# A REVISION OF THE INDO-MALAYAN SPECIES OF CHONEMORPHA G. DON

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THE genus Chonemorpha G. Don has been recently revised by Chatterjee in Kew Bulletin (1947: 47-52). In his account, Chatterjee has raised some doubts regarding the real identity of C. assamensis as the original description of this species was very inadequate. The present paper on the same subject is intended to supplement Chatterjee's recent account and contains a description of a new species besides clarification of a few nomenclatural points.

The genus is mainly confined to the tropical and sub-tropical zones of India, Burma, Malay Peninsula, Malayan Archipelago, Siam, Annam and China. There are 14 species recorded so far, of which India and Burma claim 5 species, Malayan Archipelago 3, Siam 3, Annam 6 and S.W. China 4 species (Map Fig. 1).

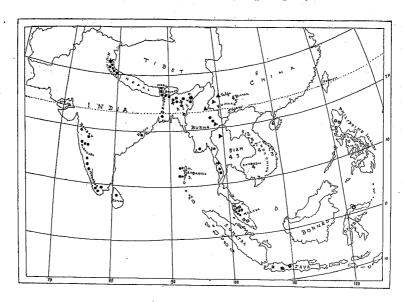


Fig. 1. Map of India and S.-E. Asia showing the Distribution of the Genus Chonemorpha.

- C. fragrans (Moon) Alston C. assamensis Furtado C. blancoi Merrill
- C. griffithii Hook. f. C. penangensis Ridley C. valvata Chatterjee
  - C. pedicellata Seshagiri Rao
- C. eriostylis Pitard 2 C. graciliflora Pitard
- C. grandeareana Pierre ex Spire
  C. macrantha Pitard
  C. megacalyx Pierre

- 6 C. splendens Chun et Tsiang
- 7 C. yersini Vernet ex Spire

With a view to elucidate the systematic position of some of the species already published, a modified key with some additional notes on the species is given. A new species collected from India has also been described.

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KEY TO THE INDO-MALAYAN SPECIES OF Chonemorpha
A. Calyx with a clear tube:
      B. Calyx finely pubescent:
            C. Calyx 10-12 mm. long with very
                 short teeth-like lobes; slightly
                 contracted at apex; corolla
                 tube 2.5-3 cm., Pedicels 1\frac{1}{2}-2
                 cm. long
                                                 C. penangensis (5)
            C. Calyx 12-15 mm. long with long
                 conical lobes about \frac{1}{3} the
                 length of Calyx; Corolla tube
                 4.5 cm.; Pedicels very long
                 3.5-5 cm.
                                                 C. pedicellata (7)
      B. Calyx glabrous or glabrescent:
                  D. Calyx 9-12 mm. long
                        with broad lobes, ½-3
                        the length of Calyx:
                       E. Corolla tube 3.5-
                              4.5 cm.; leaves
                              with round or
                              slightly
                                      cordate
                              base; petiole short
                              not more than
                              3 cm.
                                                C. fragrans (1)
                       E. Corolla tube 2-2.5
                              cm.; leaves with
                              distinct cordate
                              base; Petiole very
                             long 6-8 cm.
                                                C. blancoi (3)
                  D. Calyx 4-5 mm. long, cra-
                        teri-form with broad
                        lobes nearly ½ the length
                        of Calyx
                                                C. assamensis (2)
A. Calyx without a tube, deeply five-partite:
                          F. Calvx lobes im-
                                bricate; plant,
                               a climber with
                                smaller leaves C. griffithii (4)
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F. Calyx lobes valvate; Plant, a

slightly

with

.. C. valvata (6)

bigger

shrub

leaves

#### ENUMERATION

1. Chonemorpha fragrans (Moon) Alston in Ann. Roy. Bot. Gard., Perad., 11: 203 (1929); in Trimen Fl. Ceyl., 6: 192 (1931); Furtado in Gard. Bull. Str. Settlements, 9: 115 (1935); Alston in Kandy Fl., 47 (1938); Chatterjee in Kew Bull., 1948: 68 (1948); Echites fragrans Moon Cat., 20 (1824); Type species; "Belutta-kaka-kodi" Rheede, Hort. Malab., 9: 7, tabs. 5 and 6 (1689) (Type of E. fragrans Moon); Echites macrophylla Roxb., Hort. Beng., 20 (1814) nomem nudum. et Fl. Ind., 2: 13 (1832); Wall. Cat. 1657 A, B. (non E. macrophylla H.B.K., Nov. Gen. et. Spec., 3: 219 (1819). This is entirely a different plant as pointed out by Chatterjee (l.c. 50); E. grandis Wall. Cat. 1658 nom. nud.; E. latifolia Wall. Cat., 1657, 1657 E nom. nud.; E. elegans Wall. Cat. 1656 nom. nud.; Chonemorpha macrophylla (Roxb.) G. Don in Gen. Syst., 4: 76 (1838); Wight, Icones Pl. Ind. Or. tab. 432 (1843); DC., Prodr., 8: 430 (1844); Miquel, Fl. Ind. Bat., 2: 444 (1856); Thwaites, Enum. 194 (1864); Hook. f., Fl. Br. Ind., 3: 661 (1882); Trimen, Fl. Ceyl., 3: 138 (1895); Hook. f., Bot. Mag. tab. 7492 (1896); Gamble in King's Mat. Fl. Mal. Pen, 4: 693 (1907); Ridley in Jour. Roy. As. Soc. Str. Br., 57: 68 (1910); Gamble, Fl. Mad., 818 (1923); Furtado in Gard. Bull. Str. Settlements, 9: 115 (1935);

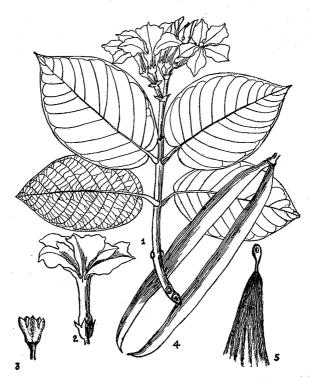


Fig. 2 (i). Chonemorpha fragrans (Moon) Alston: (1) Shoot with flowers; (2) Flower; (3) Calyx; (4) Fruit; (5) Seed.

Chatterjee in Kew Bulletin, 1947: 49 (1947); C. mærophylla Kurz in Jour. As. Soc. Bengal, 46: 257 (1877). The specific epithet is evidently a typographical error for C. macrophylla as pointed out by Chatterjee (l.c. 50); C. macrophylla var. grandis A.DC., Prodr., 8: 450 (1844).; C. mollis Miq. in Fl. Ind. Bat., 2: 444 (1856); Kurz in Jour. As. Soc. Beng., 46: 257 (1877); Furtado in Gard. Bull. Str. Settlements, 9: 116 (1935); C. Rheedei Ridley in Agri. Bull. Str. and Fed. Mal. States, 10: 146 (1911).

In 1935, Furtado, in his key to the species of Chonemorpha, broadly classified the leaves into 2 sections, one elliptic to obovate, usually more narrowed in the lower half than in the upper and the other, ovate, oval elliptic-oblong or almost orbicular, usually more narrowed in the upper half than in the lower. On the basis of this very variable leaf character (as could be seen in Fig. 2 (i), Leaves a, b and c) and also on very minor difference in the calyx, he included C. macrophylla (Roxb.) G. Don in the first of the above sections and two species, C. fragrans (Moon) Alston and C. mollis Miq. in the second. From the sheets which he quoted under C. macrophylla (Roxb.) G. Don and C. fragrans (Moon) Alston, it is evident that he had not examined any South Indian collections of C. macrophylla (Roxb.) G. Don. except perhaps the Ceylon sheet, Thwaites C.P. 2467. From the South

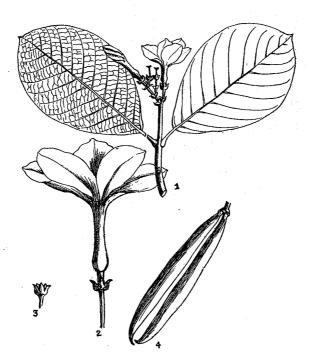


Fig. 2 (ii). Chonemorpha assamensis Furtado: (1) Shoot with flowers; (2) Flower; (3) Calyx; (4) Fruit.

Indian collections, it is clear that both the types of leaves as noted by Furtado in his key, are present on the same shoot (vide Fig. 2, (i), (1) and hence the shape of leaf forms a very variable character. The minor variations of calyx mentioned by Furtado have also been observed in the same species. Therefore, the Ceylon species of Furtado, C. fragrans (Moon) Alston is only the same as C. macrophylla (Roxb.) G. Don. Similarly C. mollis Miq. is not a distinct species and is the same as C. fragrans (Moon) Alston (syn. C. macrophylla) as correctly indicated by Chatterjee (l.c. 52)

Chonemorpha fragrans (Moon) Alston is a huge climber 12-21 metres long with stem  $1\frac{1}{4}$ -5 cm. in diameter. Leaf glossy, deep green above and finely tomentose below. Flower is white and fragrant. Fruit is light green with a waxy gloss and usually each follicle is 25-38 cm. long and  $1\frac{1}{2}$ - $2\frac{1}{2}$  cm. in diameter. Due to its wide range of distribution, the species exhibits slight variations as regards the hairiness and size of the leaves.

### Distribution

This is the most widely distributed species of the genus. It occurs throughout India, Ceylon, Andamans and Burma ranging from plains to high altitudes as far as 5,000 ft. It has also been collected from

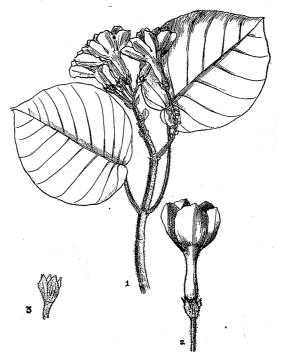


Fig. 2 (iii) Chonemorpha blancoi Merr: (1) Shoot with flowers; (2) Flower; (3) Calyx.

different localities of Malayan Peninsula where it has not been reported beyond the altitude 500 ft. and also from Java.

### Material examined

#### India-

Bengal: Calcutta Botanic Garden (Lane, 11270), (Wallich Cat., 1657 B), (Herb. Sulp. Kurz.); Buxa Reserve, W. Duars (Gamble, 7698); Duars, N. Bengal (Prain, without number).

E. Himalaya: Slik, Sikkim (Ribu, 873, 2 sheets); Teendaria (Gamble, 3223 B, C, 3 sheets); Sikkim, Alt. 2,000-4,000 ft. (J. D. Hooker, Herb. Ind. Or. H.f. & T., 3 sheets); Munsong, Alt. 3,000 ft. (Craib, 437); Sittong, Sikkim (Prain, on 13th May 1903); Mungpoo, Alt. 3,000 ft. (Cousins, 25), (Kari, Prain's coll., on 13th June 1902); Tunlioke, Sikkim (Anderson, 837, 307, without number); Sikkim (Anderson, without number).

Assam: Khasia Hills (Gallatly, 560), (Griffith, without number), (Hooker, Herb. Ind. Or. H.f. & T.); Umling, Alt. 850 ft., Khasi Hills (Kanjilal, 4018); Ghiri Ghat, Alt. 1,500 ft. (Meebold, 6298); Tengali Bam, near Naga Hills (Prain's coll., in April 1898); Gauhatty (Specimen B, Simons, in June 1848, pro parte); Sylhet (Wallich. Cat., 1657 A, Topo-type!).

N.-W. Himalaya: Dehra Dun (Mackinnon, in Aug. 1897); Below Mussuri, Alt. 4,000 ft. (Mackinnon, on 20th Aug. 1898); Kumaon, Alt. 3,500 ft.

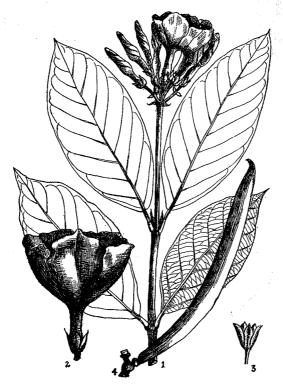


Fig. 2 (iv) Chonemorpha griffithii Hook, f.: (1) Shoot with flowers; (2) Flower; (3) Calyx; (4) One follicle.

(Strachey et Winterbottom, 231, 2 sheets); Amparaw, Alt. 3,500 ft., Kumaon (Gill, 677); Kumaon (?) (Falconer); Kumaon (Wallich Cat., 1658, 2 sheets). Peninsular India: Collector's Bungalow, Chatrapur, Ganjam Dist. (Fischer, on 20th Aug. 1903); Bombay Prov. (Specimen A, Gibson, without number); Astoll, Alt. 2,000 ft., Belgaum Dist. (Talbot, 2121); Kumbharwada, Alt. 1,500 ft., N. Kanara (Sedgewick and Béll, 6051); Ruskee (?), N. Kanara (Talbot, 81); Peninsulæ Ind. Or. (Wight, 1880, pro parte); Malabar, Concan, etc. (Stocks, Law, etc.); Thorai, Travancore State (Calder and Ramaswami, 351, 2 sheets); Trivandrum (Rama Rao, 2330).

Loc. incert. (Thwaites, C. P., 2467), (Watson, 179, Septimen B).

Tacpo, Alt. 5,000 ft., Tennasserim (Gallatly, 775?); Khaywe, Shwegyin Dn.,
Tenasserim Circle (Divl. officer, 4, letter d. 6th Sept. 1903); Lashio, Alt.,
2,600 ft., N. Shan States Dist. (Lace, 5838); Shan States Dist. (Allen, 2) Andamans-

Loc. incert. (Prain's coll., 57, 2 sheets); Wimkeoleygang (Parkinson, 619); Mangrove Bay, S. Andamans (Kurz, without number).

Malayan Peninsula-

Loc. incert. (Scortechini, 921, Herb. Mus. Perak); Goping, Alt. 300-500 ft. (Kunstler, 6000); Dispong, Perak (Kunstler, 7304, 2 sheets); Mt. Tupai, Perak (Wray Jr., 2685, 3 sheets); Batu Togok, Alt. 200 ft. (Wray Jr., 2183); Larut, upto Alt. 500 ft., Perak (King's coli., 3636).

Java, Loc. incert. (Horsfield, purchased in 1859); Littoral forests, Djawana, Java (Teysmann, without number, Herb. Sulp. Kruz.).

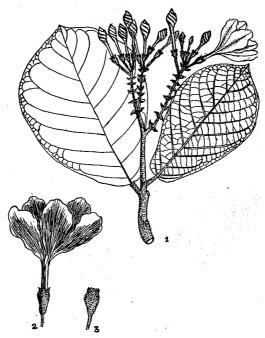


FIG. 3(i). Chonemorpha penangensis Ridley: (1) Shoot with flowers; Flower; (3) Calyx.

2. Chonemorpha assamensis Furtado in Gard. Bull. Str. Settlements 9: 115 (1935). I have seen the holotype [Fig. 2, (ii)]. The plant though resembling C. fragrans (Moon) Alston and C. macrantha Pitard in leaf and corolla characters, appears to be quite distinct in having a very short (4-5 mm. long), cup-shaped calyx with lobes divided upto nearly half its length and short peduncle. As the original description by Furtado appears very meagre, a detailed description of the species is given below.

Leaves: Opposite, petiolate, broadly obovate-oblong, 19-22 cm. long, 12-14 cm. broad, acute, entire, base cuniate, rounded, glabrous above, finely pubescent below, sub-coriaceous, pinnately reticulate, mid-rib channelled above, primary veins 10-12 pairs, slightly curved near the margin; Petiole: finely pubescent 2-3 cm. long; Flowers: on shortly peduncled terminal cymes; peduncle 4 cm. long, bracteate, pedicellate, hermaphrodite, actinomorphic, hypogynous; Bracts: many subtending the flowers, conical, 2-3 mm. long; Pedicels: 1.5-2 cm. long; Calyx lobes: 5, united, crateriform, glabrous, 4-5 mm. long, lobes nearly half the length of calyx; Corolla lobes: 5, united, hypocrateriform, 7 cm. long in bud including lobes, 1.5 cm. in diameter at the mouth, narrower near the middle, the basal bulged portion much above the mouth of calyx, corolla tube 3.5-4 cm. long, open corolla

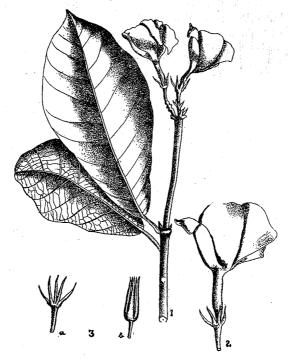


Fig. 3 (ii). Chonemorpha valvata Chatterjee: (1) Shoot with flowers; (2) Flower; (3) Calyx (a & b).

7-8 cm. in diameter, twisted, glabrous, thin, multinerved; Style: 7-9 mm., slender, glabrous; Stigma: flattened, round, saucer-shaped; Fruit: a pair of follicles, each follicle 18-20 cm. long and 1-1 5 cm. in diameter.

# Distribution

There are now only two sheets collected from Assam, one with flowers and the other with fruit only. So it is too premature to say anything about its distribution, but it is quite likely that this species by further exploration may be collected from regions adjacent to Assam.

# Material examined

India-

Assam: Chirapunji (written in Hindi) (collected by a native collector under the supervision of G. Mann in May 1893, Holotype!); Chima, Garo Hills (King's coll., without number, in 1890, specimen with fruit).

3. Chonemorpha blancoi Merrill, Spec. Blancoanæ, 312 (1918) et Enum. Philipp. Fl. Plants, 3: 335 (1923); Tabernæmontana elliptica Blanco in Fl. Filip., 115 (1837) (non T. elliptica Thunb., Fl. Jap., 3: (1784); Chonemorpha macrophylla Vidal non G. Don, Cat. Pl. Prov. Manila, 36 (1880); C. elliptica (Blanco) Merrill et Rolfe in Philip. Jour. Sci. 3: 121 (1908); Chatterjee in Kew Bull. 1947: 48 (1947).

Fernandez-villar sunk this species as a synonym under C. macro-phylla (Roxb.) G. Don while Furtado (l.c.) reduced it to C. mollis Miq. as both the plants are somewhat similar in size and nature of calyx of C. blancoi Merr. This read along with the reductions of C. macro-phylla and C. mollis under C. fragrans (Moon) Alston, would naturally take the distribution of C. fragrans (Moon) Alston as far as the Philippines. But this is very doubtful as C. fragrans (Moon) Alston does not appear to have extended to the Philippines. C. blancoi Merr. is a distinct species characterised by very long petioles and ovate-elliptic leaves with distinct cordate leaf base. Though the calyx is closely allied to that of C. fragrans (Moon) Alston, the corolla is distinctly smaller than that of C. fragrans (Moon) Alston, its tube measuring 2-2.5 cm. long.

#### Distribution

This species appears to have been confined to a very limited area like the Philippine and Celebes islands. In Philippines, it is widely distributed at low and medium altitudes of the primeval forests of Luzon. It has also been collected from N.W. Celebes. According to Merrill, this is an endemic species of these islands.

#### Material examined

Philippines-

Tatay, Palawan (Merrill, 9249); Mount Belulao, Batangas Prov., Luzon (Merrill, Sp. Blancoanæ, 482); Bosoboso, Morongo, Luzon Central (Loker, 3881); Horto Botanico Bogor (Herb. Sulp. Kurz., 1452).

Celebes-

Bonto Parang, N.-W. Celebes (Bünnemeijer, 10572).

4. Chonemorpha griffithii Hook. f., Fl. Br. Ind., 3: 662 (1882). This is a distinct species of the genus as pointed out by Chatterjee (l.c.). The leaf is smaller than that of C. fragrans and C. assamensis, not exceeding 19 cm. in length and 10 cm. in breadth. Though the Corolla is similar to that of the above two Indian species, the distinct feature of this plant is the calyx which is deeply 5-partite with imbricate lobes [as shown in Fig. 2,(iv)]. There is no calyx-tube. Fruit is a pair of follicles, each follicle being 22-28 cm. long and  $1\frac{1}{2}-2$  cm. in diameter.

# Distribution

This appears to have a restricted distribution mostly confined to the E ern Himalayas and hills of Assam reaching upto the altitude of 5,000-6,000 ft.

# Material examined

#### India---

E. Himalaya: Tony, Alt. 5,000 ft., Sikkim (Younghusband, on 29th June 1903); Kurseong, Alt. 4,500 ft., Sikkim (Kurz, without number), (Anderson, 265); Rishap, Alt. 2,500-3,000 ft., Darjeeling Dist. (Clarke, 11782 D, H), (King, 4338); Sikkim, Alt. 2,000-4,000 ft. (Thomson, in 1857), (Hooker, Herb. Ind. Or.), (King, 768, 5 sheets), (Anderson, 302), (Kurz, without number; Rungpoo, Alt. 5,000 ft. (Gamble, 793 D); Puttabong, Alt. 5,500 ft., Darjeeling Dist. (Gamble, 8209); Newtincel (?), Alt. 5,000 ft., Sikkim (King, on 29th May 1879, 3 sheets); Parmeeaklong, Sikkim (Anderson, 837); Mungpoo, Alt. 6,000 ft. (Kari, 1357).

Assam: Khasia Hills (Specimen A, Simons, in July 1850, pro parte).

5. Chonemorpha penangensis Ridley in Agric. Bull. Str. and Fed. Mal. States, 10: 147 (1911); Fl. Malay Pen., 2: 360 (1923); Furtado in Gard. Bull. Str. Settlement, 9: 116 (1935); Chatterjee in Kew Bull., 1947: 51 (1947).

This species is a climber of 6-12 metres long, with stems about  $2\frac{1}{2}$  cm. in diameter. Flower buds are tinged pink but open flowers are white with yellowish tinge inside the throat. species resembles C. fragrans (Moon) Alston particularly in the leaf character. But in floral characters, it is distinct from other species by the nature of long, hairy or finely pubescent calyx, slightly constricted at the apex with 5 very short pointed teeth-like lobes [as shown in Fig. 3, (i), (3)] and by the presence of comparatively smaller corolla As regards C. mollissima Boerlage which has been suspected to be similar to C. penangensis, I have not seen the type. Boerlage in Flor. Van Ned. Ind. 2 (1899) has noted—"In Rijks Herbarium there is a kind of Chonemorpha mollissima which has not been described. Its origin is not very clear. It differs from Chonemorpha macrophylla Don in:—(1) that the glossy calyx has very short teeth (2) that the corolla tube does not pierce outside the calyx when the flower opens (3) and that it has glossy leaves." On this basis, none of the characters except the short teeth of the calyx matches with those of C. penangensis. The character that corolla tube does not pierce outside the calyx is rather unusual in this genus and hence I doubt very much whether this species belongs to the genus, Chonemorpha at all. However the matter can be decided only by examining the type of *C. mollissima* Boerlage" (Translated from Dutch through the kindness of Rev. H. Schepers, S. J., of St. Xavier's College, Calcutta).

# Distribution

This species has a restricted distribution, being confined mostly to the Malayan Peninsula. It usually occurs at different altitudes between 300-800 ft. in the mixed jungles of Penang and Perak.

### Material examined

Malayan Peninsula-

Malacca (*Maingay*, 1837 = Kew No. 1074); Brisu, Malacca (*Derry*, 543); Upper Perak, Alt. 300 ft. (*Wray Jr.*, 3661); Perak, Alt. 300-800 ft. (*Bubong*, King's coll., 10574); Balek Palau, Penang (*Ridley*, 3441).

6. Chonemorpha valvata Chatterjee in Kew Bull., 1947: 51 (1947). This is a good species. The distinct features of this species are the shrubby nature of the plant and the deeply 5-partite (almost free) calyx with valvate lobes. A detailed description has been given by Chatterjee (l. c.).

# Distribution

The species has so far been reported from the hilly tracts of Upper Burma (Southern and Northern Shan States), S.W. China (Yunnan) and Siam at the altitude of about 4000-5500 ft. As this is a recently described species it is rather too early to discuss about its region of distribution.

#### Material examined

Burma-

South Shan States, Loc.? (MacGregor, 578); Upper Burma, Mogok, 4,000 ft. Alt. (13th June 1914, Rodger, 120, Iso-type!).

7. Chonemorpha pedicellata Seshagiri Rao sp. nov. Chonemorpha grandiereana Pierre ex Spire arcte affinis sed pedicellis et pedunculis longioribus, corolla brevioribus foliis majoribus differt.

Leaves: petiolate, elliptic, 22–27 cm. long, 11.5-14.5 cm. broad, acute, entire, base narrow, glabrous above, finely pubescent below, midrib channelled and hairy above, primary veins 10-11 pairs, gently forming loops near the margin, petioles finely pubescent, 2-2.5 cm. long; Inflorescence: on long peduncle, finely pubescent when young, 14-20 cm. long, cymose, many flowered, bracts softly tomentose, lanceolate, 9-11 mm. long; Flowers: on very long pedicels which are finely pubescent and 3.8-5 cm. long; Sepals: 5, united, finely pubescent, 12-15 mm. long, 4-5 mm. broad, lobes: narrow, conical, about  $\frac{1}{3}$  the length of calyx; Petals: 5, united, hypocrateriform, corolla tube more or less cylindrical, abruptly tapering downwards near the base, 4.5-5 cm. long, lobes twisted to left, obliquely obovate, finely multinerved, about 3.5 cm. long and 1.5 cm. broad.

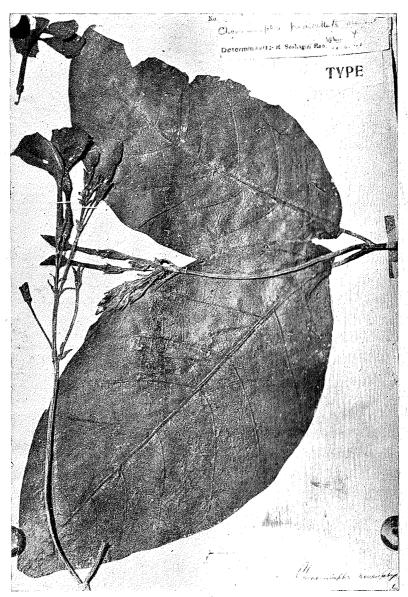


Fig. 4. Type of Chonemorpha pedicellata Seshagiri Rao sp. nov. (Nearly,  $\times \frac{1}{2}$ )

R. Seshagiri Rao

This species resembles C. grandiereana Pierre ex Spire in having almost similar calyx but differs in having long pedicels and peduncle, shorter corolla and larger leaves.

### Distribution

No definite area of its distribution can be stated as there is only one species from N.W. India, that too without any precise locality.

# Material examined

#### India-

Loc. (?) N.-W. India (Hb. Royle; Typus!).

(This sheet was named as Chonemorpha macrophylla Don and was mixed along with the bundles of that species in the Calcutta Herbarium.)

#### SUMMARY

- 1. Chonemorpha fragrans (Moon) Alston which was considered as the Ceylon species by Furtado, is nothing but the most common species once known as C. macrophylla (Roxb.) G. Don.
  - 2. Chonemorpha assamensis Furtado has been described in detail.
- 3. According to the Homonym rule, Chonemorpha blancoi Merr. is the valid name and not Chonemorpha elliptica (Blanco) Merrill et Rolfe.
- 4. Additional notes on C. griffithii Hk. f. and C. penangensis Ridley have been given.
- 5. A new species C. pedicellata Seshagiri Rao sp. nov. has been described.

# ACKNOWLEDGEMENT

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