosites. Stamens diadelphous, the vexillary filament free from the rest up to the base, stamens in two series, longer ones alternating with shorter ones. Ovary pubescent, ovules 5-7. Pod narrowly oblong, very long, up to 19.5 cm. long, 7.8 cm wide (Indian specimens), distinctly sinate at the seeds. Faintly winged on the upper suture, reticulately veined, young pods with glabrescent hairs here and there, absent in mature ones, apex slightly curved and pointed, 4-5 seeded (Indian specimens).

**Distribution**: Bengal, a rare plant.

**WALL. CAT**: Amherst, Tavoy, Burma, Feb. 1827—5911 (CAL).

**BENGAL**: Sundarbans, Tiger point, Nov. 1892—Heinig s.n. (CAL); without precise locality—S. C. Chatterjee s.n. (CAL); without any details regarding locality—Collector s.n. (CAL).

**Ceylon Province**: Thwallies 1491 (Isotype in Herb. CAL).


A robust climber. Leaf imparipinnate, alternate, 30-45.5 cm. long; leaflets 7-9, ovato-oblong, 8-15 cm. long, 4.5-8 cm. wide, thick, coriaceous, glabrous and shining above, entire, base rounded, apex obtuse to acut; lateral nerves 5-7 pairs; rachis and petiole glabrous, petiole 5-8 mm. long. Inflorescence an ample thyrsoidal plant, axillary and terminal, up to 45 cm. long, finely silky as are the pedicels and bracts, lower branchlets longer. Flowers medium sized, shortly pedicellate; pedicels 1-1.5 mm. long; bract minute, linear, bracteoles 2, lateral, just at the base of the calyx cup. Calyx cup narrowly campanulate, finely silky, faintly toothed. Corolla 8-10 mm. long, standard ovato-oblanceolate, shortly clawed, thickened above the claw in the middle, petals not jointed below. Standard, wing and keels clothed with minute deciduous hairs. Stamens 10, diadelphous, tenth stamen free down to the base. Ovary pubescent, ovules 4-5, minute. Pod thin, flat, strap-shaped, oblong, 3.8-9 cm. long, 2.5-3.5 cm. wide, distinctly winged on both the sutures, wings being subequal, pod glabrous, reticulately veined, 1-4 seeded (Description of pod after Prain, 1897, as no pod is present in the Herbarium specimens).

**Flower**: February to June; **Fruit**: July to August.

**Distribution**: Assam, Andaman and Nicobar Islands.

**ASSAM**: Valley near Fort Lungleh, South Lushai hills, 1000 m., Mar. 1899—Gage 32 (CAL).

**ANDAMANS**: South Andaman (without precise locality), Sept.—Oct. 1900—Fruit’s collector 15, 04, 90 (CAL) (a new record for Andaman Islands only).

**NICOBARS**: Kamorta Island, Feb. 1875—Kurt s.n. (CAL).

Malacca, Malayan Peninsula—Griffith 1776 (Syntype in Herb. CAL).

**Derris thyrsiflora** Benth. var. eunalata (Bedd.) Thoth. stat & comb. nov. **Derris eunalata** Bedd. 1c, Pl. Ind. Or: 42 t. 186, 1874. **Derris platypetra** Baker in Fl. Brit. Ind. 2: 245, 1878.
PLATE 10: *D. elliptica* Benth. var. *chittagongensis* Thoth. var. nov.
Leaflets 9, oblong, basal ones always smaller and the terminal ones largest. Inflorescence lax; pedicels equal or slightly longer than the calyx cup. Calyx cup more silky pubescent than in the typical plant.

A large climber. Leaf 18-36.5 cm. long; leaflets 9, oblong, up to 14.5 cm. long, 7.8 cm. wide, entire, base rounded, apex shortly cuspidate, glabrous, subcoriaceous; lateral nerves 5-8 pairs; rachis and petiolule glabrous, petiole 5.7 mm. long grooved above. Inflorescence a thyrsoid panicle, axillary and terminal, 30-45 cm. long, lower branchlets longer; rachis and pedicels finely silky. Flowers 1.1 cm. long, not fascicled, pedicellate; pedicels 4 mm. long; bract and bracteoles small, finely silky; bracteoles situated at the base of the calyx cup. Calyx cup campanulate, mouth entire, finely silky. Standard ovato-orbicular, wing, keel and standard glabrous. Stamens 10, diadelphous. Ovary pubescent, style short, stigma minute. Pod flat, oblong, wider and longer than in the typical plant, up to 13 cm. long, 2.8 cm. wide, winged on both the sutures, faintly veined as compared to distinctly and reticulately veined in the typical plant, glabrous, narrow at base, acute at apex, 1-3 seeded.

Distribution: Andaman Islands, Assam and Syntel.

**WALL. CAT**: Sylhet—5846 (CAL).

**ANDAMANS**: South Andaman, Cadellgunj hill jungle, Sept. 1892—King's collector s.n. (CAL): Dhani Khari hill jungle, Jul. 1892—King's collector s.n. (CAL); Balughat hill jungle, Jul. 1892—King's collector s.n. (CAL); without any locality (Andaman), 1900—Prain's collector 33 (CAL).

**ASSAM**: Cachar, Haflong Nullah, 833 m. Aug. 1908—Craib 131. 160 (CAL); Haflong, Mar. 1901—Gill 193 (CAL); Haflong hills, 667 m. May 1925—Beeson 9 (DD); Haflong, 550 m., May 1915—Upendranath Kanjilal 5645 (DD); without precise locality, 1890—Prazer s.n. (CAL); Khasi, Mamloo, 100 m., May 1886—Clarke 43825E (CAL); without precise locality, Apr. 1894—Gammie 494 (CAL), Griffith 1770 (CAL), Kurz s.n. (CAL); without any details regarding locality or collector—Accession number 132746, 132749 (CAL); Khasi and Jaintia, 41 miles from Dawk, Shillong road, Apr. 1935—Deka 12118 (B.S.I. Shillong); Dowk forest, Apr. 1953—Deka 7 (B.S.I. Shillong); without any locality (Assam), 1893—Munn s.n. (CAL); Apr. 1895—King's collector s.n. (CAL).

Cadellgunj hill jungle, South Andaman, Sept. 1892—King's Collector s.n., Accession number 132761 (Lectotype designated—Herb. (CAL)).


A climber. Leaf imparipinnate, alternate, 20-30 cm. long, stipulate; leaflets 7-9, ovate to ovato-cordate, at times ovato-oblong, lower ones smaller, up to 12 cm. long, 5.5 cm. wide, glabrous, thin to subcoriaceous, entire, base narrow, rarely rounded, apex distinctly acuminate; lateral nerves 5-8 pairs, raised and more prominent on the back; rachis and petiolule...
glabrous, petiole 3-6 mm. long. Inflorescence a much branched panicle, terminal and axillary, lax, secondary branchlets long and slender, bearing tertiary branchlets which in turn bear 6-8 flowers. Inflorescence up to 31 cm. long. Rachis finely silky. Flowers distinctly pedicellate. up to 1.1 cm. long; pedicels 3-4 mm. long; bract ovate, situated at the base of the pedicel, bracteoles minute, situated at the base of the calyx cup. Calyx cup minutely silky, mouth entire to faintly toothed. Standard ovate, glabrous, wings and keels also glabrous. Stamens 10 diadelphous, the tenth stamen free up to the base. Ovary minutely silky, style curved, stigma minute, ovules 3-4. Pod thin, flat, ligulate, oblong, up to 11 cm. long. 3.5 cm. wide, winged on both the sutures, reticulately veined, glabrous, base rounded to narrow, apex acute, 1-2 seeded.

Flower: July to September; Fruit: December to March.

**Distribution:** Assam, Bhutan and Sikkim.

**ASSAM:** Khasi, Mahadeo, 1-1667 m, Mar. 1901—Gill 131 (CAL): without precise locality, 667-1334 m. —Hooker & Thomson 21 (Isotype in Herb. CAL).

**BHUTAN:** Serooh, 1000 m., 1895—King s.n. (CAL).

**SIKKIM:** Jaldaka, Mar. 1910—Ribu & Rhamoo 3933 (CAL): Punakbari, 1000 m., Jul. 1879—Gamble 6905 (CAL); Kodabang, 1000 m., Sep. 1873—Gamble 2109B (CAL); Pashok, 667-1000 m., Aug. 1862—Anderson 462 (CAL); Regang, Dec. 1877—King s.n. (CAL); Gurubatham, Jan. 1900—Prain's collector s.n. (CAL); Tista, Feb. 1867—Anderson s.n. (CAL); Mungkongni, Kodabang, 1000 m., 1874—Gamble 2106A (CAL): without precise locality, 667 m., Sept. 1875—King 2412 (CAL): without precise locality (Sikkim Himalayas), 667 m., 1876 & 1877—DB s.n. (CAL).


There are no specimens of the above species, present either in the Calcutta Herbarium or any other Herbaria in India. From the description, the species appears to be distinct. It is related to *D. ferruginea* Benth. but differs from the same in the nature of the inflorescence and pod characters. Regarding its nomenclature, the name *D. laxiflora* cannot be valid, as Bentham had earlier proposed the same name (J. Linn. Soc. 4 [Suppl]: 105, 1860) for an entirely different species from Formosa. According to the International code of Botanical nomenclature, *D. laxiflora* Haines (1922) becomes a later homonym, having been preoccupied by *D. laxiflora* Benth. (1860). A new name, *Derris hainesiana* is therefore proposed for the Indian plant.

**Distribution:** Ramagar hill, N. Champaran, Bih.


Baker (in Fl. Brit. Ind. 2: 247, 1878) placed this in the category of doubtful species under section Eulerris, in the absence of pod. Prain (in J. Asiatic Soc. Beng. 66:464, 1897) pointed out that *D. ovalifolia* Benth. might be the same as *D. wightii* Baker, basing his conclusion on Wight, t. 326 as there was no specimen, present in the Calcutta Herbarium. The author was able to examine the original specimens of *Pongamia ovalifo* lia Wt. & Amr. (Wight 920, Isotype in Herb. MH) and it is clear that so far as the other characters except the pod, which could not be examined for lack of material are concerned, the above mentioned species seems to be a distinct one. But in the absence of pod, which is an important character of the genus, the author is of the opinion that *D. ovalifolia* Benth. ex parte should still remain doubtful till fruiting material of the same becomes available.

The inflorescence is just like the ones in the species belonging to the section Brachypertrum or Eulerris. The leaflets are reported to be like those species in the section Paraderris (Benth. in J. Linn. Soc. 4 [Suppl]: 115, 1860). But in the section Paraderris except *D. canarensis* Baker, the leaflets are in general larger in size. The leaflets in Wight's specimens are smaller as well as distinct from *D. canarensis* Baker. They agree with those of the species coming under the section Eulerris wherein the leaflets are smaller and fewer in number. In all probability *Derris ovalifolia* Benth. is a distinct species to be placed under the section Eulerris provisionally, till fruiting material of the same becomes available.

**Distribution:** Western Peninsula.

**WESTERN PENINSULA:** Without precise locality—Wight 917 (Isotype in Herb. MH).


This species is based on *Pongamia secunda* Gris. (Wall, Cat. 5890) which is not present in Calcutta Herbarium. In the absence of pod, Baker (Fl. Brit. Ind. 2: 247, 1878) has grouped this species in the doubtful category under the section Eulerris. In Calcutta Herbarium, specimens collected from Assam (Lister) and named *D. secunda* Baker have only immature flowers without any pod. These agree with Baker's original description. Since the pod is not available, the author feels that this species also should remain doubtful till fruiting material becomes available.

It may also be pointed out here that Prain was of the opinion (in J. Asiatic Soc. Beng. 66: 361 & 463, 1897) that this species and *Derris monticolus* Prain may be the same. Dunn, however, after a careful examination of...
PLATE 11: *D. ovalifolia* Benth.
the type material of both these species (in J. Linn. Soc. 41:237, 1912) clearly pointed out that *D. secunda* Baker and *D. monticola* Prain are quite distinct species. Specimens of *D. secunda* Baker in Calcutta Herbarium (Lister) are found to differ from *D. monticola* Prain in the texture of leaflets as well as the size of flowers. Hence the two species are quite distinct from one another as concluded by Dunn.

Distribution: Assam.

**ASSAM**: Toruputu, Duphla Hills, 2500 m., Jan. 1875—Lister 203 (CAL).


There are no specimens of the above species, present in the Calcutta Herbarium. From the description, it appears to be *Derris microptera* Benth. According to Prain (in J. Asiat. Soc. Beng. 66: 463, 1897) Wall. Cat. 5886 is the same as *D. cuneifolia* Benth. and that the plant (*D. acuminata* Benth.) collected from Sikkim by Hooker is the same as *D. microptera* Benth. It appears therefore that *D. acuminata* Benth. is a mixture of two distinct species. For lack of material, the author prefers to place this species also under doubtful category.

Distribution: Nepal and Sikkim.

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