

NEW OR LITTLE KNOWN PLANTS FROM GREAT NICOBAR ISLAND

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ABSTRACT

This paper describes two new species, *Tinomiscium nicobaricum* (Menispermaceae) and *Ophiorrhiza infundibularis* (Rubiaceae) with illustrations and fifteen new records of various Pteridophytes and Angiosperms as additions to Flora of India. *Dendrobium pensile* (Orchidaceae), a new record for India is also illustrated.

Recent intensive botanical explorations in Great Nicobar, the southernmost island in the Nicobar group, situated at about 150 km north of Sumatra between 6° 40' - 7° 20' N and 93° 30' - 94° 00' E in the Bay of Bengal, yielded many interesting new species and new records as additions to Flora of India. The flora of this tropical island has been very little studied so far. A few plant collections had been made by Jelineck of Dr. van Hochstetter's 'Novara' expedition in 1840. Subsequently Kurz in 1866 and M. C. Bonnington in 1914 made a few stray collections. K. C. Sahni of the Forest Research Institute, Dehra Dun collected during February 1952. K. Thothathri & S. P. Banerjee of Botanical Survey of India, Calcutta made a collection trip during March-April 1966 along with the Zoological and Geological Survey parties. As most of the above collections were made during the dry season, from January to April, many monsoon plants could not be collected so far. Since the establishment of the regional station of Botanical Survey of India at Port Blair in 1972, the present author could undertake intensive and extensive exploration trips during the monsoon season from May to December, col-

lecting several interesting species not known so far from these islands. Some of the new records for the Indian flora are listed below with nomenclatural citations, short descriptions and distribution notes. Two new species are described with illustrations. It is also interesting to note that invariably every one of the fifteen new records described below, is a species of S. E. Asia, known to occur from Malaya eastwards. Indeed the flora of this island is essentially Malesian with very close phytogeographical affinities to Malaya, Sumatra and Java.

While some species have been described in detail, for others short descriptions have been given, as detailed descriptions are available in recent monographs which are cited.

LYCOPODIACEAE

1. ***Lycopodium nummularifolium*** Bl. Enum. pl. Javae 2: 263. 1828. *L. rotundifolium* Roxb. in Calc. J. nat. Hist. Soc. 4: 473. 1844.

Only a few plants were seen in vegetative condition, growing epiphytic on *Pandanus* trees along littoral forests. Material insufficient for detailed description.

Stem pendulous, up to 3 times dichotomously branched; leaves oblong, suborbicular, up to 6 mm long, overlapping, glossy green.

GREAT NICOBAR: Galathea riverside, 25 km on East-West Road, 24 July 1976, Balakrishnan 3996 (PBL, CAL).

Distribution: So far known only from Malaya eastwards to Pacific Islands.

POLYPODIACEAE

2. **Microsorium insigne** (Bl.) Ching in Bull. Fan Mem. Inst. 4: 311. 1933; Holttum, Rev. Fl. Malaya 2: 174, f. 81. 1955. *Polypodium insigne* Bl. Enum. pl. Javae 127. 1828. *Pleopeltis insignis* (Bl.) Bedd. Handb. ferns Brit. Ind. 365, f. 207. 1883.

Epiphytic, fronds pinnately lobed into 4-5 pairs of lobes, up to 1 m long, sori round, scattered.

GREAT NICOBAR: Near Galathea river, 25 km on East-West Road, 16 June 1977, Balakrishnan 5798 (PBL).

Distribution: So far known from W. Malaysia, Java and Philippines only.

ASPLENIACEAE

3. **Asplenium sublaserpitilifolium** Ching in Not. Syst. 5: 13, t. 6, f. 3 & 4. 1936; Holttum, Rev. Fl. Malaya 2: 441. 1955.

Epiphytic, rhizome short-creeping, bearing a close group of stipes, densely covered with scales, hairs and roots; scales linear, curly-crisped, dull purplish brown, 1-2 cm long, 0.5-1.0 mm wide at base, with linear-oblong cells; hairs dull brown, matted-crisped, covering rhizome, hidden by scales. *Stipes* stout, dull purplish to almost black, 25-35 cm long, shallowly grooved, glabrescent; main rachis also nigrescent, 50-100 cm long, shallowly grooved above; pinna-rachises nigrescent at base; green above, terete at base, flattened towards apex, grooved when dry. *Lamina* 50-100 cm long, 20-40 cm wide, bipinnate, tripinnatifid, the lowest pinnae a little shorter than the next higher, upper pinnae gradually reduced; pinnae 5-8 cm apart at base of frond, spreading almost at right angles. *Largest pinnae* up to 22 cm long and 7 cm wide; stalk *ca* 1 cm long; pinnules spreading almost at right angles.

Largest pinnules oblong, deltoid, acuminate, pinnate at base, deeply lobed above, 3-4 cm long, 1.5-2.5 cm wide; stalks 1-2 mm long; upper base rounded, lower base cut down to midrib for about 5 mm and then cuneate; margins incised almost to midrib; distal lobes gradually less deeply incised; lobes bluntly shortly toothed. *Upper pinnules* narrowly cuneate on the lower base, broadly rounded at upper base, with one large basal lobe on upper side; veins 1-3 times forked, distinct on both sides; sori 3-4 mm long; indusia light brown; spores pale brown, translucent, slightly winged on one side.

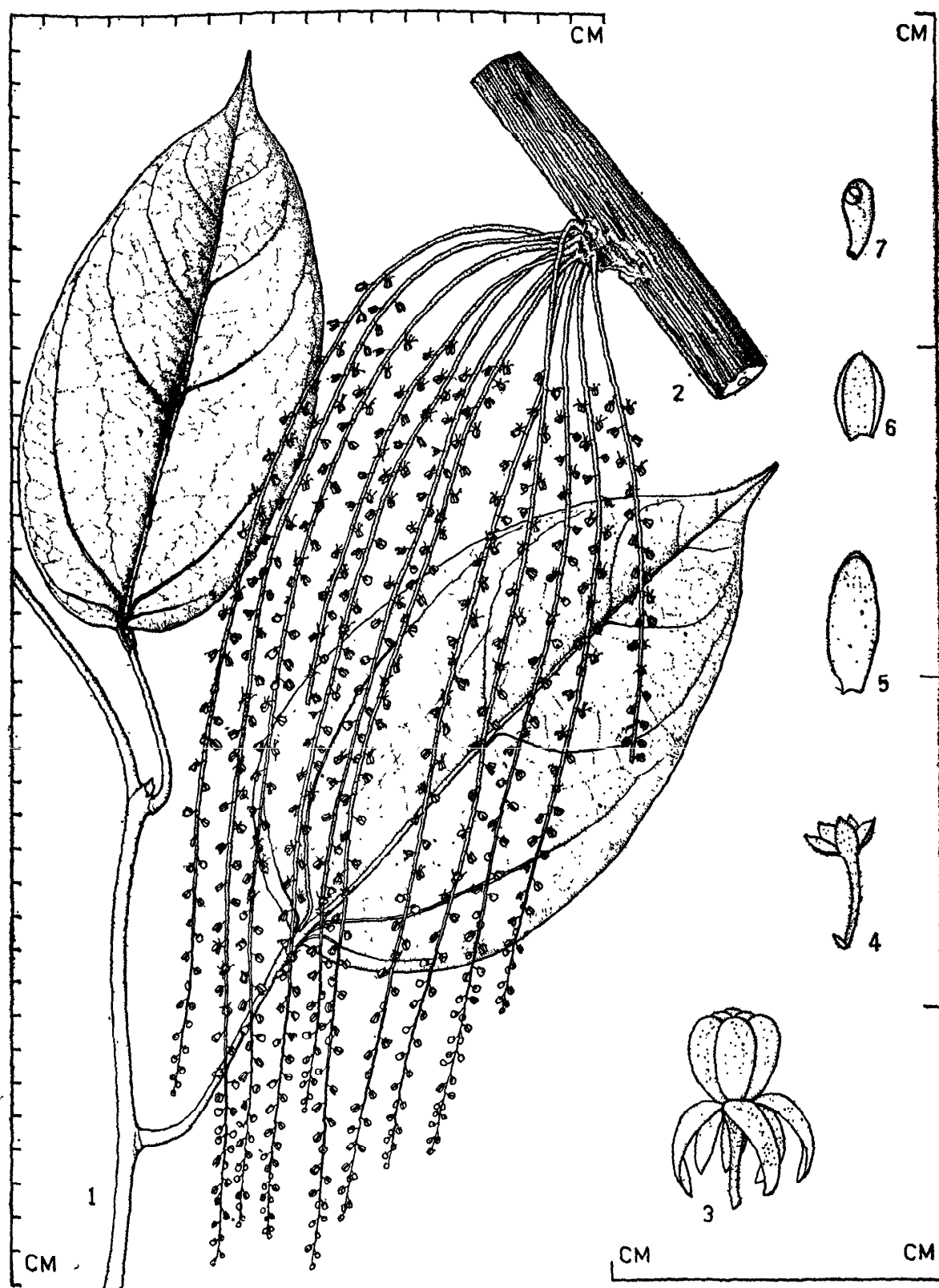
GREAT NICOBAR: 8 km on East-West Road, *ca* 75 m, shaded places in inland forests, 19 Aug. 1975, Balakrishnan 2970 (PBL, CAL, L); 24 km on road to Pygmalion Point, sea level, open places near streams, 29 Nov. 1975, P. Chakraborty 3210 (PBL, CAL).

Distribution: Originally described from Tonkin in South China. Holttum reports it from Pulau Tioman Island in South China Sea, off the east coast of Malaya. Its discovery from Great Nicobar Island is an interesting extension of its range.

MENISPERMACEAE

4. **Tinomiscium nicobaricum** Balakr. sp. nov. differt a *T. petiolare* Hk. f. & Th. et *T. phytocrenoide* Kurz, foliis utrinque glabris, non rugulosis, basi rotundatis; nervis basalibus supernis binatis divergentibus ab 4-5 mm supra bases; costis supra non sulcatis; nervis subter glabris; petiolis brevioribus; racemis longioribus, multifasciculatis; pedicellis brevioribus, *ca* 2.5 mm longis; petalis brevioribus, *ca* 2.5 mm longis; staminibus clavatis, obtusis.

Frutex scandens, validus, dioecius, multiramatus; caulis usque ad 2 cm crassus, teres, spiratim tortus, longistrorsum costatus et sulcatus; ranunculi juvenes dense ferrugineo-pubescentes. *Folia* oblongo-elliptica, basi rotundata vel subtruncata, apice breviter



Tinomiscium nicobaricum Balakr.

Figs. 1-7 : 1. Leafy twig. 2. Inflorescence on main stem. 3. Male flower. 4. Pedicel with bract and outer sepals. 5. Inner sepal. 6. Petal. 7. Stamen.
(Balakrishnan 5787A)

caudata, 15-20 cm longa, 9-13 cm lata, herbacea, chartacea, utrinque glabra; nervi basales 5, palmati, par posticum oriens ab basi, par anticum parallelum ad costam et divergens ab 4-5 mm basibus; nervi laterales 2-3 binati ex costam; nervi omnis distincti infra porcos; petioli 6-8 cm longi, basi et apice incrassati et geniculati. *Racemi* cauliflori, simplices, graciles, 5-15 simul fasciculati, 20-50 cm longi; rachides brunneo-pubescentes; pedicelli ca 2.5 mm longi, brunneo-pubescentes; sepala extima 3-5, imbricata, bracteoliformia, dense brunneo-puberula, ovata, triangulares, ca 1 mm longa; sepala interiora 6, lineari-oblonga, obtusa, ca 4 mm longa, ca 1.5 mm lata, recurvata, carnosae, margine submembranacea, extra in medio dense pubescentes vittiformis, intra basi glabra et papillosa; petala 6, erecta, oblonga, cucullata, margine involuta, stamina arcte includentia, ca 2.5 mm longa, ca 2 mm lata, tenues, glabra; stamina 6, erecta, petalis opposita et subaequilonga; filamenta libera, carnosae, clavata, ca 2 mm longa, in petalis includens; antherae introrsae, immersae, rima obliqua dehiscentes; carpella rudimentaria absentia. *Flores* ♀ et drupae ignota. Typus: *Balakrishnan* 5787 (Holo. 5787 A in CAL, iso. 5787 B-C in PBL, et 5787 D in L).

Stout woody dioecious much-branched climbers with milky latex; stem up to 2 cm thick, terete, spirally twisted, longitudinally ribbed and grooved; young twigs densely brown hairy. *Leaves* oblong-elliptic, rounded or subtruncate at base, shortly caudate-acuminate at apex, 15-20 cm long, 9-13 cm wide, herbaceous, papery, glabrous on both sides; basal nerves 5, palmate, the lowest pair arising from base, slender, short, upper pair running parallel to midrib for 4-5 mm before diverging and spreading out; lateral nerves 2-3 pairs, arising from upper half of midrib; all nerves distinct on both sides, raised below; petioles 6-8 cm long, thickened-geniculate

at apex and base. *Racemes* cauliflorous, slender, simple, 5-15 fascicled together, 20-50 cm long; rachis brown pubescent. *Male flowers* pale yellow; bracts subulate, ca 0.5 mm long, brown pubescent; pedicels ca 2.5 mm long, brown pubescent; outer sepals 3-5, bracteole-like, densely pubescent, ovate, triangular, imbricate, ca 1 mm long; inner sepals 6, linear-oblong, obtuse, recurved, ca 4 mm long, ca 1.5 mm wide, fleshy, membranous at margins, brown puberulous on median thickened band outside, glabrous and papillose at base-inside; petals 6, erect, oblong, cucullate, incurved at margins, tightly enclosing stamens, ca 2.5 mm long, ca 2 mm wide, thin, glabrous; stamens 6, erect, opposite and subequal to petals; filaments free, fleshy, club-shaped, ca 2 mm long, enclosed in petals; anthers introrse, obliquely dehiscent; pistillode absent. *Female flowers* and fruits not known. (Figs. 1-7).

GREAT NICOBAR: 25 km on East-West Road, near Galathea river, inland hill forests, ca 75 m above M.S.L., 16 June 1977, *Balakrishnan* 5787 (Holotype 5787 A in CAL, isotypes 5787 B-C in PBL and 5787 D in L).

The genus *Tinomiscium* with about 8 species is mainly Malesian extending from South China to Indonesia, the Philippines and New Guinea and with two species, *T. petiolare* Hk. f. & Th. and *T. micranthum* Diels, extending up to Assam. Among them, this new species approaches *T. petiolare* of Assam, Malaya and Sumatra and *T. phytocrenoides* Kurz of Sumatra and Java but differs from both in the leaves being glabrous on both sides, not rugulose; base being rounded or subtruncate; upper pair of basal nerves diverging at 4-5 mm above the base; midrib not grooved above; nerves glabrous; petioles shorter; racemes longer, more in number in each fascicle; pedicels shorter, ca 2.5 mm long; petals smaller and

broader, *ca* 2.5 mm long, *ca* 2 mm wide and stamens clavate and obtuse.

MELIACEAE

5. **Dysoxylum densiflorum** Miq. Ann. Mus. Lugd.-Bat. 4: 9. 1868; Ridley, Fl. Mal. Pen. 1: 396. 1922; Backer & Bakh. f. Fl. Java 2: 122. 1965.

Trees, 15-20 m; trunk straight, branched near the top. *Leaves* 13-19-foliolate; rachis subangular, shortly puberulous, 30-40 cm long; leaflets alternate, elliptic-oblong, ovate or obovate, rounded or subcuneate at base, acute or acuminate at apex, 5-25 cm long, 3-9 mm wide, glabrous or short puberulous on nerves beneath; midrib ridged beneath; lateral nerves 10-15 pairs, distinct beneath, obliquely subparallel; petioles 2-8 mm long, puberulous. *Inflorescence* racemose-spicate, 3-9 cm long, densely fascicled on leafless portion of branches and twigs; rachis subangular, puberulous; pedicels up to 2 mm long, pubescent; bracts ovate, cupuliform, slightly fimbriate at margin, *ca* 1.5 mm long. *Flowers* white, *ca* 1.5 mm long, slightly scented. *Calyx* cup-shaped, 3-4 mm long, hairy; lobes 4, rounded. *Petals* 4, linear-oblong, obtuse, 10-12 mm long, 2-3 mm wide, recurved and curled back at upper half, pubescent outside, white. *Staminal tube* cylindric-tubular, 8-9 mm long, yellow, glabrous outside, puberulous inside, 8-dentate at apex; anthers 7, sessile at or near the apex of tube on the inside. *Disc* cylindric, 3-4 mm long, 4-lobed at apex, glabrous. *Ovary* linear, 2-3 mm long, silky hairy; styles hairy almost to top, 8-9 mm long; stigma capitate, subpeltate. *Fruit* obovoid-ellipsoid, 4-6 cm long, minutely hairy.

GREAT NICOBAR: 31-32 km on East-West Road, *ca* 100 m, primary dense forests, 14 June 1977, Balakrishnan 5747 (PBL).

Distribution: So far known from Malaya, Sumatra and Java.

VITACEAE

6. **Cissus aristata** Bl. Bijdr. 183. 1825;

Backer & Bakh. f. Fl. Java 2: 91. 1965. *C. simplex* Blanco, Fl. Filip. 72. 1836. *C. pyrrhodasys* Miq. Fl. Ind. Bat. suppl. 1: 517. 1861. *Vitis pyrrhodasys* (Miq.) Ridley, Fl. Mal. Pen. 1: 476. 1922. *V. simplex* (Blanco) Burk. in Kew Bull. 1935: 319. 1935.

Slender spreading climbers; stem terete, grooved; young shoots densely red-brown malpighiaceus hairy; tendrils trifid at apex, leaf-opposed. *Leaves* simple, broadly ovate, cordate at base, acuminate, bristly serrate at margins, 7-15 cm long, 4-10 cm wide, in young leaves upper surface densely brownish malpighiaceus hairy, later becoming glabrous except the main nerves, lower surface densely reddish brown malpighiaceus velvety, sometimes becoming subglabrous; main nerves prominent, raised, densely hairy beneath; basal nerves palmately 5-nerved; lateral nerves 5 pairs from midrib; reticulations scalariform, subparallel; petiole 3-6 cm long, densely red brown hairy, becoming glabrescent. *Inflorescence* leaf-opposed, umbellately branched, densely red-brown malpighiaceus hairy; ultimate cymes subcorymbose, 3-8 cm long; main peduncle 2-4 cm long; branches 3-4, 1-2 cm long; flowers subsessile, white. *Calyx* cupular, acute at base, truncate at apex, 1-2 mm long, hairy. *Petals* free, oblong, 2-3 mm long. *Disk* cucullate, slightly 4-lobed at apex, adnate to ovary at base. *Anthers* ovoid; connective thickened. *Ovary* glabrous, 2-celled; cells 2-ovuled each; style thin, *ca* 1 mm long; stigma small. *Berry* ovoid, subglobose, 5-6 mm diam., nodding, dark purple, 1-2 seeded.

GREAT NICOBAR: Campbell Bay, 17 Aug. 1975, Balakrishnan 2911 (PBL, CAL); 35 km on East-West Road, *ca* 175 m, inland forests, roadside, 22 July 1976, Balakrishnan 3936 (PBL, CAL).

Distribution: So far known from Malaya, Borneo, Sumatra and Java.

Note: This species is closely related to

Cissus adnata Roxb. with which it is often confused but differs in the red-brown malpighiaceae hairs.

RHIZOPHORACEAE

7. ***Gynotroches axillaris*** Bl. Bijdr. 219. 1825; Kurz, For. Fl. Burma 1: 451. 1877; Henslow in Hook. f. Fl. Brit. Ind. 2: 440. 1878; Ding Hou in Fl. Males. I, 5: 488, f. 33. 1958; Backer & Bakh. f. Fl. Java 1: 379. 1963; Ding Hou in Fl. Thailand 2: 14. 1970.

Small tree, up to 10 m high, with opposite leaves and axillary pale green clustered flowers; calyx 4, deciduous; ovary red and fruits scarlet to purplish red.

Scattered along inland hill forests in the interior. Ample descriptions and illustrations are given by Ding Hou (ll. cc.).

GREAT NICOBAR: 35 km on East-West Road, ca 175 m, 22 July 1976, Balakrishnan 3940 (PBL, CAL).

Distribution: So far known from Burma, Thailand, throughout Malesia to Micronesia and Australia.

LYTHRACEAE

8. ***Lagerstroemia ovalifolia*** Teysm. & Linn. in Kruid. Arch. 3: 410. 1840 et in Nat. Tydschr. Nederl. Ind. 2: 306. 1851; Ridley, Fl. Mal. Pen. 1: 662. 1922; Backer & Bakh. f. Fl. Java 1: 256. 1963; Furtado & Srisuko in Gard. Bull. Sing. 24: 210. f. 7E. 1969.

Small to medium-sized trees, 15-20 m, (sometimes only 5-10 m), with spreading branches; leaves ovate to obovate; flowers in terminal pyramidal panicles; calyx 6-9 ridged-winged; petals pinkish-purple, crisped-undulate at margins, early caducous; fruits greenish brown, obovoid.

Detailed descriptions are given by Furtado & Srisuko (l.c.) who describes 7 varieties from different parts of Malesia. The Great Nicobar specimens fall under the typical *ovalifolia*. In Great Nicobar this species is common in lowland forests along coastal areas, particularly in sunny dis-

turbed areas and flowers and fruits during May to September.

GREAT NICOBAR: Campbell Bay, 24 Aug. 1976, Balakrishnan 3063 (PBL, CAL).

Distribution: So far known only from Malesia.

CORNACEAE

9. ***Mastixia trichotoma*** Bl. var. ***maingayii*** (Clarke) Danser in Blumea 1: 63. 1934; Mathew in Blumea 23: 70. 1976. *M. maingayii* Clarke in Hook. f. Fl. Brit. Ind. 2: 746. 1879.

Evergreen trees with spreading crown, up to 15 m high; branchlets pubescent with brownish-yellow hairs; nodes flattened. *Leaves* opposite, elliptic to oblong-lanceolate, acute to obtuse or rounded at base, acute to caudate-acuminate at apex, entire at margins, 14-20 cm long, 7-10 cm wide, stiffly subcoriaceous, pale and puberulous on nerves beneath, glossy glabrous above; petiole (1-) 2-4 cm long, slightly channelled above; midrib grooved above, raised beneath; lateral nerves 7-8 pairs, arching and anastomosing near margins, raised beneath, prominently reticulate beneath. *Inflorescence* terminal, trichotomously branched; first branches subtended by reduced smaller leaves; ultimate cymes with a central ebracteate subsessile flower and two lateral pedicellate bracteate flowers; bracts triangular, acute, 1-2 mm long, lower bracts gradually becoming foliaceous; pedicels 1-2 mm long; flowers greenish yellow with orange yellow disc. *Calyx* 4, subulate, obtuse, ca 1 mm long, puberulous outside, persistent. *Corolla* 4, early caducous, ovate-elliptic, inflexed at tip, ca 1.5 mm long, puberulous outside. *Stamens* 4; filaments subulate, flat; anthers dorsifixed, dehiscing laterally by slits, yellow. *Ovary* inferior, surrounded by a fleshy disc; style stout, erect; stigma minutely lobed; ovule 1, pendulous. *Fruit* a drupe, ellipsoid, ca 1.5 cm long, greyish-green or glaucous green, supported by persistent calyx lobes.

GREAT NICOBAR: 34 km on East-West Road, 22 July 1976, *Balakrishnan* 3934 (PBL, CAL).

Distribution: So far known from Malaya, Borneo and Sumatra.

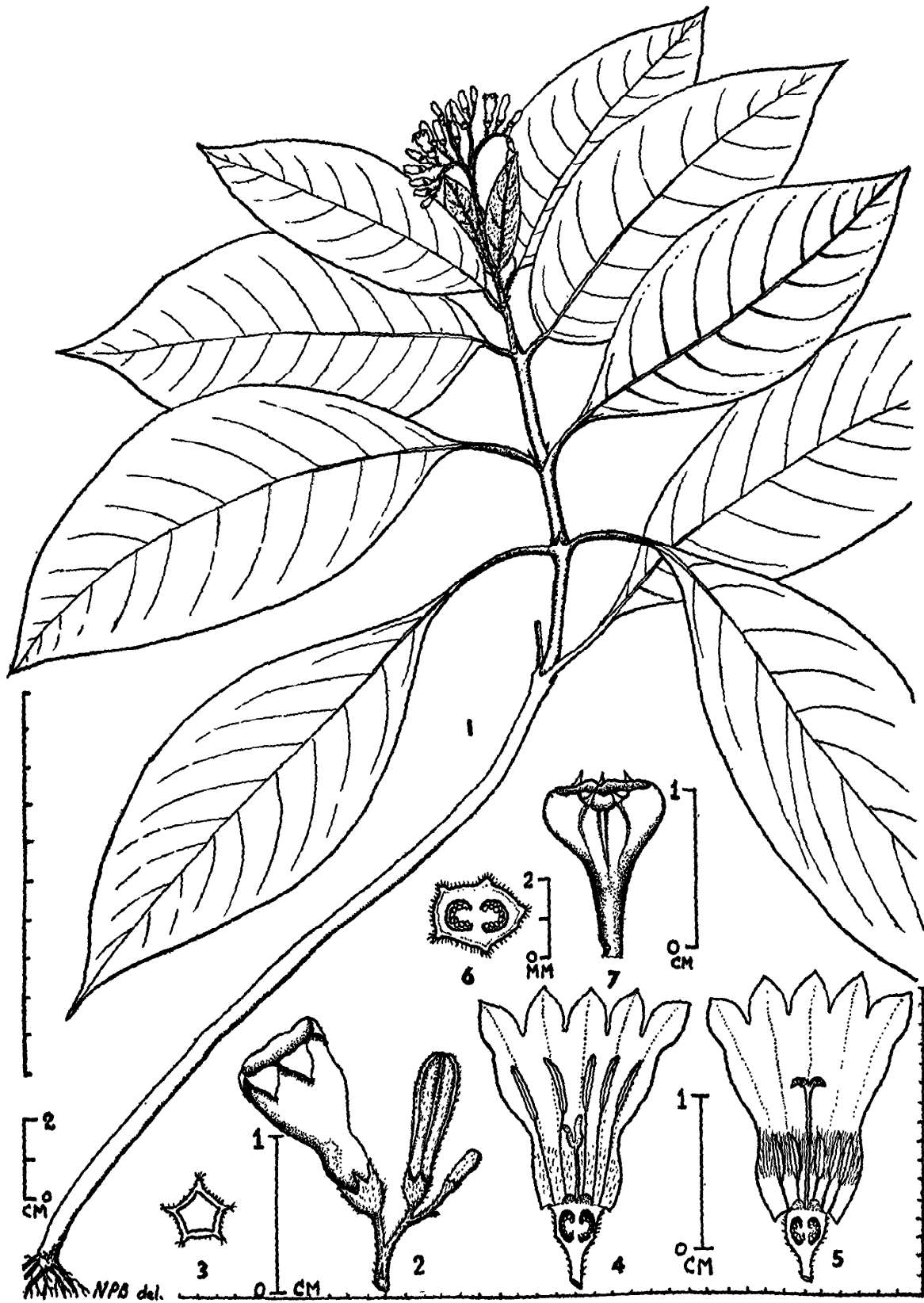
RUBIACEAE

10. ***Ophiorrhiza infundibularis*** Balakr. sp. nov. *O. costatae* Ridl. affinis, a qua imprimis differt foliis parvis; corollarum lobis longioribus, reflexis; stylis heterostylis; floribus longistyliferis pilis rigidis albis annulis vestitis ad media intra corollarum; floribus brevistyliferis pilis dispersis vestitis ad bases intra corollarum.

Herbae, 20-50 cm altae; caules petioli et nervi infra folia purpureo-virides; caules subglabris, apice puberuli, basi lignosi, plerumque simplices, raro semel vel bis ramosi, radiati ad nodos basales. *Folia* ovato-lanceolata, raro rotundata, basi acuta vel cuneata, apice acuta vel acuminata, 5-15 cm longa, 3-6 cm lata, glabra in supernis paginis, sparsim puberula et albida in inferis paginis; nervi laterales 10-14 binati, arcuata et anastomosantes ad margines; petioli 1-5 cm longi, sparsim puberuli; stipulae linearilanceolatae, latae ad bases, 4-7 mm longae, puberulae. *Inflorescentiae* terminales, solitariae, sparsim puberulae; pedunculi 3-5 cm longi; cymae 2-3 cm longae; pedicelli 1-2 mm longi; bractae subulatae, minutae, subpersistentes. *Flores* heterostyli, purpureo-albidi; gemmae oblongo-cylindricae, 5-angulatae, puberulae. *Calycis tubus* subglobosus, 5-angulatus, ca 1 mm longus; lobi 5, subulati, triangulares, ca 1 mm longi, minute puberuli. *Corolla* infundibularis, basi angustata et bulbosa, in medio abrupte dilatata, basi tubularis, ca 1 cm longa, ca 2 mm lata, ad orificum ca 4 mm lata, extra minute dispersim pilosa; lobi 5, ovati, acuti vel subacuti, in flore reflexi, ca 3 mm longi, ca 2 mm lati; corolla brevistylifera floris intra in basi tubi pilifera; corolla longistylifera floris intra medio tubi pilifera; pilis longis,

albis, rigidis, annulatis dense vestitis. *Filamenta* filiformia, in floribus brevistyliferis ca 4 mm longa, in floribus longistyliferis ca 1.5 mm longa; antherae lineares, ca 2 mm longae, candidae. *Styli* filiformes, in floribus brevistyliferis ca 2 mm longi, in floribus longistyliferis ca 7 mm longi; stigmata bilobata, ovata, ca 1 mm longa, dense papillosa. *Fructus* complanati, cuneati, truncati, ca 5 mm longi, ca 1 mm lati, ca 3 mm crassi, pedicellis incrassatis et calycibus persistentibus. Typus: *Balakrishnan* 5745 (Holo. 5745 A in CAL, iso. 5745 B-D in CAL et 5745 E in L).

Herbs, 20-50 cm high; stems, petioles and nerves beneath the leaves purplish green; stems subglabrous, minutely puberulous towards apex, woody at base, usually simple, rarely once or twice branched, rooting at lower nodes. *Leaves* ovate-lanceolate, rounded, acute or cuneate at base, acute or acuminate at apex, 5-15 cm long, 3-6 cm wide, glabrous above, sparsely puberulous and whitish beneath; lateral nerves 10-14 pairs, arching and anastomosing at margin; petioles 1-5 cm long, sparsely puberulous. *Inflorescences* terminal, solitary, sparsely puberulous; peduncle 3-5 cm long; cymes 2-3 cm long; pedicels 1-2 mm long; bracts minute, subulate, subpersistent. *Flowers* heterostylous, pale purplish white; buds oblong-cylindric, 5-angled, puberulous. *Calyx-tube* subglobose, 5-angled, ca 1 mm long, puberulous outside; lobes 5, subulate, triangular, ca 1 mm long, minutely puberulous. *Corolla* funnel-shaped, narrow and bulbous at base, abruptly dilated at middle, ca 1 cm long, ca 2 mm wide at tubular base, ca 4 mm wide at mouth, minutely scattered puberulous outside; lobes 5, ovate, acute to subacute, reflexed in flower, ca 3 mm long, ca 2 mm wide; corolla of long-styled flowers with a ring of dense stiff white hairs inside the tube at middle; short-styled flowers with a few hairs at base of corolla. *Filaments* filiform, ca 4 mm long in short-



Ophiorrhiza infundibularis Balakr.

Figs. 1-7 : 1. Habit. 2. Flower and buds. 3. Calyx-tube, t.s. 4. Flower with long stamens and short style. 5. Flower with short stamens and long style. 6. Ovary, t. s. 7. Fruit. (Balakrishnan 5745A)

styled flowers and *ca* 1.5 mm long in long-styled flowers; anthers linear, *ca* 2 mm long, glossy white. *Styles* filiform, *ca* 2 mm long in short-styled flowers, *ca* 1 mm long in long-styled flowers; stigma bilobed, ovate, *ca* 1 mm long, densely papillose. *Fruits* flat, truncate, wedge-shaped, *ca* 5 mm long, *ca* 1 cm wide, *ca* 3 mm thick with thickened pedicel and persistent calyx-lobes (Figs. 1-7).

GREAT NICOBAR: 31-32 km on East-West Road, *ca* 100 m, shaded places near streams, 14 June 1977, *Balakrishnan* 5745 A (Holotype in CAL); *ibid.* 5745 B-D (Isotypes in PBL); *ibid.* 5745 E (Isotype in L).

This species is allied to *O. costata* Ridley, but differs in being subglabrous; leaves smaller; corolla-lobes longer, reflexed; styles heterostylous; long-styled flowers with a ring of white stiff hairs inside the corolla at middle position; short-styled flowers with scattered hairs inside at basal portion of corolla.

ASTERACEAE

11. *Blumea junghuhniana* (Miq.) Boerl. Handl. Fl. Ned. Ind. 2(1): 239. 1891; *Randeria* in *Blumea* 10: 235. 1960; *Baker & Bakh. f. Fl. Java* 2: 388. 1965. *Conyza junghuhniana* Miq. in *Pl. Jungh.* 449. 1855.

Erect undershrubs or shrubs, 1-2 m high; stem woody at basal portion, up to 1.5 cm diam., terete, densely tomentose with greyish silky hairs, branched above, uppermost branches patent. *Leaves* oblong-lanceolate, pinnatifid to deeply lobed, coarsely dentate to double-dentate at margins, narrowed at base, acute at leaf apex and lobe apices, 4-35 cm long, 1-10 cm wide, upper leaves smaller, sessile and passing into bracts, densely silky-velutinous with multicellular hairs, whitish silky beneath. *Heads* 8-10 mm in diam., in large terminal pyramidal leafy panicles, densely felt-hairy; peduncles up to 15 mm long; panicle branches up to 14 cm long; involucre bracts longer than

florets, 2-9 mm long, linear-lanceolate, acuminate, scarious at margins, densely pubescent on the back with multicellular hairs; receptacle flat, slightly depressed at centre, 1.5-3.0 mm diam., alveolate, glabrous; disc florets 6-12. *Corolla* yellow, tubular, funnel-shaped, of bisexual florets 5.5-6.5 mm long with 5 angular lobes and pubescent with collectors and scattered multicellular hairs, of female florets filiform, 5-6 mm long, 2-3-lobed, glabrous. *Anthers* exserted, tails equal to or slightly longer than the thickened portion of the filament. *Achenes* *ca* 1 mm long, pale brown, columnar, 6-8-ribbed, densely hairy; pappus hairs pale red to yellowish-white, 5.0-5.5 mm long.

GREAT NICOBAR: 6 km on East-West Road, roadsides and disturbed areas, *ca* 75 m, 19 Aug. 1975, *Balakrishnan* 2962 (PBL, CAL, L).

Distribution: So far known from Malaya, Indonesia, Philippines and New Guinea.

Notes: Closely allied to *B. balsamifera*, a species common in Andaman & Nicobar Islands but can be easily distinguished by the leaves being pinnately lobed, coarsely dentate and whitish silky beneath and corolla lobes of bisexual florets with multicellular hairs in addition to collectors.

SAPOTACEAE

12. *Palaquium semarum* H. J. Lam. in Bull. Jard. Bot. Botz. 3, 7: 43, 255, f. 6. 1925; van Royen in *Blumea* 10: 581. 1960; Whitmore, *Tree Fl. Malaya* 1: 427. f. 9. 1972.

Trees, 18-20 m high, wood pinkish-red; young branchlets ferruginous tomentose. *Leaves* crowded at apex of branchlets, spatulate, oblong-obovate, rounded and obtusely caudate-acuminate at apex, narrowly cuneate or decurrent at base, 8-12 cm long, 3-6 cm wide, glabrous and glossy green above, pale green beneath, drying papery reddish-brown; midrib raised and densely reddish woolly beneath; lateral nerves 19-26 pairs, ascending at an angle of 85°-90°,

prominent beneath; tertiaries subparallel to secondary nerves, reticulate; petiole 1.5-2.5 cm long, reddish woolly on upper side at basal part. *Flowers* in 2-7-flowered clusters on axils of leaf scars below the terminal crowded leaves; pedicels 7-13 mm long, ferruginous woolly; sepals reddish woolly outside; corolla white or pale yellow, glabrous; stamens 12, epipetalous; filaments filiform; anthers sagittate.

GREAT NICOBAR: 18-19 km on East-West Road, ca 75 m, 29 July 1976, *Balakrishnan* 4083 (PBL, CAL).

Distribution: Malaya and Sumatra. As treated by van Royen (l.c.) the genus *Palaquium* occurs in the entire S. E. Asian region, except Andaman and Nicobar Islands. The discovery of this species in Great Nicobar fills in this gap.

SYMPLOCACEAE

13. ***Symplocos fasciculata*** Zoll. Syst. Verz. 136. 1854; Nooteboom, Revis. Symplocaceae Old World 191, t. 13. 1975.

Trees, 10-12 m high; young branchlets sparsely puberulous; twigs shiny brown; leaves scattered, spirally arranged, elliptic to lanceolate, obliquely acute or cuneate at base, caudate-acuminate at apex, subentire, 7-12 cm long, 2-3 cm wide, glabrous above, sparsely appressed hairy beneath; midrib grooved above, raised beneath; lateral nerves 6-8 pairs, curved upwards and meeting in an intramarginal nerve; petioles 2-8 mm long; flowers in axillary short fascicles, as long as or shorter than petiole, pubescent; stamens many.

GREAT NICOBAR: 35 km on East-West Road, ca 175 m, inland hill forests, 22 July 1976, *Balakrishnan* 3941 (PBL, CAL).

Distribution: Thailand, Malaya, Singapore, Borneo, Philippines, Celebes, Sumatra and Java.

LOGANIACEAE

14. ***Fagraea auriculata*** Jack, Mal. Misc. 2, no. 7, 72. 1822; Kurz, For. Fl. Burma 2: 204. 1877; Clarke in Hook. f. Fl. Brit.

Ind. 4: 83. 1883; Ridley, Fl. Mal. Pen. 2: 416. 1922; Leenhouts in Fl. Males. I, 6: 326. 1962; Backer & Bakh. f. Fl. Java 2: 211. 1965; Whitmore, Tree, Fl. Malaya 2: 270. 1973.

Large lianas, climbing up to 15 m; young twigs 4-angular, sometimes thorny below leaf-bases; leaves oblong-obovate, decurrent at base, broadly rounded and often short acuminate at apex, 14-30 cm long, 8-16 cm wide, coriaceous, glossy green above, pale green beneath; lateral nerves 6-8 pairs, distinct beneath; petioles 2-3 cm long, narrowly winged, auriculate at base; flowers in terminal, 1-3-flowered cymes; calyx 4-5 cm long, deeply lobed, pale greenish white; corolla widely funnel-shaped, 10-15 cm long, 12-17 cm wide at mouth, white, greenish white at throat, leathery in texture; fruits oblong, greyish white, glossy, with persistent style, 8-10 cm long.

The giant white flowers and showy fruits with dark green glossy foliage makes this an attractive climber suitable for introduction into gardens.

GREAT NICOBAR: East-West Road, 18 km, ca 100 m, inland hill forests, 23 Aug. 1975, *Balakrishnan* 3055 (PBL, CAL).

Distribution: Burma, Thailand, Vietnam, Malaya, Borneo, Philippines, Sumatra and Java.

ORCHIDACEAE

15. ***Dendrobium pensile*** Ridley in J. Linn. Soc. 32: 253. 1896 et Fl. Mal. Pen. 4: 40. 1924; Holttum, Rev. Fl. Malaya, Orchids, ed. 3. 340. 1964.—Belongs to Section *Gastridium*.

Epiphytic; stems pendulous, 50-100 cm long, 2-3 mm thick, slender, terete, covered with leaf-sheaths. *Leaves* alternate, elliptic-lanceolate to oblong-lanceolate, narrowed to base, acute to acuminate and minutely bidentate at apex, 6-10 cm long, 1.0-2.5 cm wide, thick, fleshy, subcoriaceous; midrib not very distinct. *Inflorescence* 2-flowered, on very short peduncles, arising from inter-

nodes piercing leaf-sheaths; bracts sheathing, compressed to peduncle. *Flowers* ca 1 cm long, pale yellow, not widely opening; pedicel with ovary 6-7 mm long, white. *Dorsal sepal* ovate-lanceolate, subacute, ca 8 mm long, ca 4 mm wide, many-nerved. *Lateral sepals* falcate-lanceolate, broad at

base, 9-10 mm long, ca 5 mm wide at base, many nerved, attached to column foot almost along its entire length forming an obtuse short mentum. *Petals* linear-oblong, obtuse to subacute, ca 9 mm long, ca 2 mm wide, many-nerved. *Lip* attached to tip of column foot, mobile, curved, 3-lobed, wavy at margins, ca 8 mm long, ca 4 mm wide; lateral lobes short triangular; median lobe ovate, acute, curved at tip; disc with many scattered flimsy tubercles and 3 keels in the middle, beset with red tubercles. *Column* ovoid, ca 4 mm long, acutely 3-dentate at tip; foot curved, ca 4 mm long; anther subglobose to ovoid; pollinia 4, laterally compressed, closely packed in subglobose obtuse operculum (Figs. 1-3).

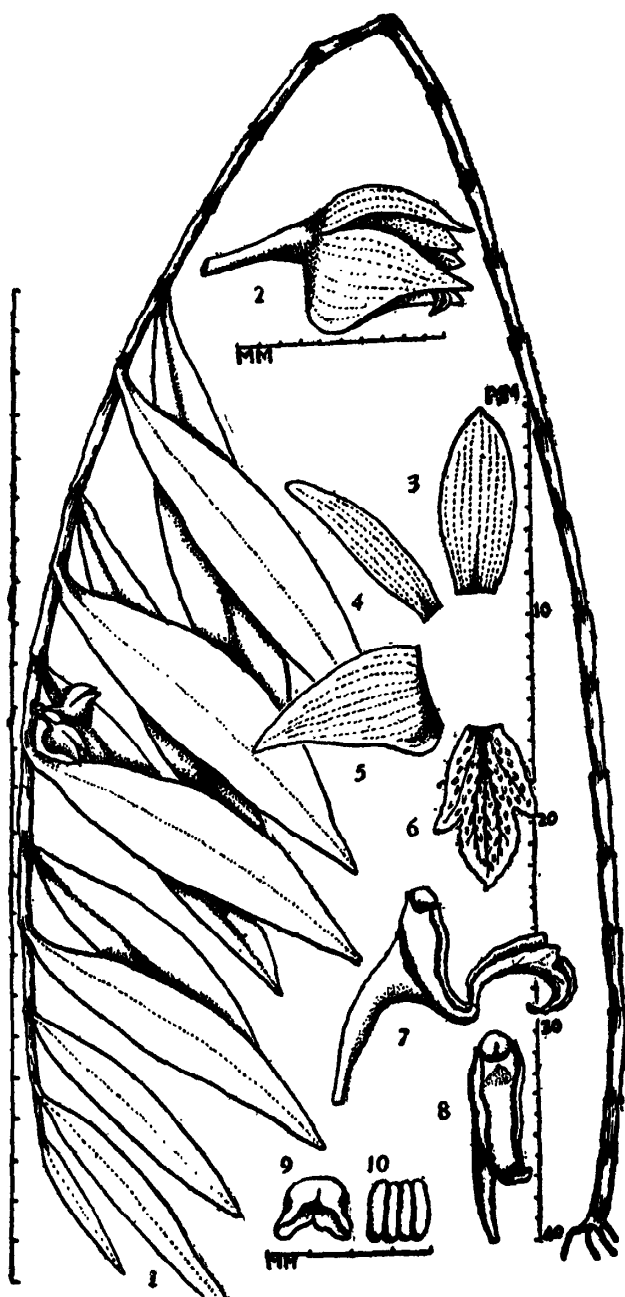
GREAT NICOBAR: 15 km on road to Pygmalion Point from Campbell Bay, lowland coastal forests, 19 June 1977, *Balakrishnan* 6081 (PBL).

Distribution: So far known to occur in Malaya only.

CYPERACEAE

16. ***Carex cryptostachys*** Brongn. in Duperrey, Voy. 'La Coquille' Bot. Phan. 152, t. 25. 1833; Clarke in Hook. f. Fl. Brit. Ind. 6: 714. 1894 (sphalm. *C. cyrtostachys*); Kuekenh. in Engler, Pflanzenr. 38: 471. 1909; Ridley, Fl. Mal. Pen. 5: 181, f. 221. 1925; Backer & Bakh. f. Fl. Java 3: 490. 1968.

Rhizome suberect, 3-5 cm high. *Leaves* numerous, subradical, spirally arranged, linear-lanceolate, narrowed to long acuminate apex, 30-50 cm long, 0.5-1.0 cm wide, many-nerved, greyish green. *Inflorescence* axillary, much shorter than leaves, more or less hidden inside leaves, 10-18 cm long, pale green, erect, very shortly branched; spikes linear, lax; bracts linear, up to 1 cm long, shorter than spikelets, with funnel-shaped sheaths and short blades; spikelets lax-flowered, linear, 8-20 mm long, 3-5 mm thick; glumes ovate, amplexicaul at base, obtuse, apiculate at apex, ca 2 mm long,



Dendrobium pensile Ridl.

Figs. 1-10: 1. Habit. 2. Flower. 3. Dorsal sepal. 4. Petal. 5. Lateral sepal. 6. Lip. 7. Column with lip. 8. Column. 9. Operculum. 10. Pollinia.

(Balakrishnan 6081)

many-nerved ; style thickened at upper half ; stigmas 3, curved, papillose. *Utricle* oblong, ellipsoid, obtusely trigonous, shortly beaked, *ca* 3.5 mm long, sparsely puberulous, scabrous on angles, pale green ; nut irregularly rhomboid-obovoid, yellow, seated on a spongy disc-like body, faces strongly excavated at base and apex, *ca* 2 mm long.

This species belongs to Section *Indicae* where the terminal spikes are androgynous with female flowers at base and male at top. This is probably the only Indian species with excavated distorted nuts.

GREAT NICOBAR: Campbell Bay, inland primary forests in damp shaded places, 19 July 1976, *Balakrishnan* 3877 (PBL, CAL).

Distribution: So far known from China, Thailand, Malaya and Java.

17. ***Scirpodendron ghaeri*** (Gaertn.) Merr. in Philip. J. Sci. 9: 268. 1914 ; Kern in

Backer & Bakh. f. Fl. Java 3: 454. 1968 et in Fl. Males. I, 7: 456, f. 3. 1974. *Chionanthus ghaeri* Gaertn. Fruct. 1: 190, t. 39, f. 6 a-e. 1824. *Scirpodendron costatum* Kurz in J. As. Soc. Beng. 38(2): 85. 1869 ; Clarke in Hook. f. Fl. Brit. Ind. 6: 684. 1894 ; Ridley, Fl. Mal. Pen. 5: 175. 1925. Erect stout perennial herbs ; leaves up to 3 m long, plicate with 3 prominent nerves ; culms up to 55 cm long, 8 mm thick ; panicles dense, oblong-ovoid, 10-20 cm long, up to 7 cm thick ; fruits conical, 1.0-1.5 cm long, brown.

GREAT NICOBAR: Galathea riverside, 25 km on East-West Road, 24 July 1976, *Balakrishnan* 3999 (PBL, CAL) ; Campbell Bay to Chengappa Bay, 11 June 1977, *Balakrishnan* 5706 (PBL, CAL).

Distribution: So far known from Sri Lanka, Thailand and throughout Malesia to Australia and Polynesia.