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THE GENUS INDIGOFERA L. (FABACEAE - PAPILIONOIDEAE) IN BURMA

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ABSTRACT

26 species of *Indigofera* are found in Burma. It includes 2 new species (*I. maymyoensis* and *I. meghalayensis*) and a new record (*I. scabrida*). A key is provided to the species recognised; descriptions, distributions and phenology are given. The specimens examined are cited.

ABSTRAK

26 jenis *Indigofera* terdapat di Burma, termasuk 2 jenis baru (*I. maymyoensis* dan *I. meghalayensis*) serta suatu rekaman baru (*I. scabrida*). Kunci determinasi pada jenis yang diterima diberikan, begitu pula pertelaan distribusi dan fenologinya serta spesimen-spesimen yang diperiksa.

INTRODUCTION

The genus *Indigofera* L. comprises ca 700 species distributed in tropical and sub-tropical regions of the world. Tropical Africa with largest number of species is considered to be the centre of distribution. Baker (1876) recorded 8 species of the genus from Burma including 2 new species described by Wallich (1832) and Kurz (1873). However, the first general account of the genus in Burma was given by Kurz (1875), enumerating 13 species and a variety, giving their distribution, phenology and a key to the species. Since then, Prain (1897), King & Prain (1898), Gage (1904) and Craib (1910) have described several new species from this area. They have also added new records and new distributions of various species of *Indigofera* for Burma. Later, some district floras like that of Minbu (Cage, 1904) and check-lists by Lace (1912) and Rodger (1922) have convered a number of *Indigofera* species from Burma.

The present paper is a comprehensive account of the genus in Burma and is primarily based on materials represented in CAL, BSIS, BSI, and

DD. In all 26 species are recognised here, which is almost double the number treated by any other previous workers. This study includes 2 new species and a new record for Burma. It is hoped that this study will serve as a precursor for future revisionary works.

INDIGOFERA L.

Indigofera L. Sp. Pl.: 751. 1753 et Gen. Pl.: 333. 1754; Hutchinson, Gen. Fl. Pl. 1: 400. 1967; Gillett *in* Kew Bull. Add. Ser. I: 1—166. 1958; Ali *in* Bot. Notis. 111: 543—577. 1958.

Type species: *I. tinctoria* L.

Annual or perennial herbs or undershrubs, rarely small trees (*I. brunoviana* Grab. ex Wall. & *I. bella* Prain), densely clothed with adpressed modified biramous or subsimple hairs, stiff erect multicellular, often gland-tipped hairs sometimes present. Leaves pulvinate, usually imparipinnate, sometimes digitately 3-foliolate, conjugate, 1-foliolate or simple, lateral leaflets usually opposite sometimes alternate; stipules usually small setaceous, shortly adnate to petiole, rarely inter or intrapetiolar; stipels present or absent; leaflets variously shaped, entire, lateral nerves usually obscure; Flowers usually in axillary recemes, sometimes in open or subcapitate panicles. Flowers pedicelled or subsessile in the axil of a setaceous, caduceous bract; bracteoles absent. Calyx companulate, 5-lobed, lobes subequal or the lowest longest. Corolla usually red or pink sometimes white, caducous; standard sessile or clawed, ovate, ovate-oblong or suborbicular, usually adpressed strigulose without, sometimes persistent; wings oblong, clawed, slightly adherent to keel; keels erect, obtuse or acuminate gibbous or more usually spurred on each side near the base. Stamens diadelphous, vexillary (upper) filament free, the others connate, persistent; anthers more or less uniform, dorsifixed, almost always spiculate with or more usually without basal scales. Ovary sessile or subsessile, 1-mamy-ovulate; style glabrous, rarely glandular; stigma capitate, often penicellate. Legumes linear, rarely oblong or globose, straight or curved, cylindric, tetragonal or flattened, sometimes nuricate, turgid, torulose, septate between the seeds, usually dehiscent, endocarp often spotted, seeds globose or cylindric and truncate at one or both ends, estrophiolate.

DISTRIBUTION: Ca 700 species in the world; 27 species in Burma.

KEY TO THE SPECIES OF INDIGOFERA L. FROM BURMA.

1. Leaves simple;
   2. Petioles jointed; stipels present:
      3. Peduncles long (2—3 cm long); leaflets adpressed pubescent on both surfaces; younger branches adpressed grey pubescent . . 4. *brunoniana*
      3. Peduncles short (less than 3—5 cm long); leaflets distinctly glabrous above; younger branches adpressed brown pubescent:
         4. Young branches groved scabrous; petioles long (2—3 cm); flowers lax in racemes that are shorter than leaves . . . . . 14. *maymyoensis*

4. Young branches not groved, volvety pubescent; petioles short (0.7—1.0 cm); flowers compact in racemes that are longer than leaves . . . . . 5. *caloneura*

2. Petioles not jointed; stipels absent:
5. Pods globose, 1-seeded . . . . . 12. *linifolia*
5. Pods linear, more than 1-seeded:
6. Leaves linear-oblong or lanceolate, entire, obscurely gland-dotted beneath; pods winged on sutures . . . . . 21. *squalida*
6. Leaves narrowly linear, revolute, not gland-dotted beneath; pods not winged on sutures . . . . . 16. *minbuensis*

1. Leaves compound:
7. Leaflets 3:
8. Leaflets gland-dotted beneath; pods glandular, narrowly winged on sutures . . . . . 24. *trifoliata*
8. Leaflets not gland-dotted beneath; pods not glandular not winged on sutures;
9. Racemes long (8—19 cm); flowers 8—10 mm long; pods 4—4.5 cm long, bent, abruptly apiculate at tip . . . . . 4. *bruneniana*
9. Racemes hort (2—3 cm); flowers 5 mm long; pods 2.5—3 cm long, straight, spine-pointed at tip . . . . . 25. *trita*

7. Leaflets more than 3:
10. Gland-tipped hairs present:
11. Racemes short (5—6 cm); 6—12-flowered . . . . . 7. *colutea*
11. Racemes long (12—18 cm); many-flowered . . . . . 18. *scabrida*

10. Gland-tipped hairs absent:
12. Leaflets alternate:
13. Racemes globose, sessile or subsessile; pods short (3—5 mm long), 2-seeded . . . . . 19. *linnaei*
13. Racemes elongated, distinclty peduncled; pods long (1.5—2.5 cm long), 8—12-seeded . . . . . 19. *spicata*

12. Leaflets opposite (sometimes sub-opposite or alternate in *I. cassicides*):
14. Pods glabrous:
15. Leaflets 5—7; racemes 5—6-flowered . . . . . 10. *glabra*
15. Leaflets more than 7; racemes many-flowered:
16. Sterile bracts present at the base of racemes 6. *cassioides*
16. Sterile bracts absent at the base of racemes:
17. Leaflets 7—9, 5—10 cm long; corolla white; pod tips abruptely upturned . . . . . 3. *bella*
17. Leaflets more than 10, less than 5 cm long; corolla pinkish-purple; pod tips straight:
18. Leaves 21—31-foliolate; leaflets 1—1.6 cm long; stipules 5—8 mm long, filiform; standard puberulous without . . . . . 11. *lacei*
18. Leaves 9-17-foliolate; leaflets 4—6 cm long; stipules 1.5—4 mm long, lanceolate; standard glabrous without . . . . . 2. *atropurpurea*

4. Pods adpressed-pubescent:
   19. Fruiting pedicels reflexed:
      20. Large shrubs or small trees (2.5—5 m tall); leaflets 21—41, linear-oblong; pods cylindrical, adpressed pubescent . . . . . 20. *stachyodes*
      20. Small shrubs (0.5—1.2 m tall); leaflets 7—9, ovate or obovate; pods subtetragonous, spreading pubescent . . . . . 1. *astragalina*
   19. Fruiting pedicels spreading:
      21. Pods curved:
         22. Leaflets glabrous adxially; pods thin, slightly curved, 8—12-seeded . . . . . 23. *tinctoria*
         22. Leaflets adpressed pubescent; pods thick, strongly curved, 5—6-seeded . . . . . 22. *suffruticosa*
      21. Pods straight:
         23. Pods up to 4 cm long:
            24. Racemes long (12—15 cm); bracts conspicuous; standar hairy within at base; pods brown pubescent . . . . . 17. *nigrescens*
            24. Racemes short (3—8 cm); bracts inconspicuous; standard glabrous within at base; pods grey pubescent:
               25. Leaves petiolate; pods adpressed finely canascent, sutures narrow . . 26. *wightii*
               25. Leaves sessile Pods glabrescent, sutures board . . . . . 8. *dosua*
         23. Pods more than 4 cm long:
            26. Leaves 5-foliolate; leaflets large (5—10 × 3—6 cm) pod tips bent and blunt . . . . . 27. Sp. A.
            26. Leaves more than 5-foliolate; leaflets small (2—3 × 0.5—1.7 cm); pod tips straight and prominently long beaked . . . . . 9. *galegoides*

15. *I. meghalayensis* Sanjappa comes between *I. dosua* and *I. wightii* in the key. The species can be correctly assigned to its position in the key after studying mature pods.

INDIGOFERA ASTRAGALINA DC.

Indigofera astragalina DC. Prodr. 2: 228. 1825; Gillett *in* Kew Bull. 14: 290. 1960 et 24: 500. 1970. — Type: Senegal, *Perrottet s.n.* (P, holo); Figure: Roxb. Icomes (Ined.) 385 (CAL).

I. hirsuta auct. non. L.; Baker *in* Hook. f. Fl. Brit. India 2: 98. 1876 pro *parte*; Kurz *in* J. Asiat. Soc. Beng. 46: 270. 1876; King *in* J. Asiat. Soc. Beng 66: 80. 1897; Gage *in* Rec. Bot. Surv. India 3: 41. 1904; Lace, List..... trees, shrubs, climbers etc. ..... Burma, 40. 1912.

Annual, erect, subshrub, 60—80 cm tall; branches brownish-white hirsute. Leaves 8—12 cm long, leaflets (7—) 9—11(—13), side ones

opposite, 2.2—2.8 x 1.1—1.5 cm, terminal slightly larger, obovate, elliptic or ellipttic-oblong, rounded at base and apex, mucronulate, sometimes retuse at apex, green above, pale beneath, adpressed pubescent on both surfaces; stipules 1.6 cm long, filiform, brown-plumose; stipels 2—3 mm long, brown plumoses; petiolules 1—3 mm long, pubescent. Racemes 10—15 cm long with 1—2.5 cm long peduncle, rachis brownish-white pubescent, compactly many-flowered. Flowers 4—5 mm long, light pink; bracts 1—1.5 mm long, setaceous, brown-plumose. Calyx 3.5—5 mm long, adpressed spreading light-brown, pubescent without, lobes 3—4.5 mm long; tube short. Standard 4—5 x 2.5—3 mm, elliptic obovate, rounded to obtuse at base, obtuse to shallowly reuse at apex, mucronulate, adpressed puberulous without; wings 3—4.5 mm long, ciliate; keels 4.5—5 mm long, pubescent without at tips and margin. Ovary 1—2 mm long, glabrous; style 2—3 mm long, glabrous; stigma capitate. Pods 1—1.5 × 0.35 mm, subquadrangular, shortly abruptly apiculate, spreading white-hairy, 5—6-seeded, deflexed. Seeds 2.5—1.5 mm, tetragonous, stony, broadly pitted, dark-brown.

FL. & FR.: November - December.

DISTRIBUTION: Burma (Meiktila, Pegu, Shan States, Tenasserim), India, Pakistan, Sri Lanka, Indo-China, China, Australia, New Guinea, Tropical Africa, S. Africa, Madagascar, Intr. in West Indies.

NOTE: Often *Indigofera astragalina* DC. is confused with *I. hirsuta* L. (in almost all works on areas of its occurrence) until Gillett (1960) clearly pointed out the differences between these two closely allied species. The main differences are in the length of the peduncle, colour of indumentum, breadth and number of seeds per pods, number of leaflets and colour of flowers.

In Burmese specimens the hairs on calyx lobes and young pods are grey initially turning rusty-brown. On pods the browning of hairs starts from tip to base and from dorsal to ventral surface. The hairs on pods are a mixture of heterobrachial (long) and isobrachial (short) types.

BURMA: Prome Dist., Magwee, alt, 250′, 13 Nov. 1940, *Rhind s.n.*; Shan States, Nov. 1890, *Huk s.n.*; Meiktila, Dist., unknown locality, Nov. 1888, *Collett 926*.

INDIGOFERA ASTROPURPUREA Buch.—Ham. ex Horn.

Indigofera astropurpurea Buch.—Ham. ex Horn. Hort. Reg. Bot. hafn. Suppl. 152. 1819; Baker *in* Hook. f. Fl. Brit India 2: 101. 1876; Lace, list..... Trees. Shrubs, Climber etc..... Burma: 40. 1912. — Type: Nepal, *Buchanan Hamilton* in *Wallich List s. n.* (G). Figure: Lindl. Bot. Reg. 21:t. 1744, 1836; Bot. Mag. 21: t. 1744. 1836; Mag. t. 3065. 1831; Wight Icones, t. 369. 1840; Roxb. Icnes (Ined.) 1627 (CAL).

Erect shrub, 2—3 m tall; branches subangular, thinly adpressed pubescent when young, terete and glabrous with age. Leaves 20—25 cm long with 1.5—2 cm long petiole; leaflets 7—15, opposite or sub-opposite,

5—6.5 x 2.5 cm, ovate, elliptic or ovate-lanceolate, rounded to obtuse at base, obtuse to faintly retuse at apex, adpressed pubescent on both surfaces with prominent veins beneath; stipules 1.5—4 mm long, subulate, hairy without, caducous; stipels 1—2 mm long; petiolules 2—2.5 mm long. Racemes 12—18 (—25) cm long with 2.5—3 cm long peduncle; rachis angular, thinly adpressed pubescent with scars of fallen flowers; many-flowered. Flowers 7—10 mm long, reddish-purple; pedicels 1.5—3 mm long; bracts 2.5—5 x 1 mm, longer than buds, lanceolate, acuminate, adpressed brown pubescent without, caducous. Calyx 2.5 mm long, obliquely campanulate, 5-lobed, adpressed pubescent without; lobes 0.5 mm long, deltoid; tube 2 mm long. Standard 8—12 × 4 mm, obovate-oblong, obtuse at apex, glabrous (puberulous without in buds); wings 6—7 mm long, ciliate; keels 8—10 mm long, puberulous without towards margin. Ovary 5—6 mm long, linear, glabrous; style 3—4 mm long, glabrous; stigma capitate. Pods 3.5—4 × 0.35 cm, linear, straight, acute, sutures thin, glabrous, 6—12-seeded, deflexed-spreading. Seeds 1.3—2.5 x 1 mm, cylindric, rounded at both ends, smooth, shining, reddish-brown.

FL & FR: August - November.

DISTRIBUTION: Burma (Maymyo Plateau, S. Shan States, Heho), India, Bhutan, Nepal, China, Thailand.

BURMA: Maymyo Plateau, alt. 3500′, 17 Aug. 1912, *Lace 5890*, *Lace 5517*; S. Shan States, Kungtung, Oct. 1909, *MacGregor 954*; Indy, 1895, *Khaleel s. n.*; 1896, *Khaleel s., n.*; Thwakhan, 1896 *Khaleel s. n.*; Tungyi 1893, *Khaleel s. n.*; Bhamo, June 1892, *Huk s. n.*; Heho, 1985, *Khaleel s. n.*

INDIGOFERA BELLA Prain

Indigofera bella Prain *in* J. Asiat. Soc. Beng. **66**: 335. 1897 et *in* Ann. Roy. Bot. Gard. Calcutta **9**: t. 28. 1901; Brandis, Ind. Trees: 218. 1906. — Type: Upper Burma, Kalay Hills, 9 Sept. 1894, *J.C. Prazer s. n.* (CAL! K).

Erect shrub or small tree, 2.5—3.5 m tall; branches angular and pubescent when young, terete and glabrous with age. Leaves 8—20 (—30) cm long with 5 cm long petiole, leaflets 7—9, opposite, 5—8 x 2—4 cm, elliptic or elliptic-lanceolate, sometimes ovate, acute or obtuse at base and apex, mucronate, glabrous above, thinly adpressed pubescent with conspicuous midrib below; stipules 8—11 mm long, setaceous, adpressed pubescent without, caducous; stipels 4—4.5 mm long, setaceous, glabrous. Racemes 15—20 cm long with 1—5 cm long peduncle, many-flowered. Flowers 1—1.5 cm long, white; pedicels 2—3 mm long; bracts 7—8 mm long, setaceous, adpressed pubescent, caducous. Calyx 2—2.5 mm long, 5-lobed, adpressed, pubescent without; lobes deltoid; tube 2 mm long. Standard 1—1.5 × 0.5 cm, ovate-oblong, rounded at base, obtuse at apex, mucronulate, thinly puberulous without; wings 8—10 mm long, thinly ciliate; keels 1—1.5 cm long, thinly adpressed puberulous without. Stamens 1—1.2 cm long, filaments persistent. Ovary 10—12 mm long, linear, glabrous; style 2—3 mm long; stigma capitate. Pods 5—6 x 0.3—0.35 cm, cylindrical, straight, faintly torulose, abruptly upturned at

apex, glabrous (adpressed pubescent when young, sutures thick, up to 18-seeded. Seeds 2 x 1.5 mm, tessoroid, reddish-brown.

FL. & FRT.: September - December.

DISTRIBUTION: Burma (Mobighir Hills, Kalay Hills, Chindwin Dist., Toungoo Dist., Kattu Dist.) — Endemic.

NOTE: *Indigofera bella* Prain was described based on the collections of J. C. Prazer (Myinegin Hills and Kalay Hills) and S. Kurz (Pegu) from Burma. These collections are preserved at CAL and K. As Prain did not choose any of them as type, it is necesary to designate a lectotype for the species. Among the syntypes-Upper Burma, Kalay Hills, 9 Sept. 1894, *J. C. Prazer s. n.* preserved at CAL is annotated by Prain along with an excellent drawing of floral parts and pods. Therefore, it is selected here as LECTOTYPE for the species.

BURMA: Kala Hills, 9 Sept. 1894, *Prazer s. n.*; Mobighu Hills, 4 Sept. 1890, *Prazer* 363; S. Minguin Hills, 21 Nov. 1890, *Prazer s. n.*; Upper Chindwin Dist., Mankudaw, 25 Aug. 1908, *Lace 4239*; Maesin Range, alt. 500', 20 Oct. 1926, *s. l. 3312*, Kattu Dist. Mokwa Reserve, 21 Nov. 1908, *Lace 4416*; Toungoo Dist., Gwethe Reserve, alt. 800', 13 Dec. 1926, *s. l.* 4322 (No. on the field label 4422). Upper Burma, 1890, Unknown locality, *Prazer s. n.*

INDIGOFERA BRUNONIONA Grah. ex Wall.

Indigofera brunoniana Grah. ex Wall. *in* Pl. Asiat. Rar. 3: 48, t. 279. 1832; Baker *in* Hook. f. Fl. Brit. India 2: 93. 1876; Kurz *in* J. Asiat. Soc. Beng. 46: 270. 1876 et For. Fl. Brit. Burma 1: 359. 1877; Brandis, Ind. Trees: 218. 1906. — Type: Burma, Montibus Prome, 1826, *Wall. List. nno. 5491a* (K, Photo CAL! isosyntypes CAL !). Figure Wall. in Pl. Asist. Rar. 3: t. 279. 1832.

Erect shrub small tree. (1—)3—5 m tall, branches angular and adpressed pubescent when young, terete and subglabrous with age. Leaves 7—16 cm long with 0.7—1.5 cm long petiole; leaflets 1—3, opposite, 6—15 x 3—6.5 cm, ovate-elliptic or elliptic-lanceolate, obtuse at base, acute and mucronate at apex, adpressed pubescent on both surfaces, dark-green above, and pale beneath with prominent midrib; stipules 2—5 mm long, linear-subulate, adpressed pubescent within, persistent; petiolules 3—4 mm long, stipels 2—2.5 mm, same as sttipules. Racemes 8—15(—19) cm long with 2—3 cm long peduncles, many-flowered. Flowers 8—10 mm long, white; pedicels 2 mm long, bracts 3 mm long, setaceous, adpressed pubescent without, caducous. Calyx 2—2.5 mm long, adpressed pubescent without; lobes 1.5—2.0 mm long triangular; tube 0.5—1 mm long. Standard 8—10 × 0.4 mm, ovate-elliptic, rounded at base, obtuse and mucronulate at apex, adpressed white-puberulous without; wings 6—8 mm long, ciliate; keels 7—9 mm long, thinly adpressed, puberulous. Stamens 8—10 mm long, filaments persistent. Ovary 5—7 mm long, linear, glabrous; style 3—4 mm long, glabrous; stigma capitate. Pods 3—4.5 x 0.4 cm linear, straight, quadrangular when young becoming cylindrical with

age, faintly torulose, slightly curved and blunt at tip, somewhat adpressed brown-pubescent, pendant, 8—12-seeded. Seeds 2 x 1.5 mm, cylindrical, truncate at both ends, smooth, shining, deep-brown.

VERNACULAR: *Toung-Mai-Sain.*

FL. & FRT.: August - November.

DISTRIBUTION: Burma (Prome Hills, Pegu, Martaban, Pimmoa-Yomah, Toungoo) — Endemic.

NOTE: *Indigofera brunoniana* Grah. ex Wall. was described based on collections from Burma (Prome Hills) and those cultivated in Botanical Garden, Calcutta. These collections were named by Robert Graham in *Wall. Cat. 5491A* (*nom. nud.*) and are represented at CAL, K and C. Though the species is validated by Wallich, he did not designate any of the duplicates as type. Among the syntypes the duplicate at K is well preserved and annotated by Wallich, and therefore, it is chosen here as LECTOTYPE for the species.

BURMA: Prome Hills, 9 Oct. 1826, *Wall. List no. 5491A, 5491B;* cultivated at Hortus Botanicus Calcuttensis, Pinmona, 19 Aug. 1890, *Huk s. n.* (This collection is represented by 3 sheets A, B & C of these, specimens of 'A' has all leaves trifoliolate, 'C' has all unifoliolate and 'B' has mixture of both); Yomah, *Kurz s. n.*; Toungoo Dist., Gwethe Hill Resort, alt. 800', *Toppin 4321, 1698.*

INDIGOFERA CALONEURA Kurz

Indigofera caloneura Kurz *in* J. Asiat. Soc. Beng. 42: 229. 1873; Ibid. 46: 270. 1876 et For. Fl. Brit. Burma 1: 360. 1877; Baker *in* Hook. f. Fl. Brit. India 2: 93. 1876; Prain *in* J. Asiat. Soc. Beng. 66: 355. 1897; Brandis. Ind. Trees: 218. 1906; Lace, List..... trees, shrubs, climber, etc..... Burma: 40. 1912. — Type: Burma. Pegu, *Kurz s. n.* (K, Photo CAL !); *I. oblonga* Craib *in* Kew Bull. 1914 et Fl. Siam. Enum. 1: 378. 1921. *syn. nov.* — Type: Payap, Doi Nang Keo c. 850 m. *A. F. G. Kerr 2524* (K, Type number CAL !).

Erect shrub, tall; branches angular, densely soft brown tomentose when young, terete and glabrous with age. Leaves 8—12 cm long with 3—5 cm long petiole; leaflet 1, 6—12 x 2.5—6 cm, elliptic or ovate-elliptic, rounded at base and apex, rarely retuse and mucronulate at apex, glabrous and dark-green above, densely soft brown pubescent with prominent nerves beneath; stipules 5 mm long, linear-subulate, densely soft brown pubescent without; petiolule 3 mm long, stipels 1.2—2 mm long, same as stipules. Racemes 8—10 cm long, subsessile or sessile, rachis densely soft pubescent, compactly many-flowered, basal flowers, caducous. Flowers 8—10 mm long, pink; pedicels 1—1.5 mm long, densely tomentose; bracts 3.5—4 mm long, linear-setaceous; densely tomentose without caducous. Calyx 2—2.5 mm long, 5-lobed, densely tomentose; lobes triangular, acute, tube short. Standard 8—10 mm long, ovate, obtuse and mucronulate at apex, densely brown pubescent without, persistent; wings 6—8 mm long, ciliate; keels 7—9 mm long, thickly brown pubescent without; stamens 8—10 mm long, filaments persistent. Ovary

5—7 mm **long, linear, glabrous;** style 3 mm iong, glabrous; stigma capitate. Pods 4.5 x 0.4 cm spreading linear, straight except for upturned blunt **tips,** sutures thin valves faintly twisted after dehiscent, adpresaed **brown** pubescent, endocarp red-spotted, 8—12-seeded, spreading. Seeds 2 x 2 mm, cylindric, smooth, shining, reddish brown.

FL. & FRT.: February - May.

DISTRIBUTION-. Burma **(Amherst,** Pegu, Shan States, **Tenasserim).** Thailand.

NOTE: *Indigofera cakmeitra* Kurz was based on collection of **Kurz** from Burma (Pegu). The duplicates are distributed at CAL and K. A* none of these is selected as type for the taxon, the duplicates at K (Photo CAL !) which is annotated by Kurz is designated here as LECTOTYPE.

Craib (I.e.) described /. *oblonga* based A. F. G. Kerr's collections from Siam (Payap), suggesting its affinity with. /. *calonetira* Kurz and distinguished it from /. *caloneura* based on length of the leaflet, petioles **and** fruiting pedicels. On examination of the type material *(Kerr* 2524 — K, Photo CAL !) and type numbers of both the species at CAL, it was found that they do not show characters which Craib used to distinguish the 2 species. Since the characters of /. *cotomeum* Kurz and /. *obtovga* Craib are essentially same, the latter species is treated here as conspecific with /. *colartaira* Kurz.

BURMA: PcjfU. *x.l. &* ».: Shan Hills, **LwekaW,** alt. 4000', May 1888, Collett TOG; Shan Hills, I HOD, *Mac* ***Gregor*** *Gl-3;* Amherst Dist. Tmichauang, Donenii Rntw, alt. 2000', G Fob, 1912; *Lucr* 5fifiK; Tenasserim, Taepo, alt. 500**, 13 April 1877, *Callatttj* ***lib.***

INDIGOFKKA CASSIOIDES RoUlei' CX IK".

indigofera caesimdes Rotller ex DC. **Prodr.** 2: 22H. 1825, AH *in* Bot. Noth. Ill: r>C9. li),ri8. — Type: Mt. Nillgcrry. Ind. Or. 1823, *Lescheuault* s. n. (G. Photn **CAL!), Figure:** RMIJ. **leones** (Inwl.) 2330 *&* 195)l **(K,** CAL!).

!. ***leptostackya*** **DC. Prodr. 2: 226. 1B8B.**

1. ***ettiptica*** Roxb. Fl. Ind. 3: 380. 1832 et Icones (Ined.) 1991; Kurz **HI** J. *Amat.* Hoc. Benp. 46: 270. 187G et For. Fl. Brit. Burma 1: 3GI. 1877.

/. *violacea* Roxb. Fl. Ind. 3: 380. 1832 et Icones (Ined.) 2330.

/. ***ptdeheUa*** **auct** *non* Roxb. Baker *in* Hook f. Fl. Brit. Ind. 2: 101. 1876 *pro* parte: Kurz, For. Fl. Brit. Burma 1: 361, 1877; Gage in Rec. Bot, Surv. India 3: *-11.* 1904: **Lace,** List ..... trees, shrubs, climbers, etc ..... Burma: 40. 1912.

Erect shrub, 2—3 m tall; branches striate, adpressed pubescent when young, terete and glabrous with age. Leaves 12—15 cm long with 1—1.5 cm long petiole; leaflets 13—21, opposite or suboppoaite, 2—4 x 1—2.5 cm, elliptic or elliptic-oblong, obtuse at both ends, mucronulate, adpressed pubescent on both surfaces with raised nerves beneath; stipules 2—4 mm long; stipels 1—2 mm long, subulate, caducous. Racemes 8—15 cm long with 1—1.5 cm long peduncle having crowded sterile bracts **at** base many-

flowered. Flowers 1—1.3 cm long, pink; pedicels 1—2 mm long; bracts 3—6 x 2—3 mm, usually lanceolate, acuminate or long cuspidate, adpressed white pubescent without, caducous. Calyx 2.5—3 mm long, 5-lobed, densely adpressed white pubescent; lobes triangular, acute; tube 2—2.5 mm long. Standard 1—1.3 × 0.5—0.8 cm, obovate-oblong or ovate-oblong, clawed at base, rounded and mucronulate at apex, finely ciliate along the upper margins; wings 8 mm long, glabrous; keels 1—1.2 cm, finely hairy along upper margins. Ovary 7—9 mm long, linear, glabrous style 2—4 mm long, glabrous; stigma capitate. Pods 2.5—3 x 0.3—0.4 cm, linear, compresso-cylindrical, acute at apex, glabrous, 6—12-seeded, spreading. Seeds 1.5—2 x 1—1.5 mm, cylindrica, truncate at both ends, smooth, shining, reddish-browns.

VERNACULAR: *Taw-mai-yainy; Me* (Joemigoo Dist.).

FL. & FRT.: December - April.

DISTRIBUTION: Burma (Magwe, Shan States, Pegu, Martaban, Rangoon, Tenasserim, Minbu), India, Pakistan, China, Indochina, Thailand.

BURMA: Magwe Dist., Indiang Forest, alt. 600', 24 Feb. 1915, *Rogers 912*; Shan States, Kung Tung, alt. = 4000', Dec. 1909, *Mac Gregor 126b*; Maymyo Plateau, alt. 3500', 12 April 1908, *Lace 3120*; unknown locality, *Maiden s. n.*; Jan. 1891, *Huk s. n.*; Makhaye Hill, 1893, *Dr. King's Collector s. n.*; Hsamongkhan, 13 Feb. 1917, *Arundale EB 109* (BSIS); Lashis, 19 Jan. 1904, *Burkill 22559* (BSIS); Pegu, Tonkgerhat, *Kurz 1693*; Minbu, Pojo, Chin Hills, Dec. 1902, *Mokim 753* (CAL, BSI); Pyawfive, Jan. 1903, *Mokim 1113*; Hebo Road, Huzedu, Chin Hills, March 1903, *Mokim 1575*; Feb. 1903, *Mokim s. n.*; Madow Hill, 28 Feb. 1893, *Dr. King's Collector 83*; Nagh-Kgun, 16 Jan. 1868, *Anderson s. n.*; Cokteik, alt. 2000', Jan. 1908, *Meebold 8027* (BSI).

INDIGOFERA COLUTEA (Burm. f.) Merr.

Indigofera colutea (Burm. f.) Merr. *in* Philippine J. Sci. **19**: 335. 1921; Gillett *in* Kew Bull. Add. Ser. **1**: 65. 1958; Ali *in* Bot. Notis. **111**: 548. 1968. Figure: Roxb. Icones (Ined.) 887 (CAL !); Wight, Icones, t. 404. 1840 (sub *I. viscosa* Lamk.). — *Calega colutea* Burm. f. Fl. Ind.: 172. 1768, *non. sensu* Willd. 1803. — Type: India, Plukenet, Phytographia: t. 166/3. 1692 based on a specimen at BM (Photo CAL !).

I. viscosa Lamk. Encyc. **3**: 247. 1789; Baker *in* Hook. f. Fl. Brit. India 2: 95. 1876; Kurz *in* J. Asiat. Soc. Beng. **46**: 269. 1876; Gage *in* Rec. Bot. Surv. India **3**: 40. 1904.

I. viscosa Lamk. var. *brachycarpa* Baker f. Leg. Trop. Afr.: 124. 1926.

I. glutinosa Perr. ex DC. Prodr. 2: 227. 1825. — Type: Herb. DC. 2: 227 (G, microflec. CAL !).

I. consanguinea Klotz. *in* Peter, Reise Mossamb. Bot. 50. 1861.

I. senticosa Harv. *in* Harv. & Sond. Fl. Capensis 2: 196. 1862.

I. zenkeri Harms ex Baker f. J. Bot. **41**: 241. 1903.

I. zenkeri Harms ex Baker var. *bravifoliata* de Willd. Pl. Beq. 2: 538. 1924.

I. multifoliata de Willd. Pl. Beq. **2**: 539. 1924.

I. junodii N. E. Br. *in* Kew Bull. 1925: 147. 1925.

Annual, erect subshrub, 60—85 cm tall; branches terete, striate densely gland-tipped hairy mixed with simple, medifixed hairs. Leaves 2—3.5 cm long elliptic or eliptic-oblong, rarely lanceolate or obovate. obtuse or cuneate at base, obtuse and mucronate at apex, adpressed pubescent on both surfaces with gland-tipped hairs on midrib and margins, stipules 5—8 mm long, setaceous, gland-tipped hairy, caducous; petiolules 1 mm long; exstipellata. Racemes 5—6 cm long with 1.2—2 cm long peduncle, rachis gland-tipped hairy, distinctly 6—12-flowered. Flowers 4—5 mm long, pinkish-red; pedicels 1 mm long; bracts small, gland-tipped hairy, cadaucous. Calyx 2—2.5 mm long, adpressed hairy and with gland-tipped hairs along margins; lobes 2 mm long, linear, acuminate; tube short. Standard 4—4.5 × 2—2.5 mm, obovate, obtuse at base, rounded and mucronate at apex, strigose without; wings 3.5—4 mm long, glabrous; keels 4.5—5 mm long. thinly strigose without. Ovary 3—3.5 mm long, linear, glabrous; style 1—1.5 mm long, glabrous, stigma capitate. Pods 1.5—2 x 0.4 cm spreading linear, subcylindric, shortly apiculate, faintly torulose, medifixed and gland-tipped hairy, 8—12 seeded, endocarp red-spotted. Seeds 1.2 × 1 mm, cubical, truncate at both ends, foveolate, shining, reddish brown.

FL. & FRT.: September - December.

DISTRIBUTION: Burma (Mandalay, Minbu, Prome), India, Pakistan, Indonesia, Java, Timor, Sri Lanka, Afghanistan, Australia, Arabia, Throughout Tropical Africa, New Zealand.

BURMA: Mandalay, 25 Sept. 1868, *Anderson s.n.*; Sagaiyang, 2 Nov. 1892, *Huk* 63; Minbu, Shingiangi Road, Nov. 1902, *Mokim 562*; Chin Hills, Sillotia Road, *Mokim 320, 401* (BSI); Prome, 14 Dec. 1908, *Burkill 31594* (BSIS); Unknown locality, Oct. 1891; *Huk 49*; 19 Sept. 1921, *Saiyoy s.n.*

INDIGOFERA DOSUA Buch.-Ham. ex D. Don

Indigofera dosua Buch.-Ham. ex D. Don, Prodr. Fl. Nepal: 244. Feb. 1825; Baker *in* Hook. f. Fl. Brit. India 2: 102. 1876, *excl. var.*: Lace, List..... trees, shrub, climbers, etc. Burma: 40. 1912. — Type: Nepal, Suembu, 7 July, 1802, *Buchanan-Hamilton s.n.* (BM, Photo CAL !). Figure: Lindl. Bot. Reg. 15: t. 57. 1842.

I. polyphylla DC. Prodr. 2: 227. Nov. 1825. — Type: Herb. DC. 2: 227. 1825 (G, microfisc. CAL !).

Erect shrub, 1—2 m tall; branches slender, terete, grey-tomentose. Leaves 6—8 cm long, subsessile leaflets (11—)17—31, opposite or subopposite; 1—1.8 × 0.4—0.7 cm, elliptic or elliptic-oblong, rarely linear-oblong, rounded base, obtuse and mucronate at apex, adpressed pubescent on both surfaces, green above and pale below; stipules 3—4 mm long, setacous; petiolules short; stipels very short. Recemes 3—7 cm long, with 1—1.5 cm long peduncle; reddish-grey tomentase, many-flowered. Flowers 1—1.3 cm long, bright-pink; pedicle 1 mm long, pubescent; bracts 2.5—3 × 1.2 mm, narrow-lanceolate, acuminate, adpressed grey-tomentose without, exceeding buds, caducous. Calyx 2.5—3 cm long,

adpressed grey-tomentose; lobes 0.5 mm long, deltoid tube 2—2.5 mm long. Standard 10—12 × 5 mm, obovate, oblong mucronulate at apex, strigulose without; wings 8—10 mm long, glabrous; keels 10—12 × 4 mm, obovate-oblong, strigulose without. Ovary 2—3 mm long, oblong, glabrous, 8—10-ovuled; style 2 mm long; stigma capitate. Pods 2—2.8 × 0.4 cm, linear, straight, apiculate, sutures broad, thinly adpressed grey pubescent; 8—12-seeded.

FL. & FRT.: April - June.

DISTRIBUTION: Burma (Mogot); India, Nepal and Bhutan.

BURMA: Upper Burma, Mogot, alt. 4000'. April 1890, *Cooper* 9.

INDIGOFERA GALEGOIDES DC.

Indigofera galegoides DC. Prodr. 2: 225. 1825; Baker *in* Hook. f. fl. Brit. India 2: 100. 1876; Kurz *in* J. Asiat. Soc. Beng. 46: 270. 1876 (*excl.* Syn. *I. zollingeriana* Mig.) et 7 or, Fl. Brit. Burma 1: 360. 1877; Lace, List..... trees, shrubs, climbers etc..... Burma: 40. 1912. — Type: Ceylon (Sri Lanka), 1823, *Leschnault s. n.* (G, Photo CAL !). Figure: Roxb. Icones (Ined.) 2331 (CAL !) (sub *I. uncinata* Roxb.). *I. uncinata* Roxb. Fl. Ind. 3: 382. 1832 *non* G. Don 1822. *I. finlaysoniana* Grah. *in Wall List no.* 5488. 1832 (*nom. mud.*), ex Ridley, Fl. Malay Pen. 1: 581.1922 (CAL !, K, Microfisc. CAL !).

Erect shrub, 1.5—2.5 m tall; branches angular, thinly short-adpressed pubescent when young, terete and glabrous with age. Leaves 12—22 cm long with 1.5—2 cm long petiole; leaflets 11—25, opposite rarely subopposite, 2—3 × 0.3—1.7 cm, obovate to obovate-oblong or oblanceolate, cuneate at base, rounded and mucronate at apex thinly adpressed pubescent on both surfaces; stipules 2.5—3.5 mm long, subulate, adpressed brown pubescent without; petiolules 2 mm long; stipels 1—1.5 mm long, subulate, with tuft of brown hairs between stipels. Racemes 8—12 cm long, subsessile, compactly many-flowered. Flowers 7—9 mm long, pale red; pedicels 2 mm long, pubescent; bracts as long pedicels, lanceolate adpressed hairy without. Calyx 1—2 mm long, adpressed light-brown pubescent without; lobes 0.5 mm long, triangular; tube 1—1.5 mm long. Standard 7—8.5 × 4.5—5 mm, obovate to obovate-oblong, obtuse at base and apex, macronulate, puberulous without; wings 6—7 mm long, glabrous; keels 7—9 mm long, adpressed puberulous on upper part without. Ovary 6—7 mm long, linear, glabrous; style 4 mm long, glabrous; stigma capitate. Pods 6—7.5 × 0.5 cm, fastigately grouped with their apices pointing towards apex of peduncles, linear, subquadrangular or cylindrical, long-beaked at apex, sutures thin, valves wrinkled, faintly torulose, thinly adpressed brown pubescent, 10—16-seeded, endocarp red-spotted. Seeds 2.5—3 × 1.5 mm cylindric or subquadrangular, truncate at both ends, shallowly pitted, shining, reddish-brown.

FL. & FRT.: August - March.

DISTRIBUTION: Burma (Mingin, Martaban, Rangoon — up to 4000', Tenasserim, Amherst, Tavoy, Minbu, Pegu), India (Peninsular & North-Eastern), Bangladesh, Sri Lanka, China, Indonesia, Thailand, Indo-China, Java, Malacca, Philippines.

BURMA: Mingin, Nov. 1880, *Prazer s. n.*: Tenasserim Dunaon, March 1911, *Meebold* 14670; Modget, 18 Feb. 1877, *Gallatly 358*; Amherst, Kasat, Watchaung Reserve, alt. 100′, 14 Jan. 1912, *Lace 5582*; Tavoy, Dec. 1900, *Mokim 63* (CAL, BSIS); Pegu Yedohgeley, *Kurz 1696*; Karbay, *Kurz 1694*.

INDIGOFERA GLABRA L.

Indigofera glabra L. Sp. Pl. 751. 1753; Gamble, Fl. Pres. Madras 1: 219. 1935; Ali *in* Bot. Notis. 111: 572. 1958. — Type: Ceylon (Sri Lanka), *Herb. Hermann* vol. 3: fol. 27 (BM, Microfisc. CAL !). Figure: Wight, Icones t. 385. 1840; Roxb. Icones (Ined.) 386 (CAL !) — sub *I. fragrens* Roxb.

I. pentaphylla Murr. Syst. Veg. (ed. 13): 564. 1774.

I. fragrans Ratz. Obs. 4: 29. 1786; Wall List no. 5452, 1832, *nom. nud.*; Gage *in* Rec. Bot. Surv. India 3: 40. 1904.

Diffuse herb, 15—20 cm tall; branching from base, 20—25 cm long, branches ascending, glabrous or with a few deciduous spreading hairs. Leaves 3—4.5 cm long with 3—4 mm long petiole; rachis spreading hairy; leaflets 5, rarely 7, opposite, 8—15 x 5—8 mm, elliptic or obovate, rounded at base, obtuse at apex with a gland-tipped mucro in young leaflets, adpressed spreading hairy on both surfaces, green above and pale below; stipules 8—10 × 3—4 mm, lanceolate, acuminate, pink-veined ciliate on midrib and margins petiolules 1—2 mm long, pilose; stipels small. Racemes 2—3 cm long with 1—1.5 mm long peduncles; peduncles pilose, rachis glabrous with a few reddish-glandular eruptions, distantly 5—8-flowered. Flowers 4—5 mm long, light pink; pedicels 2—3 mm long spreading hairy; bracts 1.5—2 x 1 mm, lanceolate, acuminate, ciliate along midrib and margins. Calyx 2.5—3.5 mm long, spreading pubescent without; lobes 2—2.5 mm long, lanceolate, acuminate, gland-tipped at apex; tube 0.5—1 mm long. Standard 4—5 × 2.5—3 mm, orbicular-ovate, obtuse at apex, puberulous without; wings 3—4 mm long, glabrous; keels 4—4.5 mm long, puberulous without. Ovary 3—4 mm long, linear, glabrous; style 1.5—2 mm long, glabrous; stigma capitate. Pods 2.5—3 x 0.2—0.4 cm, spreading, linear, cylindrical, shortly apiculate, sutures somewhat thick, faintly torulose, glabrous, 8—10-seeded; endocarp red-spotted. Seeds 2—2.5 × 1 mm, cylindric, truncate at both ends, or fovesolate, especially on truncate and reddish-brown.

FL. & FRT.: October - December.

DISTRIBUTION: Indochina, Burma (Tutman, Minbu), India, Sri Lanka.

BURMA: Tutman Dist., *Unknown locality*, Nov. 1902, *Mokim 660* (CAL, BSI), *Mokim* 658 (BSI); Minbu Dist., Sagu Road, Oct. 1902, *Mokim 384*.

INDIGOFERA LACEI Craib (Fig. 7).

Indigofera lacei Craib *in* Kew Bull. 1910: 382, 1910 et Fl. Siam. Enum. 1: 378. 1931; Lace, List..... trees, shrubs, climbers etc..... Burma: 40. 1912. — Type: Burma, Maymyo Plateau, alt. 3500′ *J. H. Lace 426S* (K, Photo CAL !).

Erect shrub, 2 m tall; branches grooved with edges acute, densely white tomentose when young, terete and glabrous with age. Leaves 7—12 cm long petioles, usually alternate, rarely opposite or subopposite, leaflets 21—31, opposite, 10—16 x 4—6.5 mm, elliptic-oblong, rarely obovate, rounded at both ends, sometimes cuneate at base, mucronate, dark green above, pale beneath, thinly adpressed pubescent on both surfaces; stipules 5—8 mm long, linear, acuminate, usually free-lateral, sometimes interpetiolar (as in *Badal Khan 202*), adpressed pubescent without; petiolules 1—1.5 mm long; stipels 0.8—1.0 mm long. Racemes 10—15 cm long, with 1.2—2 cm long peduncles; many-flowered rachis angular, adpressed pubescent; Flowers 8—10 mm long, reddish-purple; pedicels 2—4 mm long; bracts 1—1.5 mm long, filiform, longer than buds, caducous. Calyx 2 mm long, 5—lobed adpressed puberulous, lobes short, dentate, acute; tube 1.5 mm long, oblique. Standard 6.5—7 × 4 mm, obovate, rounded and mucronulate at apex, scabrous without; wings 6 × 1.5 mm long, ciliate; keels 6.5 mm long, puberulous without. Ovary 5—5.5 mm long, linear, glabrous; style 1—1.5 mm long, glabrous; stigma capitate. Pods 3—3.5 x 0.25—0.3 cm, linear, cylindrical, acute, smooth, shining, 6—10-seeded, pointing parallely towards apex of the axis; endocarp red-spotted; exocarp cracking in mature pods. Seeds 2 × 1.5 mm, cylindric, sometimes spherical, truncate and rounded at both ends, dark-red.

FL. & FRT.: October - February.

DISTRIBUTION: Burma (Shan States, Amherst, Pegu, Minbu), Thailand, India.

BURMA: Shan States, Maymyo Hills, Oct. 1888, *Khan 202*; Laikow, 1893, *Khalil s. n.*; Maymyo Plateau, alt. 3500', 26 Sept. 1911, *Lace 5435*; Amherst, Niba to Kyanket, alt. 1000, 8 Feb. 1912, *Lace 5674*; Pegu Garen county, 1957, *s. l.* & *n.*, Gokteik, alt. 2000', Jan. 1908, *Meebold 8065*; Chin Hills, Pabo, alt. 4500', Jan. 1903, *Mokim 1162* (BSI).

INDIGOFERA LINIFOLIA (L.f.) Retz.

Indigofera linifolia (L.f.) Retz. Obs. 1: 29. 1786 et 6: 33, t. 2. 1971; Baker in Hook. f. Fl. Brit. India 2: 92. 1876; Kurz in J. Asiat. Soc. Beng 46: 269, 1876; Cage in Rec. Bot. Surv. India 3: 40. 1904. — Type: Ind. Orient. *Unknown Collector* (LINN. No. 921. 5, microfische CAL !). Figure: Retz. Obs. 6: t. 2. 1791; Wight, Icones t. 313. 1840; Roxb. Icones (Ined.) 376 (CAL !). — *Hedysarum linifolium* L. f. Suppl. Pl. 331. 1781. — *Sphaeridiophorum linifolium* (L. f.) Desv. J. Bot. 1: 125. t. 6. f. 35. 1813.

S. abyssinicum Jaub. & Spach, Illustr. Pl. Or. t. 191. 1857.

Prostrate or procumbent herb; much branched from base with 12—25 cm long branches, somewhat 2-edged, silvery white canescent. Leaves 10—25 x 1—3 mm, simple, sessile or sub-sessile, lamina linear or oblong, obtuse to acute at base and apex, sometimes slightly retuse at apex, adpressed silvery scarbrous on both surfaces; stipules 2—3 mm long, lanceolate, acuminate; adpressed pubescent, sometimes persistent Racemes 8—12 flowered 1.5—2 cm long, sessile or subsessile, pink; pedicels 1—12

mm long; bracts 1—2 mm long. Flowers 4—5 mm long, lanceolate acuminate, adpressed pubescent without, caducous. Calyx 3 mm long, adpressed silvery scabrous without; lobes 2—2.5 mm long, linear, acuminate; tube short. Standard 4—5 x 2 mm, ovate or obovate, obtuse-mucronate at apex, scabrous without; wings 2.5—3 mm long, glabrous; keels 4—5 mm long, scabrous without. Ovary 2—2.5 mm long, oblong, glabrous; style 2—2.5 mm long, glabrous; stigma capitate. Pods 2—3 x 2—3 mm, spherical, centrally apiculate, 1-seeded, silvery white scabrous. Seeds 1—1.5 x 1—1.5, spherical, smooth, blackish-brown, sometimes mottled.

FL. & FRT.: October - November.

DISTRIBUTION: Burma (Minbu, Pegu, Shan States), India, Pakistan, Afghanistan, Sri Lanka, Indo-China, Thailand, Indonesia, New Guinea, Australia, China, Taiwan, Eritrea, Ethopia, Sudan, Philippines.

BURMA: *Unknown locality.* Oct. 1891, *Huk. s. n.*; Minbu, Nov. 1902, *Mokim 507* (Flowers white ?).

INDIGOFERA LINNAEI Ali

Indigofera linnaei Ali *in* Bot. Notis. 111. 549. 1958; Backer & Brink, Fl. Java: 591. 1963. — Type: India, Coramandal Coast, Hebr. Sloane, vol. 95, f. 186 (BM. Photo CAL !). Figure: Wight, Icones t. 403. 1840; Roxb. Icones àIned.) 390 (CAL !).

I. enneaphylla L. Mant. 2: 272. 1771. Append. 571: 1771. *illeg. nom.*; Baker *in* Hook. f. Fl. Brit. India 2: 94. 1876; Kurz *in* J. Asiat. Soc. Beng. 46: 269. 1876; Gage *in* Rec. Bot. Surv. India 3: 40. 1904.

Hedysarum prostratum L. Mant. 1: 102. 1767. *H. prostratum* Burm. f. Fl. Ind. 168, f. 1, 1768. — *Indigofera prostrata* (Burm. f.) Domin. *in* Bibl. Bot. Stuttgarti 1926, *non* Willd. 1802.

I. caespitosa Wight *in* Wall. List. no. 5447. 1832, *nom. nud.*

Prostate herb; rootstock woody; branches 30—35 cm long, terete or angled, densely caespitose, trailing. Leaves 3—3.5 cm long, sessile or subsessile, leaflets (5—)7—9(—11), alternate, 5—16 × 2—5 mm, obovate, or obovate-oblong, cuneate at base, rounded to retuse and mucronate at apex, adpressed scabrous on both surfaces; stipules 5—7 x 1.5—2 mm, lanceolate, acuminate, pubescent on midrib and basal margins without; stipels absent. Racemes 1—2 cm long, globose to ovoid, sessile or subsessile, 10—20-flowered, rachis white-pubescent. Flowers 4—5 mm long, pink; pedicels 1 mm long; bracts 1—1.5 mm long, lanceolate, acute, caducous. Calyx 2.5—3.5 mm long, adpressed pubescent without; lobes 2.5—3 mm long, lanceolate, acuminate; tube 0.5—1 mm long; standard 4—5 × 2—3 mm, obovate, rounded and mucronulate at apex, puberulous without; wings 4 mm long, glabrous; keels 4—5 mm long, glabrous. Ovary 2—3 mm long, oblong, glabrous style 1—2 mm long, glabrous; stigma capitate. Pods 3—5 x 1.5—2 mm, ovoid or oblong, turgid, shortly apiculate, adpressed hoary, 1—2-seeded; sutures thin. Seeds 1—1.2 × 1 mm,

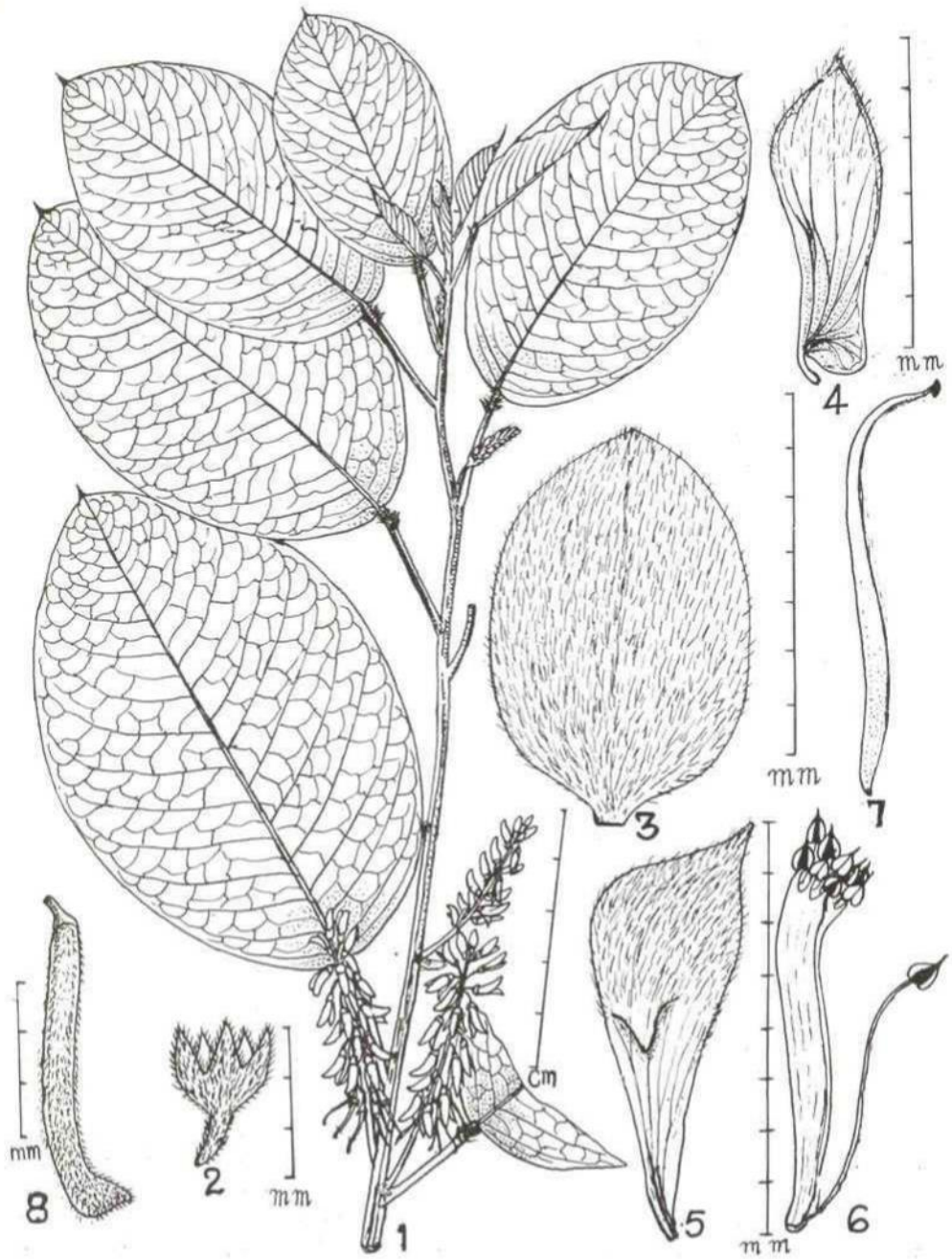


Fig. 1. *Indigofera maymyoensis* Tanjappa: 1. Twig of the plant 2. Calyx 3. Stanard 4. Wing petal 5. Keel petal 6. Stamens 7. Carpel and 8. Pod.

ovoid or glabose, truncate one and rounded at other, smooth, shining, reddish-brown.

FL. & FRT.: June - December.

DISTRIBUTION: Burma (Minbu, Prome), India, Pakistan, Sri Lanka, China, Indo-China, Thailand, Indonesia, Java, New Guinea, Australia.

BURMA: Minbu, *Unknown locality*, Sept. 1902, *Mokim* 152 (BSI); Minbu Dist., Mahoc, Chin Hills, Dec. 1902, *Mokim* 818 (CAL, BSI); Sillotia Road, Chhin Hills, Oct. 1902, *Mokim 329, 332* (BSI); *Unknown* locality, 22 June 1890, *Huk s.n.* Minju, 1893, *Dr. King's Collector s. n.* (Flowers white, racemes are highly metamorphosed); *Unknown locality*, 19 July 1921, *Banerjee* 10.

Indigofera maymyoensis Sanjappa, *sp. nov.* (Fig. 1).

Affinis *I. caloneura* Kurz sed differt ramis scabris furcatisque, foliis longipetiolatis, floribus laxis in racemis manifeste pedunculatis, racemisque quam foliis brevioribus. — Holotypus: *J. H. Lace 4846* (CAL).

Allied to *I. caloneura* Kurz but differs from it in having scabrous and grooved branches; long petioled leaves, base flowers lax in distinctly peduncled racemes that are shorter than leaves.

Erect shrub 1—1.5 mm tall; branches grooved with ridges acute, adpressed brown scabrous. Leaves 14—20 cm long with 2—3 cm long petioles; unifoliolate; leaflets 11.5—17.5 × 8—10 cm, elliptic or elliptic-obovate, rounded at both ends, mucronate, green and glabrous above, pale and thinly adpressed pubescent beneath with prominent nerves; petioles 2—3 cm long jointed, channelled above, scabrous; stipules 3—4 mm long, filiform, scabrous; petiolules 2—3 mm long, stipels 2 mm long, subulate. Racemes shorter than leaves (6—8 cm long including peduncle of 1—1.5 cm long), rachis grooved, scabrous; laxly many flowered. Flowers 8—10 mm long; bracts 3—4 mm long, filiform, caducous, pedicels 2—3 mm long, scabrous. Calyx 2.5 mm long, campanulate, adpressed rusty brown pubescent without, lobes 0.5 mm long, triangular, acute, tube 2 mm long; standard 7 × 5 mm, ovate-elliptic, rounded at both ends, adpressed dark-brown puberulous; wings 6 mm long, ciliate; keels 7 mm long, adpressed brown puberulous without. Stamens 9 + 1, diadelphous; ovary 5.5 mm long, glabrous; style 2.5 mm long; stigma capitate. Legumes 4—5 x 0.4 cm, linear, stout with curved and blunt apex, brown scabrous, 6—10-seeded, endocarp red-spotted. Seeds not seen.

FL.: June - July; FRT.: November - December.

DISTRIBUTION: BURMA (Maymyo Plateau).

BURMA: Maymyo Plateau, 3500', 6 July 1909, *Lace* 4846 (Holotype, CAL); 5 Nov. 1911, *Lace* 5519 & 21 June 1913, *Lace* 6227 (Paratype, CAL).

Indigofera meghalayensis Sanjappa, *sp. nov.* (Fig. 2).

Affinis *I. cylindracea* Grah. ex Baker sed differt in indumento pilis dense adpressed atro-ferrugineis, foliis brevioribus, foliolis pflucioribus, racemis paucifloris, calycis lobis lineari-acuminatis, pedicellis brevibus rigentibusque. — Hototypus: *N. L. Bor 18168* (DD).

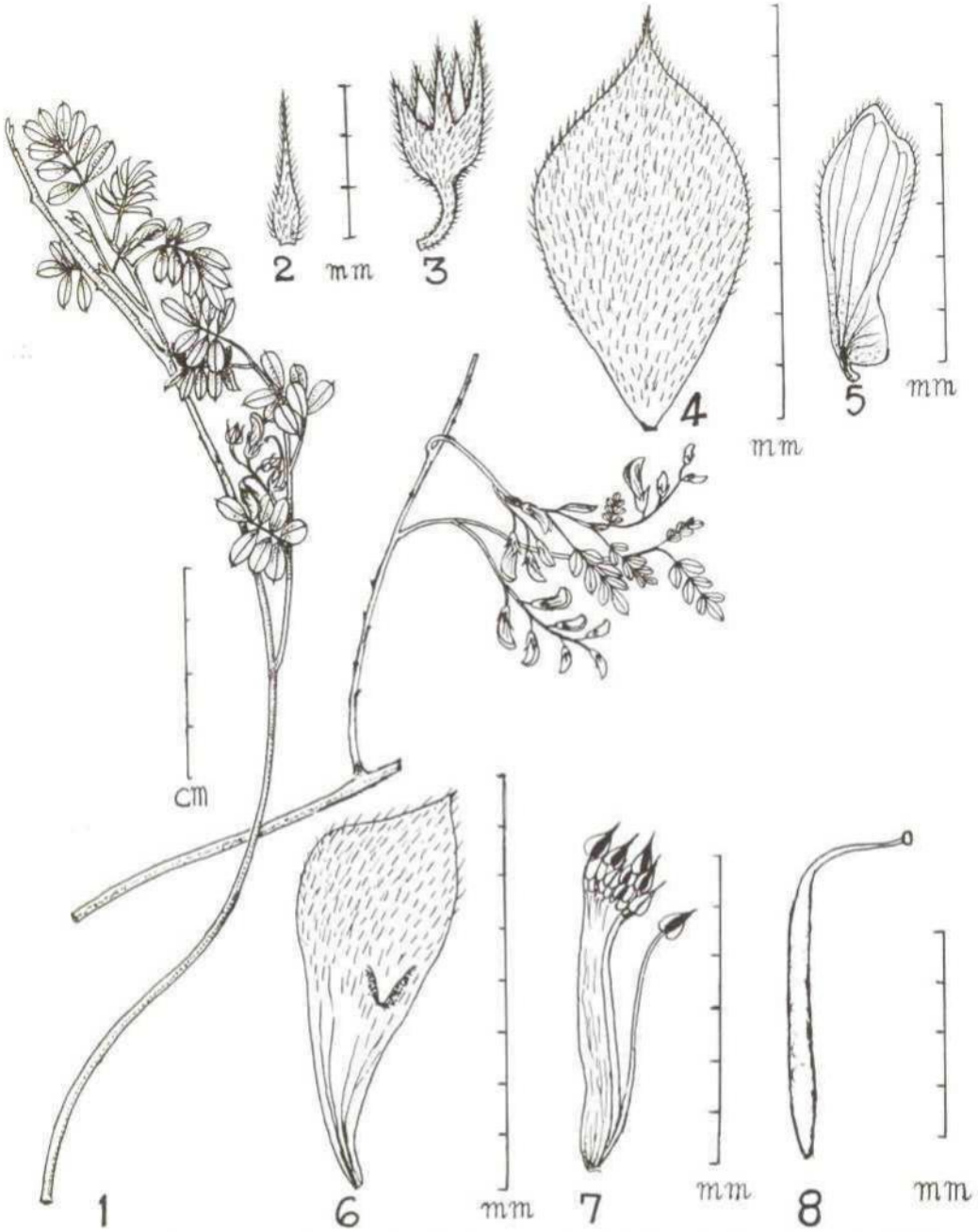


Fig. 2. *Indigofera meghalayensis* Sanjappa: 1. Twigs of the plant 2. Bract 3. Calyx 4. Standard 5. Wing petal 6. Keel petal 7. Stamens and 8. Carpel.

Allied to *I. cylindracea* Grah. ex Baker, but differs from it in having densely adpressed dark rusty-brown indumentum; shorter leaves with fewer leaflets; short, few-flowered racemes; linear-acuminate to calyx lobes, short and rigid pedicels.

Shrub ca. 2.5 m tall; branches angular, densely adpressed pubescent. Leaves 2.5 cm long, pinnate, alternate; petiole 5 mm long, shallowly canaliculate above, adpressed rusty-brown, pubescent; leaflets (5—)7—9, opposite, 5—8 x 3—4 mm, elliptic or oblong, rounded at base, obtuse and mucronulate at apex, adpressed brown and white pubescent on both surfaces. Stipules 3—3.5 mm long, linear-acuminate, adpressed brown hairy without, petiolules 1.5 mm long. Racemes 4—5 cm long, including peduncles of 1—1.2 cm long, axillary, rachis adpressed rusty-brown pubescent many-flowered. Flowers 5—7 mm long, yellow (?), bracts 2—2.5 x 5 mm, linear-lanceolate, adpressed pubescent without, pedicels 2 mm long. Calyx 3 mm long, campanulate, adpressed rusty-brown pubescent without; lobes 2 mm long, linear acuminate, tube 1 mm long. Standard 6—6.5 × 3—4 mm, obovate, obtuse at apex, adpressed white puberulous without; wings ciliate along margins; keels adpressed pubescent without. Stamens 9 + 1, diadelphous. Ovary 4—4.5 mm long, linear, glabrous; style 2—3 mm long, glabrous; stigma capitate. Legumes straight, and thinly adpressed pubescent when young.

Vernacular: "Ma-Thon-Pha-Pai" (Chhin).

FL. & FRT.: April - May.

DISTRIBUTION: Burma (Chhin Hills) and India (Meghalaya).

INDIA: Meghalaya, Smit, Khasia & Jayantia Hills, 26 April 1944, *Bor 18168* (Holotype, DD).

BURMA: Mt. Victoria, lat. 8000', Chhin Hills, 1939, *Dikason 8534* (Paratype, CAL). *Unknown locality*, Chhin Hills, 1895, *Duan* 82 (Paratype, CAL).

INDIGOFERA MINBUENSIS Gage (Fig. 3)

Indigofera minbuensis Gage *in* Rec. Bot. Surv. India 3: 40. 1904; Brandis, Ind. trees (Addenda): 706. 1905; Rodger *in* J. H. Lace, List..... trees, shrubs, climbers, etc..... Burma: 46, 1922. — Type: Burma, Cana, Chhin Hills, Minbu Dist. alt. 4000', Jan. 1903, *S. Mokim 1158* (Lectotype, CAL; Isolectotype CAL ! K).

Erect shrub, 25—40 cm tall; branches ridged and furrowed with obtuse angles, adpressed scabrous. Leaves 5—7 cm long with 0.2—2.5 mm petiole, simple, lamina 5—7 × 0.5 cm, linear, chartaceous, cuneate at base, acute and mucronulate at apex, margin revolute, scabrous on both surfaces, midrib raised beneath. Racemes 8—10 mm long, sessile. Flowers not seen; calyx 2—2.5 mm long, scabrous without, persistent; lobes setaceous, tube short. Pods 1—1.3 × 0.2 cm, linear-cylindrical, sutures thin, abruptly short apiculate, scrabrous, 3—6-seeded. Seeds 1.5 × 1 mm, cylindric, truncate at both ends, reddish.

FL. & FRT.: November - January.

DISTRIBUTION: Burma (Minbu) - Endemic.

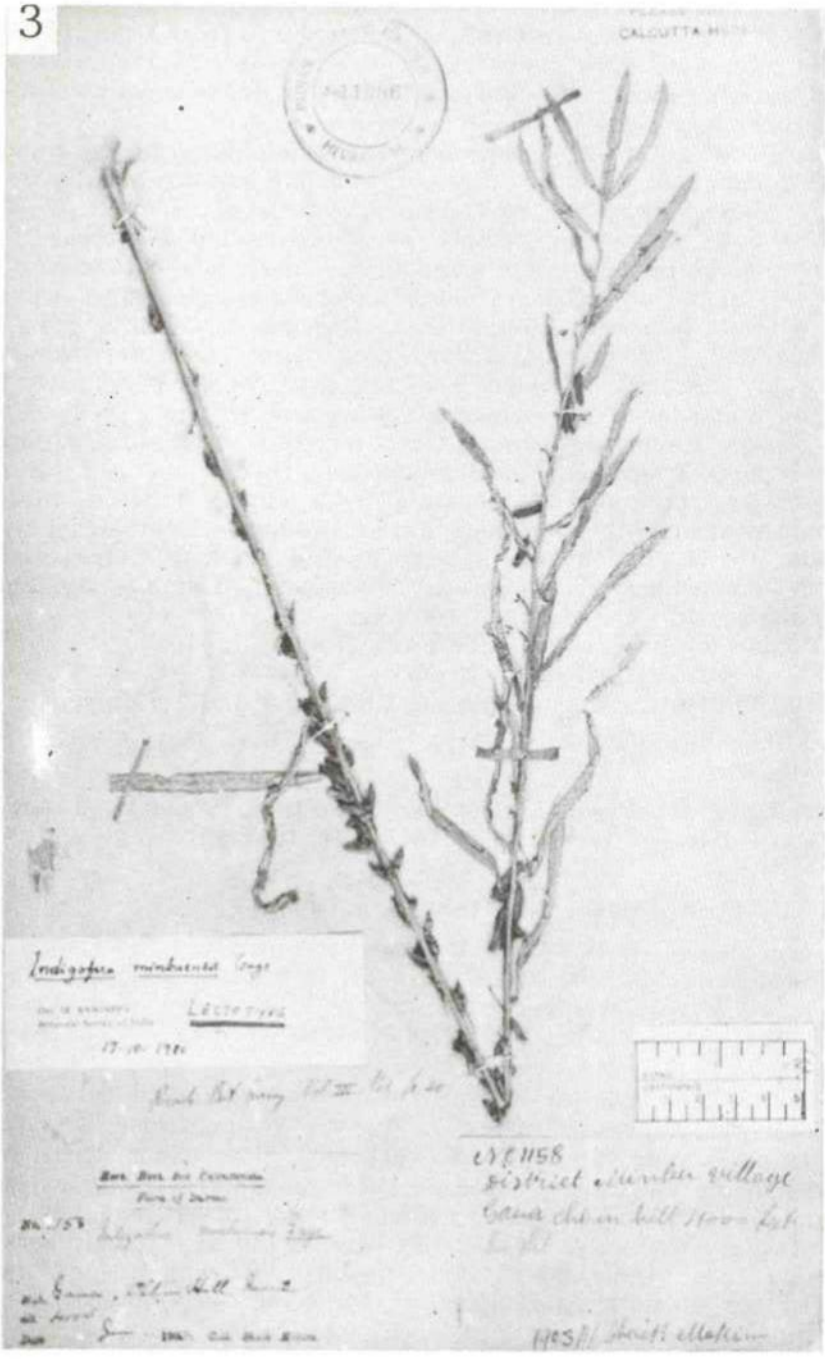


Fig. 3. *Indigofera minbuensis* Gage.

NOTE: *Indigofera minbuensis* Gage is based on Shaik Mokim's collection from Chhin Hills in Minbu of Burma. There are at least 4 replicates of these collections represented at CAL and K (Photo Cal !). Though all these replicates are annotated by Gage, he did not choose any of them as type. Hence, one of the replicates viz. *Shaik Mokim* 1158A (CAL) is selected here as LECTOTYPE for the species. So far the species in known only by type collection only.

INDIGOFERA NIGRESCENS Kurz ex King & Prain (Fig. 4)

Indigofera nigrescens Kurz ex King & Prain *in* J. Asiat. Soc. Beng. 67: 286. 1898, *Lace*, List..... trees, shrubs, climbers, etc..... Burma: 40. 1912. — Type: Upper Burma, Maymyo, Oct. 1888, *B. Khan 203* (Lecto, CAL).

Erect shrubs, 2—5 m tall; branches angular, adpressed brown pubescent when young, terete and glabrescent with age. Leaves 7—12—(15) cm long with 1—2 cm long petiole, alternate, sometimes subopposite or whorled; rachis brown pubescent; leaflets 13—21(—25), opposite, 1.5—2.1 × 0.6—1.2 cm, elliptic to elliptic-oblong, cuneate at base, rounded and mucronate at apex, adpressed brown pubescent on both surfaces, bluish-green above, pale green beneath with conspicuous midrib; stipules 5—6 mm long, linear-acuminate, thinly adpressed pubescent with bluish-black spots; petiolules 1.5—2 mm long, brown pubescent. Racemes 10—20 cm long, with 2—3 cm long peduncle, rachis brown pubescent (elongating in fruits), compactly many-flowered with conspicuous bracts. Flowers 5—6 mm long, deep magenta-coloured; pedicels 1 mm long; bracts 5—6 mm long, linear, acuminate, adpressed brown pubescent and bluish-black. Spotted without. Calyx 3 mm long, adpressed brown pubescent without; lobes 2 mm long, linear-acuminate; tube 1 mm long. Standard 5.5 × 3 mm, ovate or ovate-elliptic, rounded and mucronate at apex, adpressed brown scabrous dorsally without with a patch of adpressed white hairs ventrally near the base; wings 4.5 mm long, ciliate; keels 5—5.5 mm long, adpressed brown pubescent without. Ovary 3 mm long, linear, glabrous; style 2 m mlong, glabrous; stigma capitate. Pods 2—2.8 × 0.25—0.3 cm long, linear cylindrical, turgid, sutures faintly thickened, abruptly short-spiculate, adpressed brown pubescent, 6—9-seeded, spreading. Seeds 2 × 1 mm truncate at both ends, smooth, shining, reddish.

FL. & FRT.: August - December.

DISTRIBUTION: Burma (Mandalay, Minbu), India, Indochina, China, Java, Philippines.

NOTE: *Indigofera nigrestens* Kuhz. ex King & Prain in based on several collections made from India: Khasia Hills (*Clarke 5848* and *Mann. s. n.*), Burma: Kachin Hills (*Mokim s. n.*) and Shan Hills (*Khan 203*) and China: Yunnan (*Anderson s.n.*). 2—3 duplicates of these collections are preserved at CAL and K. Since King and Prain did not typify

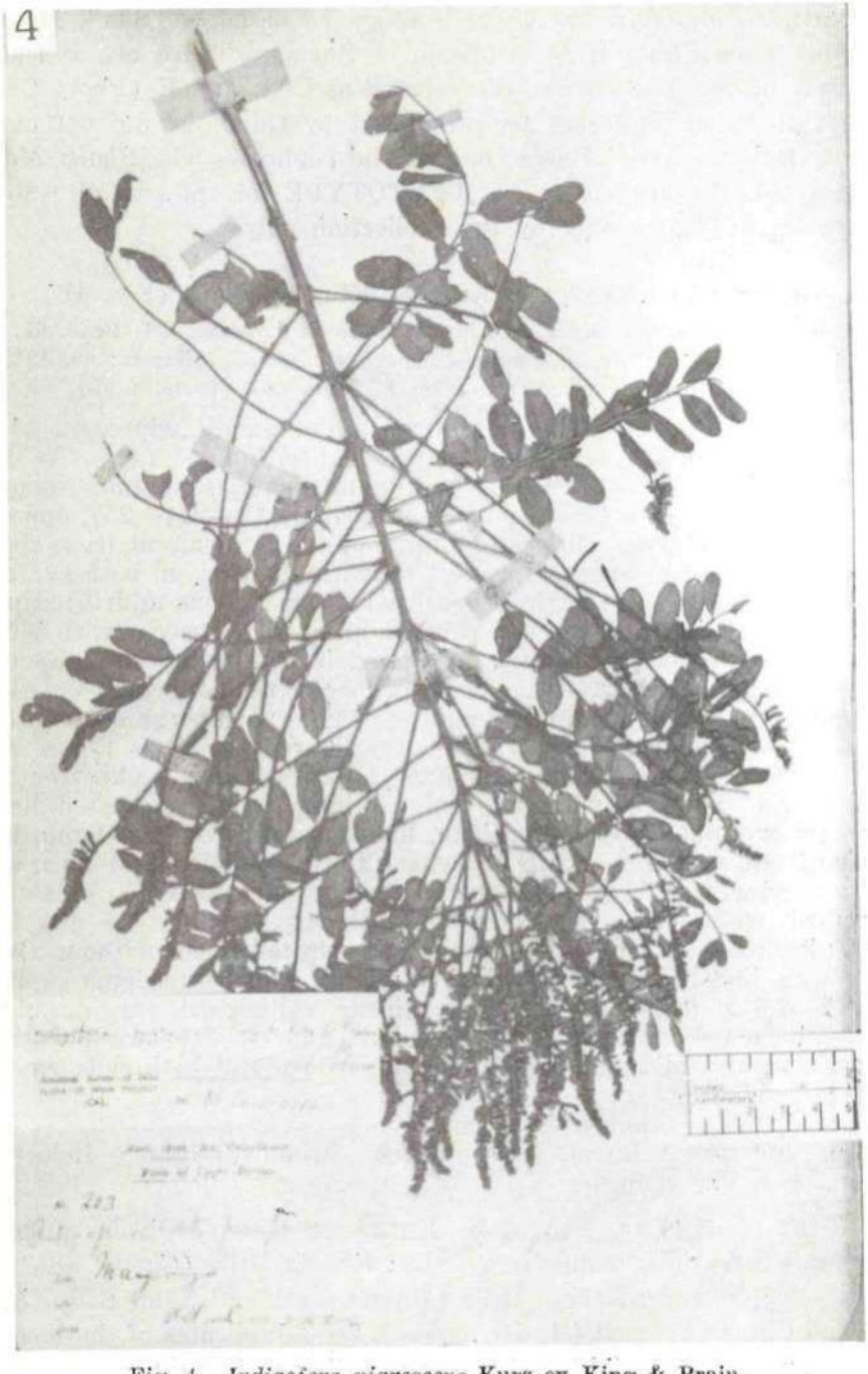


Fig. 4. *Indigofera nigrescens* Kurz ex King & Prain.

the species, therefore, Maymyo, Oct. 1888, *Khan 203* is selected here as LECTOTYPE for the species.

BURMA: Mandalay, 40 miles from Mandalay, Maymyo Hills, Oct. 1888, *Khan 203*; Kachin Hills, *Mokim s. n.*; Myityiana, Piope, *Dr. King's Collector s. n.*; Khampti long mission collection 1911-12, Kalan Tan, alt. 2450', Jan. 1912, *Toppin 6069*; Pnatan, alt. 1150', Jan. 1912, *Toppin s. n.*; Mandalay Maymyo Plateau, alt. 3500', 5 Oct. 1912, *Lace 5976*.

INDIGOFERA SCABRIDA Dunn (Fig. 5)

Indogofera scabrida Dunn *in* J. Linn. Soc. 35: 487. 1903; Craib *in* Notes Roy. Bot. Gard. Edinburgh 8: 64. 1913. — Type: China, Yunnan, in exposed grassy parts of Mengtze Mountains, alt. 4600-6000', *A. Henry 9686a* (Lectotype K, Photo & Type number CAL !).

Ereect shrub; branches terete, densely adpressed rusty brown pubescent mixed with basifixed and gland-tipped hairs. Leaves 9—13 cm long with 1.5—1.8 cm long petiole; rachis hairy; leaflets 11, opposite, 1.5—3 × 0.7—1.2 cm, elliptic of elliptic-oblong, rounded base, obtuse and mucronate at apex, thinly adpressed pubescent on both surfaces; sparsely gland-tipped ciliate along margins and midrib beneath; stipules 5 mm long, linear-acuminate; adpressed white basifixed and long gland-tipped hairy without; petiolules 1.5—2.5 mm long, stippels 3 mm long, linear-acute, hairy. Racemes 16—18 cm long with 1—2 cm long peduncles; rusty brown hairy as on branches, many-flowered. Flowers 7—8 mm long, crimson; pedicels 2 mm long, adpressed hairy. Calyx 3 mm long, adpressed white puberulous and ciliate with gland-tipped hairs; lobes 2 mm long, linear-acuminate; tube 1 mm long. Standard 7 × 4 mm, ovate or obovate, obtuse and mucronate at apex, puberulous without; wings 6 mm long, ciliate; keels 7 mm long, puberulous wihout, ovary 5 mm long, linear, glabrescent; style 2 mm long, stigma capitate. Pods (described from *A. Henry 9686*), 2.8—4 × 0.25—0.4 cm, subcylindrical, linear, straight, shortly apiculate, 8—12-seeded, adpressed pubescent, sutures thin. Seeds 2 × 1 mm, cylindric, truncate at both ends, smooth, shinning, dark-brown.

FL. & FRT.: August - November.

DISTRIBUTION: Burma (Shan States), China. This is the first record of the species from Burma.

NOTE: *Indigofera scabrida* Dunn is based on A. Henry's and Ducloux's collections from Yunnan in China. All those collections are represented at CAL, K and E. Since the author did not select any of them as TYPE, the well preserved *Henry 9686* (K, Photo CAL ! TYPE Number CAL ?) is therefore, selected here as LECTOTYPE for the species.

BURMA: Shan States, Keng Tung, alt. 5000', Aug. 1909, *Mac Gregor 614*,

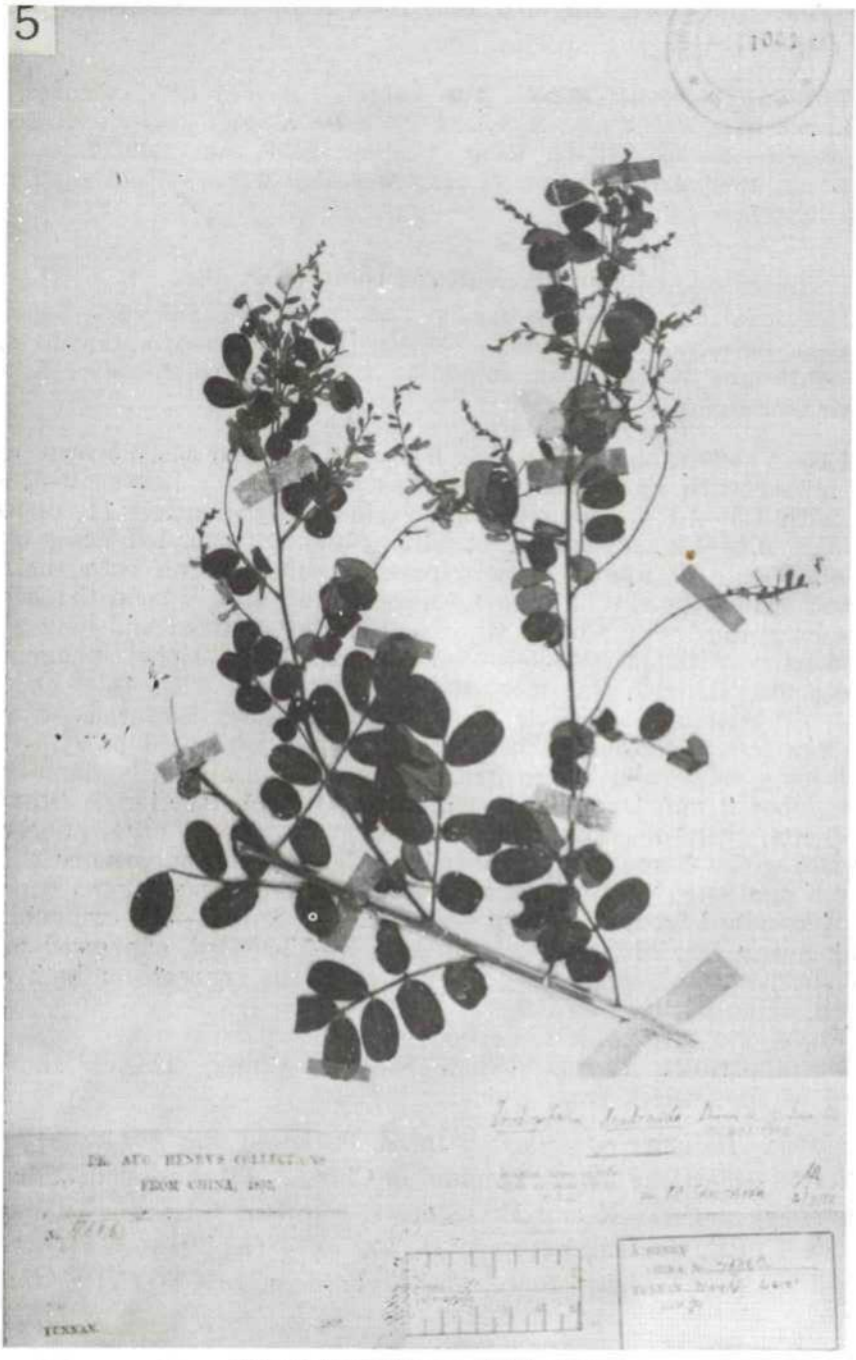


Fig. 5. *Indigofera scabrida* Dunn.

INDIGOFERA SPICATA Forsk.

Indigofera spicata Forsk. Fl. Aegypt. Arab.: 138. 1775; Gillett *in* Kew Bull. Add. Ser. **1**: 119. 1958. — Type: Yemen, Bolgose, *Forskal s. n* (Holotype C, Photo CAL !). Figure: Jacq. Ic. Pl. Rar. t. 570. 1765.

"*I. endocaphylla* Jacq. "Poir. *in* Lamk. Encyc. Suppl. **3**: 147. 1813 *Per Errore*; Baker *in* Hook. f. Fl. Brit. India **2**: 98. 1876; Kurz in J. Asiat. Soc. Beng. **46**: 269. 1876.

I. kleinii Wight & Arn. Prodr. Fl. Penin. Ind. Or. 204. 1834.

I. anceps Vahl. ex Poir. *in* Lam. Encyc. Suppl. 3: 147. 1813.

I. deblis Grah. *in* Wall. list. no. 5466. 1832. *nom. nud.*; Kurz *in* J. Asiat. Soc. Beng. **43**: 184. 1874.

Prostrate or procumbent herb; profusely branched from base branches 30—40 cm long reddish, angular, adpressed pubescent; terete and glabrous with age. Leaves 5—6 cm long, subseessile; leaflets 5—7 (—9), alternate, 1—2 × 0.3—0.5 cm, terminal leaflets slightly larger, obovate or obovate-oblong, cuneate at base, obtuse and mucronate at apex, glabrous above, adpressed pubescent beneath; stipules 5—8 × 1—2 mm, intrapetiolar, lobes lanceolate, acuminate, faintly pubescent without, persistent; petiolules 1 mm long, spreading pubescent; stipels 1 mm long, setaceous. Racemes 4—6 cm long with 2—2.5 cm long peduncle (elongating in fruits); rachis pubescent, compactly many-flowered. Flowers 5 mm long, pink; pedicels 1 mm long; bracts 1—1.5 × 0.3 mm, lanceolate, acuminate, faintly hairy without. Calyx 3—4 mm long, almost free to the base, puberulous without; lobes linear, acuminate. Standard 4—4.5 × 3 mm, broadly ovate, rounded and mucronulate at apex, puberulous without; wings 3—3.5 mm, glabrous; keels 4—4.5 mm long, puberulous near margins. Ovary 2.5—3 mm, linear, glabrous; style 2 mm long, glabrous; stigma capitate. Pods 1.8—2.5 × 0.4 cm, linear, subangular, spine-pointed at apex, strigose, 6—10-seeded, endocarp red-spotted. Seeds 2—2.5 × 1 mm, cylindric, truncate at both ends, smooth, reddish.

FL. & FRT.: August - February.

DISTRIBUTION: Burma (Mandalay), India, Sri Lanka, Thailand, Philippines, Indonesia, Senagal, Port Guinea, Liberia, Sudan, Ivory Coast, Dahomey, Nigeria, St. Thomas, Fr. Congo, A-E. Sudan, Tropical East Africa, Angola, Madagascar, Mauritiue, Reunion, S. Africa, Introduced in America.

BURMA: Mandalay, Maymyo, alt. 3600′, 12 Sept. 1915, *Rodger 191.*

INDIGOFERA SQUALIDA Prain

Indigofera squalida Prain in J. Asiat. Soc. Beng. **66**: 355. 1897 et *in* Ann. Roy. Bot. Gard. Calcutta **9**: 21, t. 27. 1901. — Type: Upper Burma, Port Stedmann, 5 June 1893, *Dr. King's Collector 442* (Lectotype CAL; Syntypes CAL ! K !). Figure: Prain *in* Ann. Roy. Bot. Gard. Calcutta 9: t. 27. 1901.

I. changensis Craib *in* Kew Bull. 1922: 171. 1922 et Fl. Siam. Enum. **1**: 377. 1931. *syn. nov.* — Type: Maharat, Mc Chang c. 300 m, *A. F. G. Kerr 3607* (K, Type number CAL !).

Erect, much branched undershrub, 25—90 cm tall; branched ridged and furrowed when young, terete with age, adpressed pubescent. Leaves 4.5—7 cm long with 2—3 mm long petiole, simple lamina 5—8(—9.5) × 1.4—2 cm, elliptic-lanceolate or oblong-lanceolate, cuneate to obtuse at base, subacute to rounded and mucronulate at apex, thinly adpressed pubescent on both surfaces, obscurely gland-dotted gland with prominent midrib below; stipules 3.5—4 mm long, linear subulate, adpressed pubescent without. Calyx 3 mm long, almost free to the base, adpressed pubescent; lobes 2.5 mm long, linear-acuminate; tube short. Standard 5—5.5 × 1.5—2 mm, elliptic-ovate, rounded at base, acuminate at apex, adpressed scabrous without; wings 4—5 mm long, ciliate; keels 5—5.5 mm long, adpressed scabrous and faintly glandular without. Stamens 4.5 mm long, filaments persistent. Ovary 2.5—3 mm long, linear, glabrous; style 1.5—2 mm long, grandular, stigma capitate. Pods 1.5—2 × 0.3 cm, reflexed, linear, tetragonal, sharply apiculate with narrowly winged sutures, adpressed pubescent glandular, 5—8-seeded. Seeds reniform when young.

FL. & FRT.: May - July.

DISTRIBUTION: Burma (Khoni, Shan States, Pegu), Thailand.

NOTE: *Indigofera squalida* Prain is based on gatherings of Dr. King's Collector from Fort Steadman and J. C. Prazer's from Shan Hills of Burma. All these specimens are represented at CAL and K (Photos CAL !). Since Prain did not typify the species, one of the syntypes viz., Fort Steadman, 5 June, 1893, *Dr. King's Collector 442*, annotated with drawings of floral parts by Prain himself is designated here as LECTOTYPE.

Craib (1922) described *Indigofera chengensis* based on a collection of A.F.G. Kerr from Siam (Maharat) and suggested that it is allied to *I. squalida* Prain. He further states that "..... Perhaps only a variety of that species from which the few scales and spreading, and not closely appressed hair on stem and midrib distinguished it". The type collections of *I. changensis* and *I. squalida* are indistinguishable on the above suggested characters. *I. changensis* is conspecific with *I. squalida* and is a superfluous name. Hence, *I. changensis* is treated here as synonyms.

BURMA: Khoni, May 1888, *Prazer s.n.* (Syntype): Shan Staths, *unknown locality*, 1893, *Khalil s.n.* (Syntype): Pegu, *unknown locality*, *s.l. 396*.

INDIGOFERA STACHYODES Lindl.

Indigofera stachyodes Lindl. *in* Bot. Reg. 1843; 14, f. 104. 1843; Craib *in* Notes Roy. Bot. Gard. Endinburgh 8: 64. 1913; Ohashi *in* Hara Fl. E. Himal.: 158. 1966. — Type: Lindley, Bot. Reg. 1843, f. 104. 1843. (K, CAL ! — Iconotype).

I. tomentosa Grah. *in* Wall. List. no. 5487. 1832 *nom. nud.*

I. dosua Buch.-Ham. ex D. Don var. *tomentosa* (Grah.) Baker *in* Hook. f. Fl. Brit. India 2: 102. 1876; Ohashi *in* Hara, Fl. E. Himal.: 65. 1975.

Erect shrub, 1.5—3 m tall; branches densely rusty or white tomentose when young, glabrescent with age. Leaves 10—13 cm long, sessile; rachis densely tomentose, leaflets (19—)30—37, opposite or subopposite, 2—3 × 0.3—0.8 cm, linear-oblong, rounded at base, acute to obtuse and mucronulate at apex, margins revolute, thinly yellowish-white pubescent and green above, densely white tomentose and pale beneath; stipules 1.3—1.5 cm long, linear, caudate, densely tomentose without, (pointing towards opposite side of the leaf), persistent; petiolules 1 mm long, tomentose; stipels absent. Racemes 10—14 cm long with 1—2 cm long peduncle, rachis and peduncle densely tomentose, compactly many-flowered. Flowers 1—1.2 cm long, pinkish; pedicels 1.5 mm long, tomentose; bracts 10—12 × 1.5 mm, much longer than buds, linear, caudate, densely yellowish-white tomentose without. Calyx 2.5 mm, 5-lobed, densely adpressed pubescent; lobes 1 mm long, dentate-acute; tube 1.5 mm long. Standard 8—10 × 3—5 mm, ovate-elliptic; rounded and mucronulate at apex, puberulous without; wings 6—8 mm long, ciliate; keels 8—10 mm long, puberulous without. Ovary 5—6 mm long, linear, glabrous; style 4—5 mm long, glabrous; stigma capitate. Pods 2—2.5 × 0.3—0.4 cm, linear, compresso-cylindrical, short spine-pointed at apex, up to 10-seeded, densely reddish brown pubescent sutures broad, endocarp red-spotted. Seeds 1.5—2 × 1.5 mm, cylindrical, truncate at both ends, smooth, reddish-brown.

FL. & FRT.: May - September.

DISTRIBUTION: Burma (Myingyan, Shan State), India, Nepal, China, Thailand, Indochina.

BURMA: Myingyan Dist., Popa Hills, alt. 3500′—5000′, 5 Aug. 1909, *Lace 4905*; Shan States, Shan Hills, alt. 4000′, May 1888, *Collett 742*; Taungyi, 1893. *Khalil s. n.*; Fort Stedman, 1893, *Khalil s. n.* (flowers yellow ?) (CAL, BSI).

INDIGOFERA SUFFRUTICOSA Mill.

Indigofera suffruticosa Mill. Gard. Dict. ed. 8 (no. 28) 1768; Gillett *in* Kew Bull. Add. Ser. 1: 105. 1958; Gage in Rec. Bot. Surv. India 3: 41. 1904. — Type: Jamaica, *Unknown collector s. n.* ex Miller Herb. (BM, Photo CAL !). Figure: Rock. Legum. Pl. Hawaii t. 62. 1920.

I. anil L. Man t. 2: 272. 1771; King *in* J. Asiat. Soc. Beng. 66: 80. 1897; Lace, List..... trees, shrubs, climbers, etc.: 40. 1912.

I. uncinata G. Don, Gard. Dict. 2: 208. 1832, *non* Roxb. 1832.

I. micrantha Desv. Ann. Sci. Not. Ser. 1, 9: 410. 1826, *non* Bunge 1833.

I. angolensis D. Dietr. Syn. Pl. 4: 1036. 1847.

I. tinctoria L. var. B *anil* Kurz *in* J. Asiat. Soc. Beng. 46: 269. 1876.

I. suffruticosa Mill. var. *uncinata* Berhant, Fl. Seneg.: 50. 1954.

Erect subshrub, 1—1.5 m tall; branches angular, canescent, sulcate. Leaves 5—10 cm long with 1—1.5 cm long petioles; rachis adpressed canescent; leaflets 5—15, opposite, 1.5—2.5 × 0.5—0.8 cm, obovate-oblong, rounded to obtuse at both ends, mucronate, glabrous to glabrescent above, adpressed grey pubescent beneath; stipules 3 mm long, setaceous, adpressed canescent without; petiolules 1—1.3 mm long; stipels very small. Racemes 4—6 cm long, subsessile; rachis angular, adpressed pubescent, laxly 12—20-flowered. Flowers 5—6 mm long, pale-pink or pinkish-orange, pedicels 1 mm long; bracts 3—4 × 1 mm, subulate, adpressed canescent without. Calyx 2 mm long, 5—lobed, adpressed pubescent without; lobes short, dentate-acute, tube 1.5 mm long. Standard 5 × 3 mm, obovate obtuse at base, rounded and mucronate at apex brown puberulous without; wings 3—3.5 mm long; keels 5 mm long, brown puberulous without. Ovary 3 mm long, linear, glabrous or glabrescent; style 1.5—2 mm long, glabrous; stigma capitate. Pods 1—1.8 × 0.3—0.4 cm, subfalcate recurved, turgid, shortly beaked at apex, adpressed brown pubescent, 5—6-seeded, sutures broadly keeled. Seeds 2 × 1 mm, cylindric, truncate at both ends, smooth, shining.

VERNACULAR: Aung-me (Mandalay); Me-bin (Minbu).

FL. & FRT.: August - March.

DISTRIBUTION: India, Burma (Minbu, Martaben, Bhamo, Tenassarim, Pegu, Mandalay, Shan States), Thailand, Indochina, China, Indonesia, Philippines, C. Verdes Islands, Senegal, Gantia, Sierra Leone, Liberia, Ivory Coast, Nigeria, St. Thomas, Gaboon, B. Congo, S. Rhodesia, Angola, Madagascar, S. W. Africa, Jamica.

BURMA: Pegu, Yomah to Phoungya, *Kurz 1697*; Pegu, *Unknown locality, Kurz 2509;* Bhamo, 29 Jan. 1868, *Anderson s.n.;* Iway Koo, 21 Jan. 1868, *Anderson s.n.;* Sagiyang, Aug. 1891, *Huk s.n.;* Bhamo Dist. Thimbowing river bank of Irrawaddy. alt. 350′, 11 Dec. 1908, *Lace 4473*; Tenasserim, Bhawachoung, April 1911, *Meebold 15204*; Yametin Dist. Near Thayethaung, alt. 300′, 17 Jan. 1915, *Rogers 574*; Mandalay, Wantho, 14 Dec. 1940, *Ellis s.n.*; Minbu Dist. Sinbok. cultivated, 13 Mar. 1903, *Aubert & Gage s.n.*

NOTE: In some of the specimens examined the younger leaflets are glabrous adaxially.

INDIGOFERA TINCTORIA L.

Indigofera tinctoria L. Sp. Pl.: 751. 1753; Baker *in* Hook. f. Fl. Brit. India 2: 99. 1876; King *in* J. Asiat. Soc. Beng. 66: 80. 1897. — Type: Ceylon (Sri Lanka), Herb. Hermann vol 3, f. 20 (BM, Photo CAL ?). Figure: Rheede, Hort. Mal. 1: t. 54. 1878. Wight Icones, t. 365, 1840; Roxb. Icones (Ined.) 391 (CAL !).

I. indica Lamk. Encyc. 3: 245. 1789.

I. sumatrana Gaertn. Fruct. 2: 317. t. 148. f. 4. 1791; Gage *in* Rec. Bot. Surv. India 3: 41. 1904.

I. houer Forsk. Fl. Eg.-Arab.: 137. 1775. *non sensu* Cooke 1903.
I. cinerascens DC. Prodr. 2: 226. 1825.
I. ornithopodoides Schum. Beskr. Guin. Pl.: 372. 1829.
I. anil L. var. *orthrocarpa* DC. Prodr. 2: 225. 1825.
I. orthrocarpa (DC.) Berg. & Schmidt. Darstell & Beschreb. Office. Gew. 4: 300. 1863 *non* Persl. 1844.
I. bergii Vatke, App. Ind. Sem. Berol. 3: 1876.
I. tinctoria L. var. *genuina* Kurz *in* J. Asiat. Soc. Beng. **46**: 269. 1876.
I. tinctoria L. var. *torulosa* Bak. f. Leg. Trop. Africa: 157. 1926.

Erect shrub, 50—120 cm tall (much taller under cultivation), branches faintly angular and adpressed pubescent when young, terete and glabrous with age. Leaves 5—7 cm long with 1—2.5 cm long petioles; leaflets (5—) 7—13, opposite, 1.8—2.2 × 0.8—1.1 cm, ovate or ovate-oblong, obtuse at base, obtuse or faintly retuse at apex, mucronulate glabrous above, adpressed pubescent beneath; stipules 2—3 mm long, subulate, pubescent without; petiolules 1—1.5 mm long; stipels minute. Racemes 3—5 cm long, with 4—5 mm long peduncle, rachis laxly many-flowered. Flowers 4—5 mm long, pale pink; pedicels 1—2 mm long, bracts minute, adpressed pubescent without. Calyx 2.5—3 mm long, adpressed puberulous; lobes 1.5—2 mm, triangular, acute; tube 1 mm long. Standard 4—5 × 2—3 mm, ovate, rounded at apex; adpressed dark-brown pubescent without; wings 3.5—4.5 mm long, glabrous; keels 4—5 mm long, dark-brown pubescent without. Ovary 2—3 mm long, linear, glabrous, style 1.5—2 mm long, glabrous; stigma capitate. Pods 2.5—3 × 0.4 cm, spreading, linear, cylindrical, faintly curved, somewhat torulose, abruptly short epiculate, glabrous, 6—9-seeded; sutures broad. Seeds 1.5—2 × 1—1.5 mm, cylindric, truncate at both ends, smooth, reddish or yellowish-brown.

FL. & FRT.: October — March

DISTRIBUTION: Burma (Tenasserim, Pegu), India, Sri Lanka, Pakistan, Indonesia, Thailand, Philippines, Indo-China. Tropical East Africa, W. Africa, Sudan, Scotora, Mazambique, S. Africa. Introduced in Tropical America.

BURMA: Tenasserim, Molget, alt. 500', 16 Feb. 1877, *Gallatly 328*; Prome, 12 June 1903, *Burkill s.n.*

INDIGOFERA TRIFOLIATA L.

Indigofera trifoliata L. Cent. Pl. 2: 29. 1756 et Amoen. Acad. 4: 327. 1759; Baker *in* Hook. f. Fl. Brit. India 2: 96. 1876; Kurz *in* J. Asiat. Soc. Beng. **46**: 269. 1876; Gage *in* Rec. Bot. Surv. India 3: 41. 1904. — Type: India, Herb. Linn. 923-3 (LINN, Microfisch. CAL !). Figure: Wight, Icones t. 314. 1840.
Lotus peregrina auct. non L., Burm. f. Fl. Ind.: 173. 1768.
Indigofera peregrana (Burm. f.) DC. Prodr. 2: 224. 1825.
I. moluccana DC. Prodr. 2: 232. 1825.
I. multicaulis DC. Prodr. 2: 223. 1825.
I. trifoliata L. var. *multicaulis* (DC.) Miq. Ned. India 1: 313. 1855.

Erect, much branched undershrub, 30—60 cm tall; branches striate, adpressed pubescent when young, glabrescent with age. Leaves 2.5—3.5 cm long with 8—10 mm long petioles, digitately trifoliate; leaflets 1.8—2.5 × 0.5—1 cm, oblong-obovate or oblanceolate, cuneate or obtuse at base, obtuse or rarely retuse at apex, mucronulate, adpressed hairy on both surfaces; yellowish-green above, pale and punctate-glandular beneath. Racemes 5—8 mm long, subsessile, compactly 10—15 flowered. Flowers 5—5.5 mm long, pinkish; pedicels 1 mm long, bracts minute, lanceolate, caducous. Calyx 2—2.5 mm long, adpressed hairy without; lobes 1.5—2 mm long, linear-lanceolate, acuminate; tube short. Standard 5 × 3 mm, ovate or obovate, obtuse at both ends, mucronate, glandular and adpressed puberulous without; wings 4 mm long, sparsely ciliate at tip; keels 5 mm long, glandular and adpressed pubescent without. Ovary 2—3 mm long, linear; style 1—2 mm long, glandular; stigma capitate. Pods 1.2 × 0.15 cm, deflexed-spreading, linear, straight, compressed, apiculate, faintly torulose, thinly adpressed pubescent; sutures winged. Seeds 1—2 × 1 mm, cylindric, truncate or rounded at ends, smooth shining, reddish-brown.

FL. & FRT.: June — November

DISTRIBUTION: Burma (Minbu, Tenasserim, Shan States, Mandalay), India, Pakistan, Sri Lanka, Nepal, Thailand, Indochina, Indonesia, New Guinea, Philippines, Australia.

BURMA: Minbu Dist., Sillotia Road, Chhin Hills, Oct. 1902, *Mokim 322* (BSI), *324*, *408*; Mahoo, Chhin Hills, Dec. 1902, *Mokim 762* (BSI); Fort Stedman, 1893, *Khalil s.n.*; Taungyi, 1893, *Khalil s.n.* (Flowers white); Mandalay, Meymyo Plateau, alt. 3500', 12 June 1908, *Lace 3236*; *Unknown locality*, Oct. 1891 *Huk s.n.*

INDIGOFERA TRITA L. f.

Indigofera trita L. f. Suppl. Pl.: 335. 1781; Baker *in* Hook. f. Fl. Brit. India 2: 96. 1876; Kurz *in* J. Asiat. Soc. Beng. 46: 270. 1876; Gage *in* Rec. Bot. Surv. India 3: 41. 1904. — Type: India, *Unknown Collector s.n.* LINN No. 923-9 (LINN, Microfish. CAL !). Figure: Wight, Icones, t. 315, 386. 1840; Roxb. Icones (Ined.) 380, 389 (CAL !).

I. hedysaroides Lamk. Encyc. 3: 250. 1789.
I. canescens Lamk. Encyc. 3: 251. 1789.
I. cinerea Willd. Sp. Pl.: 1225. 1802.
I. arcuata Willd. Sp. Pl.: 1228. 1802.
I. rigidula Willd. Enum.: 780. 1809.
I. timorensis DC. Prodr. 2: 223. 1825.
I. leschnaultii DC. Prodr. 2: 223. 1825.

Erect shrub, 60—100 cm tall; branches angular, adpressed white scabrous. Leaves 3—5 cm long with 2—2.5 cm long petiole, pinnately trifoliolate; petiole and rachis scabrous; leaflets 2.5—3.5 × 1—2 cm, elliptic or obovate-oblong, obtuse to rounded at base and apex, rarely

retuse, mucronate; adpressed scabrous on both surfaces; stipules 1.5—2 mm long; subulate, scabrous without; petiolules 1—1.5 mm long; stipels absent. Racemes 1—1.5 cm long, sessile or subsessile, 15—20-flowered, terminal flowers caducous. Flowers 4—5 mm long, pinkish-red or pale-pink pedicels 1—1.2 mm long; bracts 1—1.5 mm long, subulate, scabrous without. Calyx 3 mm long, white scabrous without; lobes 1—1.5 mm long, subulate, tube 0.5—1 mm long. Standard 4—5 × 3—4 mm, orbicular, obtuse or rounded and mucronulate at apex scabrous without; wings 3.5 mm long, ciliate; keels 3.5—4 mm long, scabrous without. Ovary 2—3 mm long, linear, glabrous; style 1—2 mm long, glabrous, stigma capitate. Pods 2.5—3 × 0.2—0.4 cm, divarieately reflexed, linear, straight, subtetragonous, spine-pointed at apex, up to 10-seeded. Seeds 1.5—2 × 1—1.5 mm, subtetragonous, truncate at both ends, smooth, yellowish-brown or reddish-brown.

FL. & FRT.: October — June.

DISTRIBUTION: Burma (Minbu, Ava, Thong Dong), India, Sri Lanka. Pakistan, Indonesia, Philippines, Australia.

BURMA: Meetilis, April 1888, *Collett 531*; Kymkse, 20 June 1890, *Huk s.n.*; Sagaing, 25 March 1893, *Dr. King's Collector 406*; Kumay Road, 2 Dec. 1892, *Huk 104*; Minbu, Hills, Sillotia Road. Oct. 1902, *Mokim 331*; Mandalay, Sept. 1902, *Mokim 71* (BSI).

INDIGOFERA WIGHTII Grah. ex Wight & Arn.

Indigofera wightii Grah. ex Wight & Arn. Prodr. Fl. Penin. Ind. Or.: 202. 1834; Baker *in* Hook. f. Fl. Brit. India 2: 99. 1876; Trimen, Handb. Fl. Ceylon 2: 27. 1893: Gage *in* Rec. Bot. Surv. India 3: 41. 1904. — Type: India, Graham in *Wall. List. No. 5458* (K, CAL !): Figure: Tadulingam & Jacob *in* J. Indian Bot. Soc. 4: 226. 1923.

I. foliolosa Grah. *in Wall. List. No. 5485*, 1832, *nom. nud.*

Erect shrub, 60—90 cm tall; branching from near the base, branches grooved, adpressed silvery-white canescent when young, terete and thinly adpressed canescent with age. Leaves 8—10 cm long with 5—8 mm long petioles; leaflets 9—13, opposite, 6—10 × 3—5 mm, elliptic or oblanceolate, sometimes obovate, obtuse at base, rounded and mucronulate at apex, with a swollen gland below the tip; stipules 2—3 mm long, subulate, adpressed scabrous without; petiolules 1 mm long; stipels 1 mm long with a tuft of brown hairs between the two. Racemes 3—3.5 cm long, subsessile, many-flowered. Flowers 4—5 mm long, pinkish-red or yellow (?). Pedicels and bracts small, adpressed scabrous. Calyx 2—3 mm long, 5-lobed, densely adpressed white-canescent without; lobes 1 mm long, lanceolate, acute; tube 1—2 mm long. Standard 4—5 × 3 mm, elliptic, rounded at base, acute and mucronulate at apex, adpressed canescent without; wings 4 mm long, glabrous; keels 4—5 mm long, adpressed canescent. Ovary 3—3.5 mm long, linear, sparsely hairy on ventral surface; style 1.5—2 cm long, glabrous; stigma capitate. Pods

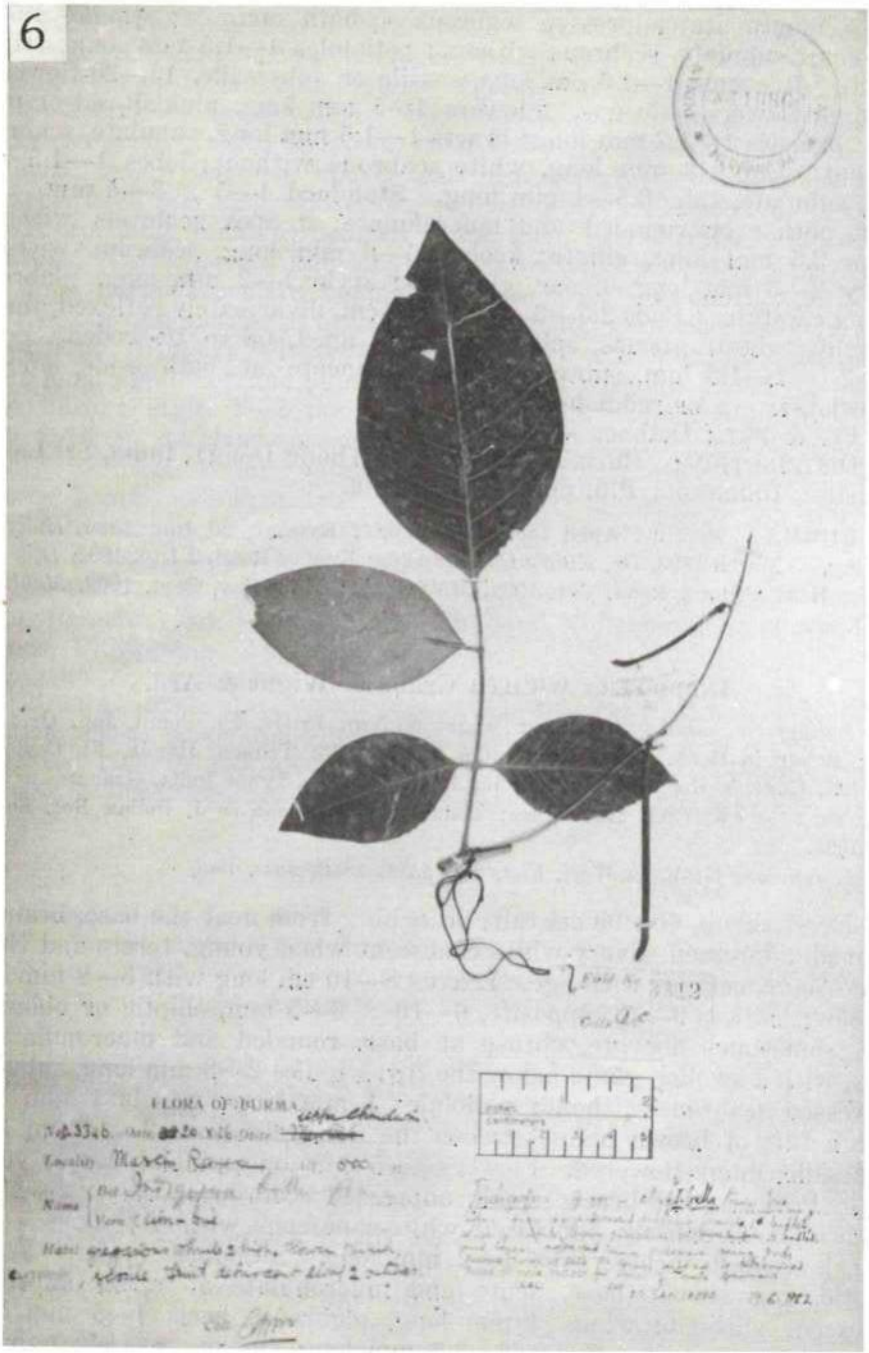


Fig. 6. *Indigofera* sp.

2—2.5 × 0.4 cm, spreading, linear straight subcylindrical, dorsal suture thicker than ventral, sharply apiculate, 8—12-seeded, adpressed-silvery-white canescent, endocarp diffusely spotted; spreading. Seeds 2 × 1 mm, cylindric of squarish, truncate at both ends, smooth, reddish-yellow.

FL. & FRT.: November — January.

DISTRIBUTION: Indochina, Burma (Tenasserim, Minbu), India, Sri Lanka.

BURMA: Tenaserim, Enddine-ghor, alt. 1000', 21 Jan. 1877, *Callatly 132* (Flowers yellow ?).

INDIGOFERA sp. A. (Fig. 6).

Gregarious shrub, ca 65 cm tall, branches terete, striate, adpressed pubescent. Leaves 18.5 cm long, pinnate, alternate; petiole 2,5 cm long; leaflets 5, lateral opposite, gradually increasing in size from base (5,5 × 3 cm) towards apex (10.5 × 6 cm), ovate or ovate-lanceolate, obtuse at base, acute and mucronate at apex, dark-green and glabrous above, pale and adpressed brown pubescent beneath with raised midrib, lateral veins prominent towards the base. Fruiting peduncles ca. 15 cm long, pedicels 2 mm long, pendulous. Young legumes 4—6.5 cm long, linear with up-turned tip, adpressed pubescent.

Vernacular: 'Ain-me'.

FL. & FRT.: September(?) — October.

DISTRIBUTION: Burma: so far known only Chindwin District.

BURMA: Upper Chindwin District, Maesin Range. 500', 20 Oct. 1926, *s.l. 3312*.

This single specimen is allied to *I. bella* Prain but differs from it in having fewer ovate or ovate-lanceolate leaflets; shorter racemes; longer and adpressed pubescent young legumes, perhaps forms a new species. As sufficient material is not available any definite conclusion is not possible.

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