

**FASCICLES  
OF  
FLORA OF INDIA**

**FASCICLE 13**

**LINACEAE & IXONANTHACEAE**

**P. K. HAJRA**

**BOTANICAL SURVEY OF INDIA  
P. O. BOTANIC GARDEN  
HOWRAH-711 103**

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P. K. HAJRA



सत्यमेव जयते

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## LINACEAE†

S. F. Gray, Nat. Arr. Brit. Pl. 2 : 639. 1821.

P. K. Hajra\*

Herbs or shrubs. Leaves usually alternate, simple, entire or crenate-serrate; stipules lateral or intrapetiolar, rarely absent. Inflorescence racemose, cymose or of solitary flowers. Flowers bisexual, regular. Sepals 4-5, imbricate, free or connate at base. Petals 5, contorted, hypogynous or rarely perigynous, fugacious, blue, yellow or white, rarely rosy. Stamens as many as or double or triple the number of petals, sometimes alternating with small staminodes; filaments connate at base; anthers introrse, 2-locular. Ovary solitary, 3-5-locular, each loculus often subdivided by a false septum, ovules 2 in each loculus, pendulous from inner angle; styles 3-5, filiform; stigmas capitate. Fruits septicidal capsules or drupes; seeds compressed, shining; endosperm copious, scanty or absent; embryo straight, cotyledons flat.

12 genera and *ca* 290 species in the tropical, subtropical and temperate regions of the World. 4 genera and 10 species in India.

*Notes:* The circumscription of the family Linaceae has been debated by several authors. J. D. Hooker (Fl. Brit. Ind. 1 : 409-417. 1874) has dealt with 7 genera and 22 species under the tribes, Eulineae, Hugonieae, Erythroxyloae and Ixonantheae. The author's observation corresponds with Linoideae of Winkler (Eng. & Prantl, Nat. Pflanzenfam. ed. 2. 19a : 107. 1931), excluding the tribe Nectaropetaleae and is in line with the treatment of the family by Hutchinson (Fam. Fl. Pl. ed. 3 : 319-320. 1973).

1a. Erect undershrubs or herbs. Stamens as many as petals :

2a. Sepals with one or two rows of gland-tipped bristles

...1. **Anisadenia**

2b. Sepals without gland-tipped bristles :

---

† Editor for Fam. Linaceae : K. THOTHATHRI, Botanical Survey of India, Howrah - 711 103.

\* Botanical Survey of India, Northern Circle, Dehradun.

- 3a. Leaves petiolate, pinnately nerved. Styles 3-4. Capsules  
3-4-locular ...4. **Reinwardtia**
- 3b. Leaves sessile, mostly one nerved. Styles 5. Capsules  
5-locular ...3. **Linum**
- 1b. Shrubs often climbing by hooks. Stamens either double or treble  
the number of petals ...2. **Hugonia**

## 1. ANISADENIA

Wall. ex Meissn. Pl. Vasc. Gen. Comment. 96. 1838; Benth. & Hook. f. Gen. Pl. 1 : 243. 1862; Hook. f. Fl. Brit. Ind. 1 : 412. 1874; Winkler in Engl. & Prantl, Nat. Pflanzenfam. ed. 2 : 19a : 110. 1931; Hutchinson, Gen. Fl. Pl. 2 : 599. 1967.

Rhizome perennial. Leaves alternate or somewhat whorled at the top of the stem, coriaceous, serrate. Stipules intrapetiolar, striate. Flowers in terminal, racemes; pedicels reflexed. Bracts caducous, minute, coriaceous, concave, grooved. Sepals lanceolate, coriaceous, strongly nerved, 3 outer with spreading gland-tipped bristles, 2 inner glandular. Petals 5, contorted. Stamens 5, bearing anthers with as many setiform staminodes between them. Glands adnate to staminal tube, often 3, one larger. Ovary 3-locular; styles 3; ovules 2 in each loculus, collateral. Fruits capsular, oblong, membranous, 1-seeded by abortion. Seeds oblong with thin endosperm; embryo straight.

*Pollen* : Grains spheroidal pantoporate. Sexine thick granular layer covered with dimorphic processes and underlain with thin nexine, which extends to form the pore membrane. Pores covered with free baculoid processes the same size and in the same pattern as those covering the non-porate regions. [Saad, Shokry J. "Palynological studies in the Linaceae" in *Pollen et Spores* 4(1) : 70. 1962].

*Distrib.* : 3 species in subtropical and temperate zones. CHINA, INDIA, NEPAL. 2 species in India.

- 1a. Stems leafy throughout. Leaves up to 6 cm long. Nectar-gland 5  
...1. **A. pubescens**
- 1b. Stems generally leafy at top. Leaves up to 10 cm long. Nectar-gland 1  
...2. **A. sextillis**
1. **Anisadenia pubescens** Griff. Itin. Notes 54. 1848; *et* Ic. Pl. Asiat. t. 593. 1854; Hook. f. Fl. Brit. Ind. 1 : 413. 1874; Kanjilal *et al.* Fl. Assam 1 : 187. 1936.



Perennial herbs, 15-45 cm tall; stem pubescent, branches 5-24 cm long. Leaves 1-6 × 0.5-2.5 cm, elliptic to lanceolate, appressed silky hairy above, whitish villous beneath, acute or shortly acuminate at apex, acute to cuneate at base, entire or undulate; nerves very oblique, generally 4-pairs, conspicuous on both surfaces; petioles 0.2-2.5 cm long, hairy. Flowers 1.0-1.5 cm long, in terminal raceme; peduncles 1-5 mm long. Sepals 5-7 mm long. Petals 12-15 mm long, white. Stamens ca 8 mm long. Ovary ovoid, 3-locular. Styles 3, ca 1.1 cm long; stigma globose.

*Type* : Khasia. Herb. Griffith s. n. (CAL).

*Fls.* : July-Oct.; *Frts.* : Aug.-Nov.

*Distrib.* : Subtropical and temperate evergreen forest. INDIA : Arunachal Pradesh, Manipur, Meghalaya, Nagaland. NEPAL, BHUTAN, CHINA.

2. *A. sextillis* Wall. ex Meissn. Pl. Vasc. Gen. Comment. 96. 1838; Griff. Ic. Pl. Asiat. t. 593. 1854; Hook. f. Fl. Brit. Ind. 1 : 412. 1874; Kanjilal *et al.* Fl. Assam 1 : 186. 1936.

Perennial herbs or undershrubs, 12-46 cm tall; stem simple, lower part creeping, rooting at base. Leaves 3-10 × 0.5-3.5 cm, lanceolate, or elliptic lanceolate, nearly glabrous above, sparingly pubescent beneath, acute or shortly acuminate at apex, attenuate at base, entire or undulate; lateral nerves 5 to 6; petioles 0.5-5.0 cm long, glabrous. Flowers ca 10 mm long, in 3-10 cm long terminal racemes; bracts ca 6 mm long; peduncles 1-3 mm long. Sepals 3-5 mm long. Petals 8-10 mm long, pink, obovate, persistent. Stamens ca 5 mm long; filaments connate below; anthers ca 1 mm long. Ovary ovoid, ca 2 mm long; styles ca 4 mm long; stigma globose.

*Type* : Sheopore, Aug. 1821 (CAL).

*Fls.* : July-Oct.; *Frts.* : Aug.-Nov.

*Distrib.* : Tropical evergreen forests of E. Himalayas. INDIA : Sikkim, Arunachal Pradesh, Manipur, Meghalaya, Nagaland, Uttar Pradesh. NEPAL.

## 2.HUGONIA

L. Sp. Pl. 675. 1753 & Gen. Pl. ed. 5 : 305. 1754; Benth. & Hook. f. Gen. Pl. 1 : 243. 1862; Hook. f. Fl. Brit. Ind. 1 : 413. 1874; Winkler in Engl. & Prantl, Nat. Pflanzenfam. ed. 2. 19a : 108. 1932; Hutchinson Gen. Fl. Pl. 2 : 598. 1967.

Scandent or bushy shrubs, often tomentose. Lateral branches short and modified as coiled hooks. Leaves alternate, entire or crenate, penninerved, stipulate. Inflorescence cymose, terminal or axillary or flowers solitary or fascicled. Sepals 5, imbricate, unequal. Petals 5, yellow, contorted, hypogynous, fugacious. Stamens 10, 5 longer alternating with 5 shorter, connate at base into a short tube. Ovary 5-locular; ovules 2, collateral in each locule; styles 5, filiform; stigmas capitate. Fruits drupaceous, globose, fleshy. Seeds compressed.

*Pollen* : Grains subprolate tricolpate=tricolporate. Sexine of baculoid rods standing on thin nexine layer. Their distal ends united to form the outer cover surmounted by the sexinous processes. These processes vary in height in the different species. Colpi covered with free processes in the same pattern but smaller than those covering the non-colpate regions. [Saad, Shokry I. "Palynological studies in the Linaceae" in *Pollen et Spores* 4(1) : 74. 1962].

*Distrib.* : *Ca* 65 species in tropical regions of the world. AFRICA, INDIA, MADAGASCAR, MALAYSIA, NEW CALEDONIA, SRI LANKA. 2 species in India.

1a. Leaves elliptic or lanceolate, crenate; lateral nerves 16-19 pairs  
...1. *H. belli*

1b. Leaves elliptic-obovate or obovate-oblong, entire; lateral nerves  
8-14 pairs  
...2. *H. mystax*

1. *Hugonia belli* Sedgwick in *Indian Forester* 46 : 424. 1920.

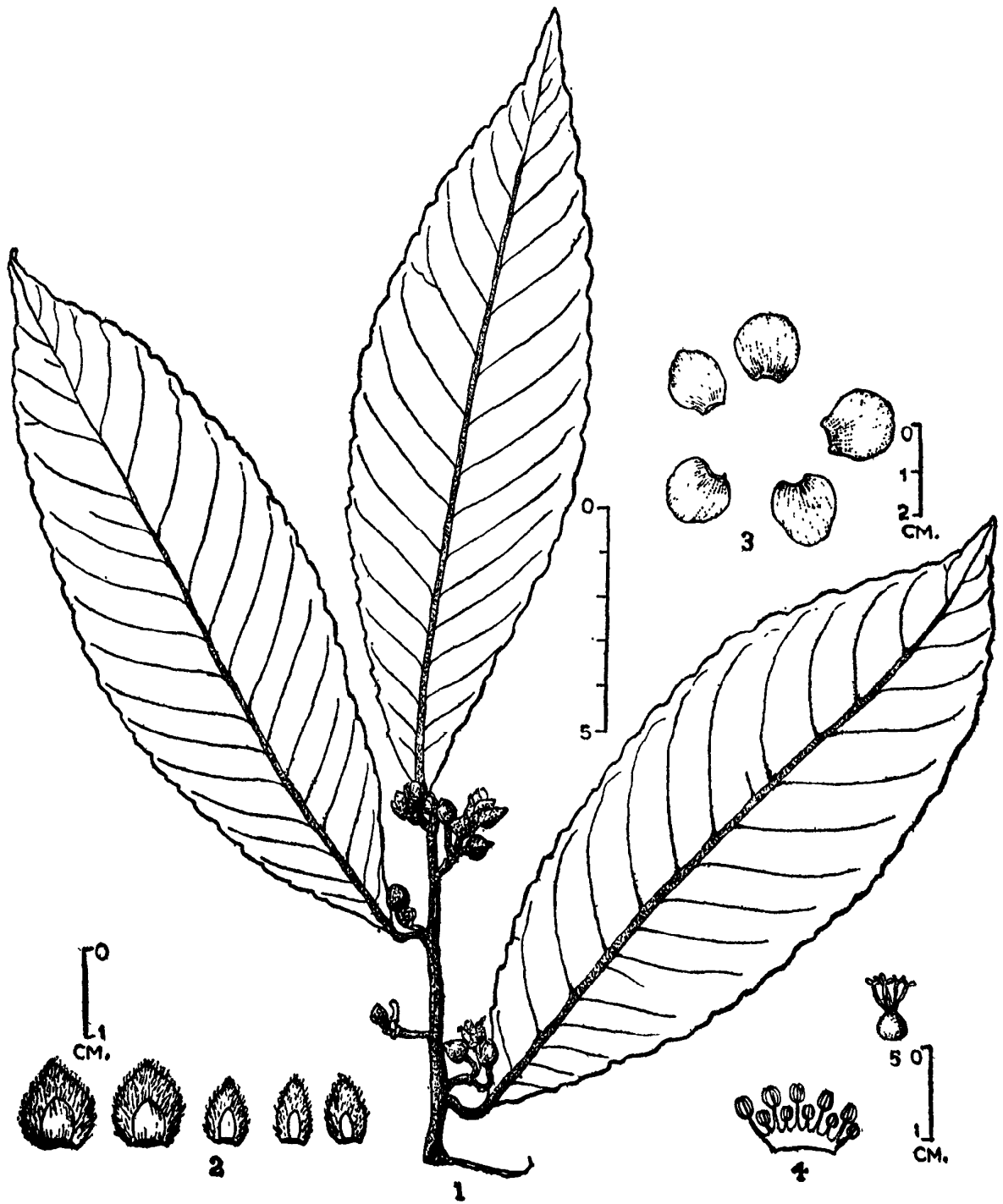
**Figs. 1-5**

Scandent shrubs, densely tomentose. Leaves 7-20 × 2-7 cm, brown-tomentose, narrowly obtuse or acute at apex, tapering at base, nerves conspicuous on both sides; petioles 6-11 mm long, tomentose. Stipules *ca* 15 mm long, linear-laciniate. Bracts 10 mm long; bracteoles 6 mm long. Lower peduncles modified into circinate hooks, upper peduncles *ca* 15 mm long, pedicels thick. Sepals *ca* 6 × 5 mm, ovate-acute. Petals 15 mm long, quickly withering. Stamens *ca* 10 mm long; filaments unequal. Ovary globose; styles filiform; stigma bilobed. Fruits *ca* 2 cm broad, dark-brown, globose, longitudinally striate, 10-locular.

*Type* : Solepoli. Coorg, *Sedgwick & Bell* 5457 (CAL).

*Fls.* : Nov.; *Frts.* : Dec.-Jan.

*Distrib.* : INDIA : Karnataka.



*Hugonia belli* Sedgwick

Figs. 1-5 : 1. Flowering twig. 2. Sepals. 3. Petals. 4. Stamens. 5. Pistil.

2. *H. mystax* L. Sp. Pl. 675. 1753 (*myxstrax*) ; Hook. f. Fl. Brit. Ind. 1 : 413. 1874 ; Wight Ill. 1 : 79, t. 32. 1840 ; Cooke. Fl. Pies. Bomb. 1 : 155. 1901 (Repr. ed. 1 : 166. 1958) ; Gamble, Fl. Pres. Madr. 1 : 126. 1915 (Repr. ed. 1 : 90. 1957) ; Haines, Bot. Bih. Or. 1 : 151. 1925 (Repr. ed. 1 : 156. 1961).

*Motirakanni* (Kan.) ; *Agori, Motirakanni* (Tam.) ; *Gatrinta* (Tel.).

Branches yellow tomentose. Branchlets short, horizontal, leafless below. Leaves 8.0 × 1.0-3.5 cm, hairy along the midrib, obtuse or subacute at apex, tapering at base ; lateral nerves prominent on both surfaces ; petioles *ca* 4 mm long, hairy. Flowers *ca* 2.5 cm across ; bracts *ca* 7 mm long, subulate ; peduncles *ca* 1 cm long, yellow-tomentose. Sepals *ca* 7 × 3 mm, imbricate, ovate-lanceolate, fulvous pubescent. Petals *ca* 12 × 7 mm, unequal, twisted, alternate with sepals, shortly unguiculate. Stamens *ca* 8-10 mm long, all fertile anthers cordate-ovate, erect, 2-loculed, opening by two longitudinal clefts. Ovary globular, glabrous, ovules pendulous ; styles *ca* 4 mm long ; stigmas lobed. Fruits *ca* 1 cm in diam., surrounded by persistent scarlet sepals. Seeds pendulous.

*Type* : India, *Koenig* s. n. (LINN.).

*Fls. & Frts.* : Aug.-Oct.

*Distrib.* : INDIA : Andhra Pradesh, Karnataka, Kerala, Maharashtra, Orissa, Tamil Nadu ; SRI LANKA.

*Uses* : The yellow root-bark is aromatic and is employed as an antidote to poisons. The bruised root is applied to inflammatory swellings. The root powder is administered as an anthelmintic and febrifuge.

### 3. LINUM

L. Sp. Pl. 1 : 277. 1753 & Gen. Pl. 135. 1754 ; Benth. & Hook. f. Gen. Pl. 1 : 242. 1862 ; Hook. f. Fl. Brit. Ind. 1 : 410. 1874 ; Winkler in Engl. & Prantl, Nat. Pflanzenfam. ed. 2, 19a : 112. 1931 ; Hutchinson, Gen. Fl. Pl. 2 : 600. 1967.

Perennial or annual herbs, sometimes suffrutescent, usually glabrous. Leaves simple, usually alternate, narrow, entire, 1-many nerved. Stipules absent or glanduliform. Flowers hermaphrodite, in corymbose panicles or in cymes. Sepals 5. Petals 5, fugacious. Stamens united at base, 5 fertile, alternating with 5 staminodes. Glands 5. Ovary 5-carpellate but becoming *ca* 10-locular by intrusion of incomplete to complete false septa ;

ovules 2 in each carpel, pendulous ; styles 5, mostly free ; stigmas capitate to linear. Fruits capsular, splitting into five simple, 2-seeded or ten 1-seeded cocci. Seeds compressed, usually smooth.

*Pollen* : Pollen grains spheroidal, prolate spheroidal or subprolate ; and more or less circular, 3-colpate, pantocolpate or pantoporate. Apertures, colpi or pores, cryptotreme. [Saad, Shokry I. "Palynological studies in the Linaceae" in *Pollen et Spores* 4(1) : 68. 1962].

*Distrib.* : *Ca* 230 species, mainly in temperate and subtropical regions. INDIA, PAKISTAN, SRI LANKA, MEDITERRANEAN REGION and NORTH AMERICA. 4 species in India.

1a. Flowers *ca* 5 mm across, yellow :

2a. Capsules shorter than the sepals ...3. *L. strictum*

2b. Capsules equalling sepals ...1. *L. mysurense*

1b. Flowers *ca* 2.5 cm across, blue ...2. *L. perenne*

1. *Linum mysurense* Heyne ex Benth. in Edward's Bot. Reg. 16. sub. t. 1326. 1830 ; Hook. f. Fl. Brit. Ind. 1 : 411. 1874 ; Duthie Fl. Upp. Gang. Pl. 1 : 123. 1903 (Repr. ed. 1 : 116. 1960) ; Gamble, Fl. Pres. Madr. 1 : 125. 1915 (Repr. ed. 1 : 89. 1957) ; Cooke, Fl. Pres. Bomb. 1 : 155. 1903 (Repr. ed. 1 : 164. 1958) ; Collett, Fl. Simlensis 66. 1902 ; Nair, Fl. Bashahr Him. 47. 1977.

*Undri* (Kan.).

Annual, 10-50 cm tall, usually branched above, glabrous. Leaves 0.5-2.0 cm long, oblong-elliptic or obovate, mucronate at apex, tapering at base, 3-nerved. Flowers in panicled corymbs ; pedicels 2-5 mm long. Sepals, *ca* 3 mm long, elliptic-lanceolate, glabrous 3-nerved. Petals *ca* 5 mm long, obovate, yellow, rounded at apex, acute at base. Stamens 5, connate at base ; filaments dilated below. Ovary *ca* 2 mm long. Fruits globose, 2-3 mm across, surrounded by persistent sepals.

*Type* : Bahabud, Sept. 1826 (K, Photo !).

*Fls. & Frts.* : Sept.-Jan.

*Distrib.* : INDIA : Karnataka, Kerala,, Maharashtra, Madhya Pradesh, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh ; SRI LANKA.

*Notes* : The plant is reported to be a collateral host, during summer and rainy season, of *Melampsora lini* (Ehrenb.) Lev., a serious rust on linseed plant in India.

2. *L. perenne* L. Sp. Pl. 1 : 277. 1753 ; Hook. f. Fl. Brit. Ind. 1 : 411. 1874 ; P. Abdulla in Fl. W. Pak. 21 : 3. 1972.

Perennials, 15-90 cm tall; branches many, ascending or erect. Leaves 0.5-2.5 cm long, lanceolate or lower oblong-obtuse and upper linear-acute, sessile, 1-3-nerved. Sepals 4-5 mm long, ovate or obovate, glandular at margin, 3-5-nerved. Petals 10-12 mm long, obovate, blue. Stamens 5. Ovary 5-locular, heterostylus; stigmas capitate-subcapitate. Fruits 5-7 mm across, larger than sepals.

*Type* : "Habitat in Sibiria et Cantabrigiae" HU (Horto Upsaliensi) Herb. Linnaeus 396.8 (LINN.).

*Fls.* : April-Aug.; *Frts.* : Oct.

*Distrib.* : INDIA : Himachal Pradesh, Jammu & Kashmir, Punjab; CENTRAL AND EASTERN EUROPE, RUSSIA, NORTH WEST AMERICA, PAKISTAN.

*Uses* : An ornamental plant suitable for garden. The seeds are considered emollient in Europe and China.

3. *L. strictum* L. Sp. Pl. 279. 1753 ; Hook. f. Fl. Brit. Ind. 1 : 411. 1874.

Annual or biennial herbs, 10-50 cm high, usually branched above. Leaves 10-15 mm long, linear, linear-oblong or lanceolate, glabrous or sparingly pubescent, acute or acuminate at apex, acute or rounded at base, scabrid along margin, sessile. Flowers ca 5 mm across. Sepals 3-6 mm long, glandular at margin. Petals yellow. Ovary globose; styles free; stigmas capitate. Fruits globose.

*Type* : Hispania Loefl. 246a (LINN.).

*Fls. & Frts* : April-Aug.

*Distrib.* : INDIA : Jammu-Kashmir.

*Uses* : The plant is reported to be cultivated in Afganistan for seed-oil and fodder. The seeds are considered emollient in Spain.

#### 4. REINWARDTIA

Dumortier, Comm. Bot. 19. 1822 ; Benth. & Hook. f. Gen. Pl. 1 : 243. 1862 ; Hook. f. Fl. Brit. Ind. 1 : 411. 1874 ; Winkler in Engl. & Prantl,

Nat. Pflanzenfam. ed. 2. 19a : 111. 1931 ; Hutchinson, Gen. Fl Sp. 2 : 599. 1967.

Undershrubs. Leaves alternate, entire or crenate-serrate, membranaceous, pinnately nerved. Stipules minute, subacute, caducous. Flowers yellow or white, in very short fasciculate, axillary racemes or in dense corymbs at the end of the branches, or solitary. Sepals 5, ovate or lanceolate, acuminate, entire. Petals 5, much longer than sepals. Stamens 5, alternating with interposed subulate staminodes ; glands 2-3, adnate to the staminal tube. Ovary 3-5-locular, loculi 2-ovulate ; styles 3-4 (-5 -7), filiform, free or connate below. Fruits capsular, globose, splitting usually into 6-8 valves. Seeds reniform, endosperm thin ; embryo straight.

*Pollen* : Grains spheroidal ; pantoporate. The sexine is made of more or less granular structure supported by baculoid elements. These bacula are still united at their distal ends to form a tegillum-like layer surmounted by the dimorphic sexinous processes. On the pores the roots of the processes are free without any trace of granulation. The big processes have number of these free baculoid roots while the small ones have only two. The nexine forms a thin homogeneous layer below the sexine. [Saad, Shokry I. "Palynological studies in the Linaceae" in Pollen et Spores 4(1) : 70. 1962].

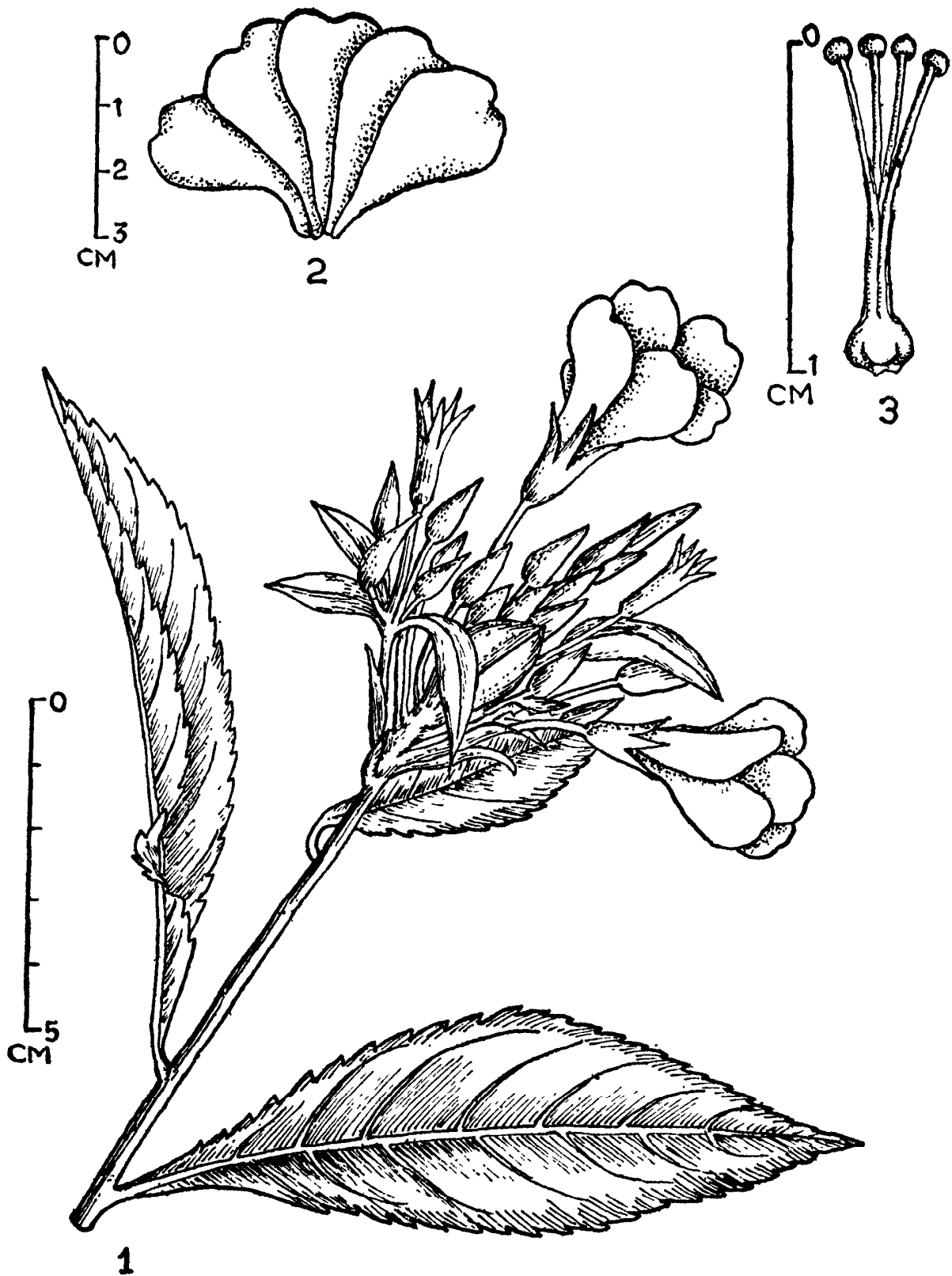
*Distrib.* : 2 species. INDIA, CHINA and MALAYSIA. 2 species in India.

- 1a. Leaves entire or minutely crenate-serrate.  
Flowers *ca* 2.5 cm across ; styles usually 3 ...2. **R. indica**
- 1b. Leaves distinctly crenate-serrate.  
Flowers 3.0-3.5 cm across ; styles usually 4 ...1. **R. cicanoba**

1. **Reinwardtia cicanoba** (Buch.-Ham. ex D. Don) Hara in Journ. Jap. Bot. 40 : 328. 1965 *et* Fl. East. Himal. 168. 1966. *Linum cicanobum* Buch.-Ham. ex D. Don, Prodr. Fl. Nepal, 217. 1825. *Reinwardtia tetragyna* Planchon in Hook. Lond. Journ. Bot. 7 : 523. 1848 ; Hook. f. Fl. Brit. Ind. 1 : 412. 1874 ; Haines, Bot. Bih. Or. 1 : 150. 1925 ; Kanjilal *et al.* Fl. Assam 1 : 185. 1936.

**Figs. 1-3**

Undershrubs. Leaves 2.0-12.0 × 0.7-5.5 cm, elliptic-lanceolate, glabrous, acuminate at apex, attenuate at base, lateral nerves usually 6 ; petioles 0.2-3.5 cm long. Flowers 3.0-3.5 cm across. Sepals 0.5-1.5 cm long, lanceolate, shortly acuminate. Petals 2-4 cm long, obovate, notched



*Reinwardtia cicanoba* (Buch.-Ham. ex D. Don) Hara

Figs. 1-3 : 1. Flowering twig. 2. Petals. 3. Pistil.



at tip. Stamens 1.5-2.0 cm long; filaments minutely hairy; anthers 2-3 mm long. Ovary globose; styles usually 4 (-3, -5), united below. Fruits capsular, obtuse, shorter than the sepals.

*Fls.* : Sept.-Nov.; *Frts.* : Oct.-Nov.

*Distrib.* : INDIA : Meghalaya, Sikkim; CHINA, NEPAL.

2. **R. indica** Dumortier, Comm. Bot. 19. 1822; Babu, Herb. Fl. Dehra Dun 99. 1977. *Linum trigynum* Roxb. Asiat. Res. 6 : 357. 1799 (*non* L. 1753). *Reinwardtia trigyna* (Roxb.) Planchon in Hook. Lond. Journ. Bot. 7 : 522. 1848; Hook. f. Fl. Brit. Ind. 1 : 412. 1874; Cooke, Fl. Pres. Bomb. 1 : 165. 1901 (Repr. ed. 1 : 165. 1958); Collett, Fl. Simlensis 66. t. 22. 1902; Duthie, Fl. Upp. Gang. Pl. 1 : 123. 1903 (Repr. ed. 1 : 116. 1960); Prain, Beng. Pl. 1 : 189. 1903 (Repr. ed. 1 : 199. 1963); Gamble, Fl. Pres. Madr. 1 : 126. 1915 (Repr. ed. 1 : 90. 1957); Haines, Bot. Bih. Or. 1 : 150. 1925 (Repr. ed. 1 : 155. 1961); Kanjilal *et al.* Fl. Assam 1 : 186. 1936; Gupta, Fl. Nainital 40. 1968; Nair, Fl. Bashahr Himal. 48. 1977.

*Balbasant* (Hindi).

Tufted undershrubs, 75-140 cm tall; branches terete, glabrous. Leaves 1.0-2.0 × 0.5-4.5 cm, usually elliptic-obovate or narrowly oblong-lanceolate, glabrous, acute or rounded at apex, mucronate, decurrent into a short petiole at base, lateral nerves usually 5-9; petioles 0.2-3.0 cm long. Flowers *ca* 2.5 cm across. Sepals 0.5-1.0 cm long, lanceolate, acute. Petals 1.0-3.5 cm long, bright golden yellow, obovate, abruptly narrowed at base. Stamens 0.5-3.0 cm long. Ovary ovoid; styles usually 3 (-4, -5, -7), free or connate at base; stigmas of the long styles larger than those of short ones. Fruits capsular, globose, shorter than sepals.

*Fls. & Frts.* : Jan.-Dec.

*Distrib.* : INDIA : Assam, Bihar, Karnataka, Madhya Pradesh, Manipur, Meghalaya, Orissa, Sikkim, W. Bengal; NEPAL, BURMA, THAILAND, W. CHINA, W. PAKISTAN.

*Notes* : Very variable species. Easily recognised in the field by bright yellow flowers.

## INTRODUCED SPECIES

**Linum usitatissimum** L. Sp. Pl. 277. 1753.

*Flax or Linseed* (Eng.) ; *Alsi* (Hindi) ; *Alsi* (Guj.) ; *Tisi* (Beng.) ; *Agasi* (Kan.) ; *Alivirai* (Tam.) ; *Avisi* (Tel.) ; *Peso* (Or.).

*Fls. & Frts.* : Jan.-Aug.

*Distrib.* : Cultivated throughout India up to 2,000 m in the Himalayas. Sometimes found as an escape.

*Uses* : The well-known flax plant is grown in India for the Linseed oil.

**L. grandiflorum** Desf. Fl. Atlant. 1 : 278. t. 79. 1798 ; Babu. Herb. Fl. Dehradun 98. 1977.

*Fls. & Frts.* : Feb.-June.

*Distrib.* : Cultivated and sometimes found as an escape.

## EXCLUDED SPECIES

**Hugonia ferruginea** W. & A. Prodr. 72. 1834 ; Hook. f. Fl. Brit. Ind. 1 : 413. 1874 ; K. N. Subramaniam & K. B. Kalyani in Indian Forester 101(9) : 569. 1975.

K. N. Subramaniam & K. B. Kalyani (*l.c.*) report its occurrence in the Belabyalachela Valley, Raichuti Range of Andhra Pradesh. The specimen could not be examined. No specimen is available in the Herbarium of Botanical Survey of India, Southern Circle (MH).

## IXONANTHACEAE†

Excell & Mendonca in Bull. Soc. Brot. 25 : 105. 1951.

P. K. HAJRA\*

Trees. Leaves alternate, simple, stipulate. Flowers small, bisexual, in axillary fascicles of racemes or cymes. Bracts small and caducous. Sepals 5, contorted, shortly connate at base. Petals 5, free, contorted, persistent. Stamens 10-25, inserted on an annular disk or very shortly united at base. Ovary superior, 5-2-locular; ovules 2 or 1 in each loculus; style simple or shortly fid. Fruit septicidal capsule, coriaceous. Seeds arillate or winged; endosperm fleshy.

*Notes* : J. D. Hooker (Fl. Brit. Ind. 1 : 410. 1874) treated the family as a tribe under Linaceae while Winkler (Engl. & Prantl, Nat. Pflanzenfam. ed. 2, 3. 19a : 82-130. 1931) treated it as a sub-family Ixonanthoideae. Excell and Mendonca (*loc. cit.*) raised it to the rank of a family which was subsequently followed by others including Hutchinson (Fam. Fl. Pl. 3rd. ed. : 314-315. 1973).

8 genera and ca 48 species in the tropical and sub-tropical regions of the world. 1 genus with 1 species in India.

## IXONANTHES

Jack. Mal. Misc. 2(7) : 51. 1822; Benth. & Hook. f. Gen. Pl. 1 : 245. 1862; Hook. f. Fl. Brit. Ind. 1 : 416. 1874; Winkler in Engl. & Prantl, Nat. Pflanzenfam. ed. 2, 19a : 124. 1931; Hutchinson, Gen. Fl. Pl. 2 : 593. 1967.

Characters of the family

*Distrib.* : Ca 12 species, tropical & subtropical ASIA and NEW GUINEA. 1 species in India.

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† Editor for Fam. Ixonanthaceae : K. THOTHATHRI, Botanical Survey of India, Howrah - 711 103.

\* Botanical Survey of India, Northern Circle, Dehradun.

**Ixonanthes khasiana** Hook. f. Fl. Brit. Ind. 1 : 416. 1874; Kanjilal *et al.*  
Fl. Assam 1(2) : 186. 1936.

**Figs. 1-3**

*Selabl* (Garo); *Ihing-buphai* (Kuki).

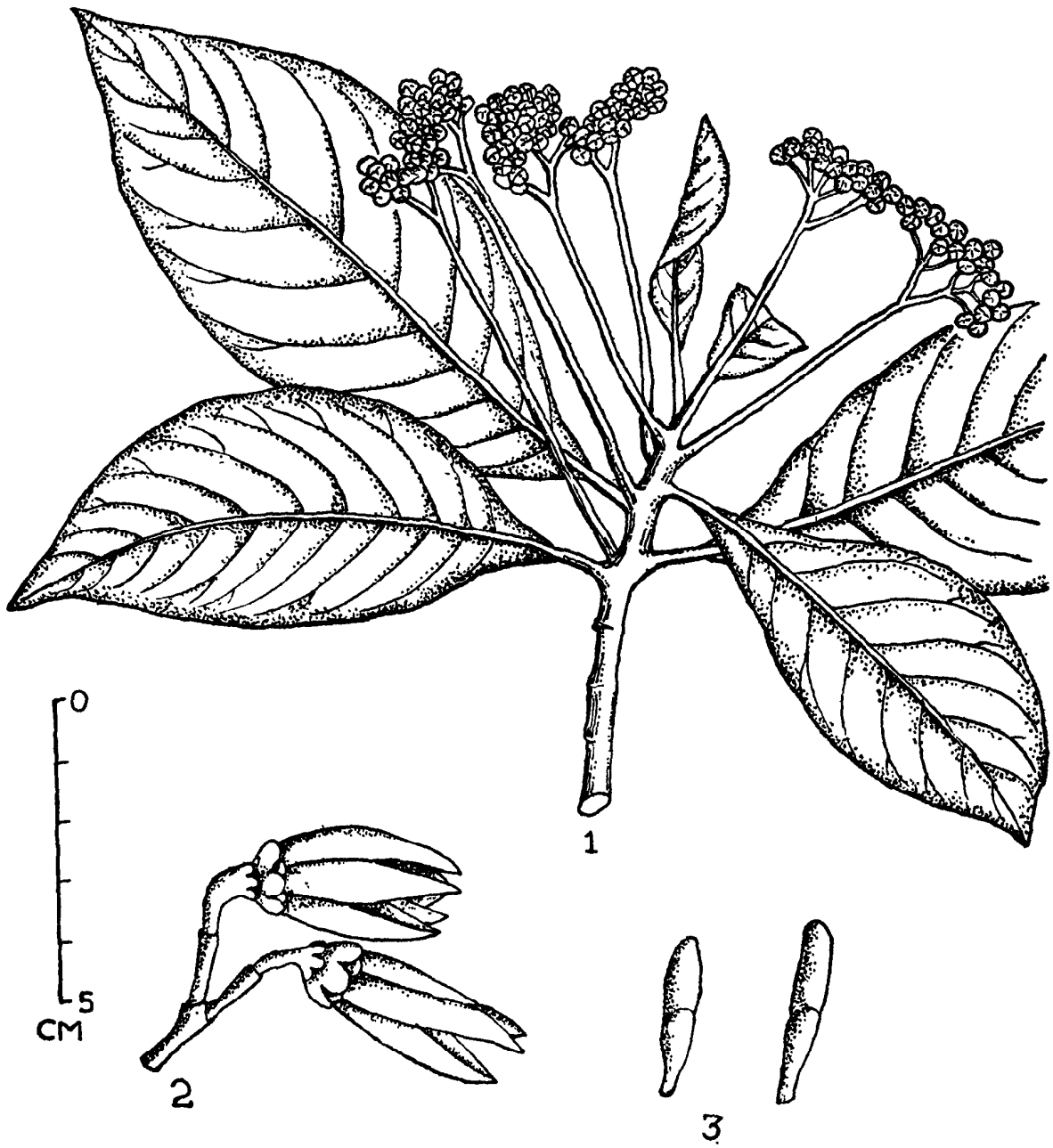
Trees, *ca* 40 m high, *ca* 80 cm in diam.; fluted at base. Leaves 7.0-13.0 × 2.5-5.0 cm, elliptic-lanceolate to oblong, glabrous, membranous, obtusely acuminate at apex, narrowed at base, decurrent into short petiole; secondary nerves 6-9 on either half with many intermediate nerves; petioles 0.6-1.8 cm long, glabrous. Peduncles slender, 4.0-10.5 cm long, obscurely winged; pedicels 0.3-0.8 cm long. Flowers *ca* 5 mm across. Sepals 2.5 × 1.4 mm. Petals 3-7 × 2-4 mm, suborbicular, enlarged and hardened round the fruit. Stamens 10; filaments linear; anthers oblong. Ovary 5-locular; style *ca* 3 cm long; stigma discoid. Fruits 3.0-4.0 × 1.0-1.5 cm, oblong, capsular, pointed at apex 5-valved. Seeds winged at the top, *ca* 2.5 cm long, wing obliquely oblong 1.0-1.5 × 0.4-0.6 cm.

*Type* : Khasia Mts., *F. de Silva* (CAL).

*Fls.* : April-May; *Frts.* : June-Dec.

*Distrib.* : INDIA : Assam, Meghalaya.

*Uses* : Wood light-brown, even grained, traversed by numerous wavy concentric but discontinuous bands of soft tissue, medullary rays very fine suitable for cabinet work (Kanjilal *et al. l. c.*).



*Ixonanthes khasiana* Hook. f.

Figs. 1-3 : 1. Flowering twig. 2. Fruits. 3. Seeds.

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## FASCICLES OF FLORA OF INDIA

<b>Family</b>	<b>Fascicle</b>	<b>Date of Publication</b>
CORIARIACEAE	1	Oct. 1978
PAEONIACEAE	1	Oct. 1978
DILLENIACEAE	2	May 1979
POACEAE (TRIBE GARNOTIEAE)	3	Nov. 1979
SIMAROUBACEAE	4	April 1980
BALANITACEAE	4	April 1980
ORCHIDACEAE (GENUS COELOGYNE)	5	June 1980
PITTOSPORACEAE	6	Nov. 1980
LILIACEAE (TRIBE SCILLEAE)	7	Feb. 1981
LEGUMINOSAE (GENUS DERRIS)	8	July 1982
ACERACEAE	9	Aug. 1982
ANNONACEAE (TRIBE UVARIEAE)	10	Sept. 1982
CUCURBITACEAE	11	Dec. 1982
VIOLACEAE	12	Aug. 1983