

**FASCICLES
OF
FLORA OF INDIA**

FASCICLE 16

ASCLEPIADACEAE : GENUS—CEROPEGIA

M. Y. ANSARI

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

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Date of Publication : 25th May, 1984.

ASCLEPIADACEAE : GENUS—CEROPEGIA

M. Y. ANSARI*

CEROPEGIA

L. Sp. Pl. 211. 1753; Benth. *et* Hook. f. Gen. Pl. 2 : 779. 1876; Hook. f. Fl. Brit. Ind. 4 : 66. 1883; K. Schum. in Engl. *et* Prantl, Pflanzenfam. 4 (2) : 270. 1895; McCann in Journ. Bomb. Nat. Hist. Soc. 45 : 211. 1945; Huber, Rev. Gatt. *Ceropegia* in Mem. Soc. Broter. 12 : 20. 1957.

Erect or twining herbs with tubers or fleshy roots. Stem glabrous or hairy. Leaves membranous or fleshy, at times reduced. Cymes sessile or pedunculate, one-many-flowered, mostly subumbellate. Corolla straight or curved; tube usually inflated at base, attenuated above, generally dilated at mouth, rarely fusiform, urceolate or campanulate; lobes connate at apex, sometimes free. Corona uni- or biseriate; outer entire, bifid, retuse or absent, hairy or glabrous; inner mostly entire, rarely bifid, erect, convergent, divergent or hooked at tips. Anthers mostly without appendages, pollen masses waxy with one pellucid margin, solitary in each anther cell, horizontal or ascending. Ovaries 2, style apex truncate or shortly conical. Follicles narrow in pairs. Seeds comose.

Distrib. : A genus of ca. 170 species, distributed in SOUTH-EAST ASIA, INDIA, MADAGASCAR, TROPICAL ARABIA, CANARY ISLANDS, AFRICA—except Mediterranean region, NEW GUINEA and NORTHERN AUSTRALIA. 44 species (excluding 1 ssp., 2 varieties) in India, 28 endemic.

Type species : *Ceropegia candelabrum* L.

Chr. No. : $2n = 22$ (Raghavan & Ansari in *Curr. Sci.* 44 : 863-864. 1975).

1a. Erect herbs :

2a. Leaves linear or linear-lanceolate, less than 15 mm broad :

3a. Cymes usually 1-flowered :

4a. Corolla lobes almost equal to the tube :

5a. Corolla less than 3 cm long; herbs 5-10 cm tall

... 19. *C. jainii*

†Editor for Fam. Asclepiadaceae (Genus-Ceropegia) : B. D. Sharma, Botanical Survey of India, Pune-411 001.

*Botanical Survey of India, Western Circle, Pune 411 001.

- 5b. Corolla more than 3 cm long ; herbs 10-50 cm tall :
 - 6a. Stem and leaves glabrous ; corolla tube largely inflated at base, hairy inside ... 41. *C. spiralis*
 - 6b. Stem and leaves hairy ; corolla tube slightly inflated at base, glabrous inside
 - ... 3. *C. attenuata*
- 4b. Corolla lobes distinctly shorter than the tube :
 - 7a. Corolla more than 4 cm long ; lobes elongated, beaked ; herbs 30-60 cm tall ... 28. *C. mahabalei*
 - 7b. Corolla less than 4 cm long ; lobes short, not beaked ; herbs 5-15 cm tall ... 37. *C. pusilla*
- 3b. Cymes usually 2-4 flowered :
 - 8a. Corolla 2.0-2.7 cm long ; lobes glabrous ; outer corona glabrous ... 31. *C. noorjahaniae*
 - 8b. Corolla 2.5-4.5 cm long ; lobes purple-hairy at base ; outer corona subciliate ... 14. *C. fimbriifera*
- 2b. Leaves ovate or ovate-lanceolate, more than 15 mm broad :
 - 9a. Cymes usually sessile, at times minutely pedunculate, peduncles 1-2 mm long ... 44. *C. wallichii*
 - 9b. Cymes distinctly pedunculate, peduncles more than 10 mm long :
 - 10a. Corolla tube subcylindric, slightly enlarging at mouth ; inner corona linear, 3-4 times longer than outer :
 - 11a. Corolla lobes linear-oblong ... 33. *C. rollae*
 - 11b. Corolla lobes ovate, obovate or elliptic :
 - 12a. Leaves ovate-lanceolate, usually rounded at base, not cordate ; corolla *ca.* 3.5 cm long, tube narrow, with slightly inflated base ... 22. *C. lawii*
 - 12b. Leaves ovate, cordate at base ; corolla 3.5-5.5 cm long, tube broad with largely inflated base ... 39. *C. sahyadrica*

10b. Corolla tube narrow, cylindric, not enlarging at mouth ;
inner corona subspathulate, *ca.* twice longer than
outer :

13a. Corolla less than 2.4 cm long ; lobes 2-3 mm
long, tube largely inflated in lower 2/3-1/2
part ; inner corona erecto-divergent

... 25. *C. maccannii*

13b. Corolla more than 2.5 cm long, lobes 6-7 mm
long, tube slightly inflated in lower 1/3-1/4
part ; inner corona erect ... 35. *C. panchganiensis*

1b. Twining herbs :

14a. Calyx segments longer than the corolla ... 13. *C. fantastica*

14b. Calyx segments shorter than the corolla :

15a. Leaves fleshy :

16a. Leaves over 2 cm long ; corolla less than 3 cm long
... 6. *C. bulbosa*

16b. Leaves reduced or absent ; corolla more than 3 cm
long ... 20. *C. juncea*

15b. Leaves membranous :

17a. Corolla lobes *ca.* equal or longer than tube :

18a. Corolla tube funnel-shaped above :

19a. Leaves ovate-cordate, ovate-oblong or
ovate-lanceolate :

20a. Inflated base of the tube com-
pletely hairy within ; inner corona
oblanceolate-rhomboid, erecto-di-
vergent ... 43. *C. vincaefolia*

20b. Inflated base of the tube hairy
within at the mouth only ; inner
corona linear, erect :

21a. Leaves prominently hairy
above ; corolla lobes glabrous
within ... 30. *C. metziana*

- 21b. Leaves sparsely hairy or glabrous above; corolla lobes hairy within the narrow parts :
 - 22a. Corolla lobes ovate at base, linear-acute above; tube moderately inflated at base; flowers minutely hairy outside
... 26. *C. macrantha*
 - 22b. Corolla lobes deltoid at base, spatulate above; tube slightly inflated at base; flowers glabrous outside ... 24. *C. lucida*
- 19b. Leaves linear, lanceolate, elongate or elliptic-oblong :
 - 23a. Corolla tube much inflated at base; lobes spatulate above; outer corona entire or shortly clefted
... 9. *C. decaisneana*
 - 23b. Corolla tube slightly inflated at base; lobes linear acute above; outer corona distinctly bifid :
 - 24a. Stem hirsute allround; corolla tube hairy at throat; inner corona oblanceolate, divergent at apex ... 5. *C. beddomei*
 - 24b. Stem hairy in a row; corolla tube glabrous at throat; inner corona linear, erect
... 23. *C. longifolia*
ssp. *sinensis*
- 18b. Corolla tube subcylindric, hardly dilated above :
 - 25a. Corolla less than 1.5 cm long; lobes broadly ovate-cordate ... 17. *C. huberi*
 - 25b. Corolla more than 1.5 cm long; lobes linear, oblong or lanceolate :

26a. Corolla tube glabrous inside :

27a. Peduncles short ; corolla lobes
hairy along margins ; outer
corona subciliate ; inner linear
... 2. *C. arnottiana*

27b. Peduncles long ; corolla lobes
glabrous ; outer corona hairy ;
inner clavate
... 11. *C. ensifolia*

26b. Corolla tube hairy inside :

28a. Leaves linear-lanceolate ; co-
rolla tube hairy inside near
basal part only ; flowers frag-
rant ... 33. *C. odorata*

28b. Leaves ovate ; corolla tube
hairy inside except basal part ;
flowers not fragrant :

29a. Corolla over 3.5 cm long ,
tube hairy within to-
wards upper part ; lobes
ovate at base, linear,
pubescent above
... 36. *C. pubescens*

29b. Corolla under 3.5 cm
long ; tube with a thin
ring of hairs about the
middle within ; lobes
linear-subspathulate, gla-
brous ... 16. *C. hookeri*

17b. Corolla lobes shorter than tube :

30a. Leaves and peduncles glabrous :

31a. Corolla tube broadly funnel-shaped
above :

32a. Corolla lobes ciliate ; outer corona
of 10 subulate lobes, *ca.* equal to
inner ... 10. *C. elegans*

- 32b. Corolla lobes glabrous ; outer
corona of 5 bifid-deltoid lobes,
shorter than inner
... 42. *C. thwaitesii*
- 31b. Corolla tube subcylindric, hardly dilated
above :
- 33a. Tube completely glabrous inside
... 18. *C. intermedia*
- 33b. Tube hairy inside in the middle or
at the mouth of inflated base :
- 34a. Corolla lobes glabrous
... 34. *C. omissa*
- 34b. Corolla lobes hairy :
- 35a. Corolla 3.0-4.5 cm long,
head short or long
beaked
... 7. *C. candelabrum*
- 35b. Corolla 1.5-2.0 cm long,
head not beaked
... 27. *C. maculata*
- 30b. Leaves or peduncles or both atleast sparsely
hairy :
- 36a. Corolla tube funnel-shaped above :
- 37a. Corolla lobes broadly ovate or ovate-
oblong, *ca.* as long as broad :
- 38a. Leaves usually ovate or ovate-
oblong ; corolla tube glabrous
at throat, neck very short with
largely inflated base
... 4. *C. barnesii*
- 38b. Leaves usually linear, lanceo-
late ; corolla tube hairy at
throat, neck prominent with
less inflated base
... 23. *C. longifolia*

37b. Corolla lobes oblong, longer than broad :

39a. Stem hirsute; corolla tube hairy inside; inner corona hooked at tips ... 15. *C. hirsuta*

39b. Stem glabrous; corolla tube glabrous inside; inner corona not hooked at tips :

40a. Peduncles almost glabrous; corolla less than 4 cm long; tube slightly inflated at base; lobes hairy on upper margins only ... 21. *C. kachinensis*

40b. Peduncles pubescent; corolla more than 4 cm long; tube much inflated at base; lobes hairy within and along margins ... 32. *C. oculata*

36b. Corolla tube subcylindric, hardly dilated above :

41a. Corolla lobes broadly ovate or orbicular :

42a. Corolla less than 2 cm long; lobes orbicular, glabrous inside; corona uni-seriate, inner hairy ... 40. *C. santapaui*

42b. Corolla 2.5-4.0 cm long; lobes broadly ovate, pubescent inside; corona bi-seriate, inner glabrous ... 12. *C. evansii*

41b. Corolla lobes lanceolate, linear-subspathulate or broadly oblong :

43a. Leaves usually ovate, ovate-lanceolate, occasionally upper linear :

44a. Stem and peduncles hairy
in 1 or 2 rows ; corolla
tube hairy inside in the
middle ; outer corona
entire ... 16. *C. hookeri*

44b. Stem and peduncles hairy
allround ; corolla tube
glabrous inside ; outer
corona shortly bifid
... 8. *C. ciliata*

43b. Leaves usually linear-lanceolate,
occasionally basal ovate-lan-
ceolate :

45a. Stem glabrous ; corolla
tube glabrous inside ;
lobes linear-oblong ; outer
corona emarginate or
notched ... 29. *C. media*

45b. Stem hairy in 1 or 2
rows ; corolla tube with a
ring of hairs inside at the
mouth of inflated base ;
lobes broadly oblong ;
outer corona bifid
... 1. *C. angustifolia*

- 1 *Ceropegia angustifolia* Wight, Contrib. 31. 1834 ; Hook. f. Fl. Brit.
Ind. 4 : 72. 1883 ; Kanjilal *et al.* Fl. Assam 3 : 308. 1939. *C. longi-*
folia sensu Huber in Mem. Soc. Broter. 12 : 41. 1957. *p. p.*

Pl. II : 5, Fig. 1

Twiners. Leaves petiolate, minutely hairy above, glabrous beneath.
Cymes few-flowered ; peduncles 2.5-5.0 cm long, hairy in a line ; pedi-
cels 5-15 mm long, glabrous. Calyx glabrous. Corolla up to 4 cm long ;
tube 15-29 mm long with base inflated in lower 1/2-1/3 part ; lobes
8-11 mm long, broadly or elliptic-oblong, glabrous. Outer corona of 5
shortly bifid, hairy lobes ; inner linear-subspathulate, erect.

Type : Bangladesh : Silhet, *Herb. Wight* (K, Photo !).

Fls. : July-Sept.

Distrib. : INDIA : Meghalaya ; NEPAL, BANGLADESH.

2. *C. arnottiana* Wight, Contrib. 32. 1834; Hook. f. Fl. Brit. Ind. 4 : 74. 1883; Kanjilal *et al.* Fl. Assam 3 : 309, 1939; Huber in Mem. Soc. Broter. 12 : 52. t. 2, f. 18. 1957.

Tuberous twiners. Stem glabrous. Leaves narrowly elliptic-lanceolate, short-petioled. Cymes sessile or shortly peduncled, few to many flowered; peduncle sparsely hairy. Corolla 2.7-5.4 cm long; tube 1.2-2.2 cm long, inflated in lower 1/3-1/4 part; lobes 1.5-3.2 cm long, narrowly linear. Outer corona of 5 bifid lobes; inner erect.

Type : Burma (lower) : Prome hills, *Herb. Wight* (Lectotype K, Photo !).

Fls. : Sept.

Distrib. : INDIA : Meghalaya; BURMA, THAILAND (SIAM).

Notes : There is only one sheet in vegetative state bearing Wall. Cat. no. 8142, available in India (CAL) which is from Burma. Another sheet of the same number (LE) bearing a single damaged flower was also examined. Huber (*l. c.*) cites specimens of *C. B. Clarke* 44470 and *Lobb* s. n. from Khasia hills, Meghalaya (K); appears to be very rare in India.

3. *C. attenuata* Hook. Ic. Pl. ser. 2 : 5. t. 867. 1852; Hook. f. Fl. Brit. Ind. 4 : 67. 1883; Cooke, Fl. Pres. Bomb. 2 : 174. 1904 (repr. ed. 2 : 239. 1958); Santapau *et* Irani in Bull. Bot. Soc. Beng. 12 (1 & 2) : 7. t. 1, f. A; t. 2, f. A. 1958. *C. angustifolia* Dalz. in Hook. Kew Journ. Bot. 2 : 259. 1850, *nec. C. angustifolia* Wight.

Pl. III : 9, Fig. 2

Tilori (Mar.).

Tall tuberous herbs. Stem hairy above. Leaves subsessile, minutely petiolate. Cymes shortly pedunculate; pedicels and calyx small. Corolla 5.0-7.5 cm long; tube up to 3.8 cm long, slightly inflated in the lower 1/3 part, narrowed above, enlarging near the mouth; lobes up to 3.7 cm long, mostly linear above, partly pubescent within. Outer corona of 5 bifid ciliate lobes; inner linear, erecto-divergent.

Type : India : Maharashtra; Malwan, *Dalzell* s. n. (K, Photo !).

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

Distrib. : INDIA : Goa, Karnataka (N. Kanara), Maharashtra; endemic.

Chr. No. : $2n = 22$.

Ecol. : Mostly grow on exposed rocky slopes among grasses.

4. *C. barnesii* Bruce *et* Chatterjee in Kew Bull. 1948 : 62. 1948.

Twining with glabrous stem. Leaves petiolate, sparsely hairy above. Cymes few-flowered; peduncles 2.5 cm long; pedicels shorter, sparsely hairy. Corolla 3.6-4.4 cm long; tube up to 3.2 cm long, glabrous within except a thin ring of hairs at the mouth of the inflated base; lobes 1.2 cm long, hairy inside and along margins near apex only. Outer corona entire, ciliate; inner erect, sub-clavate.

Type : India : South India, *Barnes* (Holotype K, Photo !).

Fls. : May-June.

Distrib. : INDIA : Karnataka, Tamil Nadu ; endemic.

Notes : A little known species. Besides collections at K, there are only two sheets at MH from Pykara falls (Nilgiris) and South Kanara ; appears to be very rare.

5. *C. beddomei* Hook. f. Fl. Brit. Ind. 4 : 75. 1883 ; Gamble, Fl. Pres. Madr. 5 : 859. 1923 (repr. ed. 2 : 604. 1957).

Fig. 3

Hairy twiners. Leaves linear to narrowly lanceolate, petiolate. Cymes few-flowered; peduncles *ca.* 3.5 cm long, pedicels *ca.* 1 cm long; calyx *ca.* 1 cm long. Corolla up to 7.8 cm long, dark purple; tube 3.5 cm long, glabrous within except throat; lobes 4.3 cm long, elongate-triangular, hairy in the middle in a line within and along margins. Outer corona of 5 deltoid bifid hairy lobes; inner erecto-divergent.

Type : India : Kerala ; Peermade (750 m), *Beddome* s. n. (K, Photo !).

Fls. : Nov.

Distrib. : INDIA : Kerala (Peermade, Ponnudi, Cochin, Pachakkannam); endemic.

Notes : Rare, only represented by *Vivekananthan* 46665 from Pachakkannam (Idukki Dist.) at MH in India.

6. *C. bulbosa* Roxb. Pl. Corom. 1 : 11. t. 7. 1795 ; Hook. f. Fl. Brit. Ind. 4 : 67. 1883 ; Cooke, Fl. Pres. Bomb. 2 : 176. 1904 (repr. ed. 2 : 240-241. 1958) ; Duthie, Fl. Upper Gang. Pl. 2 : 66. 1905 (repr. ed. 1 : 514. 1960) ; Gamble, Fl. Pres. Madr. 5 : 857. 1923 (repr. ed. 2 : 602. 1957).

Fig. 4

Daichandi (Hindi); *Kanvel* (Mar.); *Commo manda* (Tel.).

Tuberous twiners. Leaves subsessile to petiolate, orbicular, ovate or linear-lanceolate, glabrous. Cymes pedunculate; pedicels short. Corolla greyish purple; tube 1.0-1.7 cm long, inflated at base, narrowed in the middle, funnel-shaped above, glabrous inside; lobes 5-8 mm long, linear above from ovate-deltoid base, hairy inside and along margins in linear parts. Outer corona saucer-shaped, entire or broadly shallow; inner slender, sickle-shaped or divergent.

1a. Leaves orbicular, ovate, emarginate or apiculate, long-petioled
... var. **bulbosa**

1b. Leaves linear to lanceolate, subsessile
... var. **lushii**

var. **bulbosa**

Type : Roxb. Pl. Corom. 1 : 11. t. 7(!).

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

Distrib. : Throughout India; PAKISTAN (Punjab, Sind).

Chr. No. : $2n = 22$.

Notes : In t. 7 of Roxb. Pl. Corom. (*l. c.*), the inner processes are shown as converging, but these are really diverging.

var. **lushii** (Grah.) Hook. f. Fl. Brit. Ind. 4 : 68. 1883; Cooke, Fl. Pres. Bomb. 2 : 176. 1904 (repr. ed. 2 : 241. 1958); Gamble, Fl. Pres. Madr. 5 : 857. 1923 (repr. ed. 2 : 602. 1957). *C. lushii* Grah. in Bot. Mag. t. 3300. 1834. *C. acuminata* Roxb. Pl. Corom. 1 : 12. t. 8. 1795; Hook. f. Fl. Brit. Ind. 4 : 70. 1883. *C. tuberosa* Dalz. et Gibs. Bombay Fl. 154. 1861, nec. Roxb. *C. bulbosa* Roxb. var. *esculenta* (Edgew.) Hook. f. *l. c.* 68. 1883. *C. bulbosa sensu* Huber in Mem. Soc. Broter. 12 : 60. 1957, p. p.

Type : India : Karnataka; Kanara, Kasersaya jungle, *Lush* s. n. (E; Bot. Mag. t. 3300!).

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

Distrib. : Throughout India; PAKISTAN.

Chr. No. : $2n = 22$.

Notes : All varieties known under *C. bulbosa* Roxb. along with *C. acuminata* Roxb. were merged by Huber (*l. c.*). However, field studies supported by herbarium specimens reveal atleast existence of 2 distinct

taxa, based on constant leaf character. These also breed true in nature and specimens having both orbicular and linear leaves in the same plant are not seen. Besides, studies on the twin pollinia of these 2 taxa (Govindappa & Ramakrishna in *Curr. Sci.* 47 : 636. 1978) also support the retention of var. *lushii* as distinct from var. *bulbosa*.

7. *C. candelabrum* L. Sp. Pl. 211. 1753; Hook. f. Fl. Brit. Ind. 4 : 70. 1883; Gamble, Fl. Pres. Madr. 5 : 857. 1923 (repr. ed. 2 : 603. 1957). *C. elliotii* Hook. f. Fl. Brit. Ind. 4 : 70. 1883.

Pl. I : 1, Fig. 5

Nota-nodhem-valli (Mal.).

Glabrous twiners. Leaves variable, linear to orbicular, petiolate. Cymes many-flowered, peduncles longer than pedicels. Corolla 2.9-4.5 cm long; tube 2.7-3.0 cm long, inflated in lower half; lobes 5-15 mm long, short or long beaked, base ovate, hairy within. Outer corona of 5 entire or truncate hairy lobes; inner erect, linear-subspathulate.

- 1a. Corolla lobes 5-8 mm long with truncated apices or short beaked (2-3 mm long) ... var. **candelabrum**
- 1b. Corolla lobes 10-15 mm long with elongated apices or long beaked (8-10 mm long) ... var. **biflora**

var. **candelabrum**

Type : Plate of Rheede, Hort. Malab. 9 : 27. t. 16. 1673(!).

Fls. : Aug.-Jan.; *Frts.* : Nov.-Mar.

Distrib. : INDIA : Andhra Pradesh, Karnataka, Kerala, Tamil Nadu; SRI LANKA (?).

var. **biflora** (L.) Ansari, *stat. nov.* *C. biflora* L. Sp. Pl. 211. 1753. *C. tuberosa* Roxb. Pl. Corom. 1 : 12. t. 9. 1795; Hook. f. Fl. Brit. Ind. 4 : 70. 1883; Cooke, Fl. Pres. Bomb. 2 : 176. 1904 (repr. ed. 2 : 241. 1958); Haines, Bot. Bih. Or. 4 : 562. 1922 (repr. ed. 2 : 589. 1961); Gamble, Fl. Pres. Madr. 5 : 857. 1923 (repr. ed. 2 : 603. 1957). *C. longiflora* Poir. in Roem. et Schult. Syst. veg. ed. 2, 6 : 2. 1820. *C. mucronata* Roth, Nov. Pl. Spec. 179. 1821. *C. candelabrum auct. non* Linn. : Roxb. Fl. Ind. 2 : 27. 1824. *C. intermedia* Wt. : Hook. f. Fl. Brit. Ind. 4 : 71. 1883, *p. p.*

Wel-mottu (Sinh.).

Type : Plate of *Ceropegia* 110, Hermann Herb. (BM !).

PLATE I

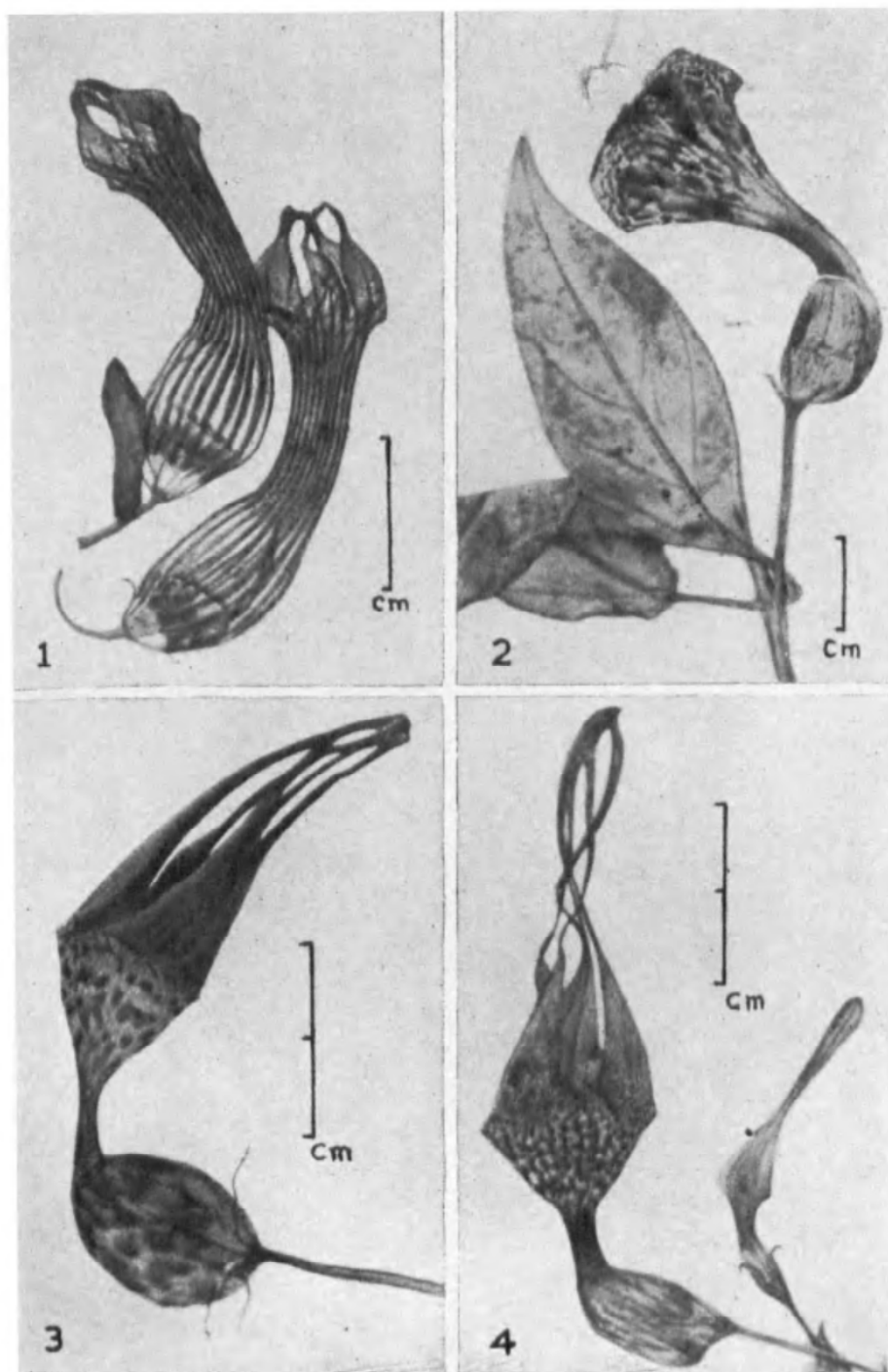


Plate I (1-4) : 1. *Ceropogia candelabrum* L. 2. *C. elegans* Wall. 3. *C. decaisneana* Wt. 4. *C. metziana* Miq.

PLATE II

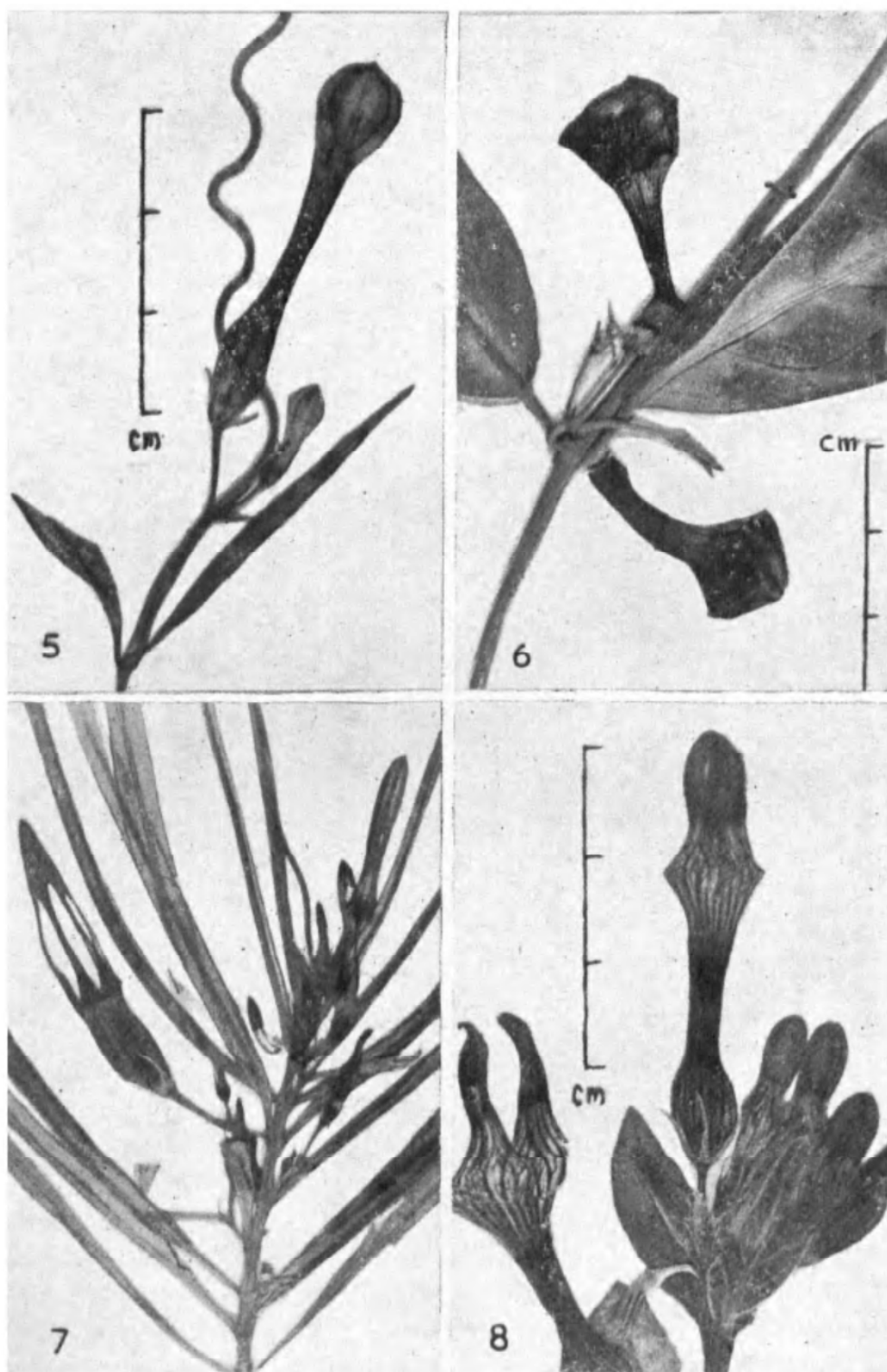


Plate II (5-8) : 5. *Ceropegia angustifolia* Wt. 6. *C. longifolia* Wall. 7. *C. fimbriifera* Bedd. 8. *C. wallichii* Wt.

Fls. : Aug.-Dec. ; *Frts.* : Sept.-Jan.

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

Notes : Though *C. biflora* L. is based on collections of Hermann from Sri Lanka, in the absence of any specimen, his drawing of *Ceropegia* 110, which is associated with *C. biflora*, is available at Herb. Hermann (BM) which clearly shows the species intended (corolla lobes with elongated beak). *C. tuberosa* Roxb. from South India is similar in all respects to *C. biflora*, hence conspecific. But Stevens (in Saldanha et Nicholson Fl. Hassan Dist. 445. 1976) maintains *C. tuberosa* (i.e. *C. biflora* L.) as distinct. Huber (l. c. 58) treats *C. biflora* as synonymous to *C. candelabrum*.

8. *C. ciliata* Wight, Ic. Pl. Ind. Or. 4. t. 1262. 1848 ; Hook. f. Fl. Brit. Ind. 4 : 72. 1883 ; Gamble, Fl. Pres. Madr. 5. 858. 1923 (repr. ed. 2 : 603. 1957).

Twining with tuberous roots. Stem, leaves, peduncles, pedicels and calyx hairy. Cymes many-flowered. Corolla ca. 2.8 cm long, green, slightly curved ; tube ca. 1.8 cm long, inflated at base, narrowed in the middle, slightly dilated at mouth ; lobes ca. 1 cm long, falcate when folded on back, glabrous. Outer corona of 5 ciliate lobes ; inner spathulate, erecto-divergent or recurved at apex.

Type : India : Tamil Nadu ; Nilgiri hills, Wight 1927 (K, Photo !).

Fls. : Aug.-Sept.

Distrib. : INDIA : Kerala, Tamil Nadu ; endemic.

9. *C. decaisneana* Wight, Ic. Pl. Ind. Or. 4 : t. 1259. 1848 ; Hook. f. Fl. Brit. Ind. 4 : 73. 1883 ; Gamble, Fl. Pres. Madr. 5 : 859. 1923 (repr. ed. 2 : 604. 1957) ; Huber in Mem. Soc. Broter. 12 : 62. 1957, p. p.

Pl. I : 3, Fig. 6

Twining with glabrous stem except hairy nodes. Leaves lanceolate, elongate or elliptic-oblong, base acute, sparsely hairy above. Cymes 4-8 flowered ; peduncles usually longer than pedicels, both hairy. Corolla up to 7.5 cm long, outside minutely hairy in buds ; tube 4 cm long, spotted purple, base inflated in lower half with a ring of hairs at its mouth within ; lobes 3.5 cm long, deltoid in lower half, spathulate, ciliate within above. Outer corona of 5 hairy lobes ; inner erect, long, ligulate.

Type : India : Tamil Nadu ; Sisparah ghats (Nilgiris), Wight s. n. (K, Photo!).

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

Distrib. : INDIA : Kerala, Tamil Nadu ; SRI LANKA (?).

Notes : A distinct species. It forms one of the two elements of the Type of *C. brevicollis* Hook. f., the other being *C. metziana* Miq. Thus Huber's (*l. c.*) description of the species is confusing when he treats the name *C. brevicollis* as a variety of *C. decaisneana*.

10. *C. elegans* Wall. in Bot. Mag. t. 3015. 1830 ; Hook. f. Fl. Brit. Ind. 4 : 68. 1883 ; Gamble, Fl. Pres. Madr. 5 : 857. 1923 (repr. ed. 2 : 602. 1957). *C. sphenanantha* Wt. et Arn. in Wt. Contrib. 31. 1834. *C. mysorensis* Wight, Ic. Pl. Ind. Or. 3 : t. 846. 1844-45 ; Hook. f. Fl. Brit. Ind. 4 : 69. 1883 ; Gamble, Fl. Pres. Madr. 5 : 857. 1923 (repr. ed. 2 : 602. 1957). *C. walkerae* Wight, Ic. Pl. Ind. Or. 4 : t. 1266. 1848 ; Hook. f. Fl. Brit. Ind. 4 : 69. 1883. *C. gardneri* Thw. ex Hook. in Bot. Mag. t. 5306. 1862 ; Hook. f. Fl. Brit. Ind. 4 : 69. 1883. *C. elegans* Wall. var. *gardneri* (Thw. ex Hook.) Huber in Mem. Soc. Broter. 12 : 73. 1957.

Pl. I : 2

Glabrous twiners with fibrous fascicled roots. Leaves ovate to lanceolate, petiolate. Cymes few-flowered, pedunculate. Corolla variable, 2.5-6.0 cm long ; tube 1.8-4.5 cm long, inflated at base, moderate-largely dilated at mouth (1.5-3.5 cm diam.) ; lobes 5-12 mm long, usually purple ciliate, as broad as or broader than long. Outer corona of 10 subulate lobes, hairy or glabrous ; inner 5, erect.

Type : Bot. Mag. t. 3015 (!).

Fls. : June-Dec. ; *Frts.* : Dec.-Apr.

Distrib. : INDIA : Karnataka, Kerala, Tamil Nadu ; SRI LANKA.

Note : *C. elegans* complex needs thorough biosystematic studies.

11. *C. ensifolia* Bedd. in Madras Journ. Lit. Sci. ser. 3(1) : 52. 1864 et Ic. Pl. Ind. Or. 1 : t. 173. 1874 ; Hook. f. Fl. Brit. Ind. 4 : 75. 1883 ; Gamble, Fl. Pres. Madr. 5 : 859. 1923 (repr. ed. 2 : 604. 1957). *C. albiflora* Hook. f. Fl. Brit. Ind. 4 : 75. 1883 ; Gamble, Fl. Pres. Madr. 5 : 859. 1923 (repr. ed. 2 : 604. 1957). *C. ciliata* Wt. ssp. *ensifolia* (Bedd.) Huber in Mem. Soc. Broter. 12 : 69. t. 3, f. 36b. 1957.

Twining with subglobose tubers. Stem branching. Leaves ovate-lanceolate to linear, almost glabrous. Cymes many-flowered; peduncles hirsute; pedicels sparsely hairy or glabrous; calyx glabrous. Corolla up to 4 cm long; tube *ca.* 2 cm long, base slightly inflated; lobes *ca.* 2 cm long, linear-oblong. Outer corona of 5 ciliate lobes; inner erect.

Type : India : Tamil Nadu; Anamallay hills, *Beddome* (K, Photo !).

Fls. : Aug.-Sept.

Distrib. : INDIA : Kerala, Tamil Nadu; endemic.

12. *C. evansii* McCann in Journ. Bomb. Nat. Hist. Soc. 45 : 209. 1945; Santapau *et* Irani in Bull. Bot. Soc. Beng. 12(1 & 2) : 11. t. 1, f. 'D', t. 2, f. C. 1958.

Pl. III : 10

Tuberous twining. Stem glabrous. Leaves ovate to ovate-lanceolate, base rounded, almost glabrous. Cymes few-flowered; peduncles long, hairy; pedicels glabrous. Corolla *ca.* 4 cm long; tube *ca.* 28 mm long, base inflated, narrowed in the middle, expanding upwards, glabrous inside; lobes 10-12 × 8-9 mm, folded on back. Outer corona of 5 deltoid-bifid hairy lobes; inner linear, erect.

Type : India : Maharashtra; Khandala, *Santapau* 919A, 920B (Paratypes ! BLAT).

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

Distrib. : INDIA : Maharashtra; endemic.

13. *C. fantastica* Sedgwick in Journ. Ind. Bot. 2 : 124. 1921; Kanodia *et* Reddi in Bull. Bot. Surv. Ind. 6 : 311. t. 1, *et* f. 1-5. 1964.

Twining with subglobose tubers. Stem glabrous. Leaves ovate to lanceolate, petiolate, glabrous except ciliate margins. Cymes 4-7-flowered; peduncles hairy; pedicels glabrous. Calyx *ca.* 4 cm long. Corolla 2.5 cm long, dark purple; tube 2 cm long, subcylindric, somewhat funnel-shaped above, ciliate inside in the upper half; lobes 5 × 3.5 mm, ovate-oblong, ciliate within and on margins. Outer corona of 5 bifid glabrous lobes; inner linear-subclavate, erecto-divergent.

Type : India : Karnataka; Sulgeri, N. Kanara, *Bell* 4252 (K, Photo !).

Fls. : Aug.; *Frts.* : Sept.

Distrib. : INDIA : Goa, Karnataka, Maharashtra; endemic.

Ecol. : On lateritic soil in open semi-evergreen forests, among shrubs.

Notes : Perhaps the only species in the genus having calyx longer than corolla. An extremely rare and endangered species.

14. *C. fimbriifera* Bedd. in Madras Journ. Lit. Sci. ser. 3(1) : 53. 1864, *et* Ic. Pl. Ind. Or. 1 : 38. t. 172. 1874; Hook. f. Fl. Brit. Ind. 4 : 66. 1883; Gamble, Fl. Pres. Madr. 5 : 856. 1923 (repr. ed. 2 : 602. 1957).

Pl. II : 7

Erect herbs. Stem pubescent. Leaves linear, sessile, puberulous above. Cymes few-flowered; peduncles short, pedicels longer, glabrous. Corolla *ca.* 4.5 cm long; tube *ca.* 2.5 cm long, base slightly inflated, narrowed in the middle, gently enlarged above, glabrous inside; lobes *ca.* 2 cm long, linear-clavate, glabrous above, from ovate base. Outer corona of 5 bifid-deltoid lobes; inner erect, linear-subspathulate.

Type : India : Tamil Nadu; Anamallay hills, *Beddome* (K, Photo !).

Fls. : July-Aug.; *Frts.* : Aug.-Sept.

Distrib. : INDIA : Karnataka, Tamil Nadu; endemic.

15. *C. hirsuta* Wt. *et* Arn. in Wt. Contrib. 30. 1834; Hook. f. Fl. Brit. Ind. 4 : 71. 1883; Prain, Beng. Pl. 2 : 701. 1903 (repr. ed. 2 : 520. 1963); Cooke, Fl. Pres. Bomb. 2 : 177. 1904 (repr. ed. 2 : 242. 1958); Haines, Bot. Bih. Or. 4 : 562. 1922 (repr. ed. 2 : 589. 1961); Gamble, Fl. Pres. Madr. 5 : 562. 1923 (repr. ed. 2 : 604. 1957); Huber in Mem. Soc. Broter. 12 : 63. 1957, excl. syn. *C. vincaefolia* Hook.; *C. jacquemontiana* Decne. in DC. Prodr. 8 : 641. 1844. *C. ophioccephala* Dalz. in Hook. Kew Journ. 2 : 259. 1850. *C. hirsuta* var. *stenophylla* Hook. f. *l. c.* *C. hispida* Blatt. *et* McCann in Journ. Bomb. Nat. Hist. Soc. 35 : 409. 1931.

Pl. III : 11, Fig. 7

Khaloola (Hindi, Urdu); *Haamana* (Mar.); *Khilora* (Raj.).

Coarse tuberous twiners. Leaves (variable), peduncles, pedicels and calyx hairy. Cymes few-many flowered. Corolla 2.8-5.8 cm long; tube 2-4 cm long, depressedly inflated at base, funnel-shaped above; lobes 8-18 mm long, broadly oblong or oblong-obovate, hairy inside and along margins. Outer corona of 5 bifid hairy lobes; inner linear, erect.

Type : India : Tamil Nadu; Nilgiris, (Wt. Cat. n. 1510), *Herb. Wight* (Holotype, K, Photo !).

Fls. : July-Nov. ; *Frts.* : Sept. onwards.

Distrib. : Throughout India except Himalayan region.

Notes : As variations in the colour of flowers and orientations in corolla lobes are observed, biosystematic studies of *C. hirsuta* complex are desired.

16. *C. hookeri* C. B. Cl. ex Hook. f. Fl. Brit. Ind. 4 : 73. 1883.

Fig. 8

Twining with tuberous rhizomes. Stem hairy in 1 or 2 rows. Leaves ovate, acuminate, hairy above. Cymes few-flowered ; peduncles hairy ; pedicels glabrous. Corolla *ca.* 2 cm long, dark-purple ; tube *ca.* 12 mm long, lower half inflated, gently narrowing towards mouth ; lobes *ca.* 8 mm long. Outer corona entire, hairy ; inner linear, erect.

Type : India : Sikkim ; Lachen (10-11000 ft) *Ceropegia* n. 23. J. D. Hooker (Holotype, K, Isotype ! W).

Fls. : June-July.

Distrib. : INDIA : Sikkim ; NEPAL, TIBET.

17. *C. huberi* Ansari in Bull. Bot. Surv. Ind. 10(2) : 219. 1968 (1969).

Pl. III : 12

Kharpudi (Mar.).

Twining with subglobose tubers. Stem branching, glabrous. Leaves ovate to lanceolate, petiolate, mostly glabrous. Cymes many-flowered on long hairy peduncles ; pedicels hairy. Corolla 1.2 cm long, white ; tube 5 mm long, slightly inflated near base, narrowed towards mouth, glabrous inside ; lobes 7 × 10 mm, glabrous forming circular flattened head. Outer corona entire, 5-lobed, glabrous ; inner conical-elongated, hairy, convergent at apex.

Type : India : Maharashtra ; Amba ghat in Ratnagiri Dist., Ansari 105001A (Holotype ! CAL).

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

Distrib. : INDIA : Maharashtra ; endemic.

Chr. No. : $2n = 22$.

18. *C. intermedia* Wight, Ic. Pl. Ind. Or. 4 : t. 1263. 1848, *emend.*

Huber in Mem. Soc. Broter. 12 : 61. t. 2, f. 26. 1957 ; Hook. f. Fl. Brit. Ind. 4 : 71. 1883, *p. p.* ; Gamble, Fl. Pres. Madr. 5 : 858. 1923 (repr. ed. 2 : 603. 1957).

Fig. 9

Glabrous twiners. Leaves ovate, lanceolate, acuminate, petiolate. Cymes few-flowered, pedunculate. Corolla *ca.* 3 cm long, pale-purplish ; tube *ca.* 2 cm long, base largely inflated, narrowed in the middle, expanding above ; lobes *ca.* 8 mm long, oblong-subspathulate, hairy within and along margins, base triangular, glabrous. Outer corona entire or sub-truncate, glabrous ; inner erect.

Type : India : Serramalie (Serrumalai), near Dindygul (Tamil Nadu), *Wight* (Lectotype, K, Photo !).

Fls. : June-Dec. ; *Frts.* : Aug.-Jan.

Distrib. : INDIA : Kerala, Tamil Nadu ; endemic.

19. *C. jainii* Ansari *et* Kulkarni in Bull. Bot. Surv. Ind. 22(1-4) : 221. 1980 (1982).

Pl. III : 13

Erect, dwarf, tuberous herbs. Stem sparsely hairy above. Leaves elliptic or linear-elliptic, short petiolate, hairy above. Cymes uniflowered ; peduncles short ; pedicels hairy. Corolla 2 cm long, purplish brown ; tube 1 cm long, base inflated, narrowed in the middle, expanding upward, glabrous inside ; lobes 1 cm long, linear-oblong, glabrous above from ovate-deltoid base which is white hairy within. Outer corona of 5 bidentate, ciliate lobes ; inner erect, linear.

Type : India : Maharashtra ; Ambolighat (Ratnagiri Dist.), *Kulkarni* 121885A (Holotype ! CAL ; Isotype ! BSI).

Fls. : Aug.

Distrib. : INDIA : Maharashtra ; endemic.

Ecol. : On rocky banks of nalas and rivulets.

20. *C. juncea* Roxb. Pl. Corom. 1 : 12. t. 10. 1795 ; Hook. f. Fl. Brit. Ind. 4 : 68. 1883 ; Cooke, Fl. Pres. Bomb. 2 : 175. 1904 (repr. ed. 2 : 240. 1958) ; Gamble, Fl. Pres. Madr. 5 : 856. 1923 (repr. ed. 2 : 602. 1957).

Pl. III : 14

Kanvel (Mar.) ; *Bella gada* (Tel.).

Fleshy herbs. Leaves scale-like. Cymes few-flowered, pedunculate.

Corolla 4.0-5.5 cm long; tube *ca.* 3 cm long, inflated at base, funnel-shaped above the middle, hairy inside near the mouth; lobes *ca.* 2 cm long, linear, hairy within above, from deltoid base. Outer corona of 5 bidentate-deltoid ciliate lobes; inner linear, erect, hooked at apex.

Type : Plate 10 of Roxb. Pl. Corom. 1 : 12. 1795.

Fls. : July-Nov.

Distrib. : INDIA : Andhra Pradesh, Karnataka, Kerala, Tamil Nadu.

Ecol. : In drier belts.

Note : Juice of the plant serves as a tranquilizer.

21. *C. kachinensis* Prain in Journ. Asiat. Soc. Beng. 69(2) : 170. 1900 ; Huber in Mem. Soc. Broter. 12 : 50. 1957.

Twining with stem, branches, peduncles and pedicels glabrous. Leaves ovate, ovate-lanceolate, petiolate, slightly puberulous above. Cymes many-flowered. Corolla 3 cm long; tube 2 cm long, base inflated, narrowed in neck, dilated upward; lobes 1 cm long, oblong. Outer corona of 5 bifid villous lobes; inner erect, clavate.

Type : Burma : Kachin hills, *Shaikh Mokim* s. n. (Holotype ! CAL).

Fls. : Oct.-Nov.

Distrib. : INDIA : Sikkim; BANGLADESH (SYLHET), BURMA.

Notes : A specimen of *King* from Sikkim at CAL (Acc. No. 296644) appears to be this species in its floral character, though stem, leaves etc. are a bit hairy. Huber (*l. c.*) reports its occurrence, based on *Herb. Wight* collection (K) from Sylhet.

22. *C. lawii* Hook. f. Fl. Brit. Ind. 4 : 67. 1883; Cooke, Fl. Pres. Bomb. 2 : 175. 1904 (repr. ed. 2 : 240. 1958) *p. p.*; Santapau *et* Irani in Bull. Bot. Soc. Beng. 12 (1 & 2) : 8. 1958, *p. p.*

Pl. III : 15, Fig. 10

Kharpudi, Tiloni (Mar.).

Tall, erect, tuberous herbs. Stem pubescent above. Leaves petiolate, puberulous above. Cymes many-flowered; peduncles and pedicels hairy. Corolla 3.0-3.5 cm long; tube 2.8 cm long, inside a ring of hairs at the bottom of inflated base, rest glabrous; lobes 6-7 mm long, ovate-cordate, hairy or glabrous within. Outer corona of 10 obtuse lobes, hairy; inner linear, erect, 3-4 times as long as outer.

Type : India : Maharashtra ; Concan (Konkan), *Ceropegia* n. 25, *Stocks, Law* (Holotype, K, Photo !).

Fls. : Aug.-Sept. ; *Frts.* : Sept. onwards.

Distrib. : INDIA : Maharashtra ; endemic.

Notes : *Wadhwa* 127731 (BSI), collected from Harishchandragadh (29-9-1970) agrees well with the protologue and the type photo.

23. *C. longifolia* Wall. Pl. As. Rar. 1 : 56. t. 73. 1830 ; Hook. f. Fl. Brit. Ind. 4 : 69. 1883 ; Huber in Mem. Soc. Broter. 12 : 41. t. 1, f. 5a. 1957, excl. syn. *C. angustifolia* Wt. ; Raizada *et* Saxena, Fl. Mussoorie 1 : 434. 1978. *C. borii* Raizada in Indian Forest Rec. (N. S.) Bot. 3 : 121. 1941 ; Babu, Herb. Fl. Dehra Dun 305. 1977.

Pl. II : 6, Fig. 11

Twining with fascicled roots. Stem with 1 or 2 rows of hairs, prominent about nodes. Leaves linear-lanceolate, at times ovate, puberulous above. Cymes few-flowered ; peduncles hairy in a row ; pedicels glabrous. Corolla 2.5-4.0 cm long ; tube 2.0-2.8 cm long, inflated base with a ring of hairs within at its mouth ; lobes 5-12 mm long, broadly ovate-deltoid or oblong, hairy within and along margins. Outer corona of 5 deeply bifid-deltoid, villous lobes ; inner linear-subspathulate, erect.

1a. Corolla tube ciliate at the throat, base inflated ; lobes broad, ovate-deltoid ... ssp. *longifolia*

1b. Corolla tube glabrous at the throat, base not or slightly inflated ; lobes oblong ... ssp. *sinensis*

ssp. *longifolia*

Type : Nepal, *Wallich* (Lectotype, K, Photo !).

Fls. : June-Aug. ; *Frts.* : Aug.-Sept.

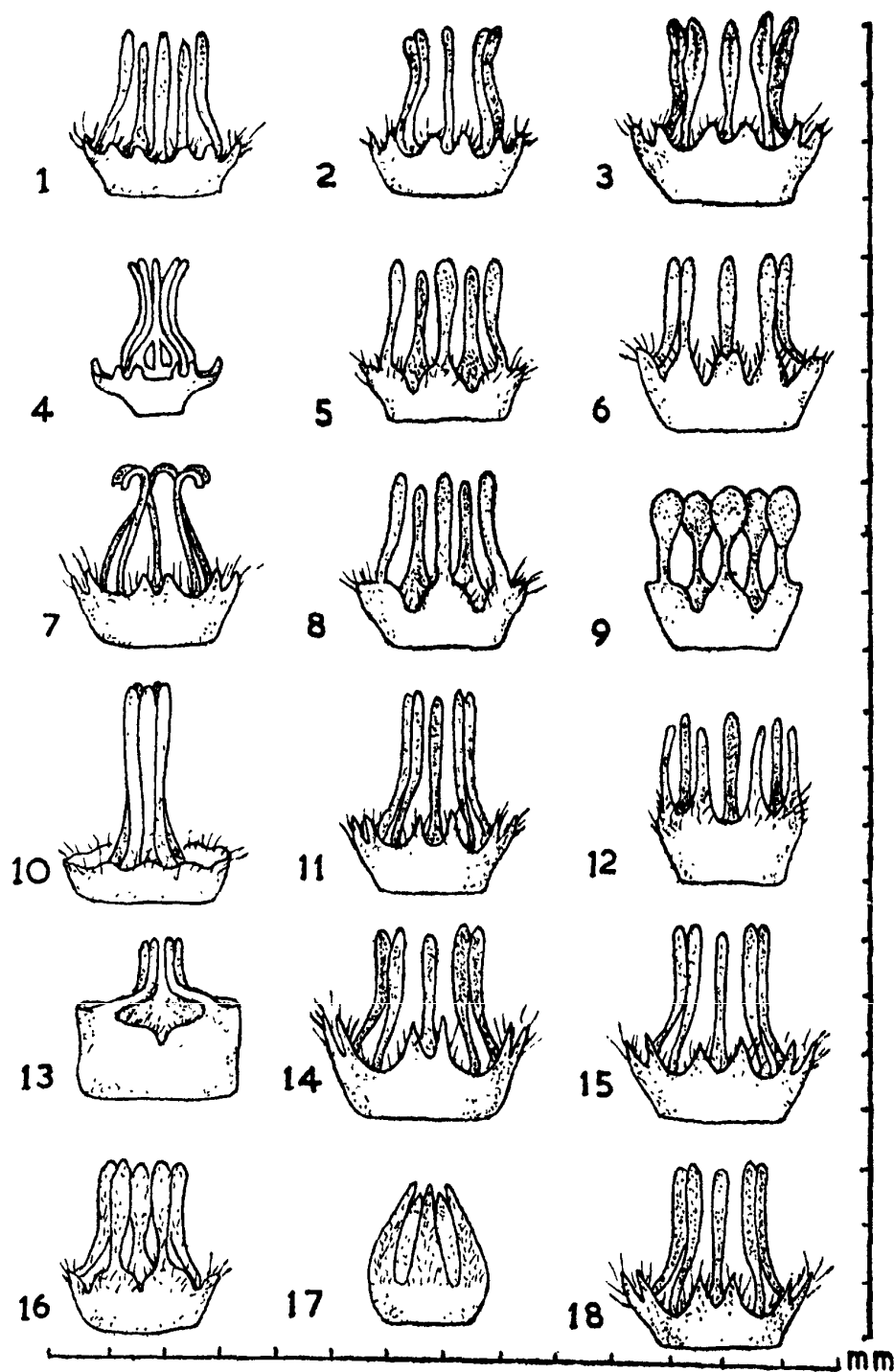
Distrib. : INDIA : Meghalaya, Uttar Pradesh, West Bengal ; NEPAL, BANGLADESH, BURMA (?).

ssp. *sinensis* Huber in Mem. Soc. Broter. 12 : 42. 1957.

Type : China : Szetschwan, *Wilson* 2313 (K, Photo !).

Fls. : July-Aug.

Distrib. : INDIA : Meghalaya, Pongtung (K. & J. Hills) ; CHINA.



Figs. 1-18 : Figures of Corona.

1. *Ceropegia angustifolia* Wt. 2. *C. attenuata* Hook. 3. *C. beddomei* Hook. f. 4. *C. bulbosa* Roxb. 5. *C. candelabrum* L. 6. *C. decaisneana* Wt. 7. *C. hirsuta* Wt. et Arn. 8. *C. hookeri* Clarke ex Hook. f. 9. *C. intermedia* Wt. 10. *C. lawii* Hook. f. 11. *C. longifolia* Wall. 12. *C. maculata* Bedd. 13. *C. media* (Huber) Ans. 14. *C. metziana* Miq. 15. *C. omissa* Huber. 16. *C. panchganiensis* Blatt. et McC. 17. *C. santapaui* Wadh. et Ans. 18. *C. wallichii* Wt.

Notes : Under the fold of *C. longifolia* Wall., Huber (*l. c.*) has brought in several species known from Himalayan region and China, particularly under subsp. *sinensis* Huber, which includes majority of species from China and few collections from erstwhile State of Assam. *C. angustifolia* Wt. (Himalayan), treated by Huber (*l. c.*) under subsp. *longifolia*, has been separated out by me as a distinct species. Regarding the collections of C. B. Cl. 40200, 40200A and Kingdon Ward 13570 (BM) from Meghalaya (India), treated by Huber (*l. c.*) under subsp. *sinensis*, I do not agree with his assessment since these specimens do not quite fit into the prescribed parameters. Studies of relevant Chinese species are needed for comparison and correct assessment of these Indian material. *Deka* 18741 (ASSAM) is the only Indian specimen which could be placed under subsp. *sinensis* Huber.

24. *C. lucida* Wall. Pl. As. Rar. 2 : 33. t. 139. 1831; Hook. f. Fl. Brit. Ind. 4 : 73. 1883; Kanjilal *et al.* Fl. Assam 3 : 309. 1939.

Twiners, sparsely hairy or glabrous. Leaves ovate, oblong or lanceolate, petiolate. Cymes few-flowered; peduncles hairy in line; pedicels glabrous. Corolla *ca.* 5 cm long; tube *ca.* 2.5 cm long, inside a ring of hairs at the mouth of inflated base; lobes *ca.* 2.5 cm long, ciliate within the spatulate apex. Outer corona of 5 bifid-deltoid ciliate lobes; inner erect, linear-clavate.

Type : Bangladesh : Sillet (Sylhet), Wallich (Holotype, K, Photo !).

Fls. : Sept.-Nov.

Distrib. : INDIA : Meghalaya, Sikkim; BANGLADESH, BURMA, CHINA, HONG KONG, MALAYSIA, THAILAND (SIAM).

25. *C. maccannii* Ansari in Bull. Bot. Surv. Ind. 22(1-4) : 227. 1980 (1982). *C. lawii auct. plur. non* Hook. f. : Cooke, Fl. Pres. Bomb. 2 : 175. 1904 (repr. ed. 2 : 240. 1958) *p. p.*; Huber in Mem. Soc. Broter. 12 : 67. 1957, *p. p.*; Santapau *et* Irani in Bull. Bot. Soc. Beng. 12 : 8. 1958, *p. p.*; Venkata Reddi in Willdenowia 5(1) : 32. t. 1 & 2. 1968; Hemadri in Bull. Bot. Surv. Ind. 10(2) : 125. t. 1, f. 3 & 3A. 1968; Ansari *et* Kulkarni in Indian Forester 97 : 689. t. 2, f. B3. 1971.

Pl. III : 16

Kharpudi (Mar.).

Tall, erect, tuberous herbs. Stem pubescent above. Leaves ovate to lanceolate base mostly acute, hairy above. Cymes few to many-flowered; peduncles and pedicels hirsute. Corolla 1.7-2.3 cm long; tube 1.5-2.0 cm long, base largely inflated with a ring of hairs at the bottom within,

above narrow cylindrical ; lobes $2-3 \times 2$ mm, obovate, apex acute, glabrous. Outer corona of 5 shortly bifid, hairy lobes ; inner sub-spathulate hairy.

Type : India : Maharashtra ; Sinhgadh hill (Pune Dist.), Ansari 97574A (Holotype ! CAL ; Isotype ! BSI).

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

Distrib. : INDIA : Maharashtra ; endemic.

Chr. No. : $2n = 22$.

26. *C. macrantha* Wight, Contrib. 31. 1834 ; Hook. f. Fl. Brit. Ind. 4 : 74. 1883 ; Prain, Beng. Pl. 2 : 701. 1903 (repr. ed. 2 : 520. 1963).
C. raizadiana Babu, Herb. Fl. Dehra Dun 305. 1977.

Twiners. Stem hairy in 1 or 2 rows, distinctly at nodes. Leaves ovate to lanceolate, sparsely hairy above. Cymes many-flowered ; peduncles hairy in 1 or 2 rows ; pedicels glabrous. Corolla 5-6 cm long, prominently hairy outside in buds ; tube 2.5-3.2 cm long, inside with a ring of hairs at the mouth of inflated base ; lobes 2.4-2.8 cm long, hairy within in the linear part. Outer corona of 5 bifid-deltoid, villous lobes ; inner linear, erect.

Type : India : Uttar Pradesh ; Kumaon, Khuri Pass (Keyri Pass), Royle (K, Photo !).

Fls. : June-Aug.

Distrib. : INDIA : Jammu & Kashmir, Himachal Pradesh, Sikkim, Uttar Pradesh, West Bengal ; NEPAL, BHUTAN.

27. *C. maculata* Bedd. in Madras Journ. Lit. Sci. ser. 3(1) : 52. 1864.
C. parviflora Trimen in Journ. Bot. (London) 27 : 164. t. 63. 1889, syn. nov.

Fig. 12

Glabrous twiners with fibrous roots. Leaves ovate, shortly acuminate, petiolate. Cymes few-flowered, subumbellate ; peduncles *ca.* 2 cm long ; pedicels 1.0-1.5 cm long. Calyx 3-5 mm long. Corolla up to 2 cm long ; tube 1.3-1.5 cm long, base inflated with a thin ring of hairs at the mouth ; lobes 3-5 mm long, oblong or oblong-lanceolate, hairy. Outer corona of 5 lobes, each deeply divided to form 10 subulate lobes, hairy near the base, *ca.* as long as 5 inner erect processes. Follicles 10-20 cm long, terete, thin.

Type : India : Tamil Nadu ; Anaimalais (Anamallays) ; 2500 ft, *Herb. Beddome* (Lectotype ! LE).

Fls. : June-Feb. ; *Frts.* : Dec.-Feb.

Distrib. : INDIA : Kerala, Tamil Nadu ; SRI LANKA.

Specimens examined : Tamil Nadu ; Anamallay hills, *Herb. Beddome* (LE), *Beddome* 26 (CAL) ; Kerala ; Naduvengad, Travancore ghats, *Barber* 7166 (MH).

Notes : *Beddome* (*l. c.*) did not cite any specimen nor is there any, labelled as *C. maculata* Bedd., available. Since *Herb. Beddome* (LE) is the authentic collection available, though misidentified, from the type locality on which, it is felt, *Beddome* has based the description of *C. maculata*, it is designated here as Lectotype.

28. *C. mahabalei* Hemadri *et* Ansari in Indian Forester 97(2) : 105. 1971.

Pl. III : 17

Gauti Kharpudi (Mar.).

Tall, erect, tuberous herbs. Stem hairy. Leaves linear-lanceolate, subsessile, hairy above. Cymes uni-flowered ; peduncles, pedicels and calyx hairy. Corolla 5.5-10.0 cm long ; tube 3.75-6.5 cm long, base largely inflated, narrowed in the neck, enlarging towards mouth, glabrous inside ; lobes 1.75-3.5 cm long, linear, elongated above from ovate deltoid base, hairy within, connate at tips to form a beaked crown. Outer corona of 5 bidentate glabrous lobes ; inner linear, erect.

Type : India : Maharashtra ; Ralegaon hills, West of Junnar, *Hemadri* 107266A (Holotype ! CAL).

Fls. : Aug.-Sept. ; *Frts.* : Sept. onwards.

Distrib. : INDIA : Maharashtra ; endemic.

Notes : Flowers, perhaps, largest among known Indian species, at times reaching 11.5 cm under cultivation.

29. *C. media* (Huber) Ansari in Bull. Bot. Surv. Ind. 11 (1 & 2) : 199. 1969 (1971). *C. evansii* McCann var. *media* Huber in Mem. Soc. Broter. 12 : 67. t. 3. f. 33b. 1957 ; Santapau *et* Irani in Bull. Bot. Soc. Beng. 12(1 & 2) : 12. 1958.

Pl. IV : 18, Fig. 13

Slender tuberous twiners. Stem glabrous. Leaves linear-lanceolate, puberulous above, petiolate. Cymes few-flowered; peduncles and pedicels hairy. Corolla 2.8 cm long; tube 2 cm long, base slightly inflated, glabrous inside; lobes 8×2.5 mm, oblong, glabrous. Outer corona of 5 lobes, entire or notched in the middle, glabrous outside, hairy inside; inner linear, 'L'-shaped.

Type : India : Maharashtra; Bhimashankar hills (Pune Dist.), Irani 1194 (Holotype ! BLAT).

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

Distrib. : INDIA : Maharashtra; endemic.

Chr. No. : $2n = 22$.

30. *C. metziana* Miq. Analecta Bot. Ind. 3 : 11. 1852. *C. gracilis* Bedd. in Madras Journ. Lit. Sci. ser. 3(1) : 53. 1864, *pr. max. p. C. brevicolis* Hook. f. Fl. Brit. Ind. 4 : 74. 1883; *p. p.*; Gamble, Fl. Pres. Madr. 5 : 859. 1923 (repr. ed. 2 : 604. 1957) *p. p. C. stocksii auct. non* Hook. f. : Gamble, *l. c. C. desaisneana* Wt. var. *decaisneana sensu* Huber in Mem. Soc. Broter. 12 : 62. 1957.

Pl. I : 4, Fig. 14

Twiners. Stem glabrous except at nodes. Leaves ovate, ovate-oblong, short appressed hairy above, sparsely so beneath. Cymes few-flowered; peduncles hairy on one side, longer than glabrous pedicels. Corolla 4.0-7.7 cm long; tube 2.0-3.7 cm long, base largely inflated, within a ring of hairs at its mouth, narrowed above in the neck, funnel-shaped further up; lobes 2-4 cm long, ovate-deltoid towards base, linear-subspathulate above, acute at apex. Outer corona of 5 deltoid-bifid hairy lobes; inner longer, ligulate, glabrous.

Type : India : Tamil Nadu; Devala (Nilgiri Dist.), Gamble 15601 (Neotype, K, Photo !; CAL !).

Fls. : Sept.-Dec.; *Frts.* : Nov. onwards.

Distrib. : INDIA : Karnataka, Kerala, Tamil Nadu; endemic.

Specimens examined : Kerala : Pamba Dam, Vivekananthan 48341 (MH); Tamil Nadu : Nilgiri Dist., Vajravelu 43493 (MH).

Notes : Enquiries with the well-known herbaria of the World reveal that the Type of *C. metziana* Miq. [Metz 624 from near Mercara, Canara (Kanara coast) is not available, hence a neotype (Gamble, 15601) has been designated here as it satisfies the protologue].

31. *C. noorjahaniae* Ansari in Journ. Bomb. Nat. Hist. Soc. 69 : 249. 1972.

Pl. IV : 19

Erect, tuberous herbs. Stem weak, pubescent above. Leaves linear-narrowly elliptic, hairy above. Cymes usually 3-flowered on short peduncles; pedicels 6-7 mm long. Corolla slightly curved, glabrous; tube 1.2-1.4 cm long, subcylindric, base inflated, inside glabrous; lobes 9-13 mm long, linear-oblong above from ovate-deltoid base. Outer corona of 5 obtusely bifid or emarginate lobes; inner erect linear-subclavate.

Type : India : Maharashtra; Wai-Panchgani Ghat (Satara Dist.), Ansari 104880A (Holotype ! CAL).

Fls. : July-Aug.; *Frts.* : Sept. onwards.

Distrib. : INDIA : Maharashtra; endemic.

Notes : On slopes of hill among grasses. It develops twining habit under cultivation; very rare.

32. *C. oculata* Hook. in Bot. Mag. t. 4093. 1844; Hook. f. Fl. Brit. Ind. 4 : 72. 1883; Cooke, Fl. Pres. Bomb. 2 : 177. 1904 (repr. ed. 2 : 242. 1958); Santapau *et* Irani in Bull. Bot. Soc. Beng. 12(1 & 2) : 12. 1958 (excl. syn.).

Pl. IV : 20

Tuberous twiners. Leaves broadly ovate or ovate-oblong, sparsely hairy above. Cymes few-flowered; peduncles hairy, pedicels glabrous. Corolla 6.5 cm long; tube 5 cm long, base inflated, narrowed in the neck, mouth funnel-shaped, glabrous inside; lobes 1.5 cm long, linear-oblong above from ovate base. Outer corona of 5 bifid glabrous lobes; inner erect, linear-clavate.

Type : Bot. Mag. t. 4093.

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

Distrib. : INDIA : Maharashtra; endemic.

Chr. No. : $2n = 22$.

Notes : Beddome [Madras Journ. Lit. Sci. ser. 3(1) : 54. 1864] reports its occurrence in Anaimalais (Tamil Nadu) as common. It is a misidentification. This species is so far known from Maharashtra only.

33. *C. odorata* Nimmo (in Grah. Cat. Bombay Pl. 118. 1839, *nom. nud.*) ex Hook. f. Fl. Brit. Ind. 4 : 75. 1883; Sabnis *et* Bedi in Kew Bull.

PLATE III

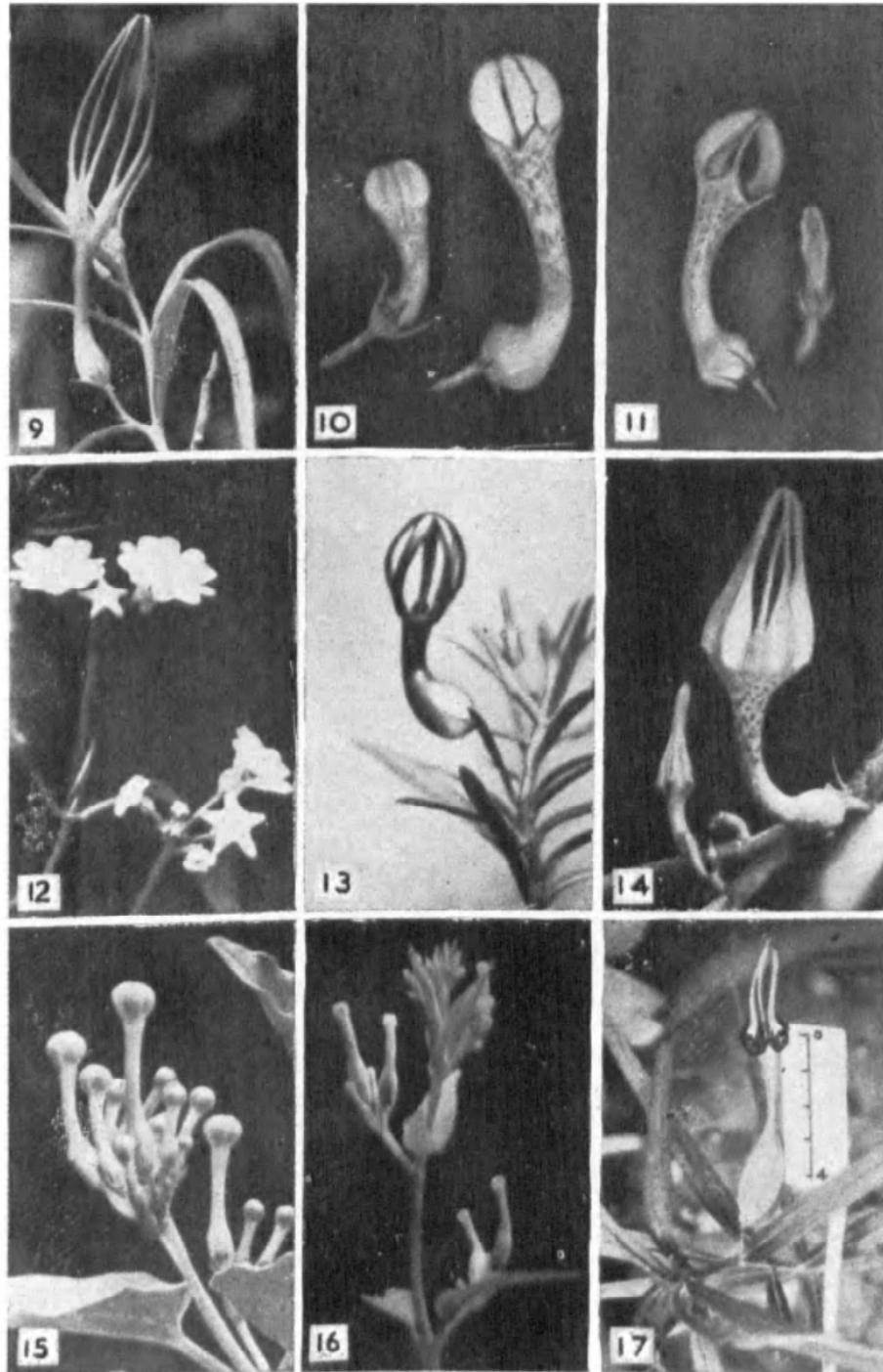


Plate III (9-17) : 9. *Ceropogon attenuata* Hook. 10. *C. evansii* McC. 11. *C. hirsuta* Wt. et Arn. 12. *C. huberi* Ans. 13. *C. jainii* Ans. 14. *C. juncea* Roxb. 15. *C. lawii* Hook. f. 16. *C. maccannii* Ans. 17. *C. mahabalei* Hem. et Ans.

PLATE IV

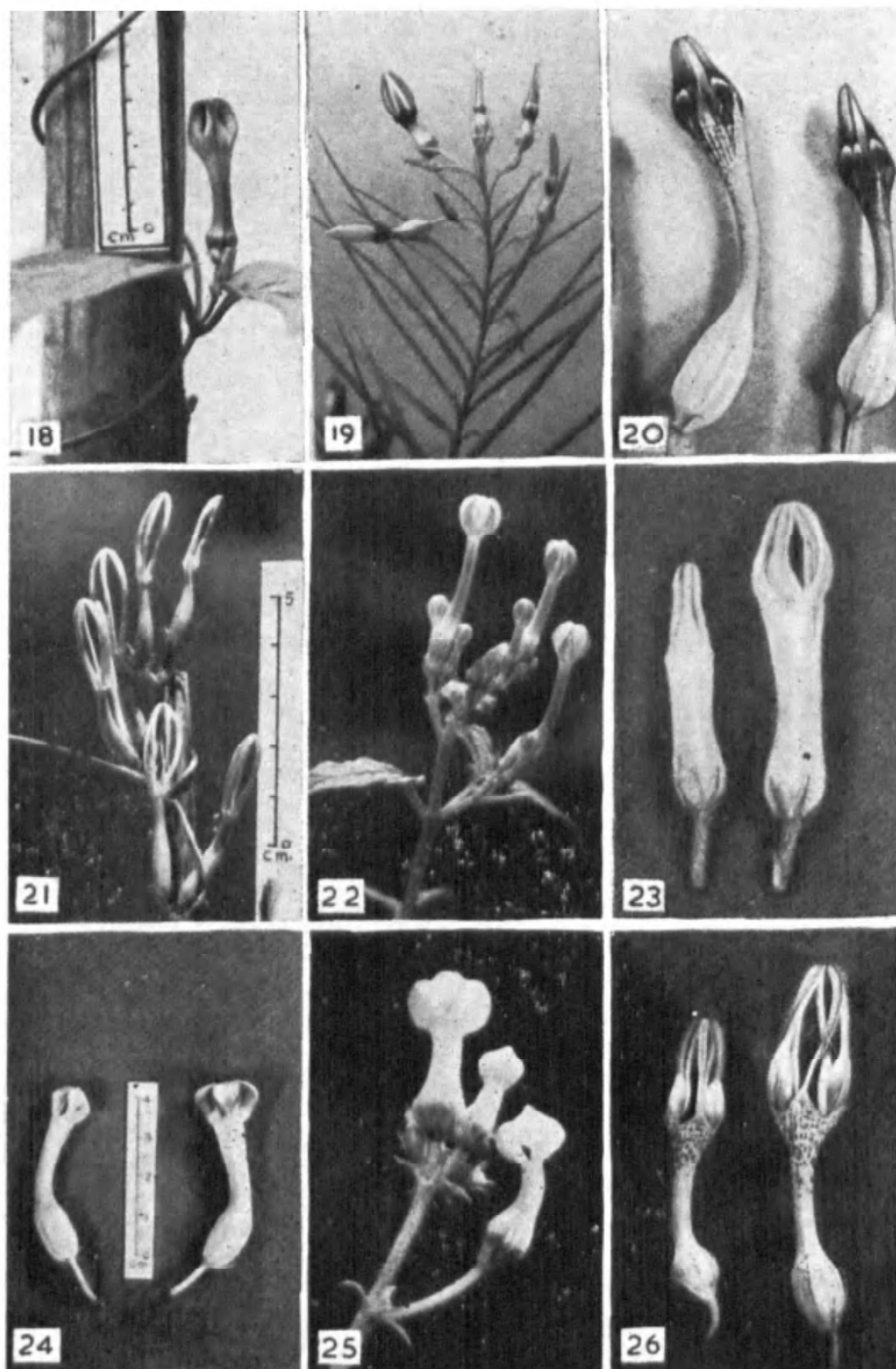


Plate IV (18-26) : 18. *Ceropogia media* (Huber) Ans. 19. *C. noorjahaniae* Ans. 20. *C. oculata* Hook. 21. *C. odorata* Nimmo ex Hk. f. 22. *C. panchganiensis* Blatt et McC. 23. *C. rollae* Hem. 24. *C. sahyadrica* Ans. et Kulk. 25. *C. santapaui* Wadh. et Ans. 26. *C. vincaefolia* Hook.

25(1) : 57-59. f. 1-6. 1971. *C. blatteri* McCann in Journ. Bomb. Nat. Hist. Soc. 45 : 210. 1945.

Pl. IV : 21

Slender tuberous twiners. Stem mostly glabrous. Leaves hairy above. Cymes few to many-flowered ; peduncles hirsute ; pedicels usually glabrous. Corolla 3-4 cm long, bright yellow, fragrant ; tube 1.8-2.0 cm long, inflated near base ; lobes 1.2-2.0 cm long, linear, glabrous. Outer corona of 5 entire lobes, glabrous ; inner linear or elongate-triangular, erect, divergent at apex.

Type : India : Maharashtra ; Concan (Konkan), Salsette island (Bombay), *Stocks in Stocks et Law* 239 (Lectotype, K, Photo !).

Fls. : Aug.-Sept.

Distrib. : INDIA : Gujarat, Maharashtra, Rajasthan (Mt. Abu) ; endemic.

34. *C. omissa* Huber in Mem. Soc. Broter. 12 : 67. 1957. *C. intermedia* Wight var. *wightii* Hook. f. Fl. Brit. Ind. 4 : 71. 1883 ; Gamble, Fl. Pres. Madr. 5 : 858. 1923 (repr. ed. 2 : 603, 1957).

Fig. 15

Glabrous twiners. Leaves ovate, lanceolate, acuminate. Cymes few-flowered ; peduncles 1.0-2.5 cm long ; pedicels *ca.* 1 cm long ; calyx 5 mm long. Corolla 2.8-3.5 cm long ; tube *ca.* 2 cm long, base inflated, mouth slightly dilated ; lobes *ca.* 1 cm long. Outer corona of 5 bifid-deltoid, ciliate lobes ; inner erect linear.

Type : India : Travancore, Courtallum, *Wight* (K, Photo !).

Fls. : Sept.

Distrib. : INDIA : Tamil Nadu ; endemic. A few sheets of this species from Sengalteri (Tinnevely Dist.) are at MH.

35. *C. panchganiensis* Blatter *et* McCann in Journ. Bomb. Nat. Hist. Soc. 36 : 534. 1933 ; Ansari in Bull. Bot. Surv. Ind. 22(1-4) : 199. f. 1-4. 1980.

Pl. IV : 22, Fig. 16

Kharpudi, Khartundi (Mar.).

Tall, erect, tuberous herbs. Stem pubescent above. Leaves ovate, rounded or sub-cordate at base, puberulous above. Cymes few-flowered ; peduncles and pedicels hairy. Corolla 2.8-3.5 cm long ; tube 2.2-2.8 cm long, base inflated, inside a ring of hairs at the bottom, above narrow

cylindrical; lobes *ca.* 6 mm long, elliptic-ovate or obovate, glabrous. Outer corona of 5 shortly bifid hairy lobes; inner erect, clavate, hairy.

Type : India : Maharashtra; Lingmala, near Mahabaleshwar (Satara Dist.), *Ansari* 105090A (Neotype ! CAL).

Fls. : July-Aug.

Distrib. : INDIA : Maharashtra; endemic.

Notes : The Type *Blatter* 200, from Panchgani, near Mahabaleshwar, is not available in any of the well-known herbaria of the world including McCann's. A neotype (*Ansari* 105090A) has been designated which satisfies the protologue.

36. *C. pubescens* Wall. Pl. As. Rar. 2 : 81. t. 187. 1831; Hook. f. Fl. Brit. Ind. 4 : 73. 1883; Kanjilal *et al.* Fl. Assam 3 : 308. 1939.

Twining. Stem glabrous. Leaves ovate, long acuminate, sparsely hairy above. Cymes few-many-flowered; peduncles long, hairy in a row; pedicels glabrous. Corolla 4.0-6.5 cm long; tube 2.0-3.2 cm long, base slightly inflated, subcylindric above; lobes 2.0-3.3 cm long, spirally twisted or beaked. Outer corona of 5 entire hairy lobes; inner linear, erect.

Type : Nepal : *Wallich* (Holotype, K; Isotype ! W).

Fls. : June-Sept.

Distrib. : INDIA : Meghalaya, Nagaland, Sikkim, West Bengal; NEPAL, BHUTAN, TIBET, CHINA (YUNNAN).

37. *C. pusilla* Wight et Arn. in Wight, Contrib. 31. 1834; Hook. f. Fl. Brit. Ind. 4 : 66. 1883; Fyson, Fl. Nilgiri and Pulney Hill-tops 2 : 191. 1915; Gamble, Fl. Pres. Madr. 5 : 856. 1923 (repr. ed. 2 : 601. 1957).

Dwarf, erect, tuberous herbs. Stem puberulous above. Leaves linear, sessile, crowded. Cymes uni-flowered; peduncles minute, pedicels long, both hairy. Corolla 2.5-2.8 cm long; tube 1.8-2.0 cm long, sub-cylindric, base inflated, glabrous inside; lobes 7-8 mm long, oblong-subspathulate, glabrous except hairy apex. Outer corona of 5 bifid, narrowly deltoid lobes, ciliate, inner long, linear, erect.

Type : India : Tamil Nadu; Nilgiri hills, *Herb. Wight* 1932 (Isotypes ! CAL, W).

Fls. : June-Aug. ; *Frts.* : Sept.

Distrib. : INDIA : Karnataka, Kerala, Tamil Nadu ; endemic.

38. *C. rollae* Hemadri in Bull. Bot. Surv. Ind. 10(2) : 123. 1968 (1969).

Pl. IV : 23

Kharpudi (Mar.).

Tall, erect, tuberous herbs. Stem pubescent. Leaves ovate, puberulous above. Cymes subaxillary and terminal, many-flowered ; peduncles and pedicels hirsute. Corolla 2.3-3.5 cm long ; tube 1.5-2.5 cm long, base slightly inflated, inside a ring of hairs at its bottom, rest glabrous ; lobes 8-13 × 2.5 mm, linear-oblong, glabrous. Outer corona of 5 short, entire or notched lobes, ciliate ; inner erect, sub-clavate.

Type : India : Maharashtra ; Dhak khilla near Junnar, *Hemadri* 107472A (Holotype ! CAL).

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

Distrib. : INDIA : Maharashtra ; endemic.

39. *C. sahyadrica* Ansari *et* Kulkarni in Indian Forester 97(12) : 688. 1971. *C. lawii* auct. non Hook. f. ; Cooke, Fl. Pres. Bomb. 2 : 175. 1904 (repr. ed. 2 : 240. 1958), *p. p.* ; Santapau *et* Irani in Bull. Bot. Soc. Beng. 12 (1 & 2) : 8. 1958 *p. p.* *C. panchganiensis* auct. non Blatt. *et* McCann : Venkata Reddi in Willdenowia 5(1) : 32. 1968 ; Hemadri in Bull. Bot. Surv. Ind. 10(2) : 125. 1968.

Pl. IV : 24

Erect, tuberous herbs. Stem pubescent above. Leaves hairy above. Cymes few to many-flowered ; peduncles and pedicels hairy. Corolla slightly curved ; tube up to 4.4 cm long, inside a ring of hairs at the bottom of the inflated base, rest glabrous ; lobes up to 11 × 8 mm, ovate, sub-cordate, glabrous. Outer corona of 5 short, entire or notched lobes, hairy ; inner erect, sparsely hairy at base.

Type : India : Maharashtra ; Ambolighat (Ratnagiri Dist.), *Kulkarni* 108643 A (Holotype ! CAL).

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

Distrib. : INDIA : Maharashtra ; endemic.

Chr. No. : 2n = 22.

40. *C. santapau* Wadhwa *et* Ansari in Bull. Bot. Surv. Ind. 10 (1) : 95. 1968 (1969).

Pl. IV : 25, Fig. 17

Khartundi (Mar.).

Tuberous twiners. Stem usually glabrous. Leaves ovate, lanceolate, puberulous above. Cymes few to many-flowered; peduncles and pedicels hairy. Corolla up to 1.5 cm long; tube 1 cm long, base inflated, glabrous inside; lobes 5 mm long, orbicular. Corona uni-seriate, inner of 5 erect elongated-conical processes, hairy outside, convergent at apex.

Type : India : Maharashtra; Mahad ghats, near Mahabaleshwar, Wadhwa 109640A (Holotype ! CAL).

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

Distrib. : INDIA : Maharashtra; endemic.

Chr. No. : $2n = 22$.

41. *C. spiralis* Wight, Ic. Pl. Ind. Or. 4 : t. 1267. 1848; Hook. f. Fl. Brit. Ind. 4 : 66. 1883; Gamble, Fl. Pres. Madr. 5 : 856. 1923 (repr. ed. 2 : 602. 1957). *C. munronii* Wight, Ic. Pl. Ind. Or. 4 : t. 1264. 1848; Hook. f. Fl. Brit. Ind. 4 : 67. 1883.

Erect, tuberous herbs. Stem usually glabrous. Leaves linear, sessile. Cymes 1-flowered; peduncles and pedicels glabrous. Corolla 4-5 cm long; tube 2.0-2.5 cm long, subcylindric, hairy inside except inflated base; lobes 2.0-2.5 cm long, linear, hairy within above from ovate or orbicular base, generally spirally twisted. Outer corona of 5 bifid-deltoid lobes, glabrous; inner linear, erect.

Type : India : Tamil Nadu; Balaghat hills, near Madras, Wight (K, Photo !).

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

Distrib. : INDIA : Andhra Pradesh, Kerala, Tamil Nadu; endemic.

Note : The species develops twining habit under cultivation.

42. *C. thwaitesii* Hook. in Bot. Mag. t. 4758. 1854; Hook. f. Fl. Brit. Ind. 4 : 71. 1883; Fyson, Fl. Nilgiri and Pulney Hill-tops 3 : 426. 1920; Gamble, Fl. Pres. Madr. 5 : 858. 1923 (repr. ed. 2 : 603. 1957).

Glabrous twiners. Leaves ovate or ovate-lanceolate, acuminate.

Cymes few-flowered, pedunculate. Corolla 3-6 cm long; tube 1.2-4.2 cm long, inside a ring of hairs at the mouth of largely inflated base, cylindrical elongated neck in the middle, above funnel-shaped; lobes 1.2-1.8 cm long, ovate-oblong. Outer corona of 5 elongated bifid-deltoid hairy lobes; inner longer, erect, linear-spathulate.

Type : Bot. Mag. t. 4758.

Fls. : Apr.-June.

Distrib. : INDIA : Kerala, Tamil Nadu; SRI LANKA.

43. *C. vincaefolia* Hook. in Bot. Mag. t. 3740. 1839, *emend.* Ansari in Bull. Bot. Surv. Ind. 13 (3 & 4) : 187. 1971 (1974). *C. hirsuta* Wt. et Arn. var. *vincaefolia* (Hook.) Hook. f. Fl. Brit. Ind. 4 : 72. 1883; Cooke, Fl. Pres. Bomb. 2 : 177. 1904 (repr. ed. 2 : 242. 1958). *C. stocksii* Hook. f. Fl. Brit. Ind. 4 : 74. 1883; Cooke, Fl. Pres. Bomb. 2 : 178. 1904 (repr. ed. 2 : 243. 1958). *C. polyantha* Blatt. et McCann in Journ. Bomb. Nat. Hist. Soc. 34 : 936. 1931 et 36 : 535. 1933. *C. oculata* Hook. var. *subhirsuta* Huber in Mem. Soc. Broter. 12 : 65. t. 3. f. 31b. 1957, *p. p.*; Santapau et Irani in Bull. Bot. Soc. Beng. 12 : 13. 1958.

Pl. IV : 26

Khapar khutti (Mar.).

Tuberous twiners. Stem glabrous. Leaves ovate, cordate, acuminate, puberulous above. Cymes many-flowered; peduncles hirsute; pedicels glabrous. Corolla 3-8 cm long; tube 1.6-4.5 cm long, base inflated, abruptly narrowed above, funnel-shaped at mouth; lobes 1.5-3.5 cm long, linear-oblong above from ovate-deltoid base, pubescent inside and hairy on margins. Outer corona of 5 lobes, entire, emarginate or shortly bifid, hairy; inner ligulate, oblanceolate, glabrous.

Type : Bot. Mag. t. 3740.

Fls. : Aug.-Sept.; *Frts.* : Sept. onwards.

Distrib. : INDIA : Maharashtra; endemic.

Notes : The type of *C. stocksii* Hook. f. (K, Photo !) is actually based on specimens of *C. vincaefolia* Hook. Huber (*l. c.*) annotates the specimens of this type as *C. metziana* Miq. and treats both *C. stocksii* Hook. f. and *C. metziana* Miq. as synonymous to *C. oculata* Hook., and considers *C. vincaefolia* Hook. as synonymous to *C. hirsuta* Wt. et Arn.

44. *C. wallichii* Wight, Contrib. 32. 1834; Hook. f. Fl. Brit. Ind. 4 : 67. 1883; Nair, Fl. Bashahr Him. 182. 1977.

Pl. II : 8, Fig. 18

Tall, robust, erect herbs with fascicled roots. Stem hairy above. Leaves ovate, sessile or shortly petiolate, puberulous or glabrous above. Cymes few-many flowered. Corolla 4.0-4.5 cm long; tube 2.8-3.0 cm long, base inflated, narrowed in the neck, within hairy, funnel-shaped above; lobes 1.2-1.5 cm long, oblong from deltoid base, inside hairy. Outer corona of 5 bifid-deltoid hairy lobes; inner erect, linear.

Type : Nepal : Wallich in Herb. Wall. (K, Photo !).

Fls. : May-June; *Frts.* : Aug.

Distrib. : INDIA : Himachal Pradesh, Uttar Pradesh; NEPAL.

EXCLUDED SPECIES

Ceropegia brevitubulata Bedd. Ic. Pl. Ind. Or. 1 : 38. 1968 = *Brachystelma brevitubulatum* (Bedd.) Gamble, Fl. Pres. Madr. 5 : 852. 1923.

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