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ADDITIONS TO THE GENUS *INDIGOFERA* L. (FABACEAE) OF INDIA AND BHUTAN

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ABSTRACT

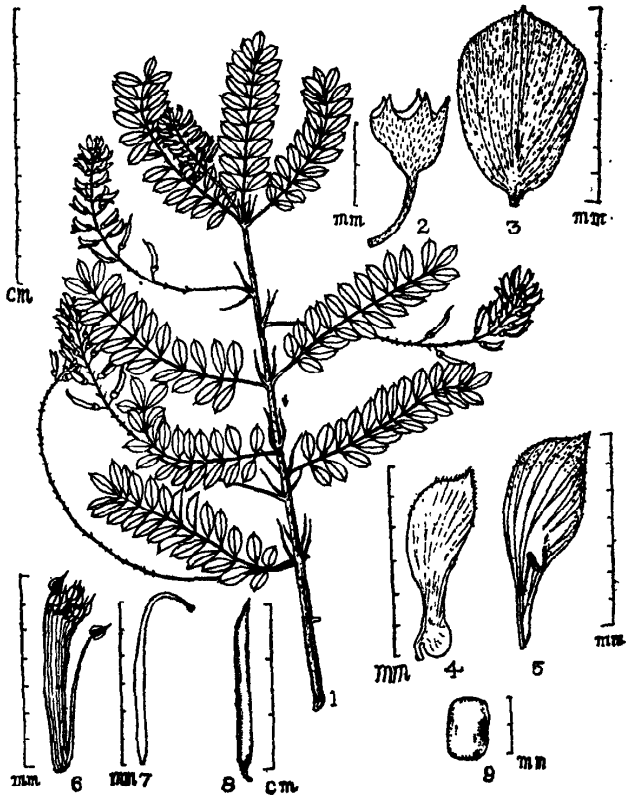
The paper describes with some illustrations, 2 species of *Indigofera* L. *viz. I. lacei* Craib and *I. silvestrii* Pampanini, new to India and Bhutan respectively. The extended distribution of *I. glandulosa* Roxb. ex Willd. to Andaman Islands and a discussion on geographical distribution of *I. silvestrii* are also included.

While examining the specimens of *Indigofera* L. for Flora of India Project at different herbaria (CAL, ASSAM, I[illegible] author located some erroneously identified and unidentified specimens of *Indigofera*. On critical study, these specimens were found to represent species new to India and Bhutan. To facilitate the correct identity of these new records, a detailed description with illustrations are provided. Hitherto unrecorded *Indigofera glandulosa* Roxb. ex Willd. from Andaman Islands is also given here.

Indigofera lacei Craib in Kew Bull. 1910 : 382. 1910 et Fl. Siam. Enum. 1 : 378. 1931 ; Rodger in J. H. Lace, List... trees, shrubs, climbers etc. Burma... (Rev.) 48. 1922.

Type : Burma, Maymyo Plateau, 3500', J. H. Lace 4268 (K, Photo-BSI Neg. No. 5349-CAL !).

Shrub, 2 m tall, erect ; branches grooved with edges acute, densely white-tomentose when young, terete and glabrous when mature. Leaves 7-12 cm long, alternate, rarely sub-opposite or opposite, pinnate ; petiole 5-7 mm long, rachis canaliculate above ; leaflets 21-31, opposite, 10-16 × 4-6.5 cm, elliptic or oblong-elliptic, rarely obovate, rounded at both ends, sometimes cuneate at base, mucronate, dark-green above, pale beneath, thinly adpressed hairy on both surfaces ; stipules 5-8 mm long, linear, filiform, free-lateral, sometimes inter-petiolar, adpressed pubescent without. Racemes 10-15 cm



Indigofera lacei Craib

Figs. 1-9 : 1. Twig of the plant. 2. Calyx. 3. Standard. 4. Wing. 5. Keel. 6. Stamens. 7. Carpel. 8. Pod. 9. Seed.

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long, axillary, many-flowered, peduncles 1.2-2 cm long, angular, adpressed pubescent. Flowers 8-10 mm long, reddish-purple ; bracts 1-1.5 mm long, filiform, caducous ; pedicel 2-4 mm long, adpressed pubescent ; calyx 2 mm long, adpressed pubescent without, lobes short, dentate, acute ; tube 1.5 mm long, oblique ; standard 6.5-7 × 4 mm, obovate, thickly short pubescent without ; wings 6 × 1.5 mm, obliquely-obovate, shortly clawed at base, acute at apex, veined, short ciliate along the margin ; keels 6.5-7 × 2 mm, spathulate, spurred, pubescent without ; stamens diadelphous (9+1), anthers apiculate ; ovary 5-5.5 mm long, linear, glabrous, (6-)8-10-ovuled ; style 1-1.5 mm long, glabrous ; stigma capitate. Pods 3-3.5 × 0.25-0.3 cm, ascending, parallel to the axis, linear, straight, slightly compressed, acute at apex, smooth, shining, (6-)8-10-seeded, endocarp red-spotted, exocarp cracking in mature pods ; seeds 2 × 1.5 mm, cylindrical, sometimes spherical, rounded at both ends, dark-red.

Specimens examined : INDIA : Nagaland, Kohima, 7000′, Naga Hills, 29 Aug. 1937, *N. L. Bor* 16138 (ASSAM) ; Sikkim, locality ? *G. H. Cave* 6857 (CAL) ; Lachung, alt. 9000′, 15 Oct. 1922, *G. H. Cave* 1973 (CAL, Herb. Lloyd Bot. Gard. Darjeeling), Chungthang, alt. 6000′, 12 Feb. 1923, *G. H. Cave* s. n. (Herb. Lloyd Bot. Gard. Darjeeling).

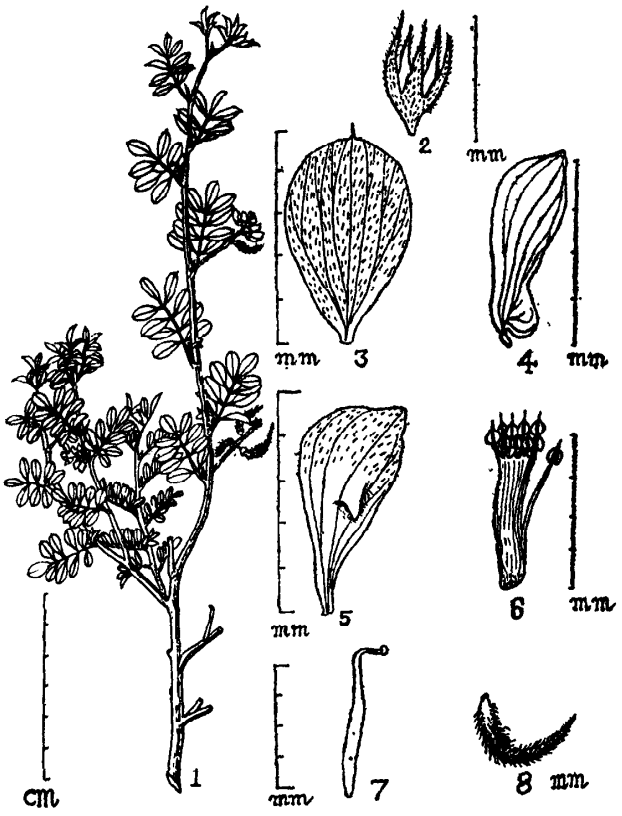
Distribution : BURMA and INDIA (Nagaland ; Sikkim). This species is a new record for India.

Notes : *Indigofera lacei* Craib is allied to *I. nigrescens* Kurz ex King et Prain, but differs from it in having grooved branches, narrow leaflets up to 31, ascending, flat and glabrous pods.

I. silvestrii Pampanini in Nuova G. Bot. Ital. 17 : 397. 1910 ; Ali in Bot. Notis 111 : 567. 1958.

Type : Hupeh, interior of Siyang Yang. 100 m, China, *C. silvestri* 1091 (FI).

Syn. : *I. bungeana sensu* Pavolini in Nuova G. Bot. Ital. 15 : 410. 1908. *p.p. non* Walp. 1839.



Indigofera silvestrii Pamp.

Figs. 1-8 : 1. A twig of the plant. 2. Calyx. 3. Standard. 4. Wing. 5. Keel. 6. Stamens. 7. Carpel. 8. Young pod.

Shrub, 60-100 cm tall, erect ; branches angular, adpressed white-pubescent when young, terete, striate and glabrous when mature. Leaves 2-2.5 cm long, alternate, pinnate ; petioles 5-10 mm long, canaliculate above, adpressed pubescent ; leaflets (3-)5-7, opposite, rarely sub-opposite, 10-15 × 3-5 mm, elliptic, oblong or obovate, rounded to obtuse at base, obtuse and mucronulate at apex, distinctly reddish-brown above (when dry), green beneath, glabrous adaxially or thinly adpressed pubescent on both surfaces; petiolules very short ; stipules 1.5 mm long, setaceous, adpressed pubescent without ; stipules 1 mm long (only one between each

pair of leaflets). Racemes 3-4.5 cm long ; peduncles 5-10 mm long, pubescent ; flowers 5 mm long, pinkish-red ; bracts 1-1.5 mm long, subulate, pubescent without ; pedicels short, pubescent ; calyx 3-3.5 mm long, adpressed pubescent without, 5-lobed, lobes 2.5-3 mm long, subulate, acute ; tube short ; standard 4.5-5 mm long, 3 mm wide, obovate, obtuse at base, rounded and mucronate at apex, adpressed white pubescent without ; wings 4 mm long, obliquely-oblong, shortly clawed at base, obtuse at apex, veined, glabrous ; keels 4-4.5 mm long, spathulate, faintly pubescent, very shortly spurred ; stamens diadelphous (9+1) ; ovary 2.5-3 mm long, oblong, glabrous ; style 1-1.5 mm long, hairy ; stigma capitate. Pods reflexed, curved outwards, thickly adpressed white pubescent. Mature pods not seen.

Specimens examined : BHUTAN : Paro valley, 2550 m, 18 Aug. 1963, *N. P. Balakrishnan* 1236 (CAL) ; *Ramesh Bedi* 71649 (CAL) ; locality ? 21 June 1971, *Ramesh Bedi* 3205 (DD). INDIA : Himachal Pradesh—Thirthan valley, Kulu, Kangra Dist., 28 Sept. 1936, *R. N. Parker* 33672 (DD, K) ; Banjar, 1410 m, Kulu, 1 June 1933, *R. N. Parker* 3272 (DD, K) ; Bhuintar, Kulu valley, 7 June 1950, *S. K. Jain & R. C. Bhardwaj* s. n. (DD) ; Nagaland—Naga Hills, 1935, *N. L. Bor* 6314 (DD, ASSAM, K).

Distribution : BHUTAN, CHINA, INDIA (Himachal Pradesh, Nagaland). TIBET—This is the first record of the species for Bhutan and Eastern India.

Notes : This species was first described from Siyang Yang (Hupeh) in China. Later, Ali (*op. cit.*) recorded it from Tibet and India (Himachal Pradesh). So far this species is known to show discontinuous geographical distribution but in localities which lie almost along the same latitude. The present record of the species from Bhutan and Naga Hills (India) further adds to its localities of its discontinuous distribution. However, it is interesting to note that the new localities fall in much lower latitudes and at varying altitudes (Table I).

TABLE 1

Intraspecific variations in *I. silvestrii* Pamp.

Locality	Altitude (in ft)	Latitude	No. of leaflets per leaf	Indumentum of leaflets
Siyang Yang (Hupeh-China)	328	32°2′N	7-9	Glabrous adaxially
Gyala (Tibet)	9000	29°N	7	,,
Kulu (Himachal Pradesh-India)	4-5000	32°5′N	5	,,
Paro Valley (Bhutan)	7650	27°24′N	5-7	Adpressed pubescent on both surfaces
Naga Hills (Nagaland-India)	2000	26°N	5-7	,,

The intraspecific variations observed in respect of number of leaflets per leaf and indumentum of the leaflets are presented in Table 1. Ali (*l. c.*) suspects the specimens with adpressed pubescence on both surfaces of leaflets to be a new variety of *I. silvestrii* Pamp. In view of the lack of complete and more specimens of the variant, its taxonomic status cannot be ascertained at present.

I. glandulosa Wendl. Bot. Boeb. 55. 1798 ; Roxb. ex Willd. Sp. Pl. 3 : 1227. 1800 ; Baker in Hook. f. Fl. Brit. Ind. 2 : 94. 1876.

Type : Herb. *Wendland* (Hannover), Figure reference : Wt. Icon. 2 : t. 330. 1840.

Description : Cooke, Fl. Pres. Bomb. 1 : 332. 1967 (Rep. ed.).

This description should be supplemented with the following characters : Leaves pinnately trifoliolate, leaflets obovate. Standard, keels, ovary, style and pods glandular.

Flowering and fruiting : August-October.

Specimens examined : INDIA : South Andamans, Port Blair, Corbyn's Cove, Road-

side, Sea-level, 31 Oct. 1973, *N. P. Balakrishnan* 550 (CAL, PBL).

Distribution : INDIA (Throughout Peninsular and Central India, Andaman Islands), AUSTRALIA and JAVA. This species is a new record for Andaman Islands.

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