

CHAPTER-3

ENUMERATION OF CLIMBING FLORA

CHAPTER-3

ABBREVIATIONS USED

MAJOR AUTHOR'S CITED NAMES :

A. DC.	=	Alphonse de Candolle
Adans.	=	Adanson
Ann.	=	Anonymus
Arn.	=	Arnott
A. Juss.	=	A. Jussieu
A. Rich.	=	A. Reichenbach
Baill	=	Baillon
Benth.	=	Benthum
Berh.	=	Berhandi
Bl.	=	Blume
Buch.-Ham	=	Buchanan-Hamilton
Bung.	=	Bunge
Brow.	=	Browne
Cav.	=	Cave
C. B. Cl.	=	C. B. Clarke
Cham.	=	Chamisso
Cogn.	=	Cogniaux
DC.	=	Augustine de Candolle
Deca.	=	Dennstedt
Dumort.	=	Dumortier
Edgew.	=	Edgeworth
Falc.	=	Falconer
Fisch.	=	Fischer
Griseb.	=	Grisenbach
Griff.	=	Griffith
Hass.	=	Hasskal
Hoff.	=	Hoffmannseg
Hook.f.	=	J. D. Hooker (Filius)
Humb.	=	Humboldt
Hutch.	=	Hutchinson
Jacq.	=	Jacquin
Jeff.	=	Jeffery
Juss.	=	Jussieu
Koid.	=	Koidzumi
Kuntz.	=	Kuntze
L.	=	C. Linnaeus
L.f.	=	C. Linnaeus (Filius)
Lam.	=	Lamarck
Laws.	=	Lawson
Lindl.	=	Lindley
Loef.	=	Loefling
Lour.	=	Loureiro
Mart.	=	Martius
Meisn.	=	Meisner
Merr.	=	Merrill
Mich.	=	Michaux
Miq.	=	Miquel

Muell.	=	Mueller
Pax.	=	Paxton
Planch.	=	Planchon
Reich.	=	Reichenbach
Retz.	=	Retzius
Rehd.	=	Rehder
Roem.-Shult	=	Roemer-Shultes
R.Br.	=	R. Brown
Roxb.	=	Roxburgh
Sal.	=	Salisbury
Schr.	=	Schrader
Sieb.&Zucc.	=	Siebold & Zuccarini
Spreng.	=	Sprengel
T.Anders	=	T. Anderson
Thoms.	=	Thomson
Thumb.	=	Thumberg
Vent.	=	Venttenat
Wall.	=	Wallich
Willd.	=	Willdenow
Wt.	=	Wight

LANGUAGES (LOCAL NAMES) USED :

Beng.: Bengali; Bhu.: Bhutia; Dz.: Dzongkha; Eng.: English; Hin.: Hindi; Lep.: Lepcha; Nep.: Nepali; Sans.: Sanskrit

DISTRIBUTIONS :

C: Central; Dar.: Darjeeling; Distrib.: Distribution; E: Eastern; Gen.: General; Loc.: Local; Sikk.: Sikkim; S: Southern; W: West/ Western.

FLOWERING/FRUIT RIPENING PERIOD:

Fl.: Flowering; Fr. rip.: Fruit ripening.

OTHERS:

auct.	=	of various authors(auctorum)
c	=	about(circa)
cf.	=	compare(confer)
nom. illeg.	=	illegitimate name(nomen illegitimim)
nom. nud.	=	nomen nudum
p.p	=	in part(pro parte)
sensu	=	in the sense of author indicated and not as originally intended

ssp/subsp.	=	sub-species
sp. nov.	=	new species(species novo)
spn.	=	specimen
var.	=	variety

cm: centimetre; Chr.: Chromosome; fig.: figure; m: meter; No.: numbers; &: and.

FOR THE ECONOMY OF THE SPACE FOLLOWING ABBREVIATIONS OF THE WELL KNOWN BOOKS, JOURNALS, PERIODICALS HAVE BEEN CONDENSED AS FOLLOWS :

BOOKS :

BP	=	Bengal Plants
Bot.Bih.& Ori	=	The Botany of Bihar and Orissa
EFPN	=	An Enumeration of the Flowering Plants of Nepal
FA	=	Flora of Assam
FFI	=	Fascicle, Flora of India
Fl. Bho.	=	The Flora of Bhopal (Angiosperms)
FB	=	Flora of Bhutan
FBI	=	Flora of British India
FEH	=	Flora Eastern Himalaya
FHD	=	Flora of Hassan District
Fl. Ind.	=	Flora Indica
FI	=	Flora India, BSI, Howrah
FID	=	Flora of Indian Desert
FM	=	Flora of Malesiana-Series I, Netherlands
Fl. Nep. Him.	=	Flowering Plants Nepal Himalaya
FPK	=	An Enumeration of the Flowering Plants of Kurseong
Fl. Sikk.Him.	=	Spring Flora of Sikkim Himalaya
FPM	=	Flora of the Presidency of Madras
FPP	=	Flora of the Punjab Plains
FT	=	Flora of Tripura State
FUGP	=	Flora of Upper Gangetic plain
Hort.Beng.	=	Hortus Bengalensis
Prodr. Fl. Nep.	=	Prodromus Florae Nepalensis
TNB	=	Trees of North Bengal
TSDD	=	List of Trees, Shurbs and large Climbers found in the Darjeeling District, Bengal

JOURNALS, PAPERS & PERIODICALS :

ARBGC	=	Annals of the Royal Botanic Garden Calcutta, Calcutta
BASB	=	Bulletin of Asiatic Society of Bengal
BBSB	=	Bulletin of Botanical Society of Bengal, Calcutta
BBSI	=	Bulletin of Botanical Survey of India, Howrah
JASB	=	Journal of Asiatic Society Bengal, Calcutta
JBNHS	=	Journal of Bengal Natural History Society
JETB	=	Journal of Economic and Taxonomic Botany
JJB	=	The Journal of Japanese Botany, Tokyo
KB	=	Kew Bulletin, U.K.
Pl. Asia, Rar.	=	Plantae Asiaticae Rariores, London
RBSI	=	Records of the Botanical Survey of India, Calcutta
TBRI	=	Transactions of Bose Research Institute, Calcutta

ENUMERATION OF CLIMBING FLORA

DICOTYLEDONOUS :

ACANTHACEAE Juss.

THUNBERGIA L.

KEY TO THE SPECIES :

1. Flowers in terminal racemes.....2
1. Flowers axillary, solitary or in pairs.....3
2. Twine dextrorsely; lamina 3-5 nerved; corolla orange red.....*T. coccinea*
2. Twine sinistrorsely; lamina 5-7 nerved; corolla bluish-white.....*T. grandiflora*
3. Petiole upto 4.5 cm long; lamina entire; corolla white; bracts falcate-blond.....*T. fragrans*
3. Petiole upto 2.5 cm long; lamina distinctly; corolla creamy white, bracts broadly ovate.....*T. lutea*

Thunbergia coccinea Wall. ex D. Don., Prodr. Fl. Nep. 120. 1825; FBI 4: 393. 1884; TSDD 59. 1896; TNB 97.1929; FA 3: 411.1939; Brem. in Neederl. Akad. Vesh. 50(4): 43. 1955; FEH 1:305.1966; FPK 79. 1981; EFPN 3:144. 1982; TBRI 50 (4): 129 .1987.

Nep : Kanesi Lahara

Lianas. Stem sinistrorsely twining, quadrangular with longitudinal furrows, solid, branches pendent upto 7m long. Pulvinous oblong; petioles 0.8-5.5cm long, glabrous; lamina 7.5-11.5x5.1-8.0cm, broadly ovate to elliptic, distantly dentate sinuate, acuminate, cordate, membranous, scales minute, sparse, palmately 3-5 nerved. Bracts 1.0-1.5x0.3-0.5cm, subpersistent; bracteols 0.8-1.5cm, ovate to oblong, acute, purple. Racemes over 5.0cm long, drooping; pedicel 1.2-1.6cm long; flowers conspicuous; calyx rimed, upto 0.25cm, white, 10 toothed; corolla orange-red, 2.5-2.8cm long, glandular ventricose, lobes 5, c0.5cm long. Stamens 4, subequal, filaments glabrous, anthers bithecous; style arms linear; stigmas subcapitate. Capsules 3.2-4.5cm long, globose below with a conical beak, glabrous. Seeds 4, c 0.5cm in diam, ovoid, smooth.

Fl. : Jul. - Sep.; Fr. rip. : Oct. - Mar.

Spn. Cited : DARJEELING : Above Happy Valley, 1900m. 27.9.1994, *Das et Samanta* 0324; Purbikhola, 350, 18.11.1994, *Das et Samanta* 0428; SIKKIM : Singling Basty, Soreng,

1520m, 30.10.1995, *Das et Samanta* 0878; 5th Mile, Gangtok, 1700m. 18.11.1995, *Das et Samanta* 0962.

- Loc. Distrib. : DARJEELING : Very common; Sukna, Panighata, Jaldhaka, Takdah, Dow Hill, Kurseong, Sonada, Sukiapokhari, Lava (132-2450m); SIKKIM : Less common; Soreng, Gangtok etc. (upto 1700m).
- Gen. Distrib. : Himalayas (Kumaun to Bhutan). India : Assam, Meghalaya; Myanmar, W. China.
- Notes : (i) Used as ornament for its beautiful flowers.
(ii) Chr. no. $2n=20$ (Sharma, A.K & Sarkar, A.K. 1967-1968).

Thunbergia fragrans Roxb., Pl. Corom. 1: 47, t. 67. 1795; FBI 4:390.1884; TNB 97: 1929; FEH 1:305.1966; EFPN 3:145.1982; TBRI 50(4): 129.1987(Photo-1).

Nep: Kanesi Lahara

Shrubby dextrorsely twining climber. Stem slender, retosely hairy. Petioles 0.8-4.5 cm long; lamina 4.5-5.2x1.6-2.5cm, ovate-lanceolate to triangular cordate, entire, acute to slightly acuminate, base cordate, hairy above glabrate below. Bracts 1.9-2.5cm long, falcate - oblong, acute, 3-nerved, pubescent. Racemes axillary, with one suberect flower; pedicels 3.5-6.0cm long; buds pubescent; flowers conspicuous, fragrant; calyx c 2.5cm, 12-16 toothed, nearly glabrous; corolla tube narrowed upto 3.0cm, ventricose, 5-lobed, white; stamens 4, at the base of corolla, anther cells c 0.3cm long, elliptic, acute; ovary c 0.4cm, glabrous, style funnelshaped 0.1-0.2cm; stigmas capitate. Capsules 2.0-2.5cm, globular below, beaked above, glabrate, forming two slits at maturity. Seeds 4, 0.39-0.5cm in diam.

Fl.: Jul. - Nov. ; Fr. rip.: Oct - Feb.

Spn. Cited : DARJEELING : Jaldhaka, 400m, 26.1.1994, *Das et Samanta* 0005; Near T.B. Hospital, Kurseong, 1560m, 03.10.1994, *Das et Samanta* 0349; Kalimpong, near Military Camp, 1200m, 04.9.1996, *Das et Samanta* 1310; SIKKIM: Rheneek, 950m, 05.9.1996, *Das et Samanta* 1315.

Loc. Distrib. : DARJEELING : Common; Panighata, Dudhia, Garubathan, Jaldhaka, Sukna, Samsing, Rangpo (132-600m); SIKKIM: Common; Pedong, Rishi, Rheneek (upto 1000m).

Gen. Distrib. : Himalayas, Tropical and Subtropical Asia, Australia and W. China.

Thunbergia grandiflora Roxb. in Edgew. Reg. 6:t.495.1820. [Hort. Beng. 45.1814 nom. nud.]; in Fl. Ind. ed. 2(3):34.1832; FBI 4 :392.1884; TSDD 59.1896; TNB 97.1929; FA 3:419.1939; Santapau in Bot. Mem. Bombay 2:9.1955; Brem in Nederl. Akd. Wet. Verh. 50(40):45.1955; 1:305.1966 FPK 79.1981; EFPN 3: 145.1982.

Flemingia grandiflora Roxb. ex Rottl. in Nov. Act. Nat. Cur. 4: 202.1803.

Nep: Kanesi Lahara

Lianas. Stem dextrorsely twining; branches slender, obscurely ribbed. Petioles 3.5-8.0 cm long; lamina 7.0-16x3.0-7.0cm, broadly ovate to cordate, distantly toothed or angular lobed, acute, base cordate, scabrid above, pubescent below, 5-7 nerved. Bracts leafy, greenish-yellow, scaly throughout; bracteoles 3.0-4.0cm, falcato-elliptic, acute with mucro, cohering; racemes 10-16cm long, pendulous; pedicels 2.0-3.0cm long; calyx 0.4-0.6cm, subentire; corolla 4.0-5.0cm long, bluish-white, Stamens 4, filaments 0.4-0.5cm, spreaded below, tip narrow, hairy; anthers 0.8-1.0cm long, bitheous. Style 0.8-1.1cm, slender, sparsely pubescent upward, bifid at tip, stigmas capitate. Capsules 2.5-5.0cm long; seeds subtrigonus with scales.

Fl.: Feb.-Apr.; Fr. rip. : Jun. - Dec.

Spn. Cited : DARJEELING : Sukna, 132m., 24.4.1994, *Das et Samanta* 0150; Purbikhola, 300m, 18.11.1994, *Das et Samanta*, 0408; SIKKIM : Rhenek, 1040m, 05.9.1996, *Das et Samanta* 1339; Mangan, 1350m, 26.9.1996, *Das et Samanta* 1529.

Loc. Distrib. : DARJEELING : Common; Jaldhaka, Sevoke, Kalimpong, Bamanpokri (110-1200m); SIKKIM : Very common; Rhenek, Mangan, Singhik, Phodong (upto 1700m).

Gen. Distrib. : Himalayas India : Assam, Manipur; Myanmar, S. China, Singapore.

Notes : (i) Used as ornament for its beautiful flowers.
(ii) Chr. no. $2n = 28$ (Nanda, P.C.1962); $2n = 56$ (Kaur, J.1970)

Thunbergia lutea T. Anders. in Journ. Lin. Soc. Bot. 9: 448. 1867; FBI 4: 392. 1884; TSDD 59. 1896; FEH 1: 305. 1966; FPK 79. 1981; EFPN 3: 144.1982; TBRI 50(4):129.1987.

Small shrubby dextrorse twiner. Stem slender nearly glabrous. Petioles 1.5-2.5 cm long; lamina 5.2-9.0x3.0-4.1 cm, ovate to lanceolate, distinctly dentate, acuminate, base cuneate, upper surface and margins hairy, glabrous below. Bracteoles 1.5-1.8cm long, broadly ovate, not scaly. Flowers axillary, solitary; peduncle 6.0-6.5cm,

longer than petiole; calyx 0.3-0.5cm long, minute, crenulate; corolla 1.5-2.5cm. long, glabrous, creamy, limbs oblique 2.0-2.5cm; Stamens 4, staminode 1, rudimentary; filaments hairy at base and glandular upward; style subsequal, slender, hairy upward. Stigmas subcapitate. Capsules 2.0-3.0cm long, globose below, beaked above, glabrous. Seeds ovoid

Fl. :Aug.-Sep. ; Fr. rip. : Sep. - Dec.

Spn. Cited : DARJEELING : North point, 1950m., 04.10.1994, *Das et Samanta*, 0382; Tindharia, 940m, 05.10.1994, *Das et Samanta* 0396; Neora Valley National Park, 2500m, 01.5.1995, *Das et Samanta* 0675.

Loc. Disbrib. : DARJEELING : Common; Jorebungalow, Senchal, Dow Hill, Lava, Neora Valley National Park, Kafer, Rimbick, Baggaonra (900-2300m); SIKKIM : Less common; Found only at Pangthang areas (upto 2000m).

Gen. Distrib. : Endemic to E. Himalayas (Darjeeling - Sikkim - Nepal).

ACTINIDIACEAE Hutch.

ACTINIDIA Lindl.

KEY TO THE SPECIES:

1. Stem and leaves glabrous or with soft simple hairs..... *A. callosa*
2. Stem and leaves with strigose hairs.....*A. strigosa*

Actinidia callosa Lindl., Nat. Syst. ed.2:439.1836; FBI 1:286.1874; TSDD 8.1896; TNB 19.1929; FEH 1:206.1966; EFPN 2 : 65.1979; FB 1 (2) : 358.1984; FI 3:195.1993(Photo-43).

Nep: Tekiphal

Large scandent shrub more than 7m long. Stem terete, solid with distinct greyish-white lenticels, sometimes with minute soft hairs, young stem with reddish brown pubescence. Petioles 0.7-2.5cm long, obscurely angled, nearly glabrous; lamina 4.5 - 12 x 2.5 - 6.0cm, ovate - elliptic, obovate or ovate - lanceolate, remotely crenate - serrulate, acute to acuminate, base acute or rounded or cuneate, coriaceous, glabrous above, finely or rusty pubescent on veins beneath, lateral veins 7 - 10 pairs. Flowers solitary or in 2-3 or many forming axillary, pseudoumbel; peduncles 5.0-15cm long, nearly glabrous; pedicel 0.5-1.2cm long, glabrous or rusty

tomentose. Sepals 4-5, 0.4x0.25cm, ovate-lanceolate, acute-obtuse, rusty tomentose; petals 5, white, 0.4-0.6x0.3-0.4cm, obovate, obtuse or rounded, rusty tomentose, reticulately nerved; stamens numerous (c50), filaments 0.25-0.35cm, anther 0.2-0.25cm, narrow; ovary 0.1-0.3x0.1-0.15cm, subglobose, sparsely hairy; style numerous, 0.2-0.4cm long; stigmas simple. Berries 1.0-1.5x0.5-1.5cm; oblong - subcylindric, brownish-pubescent. Seeds c 0.15cm long, ovoid, brownish black.

Fl.: May - Jul. ; Fr. rip.: Oct.-Nov.

Spn. Cited : SIKKIM : Namchi, 1400m, 21.5.1996, *Das et Samanta*, 1134.

Loc. Distrib : DARJEELING :Less Common; Neora Valley, Tonglu (upto 3050m); SIKKIM : Rare; found only at Namchi areas (1400-2400m).

Gen. Distrib : India : Assam, Nepal, Garwal-Bhutan, W.China, Malaysia.

Note : (i) Fruit edible (Cowan and Cowan 1929), eaten by local people.

Actinidia strigosa Hook. f.& Thoms. ex Benth., FBI 1:286. 1874; TSDD 8.1896; TNB 19.1929; FEH 1:207.1966; EFPN 2:65.1979; FB 1(2): 359. 1984; TBRI 50 (4): 104.1987(Photo-30).

Nep:Tekiphal

Stout scandent shrub; branch upto 7m long. Stem terete solid, brown with conspicuous lenticels, strigose hairs 0.15-0.20cm long. Petioles 2.0-3.0cm long, strigose; lamina 4.5-14.5x1.8-6.5cm, ovate - elliptic, serrulate, acuninate, base cordate to cuneate, membranous, glabrate above sparsely hairy beneath on veins, lateral veins 7-9 pairs; bracts 0.1cm, linear, nearly glabrous. Cymes axillary, 2-4 flowered; peduncle 0.4-1.0 cm, sparsely pubescent; pedicels 0.3-0.4cm; sepals 5,0.4-0.6x0.3-0.5cm, elliptic-obtuse; petals 5, white broadly elliptic to obovate, rounded, persistent, stamens many, anthers versatile; ovary 0.3-0.5cm, subglobose, style many, 0.12-0.4cm. Berries 1.5-2.5x1.2-2.0 cm, ovoid, mucilaginous. Seeds 0.12-0.15cm, oblong, brownish black.

Fl.: May -Jun.; Fr. rip. : Oct - Dec

Spn. Cited : DARJEELING : Tiger Hill, 2450m, 12.7.1981, *A. P. Das* 0510; Rechilachak, Neora Valley National Park, 2240m, 27.4.1995, *Das et Samanta* 0634; SIKKIM : Mulkhagra Basti, Rhenek, 2500m, 29.5.1995, *Das et Samanta* 0653.

- Loc. Distrib. : DARJEELING : Common, Kalapokhari, Sandakphu, Jorepukri, Senchal-Tiger Hill and Tangta (2400-2800m); SIKKIM : Rare; Rishi, Chungthang (upto 2800m).
- Gen. Distrib. : Endemic to temperate parts of E. Himalaya (Nepal, Bhutan, Sikkim, Darjeeling).
- Note : (i) Fruits edible : eagerly eaten by local people.

AMARANTHACEAE Juss.

KEY TO THE GENERA AND SPECIES :

1. Fruits a berry; leaves alternate.....*Deeringia amaranthoides*
 1. Fruits a utricle; leaves opposite.....*Stilbanthus scandens*

DEERINGIA Br.

Deeringia amaranthoides (Lam.) Merr., Interpr. Rumph. Herb. Amb. 211. 1917; FA 4:3. 1939; Backer in FM 4: 71. 1949; FEH 1:78. 1966; FPK 85. 1981; EFPN 3:169.1982; FB 1 (2): 221.1984.

Achyranthus amaranthoides Lam. Encycl. 1: 548. 1785.

Deeringia celosoides R. Br. Prodr. Fl. Nov. Holl. 413.1810; FBI 4:714. 1885; TSDD 103.1929.

Nep: Bakrisag, Bangilahara, Benthuya Bethu

Annual rambling under shrub. Stem terete to ribbed, solid, much branched, sparsely hairy. Petioles 1.2-2.6cm long shallowly ribbed; lamina 3.1-6.5x1.7-5.5cm, ovate to lanceolate, entire, acute to acuminate, base rounded to cuneate, membranous, reddish tinged, puberulous above, glabrous below. Bracts c 0.2cm; bracteols ovate, acuminate, spikes in axillary clusters of 8-10, 10-25cm long. Perianth segments 5, sepaline, 0.15x0.1cm, crimson, membranous, spreading in fruit, free; stamens 5, filament c 0.2cm, slender; anther c 0.1cm long, bithecous, yellowish. Ovary c 0.1cm in diam, globose; style short c 0.1cm, stigma 3 fid, hyaline. Berries c 0.4cm, subglobose, red on ripening, 3-5 seeded; seeds small, glabrous.

Fl.: Nov - Dec ; Fr. rip: Nov - Jan

Spn. Cited. : DARJEELING : N.B.U. Campus, 120m, 12.11993, *Das et Samanta*, 0081; Samsing, 400m, 29.1.1995, *Das et*

Samanta 0518; SIKKIM : Rhenek, 900m, 06.9.1996, *Das et Samanta* 1367.

Loc. Distrib. : DARJEELING : Common; Bamanpokri, Panighata, Dolka, Bagrakota, Tindharia, Mangpo (125-1800m); SIKKIM : Less common; Jorethang, Pedong, Legship, Singtam (300-1800m).

Gen. Distrib. : India: Subtropical Himalyas, Meghalaya, North Myanmar, Malaysia, China, Taiwan, Australia.

Notes : (i) Stem and leaves used as fodder and young twing as vegetables
(ii) Chr. no. $2n = 18$ (Pal, M.1964).

STILBANTHUS Hook.f.

Stilbanthus scandens Hook.f in Hook. Icon, pt. t. 1286.1879; FBI 4:729. 1885; FEH 2:25.1971; FB 1(2):227-1984.

A large shrubby climber. Stem woody, branches pendulous, silky hairy on ends. Petioles upto 4.0cm long, hairy; lamina 6.0-11.5x2.8-6.5cm, ovate-elliptic, entire, acuminate, base cuneate, appressed pubescent. Flowers not found. Utricle 0.3-0.4 cm long, oblong apex, pubescent.

Fr.: Aug.-Dec.

Spn. Cited : DARJEELING : Takdah, 1800m, 03.03.1998 *Das et Samanta* 1642; SIKKIM, 1450m, 04.04.1998. *Das et Samanta* 1643.

Loc. Distrib. : Less common; Kafer, Todey, Darjeeling, Namchi (upto 2500m).

Gen. Distrib. : Darjeeling-Sikkim Himalayas; S.E. Asia, Africa.

ANNONACEAE Juss.

ARTABOTRYS R. Br.

KEY TO THE GENERA AND SPECIES:

1. Plants with recurved hooks on the lower part of the inflorescence; branches nearly glabrous*Artabotrys hexapetalus*
 2. Plants with no hooks; branches tomentose.....*Uvaria hamiltonii*
- Artabotrys hexapetalus* (L.f.) Bhandari in Baileya 12(4) : 147. 1964; Nair, FPP

4.1978; FB 1(2):242. 1984; Nam. Chan. Fl. Pl. 47. 1987; FI 1: 251. 1993.

Annon hexapetala L.f., Sppl. 270. 1781.

Artabotrys odoratissimus R. Br. in Bot. Reg 5:t. 423. 1819(non. Blume 1825); FBI 1: 54. 1872; BP 1: 202.1981.

A. uncinatus (Lam.) Merr. in Philip. J. Sci. 7: 234.1912; BBSI 5: 40.1965; Deb, FT 1:82.1981.

Annona uncinatus Lam., Encyl. 2: 127.1786.

Uvaria odoratissima (R.Br.) Roxb., Fl. Ind.2:66.1824.

Beng.: Kanthalichanpa, Katar-champa; Nep.: Katar-champa

Large shrubby hook-climber. Stem terete, solid, puberulous. Petioles 0.4-1.0cm long; lamina 9.5-21.5x3.3-65cm, ovate to lanceolate, entire, shortly acuminate, base cuneate, shiny, thinly coriaceous, glabrous, lateral nerves 6-18 pairs. Flowers solitary or in pairs, yellow, drooping, strongly scented on woody hooked recurved peduncular branches; pedicel 1.0-1.3cm; sepals 3, ovate, connate at base, acute, reflexed at tip 0.5-0.7x0.6cm, sparsely pubescent; petals 3+3, coherent at base, ovate-lanceolate, outer 2.1-2.3x1.2-1.3 longer than inner 1.4-1.5x0.6-0.7cm. Stamens numerous, c 0.15cm, falcate or ovoid; style curved, stigma blunt. Mature carpels 6-14, 2.2-3.5cm, ovoid to obovoid, apiculate, glabrous, yellow; 1 seeded, grooved on one side, brown.

Fl.: Apr. - Jul.; Fr. rip.: Sep - Jan.

Spn. Cited : DARJEELING : N.B.U. Campus, 120m, 01.3.1996, *Das et Samanta* 1065.

Loc. Distrib. : DARJEELING : Generally cultivated but naturalised throughout the tropics (upto 300m).

Gen. Distrib. : Native of S. India; Bangladesh, Sri Lanka, Myanmar, Malaysia.

Note : (i) Chr. no. $2n = 16$ (Sobha, V. & Ramachandran, K. 1979) & 18 (Bowden, W. M. 1948).

UVARIA L.

Uvaria hamiltonii Hook. f. & Thoms.. Fl. Ind.1: 96.1855 ; FBI 1:48.1872; TSDD 3.1896. TNB 11.1929 ; BBSI 5:39.1963; FEH 1:97.1963; EFPN 2:27.1979; FFI 10:15.1982; FB 1(2) : 238.1984.

Beng.: Latkean

Scandent. Stem terete, solid, densely brownish pubescent; branches with tomentum. Petioles 0.2-0.25cm long; lamina 6.5-21x4.5-10cm, elliptic-oblong, entire obscurely

crenate acute to acuminate, base rounded to cordate, membranous, brownish tomentose above, rufous stellate tomentose below. Bracts solitary 0.5-1.0cm, suborbicular; flowers solitary or in pair, extraxillary, brown - tomentose; pedicels 2.0-4.0cm; sepals 3, connate at base widely ovate, brown pubescent outside, sparsely inside; petals 3+3, 2.1-3.1x1.3-1.5cm, obovate, cariceous, brick red; stamens 0.4cm; anther; carpels many, pubescent; stigma sessile, glabrous 1.5-2.5x1.5-2.0cm long ovoid to ellipsoid, orange tomentose; few to many seeded, shiny, stalked.

Fl.: May - Jul ; Fr. rip.: Aug - Sep

Spn. Cited : DARJEELING : N.B.U. Campus, 120m, 01.3.1996, *Das et Samanta 0763*.

Loc. Distrip : DARJEELING : Common; Rongtong, Sukna, Kalijhora, Rambh, Testa, Rangpo, Ryang, (132 -1000m); SIKKIM : Less common, in South Sikkim (upto 600m).

Gen. Distrib. : India : Darjeeling & Sikkim Hills, Assam; Nepal, Myanmar, Thailand, Andaman Island.

APOCYNACEAE Juss.

KEY TO THE GENERA AND SPECIES:

1. Plants with roots on aerial stems.....*Michrechites elliptica*
1. Plants with no roots on aerial stems.....2
2. Cymes dichotomous, axillary or subterminal.....3
2. Cymes not branched, axillary.....4
3. Lamina elliptic to lanceolate; nerves upto 6 pairs; follicles 8-15cm long.....
.....*Ichnocarpus frutescens*
3. Lamina ovate to elliptic; nerves more than 6 pairs; follicles 30-40cm long
.....*Rhynchodia wallichii*
4. Seed linear-oblong; nerves 8-12 pairs.....*Aganosma gracilis*
4. Seed ovoid; nerves 10-12pairs.....*Chonemorpha fragrans*

AGANOSMA G. DON

Aganosma gracilis Hook. f. in FBI 3: 664. 1882; TNB 91. 1929 (Photo-39).

Nep. : Bathaya-Lahara

Medium shrubby sinistrorse twiner with milky latex. Stem and branches slender, glabrous. Petioles 0.5-1.0cm long, terete, glabrous, warted; lamina 4.0-7.5x1.8-

4.1cm, elliptic-oblong, entire, acuminate, base acute, glabrous, membranous, nerves 8-11 pairs, alternate, distinct. Flowers 4-6 in cymose corymbs; peduncles 2.5-3.0cm long; pedicels 0.7-0.8cm long, hairy. Sepals 5, spreading, linear-lanceolate, acute, sparsely hairy; corolla salver - shaped, tube very short, throat oblong cylindrical, lobes 5, lanceolate to linear - oblong; stamens adnate to the throat, included; anthers saggitate and adnate to stigma; disc 5-lobed, cupular; style 1, very short, truncate; stigma columnar; Fruits not seen.

Fl.: May - Jun.

Spn. Cited : DARJEELING : Latpunchor, 1200m, 17.5.1995, *Das et Samanta* 0761.

Loc. Distrib. : DARJEELING : Common; Found only at around Latpunchor areas (upto 1500m).

Gen. Distrib. : India ; E. Himalayas.

CHONEMORPHA G. Don

Chonemorpha fragrans (Moon) Alston in Ann. Roy. Bot. Gard. Perad. 11.203. 1929; KB 1947: 52. 1947; FPK 63. 1981; EFPN 3: 83.1982; Nam. Chan. Fl. Pl. 123.1987.

Echites fragrans Moon, Cat. Pl. Ceylon 20.1824, 20.1824; Razi. RBSI 18(1) :18.19959.

Chonemorpha macrophylla (Roxb.) G. Don, Gen. Hist. 4:76. 1837; FBI 3: 661.1882; TSDD 56. 1896; TNB 90. 1929; FEH 1:259.1966.

Nep. : Leeshaney

Lianas. Stem dextrorsely twining with milky latex, terete, distinctly lenticellate, hairy when young, nearly glabrous at maturity, internodes upto 25cm long. Petioles 2.3-6.0cm long, terete, pubescent; lamina 7.5-24x13-18cm broadly ovate-elliptic, obovate or orbicular, entire, acute to cuspidate, base cordate, glabrous on both surfaces whitish-yellow below, greenish brown above on drying, nerves 10-12 pairs, alternate. Flowers in axillary cymes; peduncles 5.0-6.5cm long, nearly glabrous; bracts 2, 0.6-0.8cm long, ovate, acute, glabrous; pedicels 1.5-1.8cm long; calyx 1.1-1.5cm long, tubular, spreading upward, teeth 5, ovate-lanceolate, acute; corolla salver-shaped, milky white, throat yellow, 4.5-6.5cm across, tube 2.0-3.0cm long, wedge shaped, c 14-15x1.5-1.8cm, stamens 5, adnate to the throat of corolla tube; filaments 0.1-0.12cm or very short; anthers 0.7-0.8cm long, saggitate, adnate to stigma; style filiform, top globose; stigma conoid. A pair of follicles, 30-50cm long, cylindrical. Seeds 2.1-2.5cm, ovoid, coma long.

Fl.: May - Jul. Fr. rip.: Oct. - Feb.

Spn. Cited. : DARJEELING : Mangpo, 1300m, 13.12.1994, *Das et Samanta* 0761; Latpunchor, 950m, 17.5.1995, *Das et Samanta* 0755; Sevoke, 450m, 11.9.1996, *Das et Samanta* 1429; SIKKIM : Nandugaon, Jorethang, 840m, 21.5.1996, *Das et Samanta* 1124.

Loc. Distrib. : DARJEELING : Common; Rangpo, Peshok, Takdah, Teesta, Kalijhora, Rambh, Mangpo, Paglajhora, Kalimpong, Kurseong (400 -1500m); SIKKIM : Less common; Jorethang, Legship, below Namchi, North Ringu (300 - 1300m).

Gen. Distrib. : India : Himalayas (Kumaun - Arunachal Pradesh) ; Myanmar, Sri Lanka, Andaman, Malaysia, Indonesia, Sumatra.

Note : (i) Chr. no. $2n = 20$ (Tapadar, N. N. Roy 1964a).

ICHNOCARPUS R.Br.

Ichnocarpus frutescens (L.) R. Br. in Mem. Werner. Soc. 1: 62. 1811 ; FBI 3:669.1882; BP 2:680.1903 ; TNB 91. 1929; FEH 1: 259. 1966; FPK 64. 1981; EFPN 3:83.1982.

Apocynum frutescens L., Sp. Pl. 213.1753.

Nep: Dudhi, Dudhi-lata, Siama-lata, Dudhay Lahara

Shrubby dextrorse twiner. Stem slender, terete, rusty tomentose to glabrous. Petioles 0.4-0.8cm long; lamina 4.2-7.2x1.2-2.3cm, elliptic-lanceolate, entire, acute, base rounded, nerves 6-pairs, alternate, indistinct above, distinct beneath. Cymes axillary; paniculate; peduncles 5.0-15cm long; bracts minute; pedicels c 2.0cm long. Flowers small, c 0.6x0.3 cm; calyx tubes 0.1-0.12cm long, glandular outside, lobes 5, c 0.1cm, ovate subacute, eglandular; corolla c0.2x0.1cm, salver. shaped, mouth villous, limbs 5-lobed, acuminate, glabrous; stamens 5, included attached to the middle of the corola tube, anther 0.1-0.11cm saggitate, filaments short; ovary 2, c0.05cm diam, style very short, c0.05cm. Stigma dumble shaped c 0.05cm, tip beaked. A pair of follicles 7.5-15cm long, cylindric, rusty tomentose. Seeds 1.2-1.9 cm long, linear, comose long, deciduous.

Fl.: Oct - Nov.; Fr. rip.: Jan-Feb.

- Spn. Cited. : DARJEELING : N.B.U. Campus, 120m, 11.2.1996, *Das et Samanta* 0908; Latpunchor, 1220m, 17.5.1995, *Das et Samanta* 0753; SIKKIM: Jorethang, 320m, 28.10.1995, *Das et Samanta* 0846; Soreng, 1520m. 30.10.1995, *Das et Samanta*.
- Loc. Distrib. : DARJEELING : Very common; Dolka, Terai, Pankhabari, Garubathan, Kalijhora, River Lesh (120 - 1300m); SIKKIM: Common; Jorethang, Soreng, Rangpo, Singtam (upto 1800m).
- Gen. Distrib. : India : Tropical Himalaya, Assam; Myanmar, Sri Lanka, Malaysia, China, Indonesia, Australia.
- Note : (i) Chr. no. $2n = 20$ (Gajapathy, C. 1962b).

MICHRECHITES Miq.

Micrechites elliptica Hook. f. in FBI 3:671. 1882; TNB 91. 1929; FA 3: 273.1939; FPK 64. 1981; TBRI 50(4): 101.1987.

Nep: Dudhay Lahara

Exclusively shrubby root-climbers. Stem slightly ribbed, latex milky. Petioles very short; lamina 7.0-12x2.5-3.5cm, elliptic-lanceolate, entire, acute to slightly acuminate; base subcordate, membranous, puberulous, brown surface on drying, nerves many. Flowers in axillary and terminal paniculate cymes; calyx lobes 0.24-0.3cm long, ovate - oblong, glandular within; corolla yellow, tube 0.4-0.6 long, lobes 5, obliquely falcate, obtuse, overlapping to right. Stamens included. Follicles 12-18 cm long, sub-cylindric. Seeds 1.1-1.5 cm, flat oblong, glabrous, coma long.

Fl.: Aug - Sep.; Fr. rip.: Sep. Dec.

Spn. Cited. : DARJEELING : Soom Forest, 1750m, 12.6.1983, *A. P. Das* 1445.

Loc. Distrib. : DARJEELING : Less common; Common in Samsing, Soom Forest, Latpunchor, Kalimpong (1200-1800m).

Gen. Distrib. : India : Darjeeling, Sikkim Himalayas, Meghalaya, Bhutan.

RHYNCHODIA Benth.

Rhynchodia wallichii Hook. f. in FBI 3:666.1982.

Large shrubby sinistrorse twiner with milky latex. Stem stout, deep brown, tubercled. Petioles 0.8-2.5cm long, nearly glabrous; lamina 8.0-10.5x5.0-6.5cm, ovate-elliptic,

entire, elongated-apiculate, base rounded, shiny glabrous-above, sparsely pubescent beneath, nerves 4-6 pairs, alternate, distinct. Cymes dichotomous; peduncles c 4.0 cm long, plumose hairy, brown; bracts 2, 0.1-0.12cm, lanceolate, acuminate, pubescent; pedicels 0.2-0.23cm long, terete, pubescent; flowers 1.5x0.5cm, fragrant; sepals 5, free 0.31x0.1cm, ovate to lanceolate, brownish pubescent above and margins glabrous within. Corolla salver shaped; petals 5, white. limbs 5-lobed 0.9x0.2cm, linear - lanceolate, entire, acute, glabrous. Stamens 5, filaments c 0.1cm long, attached at the base of petals; anthers c 0.05cm long, flat; ovary 0.1-0.12cm diam, glabrous; style 0.2-0.3cm long, stigma obscurely bifid. A pair of follicles 30-40cm long, pendulous, smooth. Seeds 1.4-2.0cm long, oblong, beaked, long white hairy. Coma long, deciduous.

Fl.: Mar. - Jun.; Fr. rip.: Sep - Jan.

Spn. Cited. : SIKKIM : Karfet Forest, Jorethang, 310m, *Das et Samanta* 1078.

Loc. Distrib. : SIKKIM : Rare; Found at Jorethang and its adjoining areas (300-1200m).

Gen. Distrib. : India : E. Himalayas (Darjeeling - Sikkim) Assam; Bangladesh, Myanmar.

ARALIACEAE Juss.

HEDERA L.

KEY TO THE GENERA AND SPECIES:

1. Leaves simple, often lobed; exstipulate..... *Hedera nepalensis*
1. Leaves digitately 5-8 foliate; stipules 1.5x1.0cm.....2
2. Leaflets upto 10cm long.....*Schefflera roxburghii* var. *venulosa*
2. Leaflets upto 15 cm long..... *S. roxburghii* var. *macrophylla*

Hedera nepalensis K. Koch. Hort.Dendr. 284.1853; FEH 1:226.1966 & 3:86.1975; EFPN 2:191.1979; TBRI 50(4): 116.1987; FB 2(1): 346.1991.

H. helix sensu FBI 2:739.1879, non L.

Nep. : Dudhay Lahara, Lekh Bohori

Extensive shrubby root climber. Stem ridged when dry, sparsely minute tubercled. Leaves exstipulate; petioles 2.5-10cm long, slightly decurrent, glabrous; lamina 3.0-10x1.5cm, broadly ovate to broadly cordate, entire to 3-lobed, acute to acuminate, base cordate to cuneate, coriaceous, nerves 7-9, distinct, stellate-pubescent above,

brownish beneath. Compound umbels, terminal; peduncles 2.0-4.5cm long; pedicels 0.5-0.6cm, hairy, many flowered, white-pale green; sepals 5, 0.1x0.05cm, entire or lobed, acute to shortly caudate, matted hairy; petals 5, 0.2.-0.25x0.01-0.15cm, ovate, entire, acute, stellate-pubescent; stamens 5, filaments 0.05-0.08cm, anther bithecous 0.1-0.15cm; ovary 5 loculed, styles connate in a column. Fruit 0.6-0.8cm in diam, globose; seeds 3-5, ovoid.

Fl.: Aug. - Sep.; Fr. rip.: Jan. - May.

- Spn. Cited. : DARJEELING : Jalapahar, 2250m. 07.5.1994, *Das et Samanta* 1034; SIKKIM : Pangthang, 1910m, 20.11.1995, *Das et Samanta* 1035; Pelling, 1900m, 23.5.1996, *Das et Samanta* 1185.
- Loc. Distrib. : DARJEELING : Less common; Katapahar, Takdah, Jorebunglow, Birch Hill, Raman, Rimbick, Kalimpong (1500 - 2600m); SIKKIM: Less common; Gangtok, Gyalshing - Pelling, Chungtam (1800-2600m).
- Gen. Distrib. : India : Darjeeling - Sikkim, Assam & Meghalaya, Kashmir; Bhutan, Myanma, Afganistan, China.
- Notes : (i) The species of *Hedera* is used as foliage and stem also used medicinally.
(ii) Chr. no. $2n = 48$ (Singhal, V. K. *et al.* 1980b).

Schefflera roxburghii Gamble, FM, Pt. 3:570.1919.

Heptaleurum venulosum seem. FBI 2:729.1879.p.p

Stout shrubby root climber. Stem glabrous. Stipules 1.5x1.0cm, distinct, connate to the petiole. Leaves digitately 5-8 foliolate; petiole 9.0-14cm, longer than peduncles, glabrous; petiolule 0.6-4.5cm; lamina 6.0-17x2.3-7.5cm, ovate to oblong to elliptic, entire, caudate to acuminate, base subacute to rounded, both surfaces glabrous, midveins prominent, lateral veins alternate. Flowers not seen. Peduncle 7.0-8.0cm long in fruit and branches 0.5-1.0cm, ridged when dry; pedicel 0.3-0.4cm long. Fruit 3.0-4.0x2.0-3.0cm, globose, distinctly 5 rimed to narrowly winged, crimson.

Fl.: Apr.-Jun.

- Spn. Cited : DARJEELING : Tung Sung, 1900m, 28.3.1983, A. P. *Das* 1307.
- Loc. Distrib. : Rare; Found only in Tung Sung (1000-1900m).
- Gen. Distrib. : Endemic to E. Himalaya and E. Ghat.

Schefflera venulosa (Wt. & Arn.) Harms in Engl., pff.-fam. III, 8:39. 1894; Li in sargentia 2:34.1942; BBSI, 2:376.1960; FEH 1: 226.1966; EFPN 2: 193.1979.

var. *venulosa*.

Nep. Kantiongrik.

Shrubby climber on rocks. Leaves digitately 5-foliolate, 9.0-10cm long, oblong to elliptic, entire, acute to slightly acuminate, base rounded to cuneate; petiolule 1.5-2.0cm; bracts deciduous, ovate. Flowers in panicle. Fruits berries or globose, red.

Fr. : Mar.-Apr.

Spn. Cited : DARJEELING : Rung Dung Valley, 1800m, 23.3.1983
A. P. Das 1317.

Loc. Distrib : DARJEELING : Rare, Found only at Rung Dung Valley
(1000-2000m).

Gen. Distrib. : Subtropical India; Malaysia, China.

var. *macrophylla* (Well excl.) A. P. Das et Chanda in TBRI 50(4):126.1987.

Very large shrubby climber on rocks or trees; leaflets very large upto 15cm; flowers in panicle, common peduncle 4.0-7.0cm; secondary peduncle 0.5-1.0m. Fruit globose; seeds numerous.

Fl. : May-Jun.

Spn. Cited. : DARJEELING : Lloyd Botanical Garden 2000m, 20.5.1982,
A.P. Das 0952.

Loc. Distrib. : DARJEELING : Rare; Senchal-Birch Hill (upto 260m).

Gen.Distrib. : Subtropical India; China.

ARISTOLOCHIACEAE Juss.

ARISTOLOCHIA L.

KEY TO THE SPECIES:

1. Leaves unlobed.....2
1. Leaves palmately and deeply lobed..... *A. platanifolia*
2. Flowers many in axillary racemes; plants glabrous.....3
2. Flowers axillary solitary; plants appressed pubescent or glabrous.....4
3. Perianth tube curved; seeds deltoid-ovate, flat, not winged.....*A. indica*
3. Perianth tube straight; seeds triangular flat, narrowly winged..... *A. tagala*
4. Right handed (dextrorse) twiner.....5

4. Left handed (sinistrorse) twiner.....*A. cathcartii*
 5. Plants glabrous; lamina broader than length, nearly rounded..... *A. elegans*
 5. Plants thickly hairy; lamina much longer than breadth.....6
 6. Base of lamina shallowly cordate with lobe wide spaced, never curved
 back towards the petiole.....*A. nakaoi*
 6. Base of lamina deeply cordate with lobes narrowly spaced and generally
 slightly curved towards the petiole.....7
 7. Lamina small, acute generally 5.0-17x3.0-10cm.....*A. griffithii*
 7. Lamina much large 16-32x10-21cm, acuminate, sometimes slightly
 caudate.....*A. saccata*

Aristolochia cathcartii Hook.f. in FBI 5:77.1886; FB 1(2): 353. 1984.

Medium shrubby sinistrorse twiner. Stem many ridged, wiry with matted brown appressed sericeous hairs, internodes upto 10cm long. Petioles 2.0-9.0cm long, slightly ribbed, villous; lamina 5.0-11x2.5-6.5cm, ovate or obovate to lanceolate, entire, acute, base rounded to cordate or acute, brown, membranous, setose above, densely silky brown below. Flowers axillary solitary; perianth sigmoid, covered with long hairs, tube 3.0-4.0cm long, upper part straight, inflated, lobes of limbs square, broad, spreading covered with long purple papillose hairs; stamens 12 in 3 concentric columns. Fruits 4.0-6.0cm long, obovoid, 6-angled with deep furrows.

Fl.: May-Jun.; Fr.rip.: Apr.-Aug.

Spn. Cited. : DARJEELING : Jalapahar, 2250m, 07.05.1994, *Das et Samanta* 0196.

Loc. Distrib. : DARJEELING : Less common; Jalapahar-Senchal, Takdah Kalijhora, Mangpo (1500-2300m); SIKKIM : Rare; Rongsong and its adjoining areas (upto 1950m).

Gen. Distrib. : India : Sikkim and Darjeeling, Himalayas, Meghalaya; Bhutan.

Aristolochia elegans Mast.in Gard. Chron. 2: 301. 1885; Cooke 3: 18. 1958 (Rep.); Fl. Bho.333. 1977.

A medium shrubby glabrous dextrorse twiner. Stem shallowly ribbed, solid, yellowish-green, internodes upto 10cm long. Petioles 0.5-2.5cm long, terete, yellowish-green, stipule like rounded-cordate leaf of an undeveloped bud at the axil; lamina membranous, 2.5-5.5x2.5-6.5cm, reniform to cordate, entire, obtuse to rounded, base rounded or dilated, deep green upward, whitish green below, pedately 3-5 nerved. Flowers axillary, solitary; pedicels 5.5-6.5cm, slightly ribbed; perianth dark purple or violet brown, tube elongated and inflated at base, rounded greenish-yellow, 3.0x1.5cm, nerves parallel, white, limb dilated 1.5-2.0cm, obliquely 2-lipped 5.0x4.5cm, brown. Stamens 6+6, 0.5x0.1cm, bithecous; style very short, lobes 3.

Capsule septicial, 6-valved; seeds numerous 0.6x0.4 cm, broadly ovoid narrowly winged, gland dotted at base.

Fl.: Sep.-Dec.; Fr. rip. : Dec.-Jan.

Spn. Cited. : DARJEELING : Kalimpong, 1500m, 20.11.1994, *Das et Samanta* 1062; NBU Campus 120m, 20.11.996, *Das et Samanta* 1473.

Loc. Distrib. : DARJEELING : Generally cultivated as ornamental plants at gardens, sometimes escapes (upto 1550m).

Gen. Distrib. : A Native of tropical America.

Aristolochia griffithii Hook. f. & Thoms. ex DC.Prodr. 15(1): 437. 1864; FBI 5:77.1886; Spring. Fl. Sikk. Him. f. 173.1963; FEH 1:66.1966 & 2: 21.1971; EFPN 3: 180.1982; FB 1(2): 353. 1984. (Photo-14).

Isotrema griffithii (Duch.) Fisch., in KB 1940:98.1940.

Large woody dextrorse much branched twiner. Young stem articulated, densely wooly, brown, obscurely ribbed, sparsely hairy on rims. Petioles 1.5-5.0cm long, terete, thickly brown hairy; lamina 5.0-17x3.0-10cm, broadly ovate to orbicular, entire, acute to shortly acuminate, base auriculate to cordate, membranous, sparsely pubescent above and densely brown tomentose below, young matted with brown-villous throughout, nerves pedately 7-9 at base. Flowers solitary axillary; pedicels 1.5-4.5cm long with 2 leafy bracteols 1.0-1.5x0.5-0.7cm long. Perianth sigmoid, closely pubescent, lower tube 3.5-4.5cm, upper inflated, mouth constricted, rhombic-orbicular with a strongly greyish brown striations within, thickly villous dark purple outer; column 3-lobbed, 0.3x0.2cm., Stamens 12, 4 each in 3-whorls, sessile; ovary cylindric 2.5-5.0cm, ovules numerous, subsessile in 4-rows. Capsules 18x2.5cm, folded at base with 6 strong ribs; seeds 0.4-0.6cm, ovoid.

Fl.: Apr. - May.; Fr. rip.: Jun - Aug.

Spn. Cited. : DARJEELING : Alubari, Neora Valley National Park, 2480m, 23.4.1995, *Das et Samanta* 0596.

Loc. Distrib. : DARJEELING : Less common; Raman, Darjeeling Neora Valley National Park, Meghma (upto 3000m).

Gen. Distrib. : E. Himalaya (Nepal - NEFA); S. Tibet.

Note : (i) Used as ornament for its beautiful flowers.

Aristolochia indica L. Sp. Pl. 960.1753; FBI 5: 75.1886; BP 2: 891.1903; Bot. Bih. & Ori. Pt. 5: 785.1924; Moon., Suppl. Bot. Bih. & Ori. 259.1950. (Photo-25).

A. lanceolata Wt., t. 1858.1952.

Beng. & Hin : Iswarimul; Nep: Bal-bolena

A medium suffrutescent dextrorse twiner. Stem 4-5 ribbed, solid, greenish, glabrous. Petioles 1.0-1.5cm long, glabrous; lamina 5.0-9.0x2.0-4.0cm, obovate - oblong, with a shallow sinus near base on each side otherwise entire, shortly acuminate to apiculate, base shallowly cordate-cuneate, membranous, nerves 3, both surfaces glabrous midvein distinct and thick. Bracts opposite to base of peduncle. Flowers 1-5 in a short axillary raceme; pedicels 0.5-2.0cm, glabrous; perianth straight - slightly curved, base globose 0.5-0.6cm, in diam, tube slender, curved 1.5-2.0cm, with middle notch 0.2-0.3cm, upper portion flat, glabrous, stamens 6, in a column c 0.2cm, anther c 0.15cm. Ovary cylindrical, ribbed. Capsules 3.0-3.5 cm long, globose - oblong, ribbed nearly glabrous, 6-valved, greyish black on ripening with persistent style; seeds deltoid - ovoid, flat.

Fl.: Aug. - Oct.; Fr. rip.: Oct. - Dec.

Spn. Cited. : DARJEELING : N.B.U. Campus, 120m, 10.11.1995, *Das et Samanta* 1061.

Loc. Distrib. : DARJEELING : Rare in wild condition but common in gardens (upto 150m).

Gen. Distrib. : India; Nepal and Sri Lanka.

Note : (i) Chr. no. 2n = 12 (Sanjappa, M. 1978).

Aristolochia nakaoui Maekawa in Faun. & Fl. Nep. Him. 113, f. 14. 1955; FEH 2:21.1971; EFPN 3:180.1982; FB 1(2): 353.1984.

Isotrema nakaoui (Maekawa) A. R. Smith in B. Mag. 178 : sub.t.576.1970

Similar to *A. griffithii* only stem and leaves densely tomentose beneath, flowers densely brown-hirsute; perianth tube 3.0-4.0cm, long, folded, sac feebly inflated at base, mouth 4.0-6.0cm across, subtriangular, anthers 6 in a column.

Fl.: Mar. - Jun. ; Fr. rip.: Jun - Aug.

Spn. Cited. : SIKKIM : Nandugaon, 840m, 21.5.1995, *Das et Samanta* 1123.

Loc. Distrib. : DARJEELING : Rare; Gairibas, Jalapahar (2300 - 3000m);
SIKKIM : Rare; Nandugaon, Namchi (upto 2500m).

Gen. Distrib. : Endemic to Sikkim; Nepal, Bhutan (E.Himalaya).

Note : (i) Used as ornament for its beautiful flowers.

Aristolochia platanifolia (Klotz.) Duch. in DC., Prodr. 15(1) : 437.1864; FBI 5:76.1886; TSDD 64.1896; TNB 104.1929; FPK 88.1981. EFPN 3:180.1982; FB 1(2):354.1984. (Photo-42).

Siphisia platanifolia Klotz.in Monatsb. Akad. Wiss. Berl. 1859.603:1859.

Large stout sinistrorse twiner. Stem obscurely 4-ridged, solid, pubescent. Petioles 5.0-5.5cm long, pubescent; leaves 15-24x12-20cm, broadly ovate, digitately 3-lobed, mid-lobe often 3-lobed, dentate, each lobe 1.0-3.0cm broad, glabrous above pubescent below, dense on veins, acuminate, base rounded to cuneate, nerves 3 at base. Flowers and fruits not seen.

Spn. Cited. : DARJEELING: North Point, 1950m, 04.10.1994, *Das et Samanta* 0386; SIKKIM : Pangthang, 1900m, 20.11.1995, *Das et Samanta* 1015.

Loc. Distrib. : DARJEELING: Rare; Nimbong, Birch Hill, Lebong Road, Damsang, Kafer (1500 -2000m); SIKKIM : Rare; Found only at Pangthang (1500-2000m).

Gen. Distrib. : India : E. Himalaya, Sikkim, Assam, Mishmi Hills; Nepal-Bhutan.

Aristolochia saccata Wall. Pl. As. Rar. 2, t. 103. 1830; cat.91. n.2707.1831; Graham in B. Mag.65:t,3640.1839; FBI 5:76.1886; EFPN 3:180.1982.

Siphisia saccata (Wall.) Klotz. in Monatsb. Akad. Wiss. Berl. 1859. 603.1859.

Nep : Tengalara

Large woody dextrorse twiner. Stem terete with appressed villous, internodes 10-15cm long. Petioles upto 10cm long, shallowly ribbed; lamina 16-32x10-21cm, broadly ovate or ovate - lanceolate, entire, acuminate, base deeply cordate, membranous, glabrous above except on veins, densely matted sercious brown beneath. Flowers in cymes, blackish - brown villous; pedicel very short; perianth tube 1.5-2.0cm long, narrow, mouth rounded, rows of purple veins distinct, venation reticulate, yellow within. Capsule obovoid, many angled.

Fl.: (Mar.); Fr. rip.:Jul - Aug.

- Spn. Cited. : DARJEELING : Samsing, 400m, 29.1.1995, *Das et Samanta* 0513; Latpunchor, 1200m, 17.5.1995, *Das et Samanta* 0737.
- Loc. Distrib. : DARJEELING : Less common; Rambh-Kalijhora, Neora Valley National Park (300 - 2500m).
- Gen. Distrib. : India : E. and C. Himalayas, Assam; Nepal - Bhutan.

Aristolochia tagala Cham. in Linnaea 7:207.t.5,3.1832; TNB 103. 1929; FA 4:28.1940; FEH 3:29.1975; EFPN3:180.1982; FB 1(2): 354. 1984.(Photo-24).

A. roxburghiana Klotz. in Monatsb. Akad. Wiss. Berl. 1859. 596.1859; FBI 5:75. 1886; FA 4:28.1940.

Large shrubby dextrorse twiner. Stem 4-6 ridged, hollow, nearly glabrous, shiny, internodes up to 12cm long. Stipule like undeveloped bud at axil. Petioles 2.0-5.0cm long, ribbed, glabrous; lamina 11-16x5.5-8.0cm, broadly ovate, entire, acuminate to caudate, base broadly cordate, basal lobes spreading, membranous both surfaces glabrous, greenish-yellow, pedately 6-7 nerved. Bracts subulate. Racemes axillary 5.0-9.0cm; peduncle glabrous; pedicel 0.5-0.8cm long. Perianth 1.5-2.0cm, tubular more or less straight, basal 0.3-0.5cm, globose, mouth oblique, notched, lower lip elongate 2.0-2.5cm, oblong, nearly glabrous deepurplish. Stamens 6, anthers 4-lobed. Capsules septicial 3.0-7.0x2.5-3.0cm, oblong, stalked 3.0-4.5cm, 6-chambered. Seeds 0.7x0.8cm, triangular, flat, narrowly winged c 0.1cm, tubercled.

Fl.: May - Jun.; Fr. rip.: Oct. - Nov.

- Spn. Cited. : DARJEELING : Near Tea Research Centre, below Kurseong, 1450m, 02.10.1994, *Das et Samanta* 0337; Mangpo, 1300m, 13.12.1994, *Das et Samanta* 0465; Garubathan, 250m, 25.2.1995, *Das et Samanta* 0546; Latpunchor 1000m, 17.5.1995, *Das et Samanta* 0771.
- Loc. Distrib. : DARJEELING : Common; Dolka Forest, Bengdubi, Sevoke - Rambh, Sukna, Kalijhora, Tindharia, Kalimpong (110-1600m).
- Gen. Distrib. : India E. Himalaya, Sikkim; Nepal, Sri Lanka, Malaysia, W. & S.China.
- Note : (i) Chr. no. $2n = 14$ (Gregory, M. P.1956; Pancho, J.V.1971).

ASCLEPIADACEAE R. Br.

KEY TO THE GENERA:

1. Plants epiphytic, shrubby twiner.....*Myriopteron*
1. Plants terrestrial; shrubby twiner.....2
2. Stem woody hollow, glabrous.....*Cynanchum*
2. Stem solid, pubescent.....3
3. Cymes subumbellate; corolla much longer than tubes.....*Pergularia*
3. Cymes branched; corolla much shorter than tubes.....*Gymnema*
4. Plants suffruticose with aromatic tuber.....*Hemidesmus*
4. Plants shrubby no aroma.....5
5. Corolla lobes twisted, coronal scales corolline.....*Cryptolepis*
5. Corolla tubes valvate; coronal scales corolline united into lobed ring.....*Periploca*
6. Lamina elliptic-oblong, entire-wavy.....7
6. Lamina ovate-oblong, entire.....*Tylophora*
7. Corolla tube short, lobes spreading.....*Treutlera*
7. Corolla tube elongated.....*Ceropegia*

CEROPEGIA L.

KEY TO THE SPECIES:

1. Sparsely hairy sinistrorse twiner, corolla tips elongated 1.5-2,5 cm long.....*C. pubescens*
1. Nearly glabrous dextrorse twiner; corolla tips not elongated.....2
2. Lamina broadly lanceolate; stem hairy althrough.....*longifolia* var. *longifolia*
2. Lamina narrowly lanceolate; stem with one line of hairs.....var. *darjeelingensis*

Ceropegia longifolia Wall., Pl. Asia. Rar. 1:56, t. 73.1830; Wall. cat. 278, n. 8136.1847; FBI 4: 69.1883; RBSI 19(2): 67.1966. EFPN 3:85.1982; FFI 16:20.1984; TBRI 50(4): 109.1987(Fig 3.25).

C. angustifolia Wt., Contr. B. Ind. 31.1834; Wall., cat. 278, n. 8131.1847.

C. lanceolata Wt., Contr. B. Ind. 31.1834; Wall., 278, n. 8139.1847.

var. *longifolia*.

Large slender, herbaceous dextrorse twiner. Stem terete, slender, pubescent, internodes 14-20cm long. Petioles 0.55-0.8cm long; lamina 7.0-20x1.5-3.2cm, broadly lanceolate, entire, acuminate to shortly caudate, base rounded to acute, membranous, pubescent above, nearly glabrous beneath, lateral nerves 5-7. Bracts over 0.3cm, subulate; peduncles 2.0-4.0cm long, extraxillary, terete, shiny, glabrescent; pedicels 0.5 - 1.2cm long, flowers 3-6, mostly 1-4; sepals 5, purple, 4.0-6.0x01-0.05cm, broadly lanceolate, entire, caudate, circinately curved at base,

slender at the middle, head 2.5x0.5-1.5cm with two lateral notch, tips obtusely lobed, greenish-white, tube with green spots outside; Corona lobed, lanceolate, ciliated. Staminal column minute, pollen mass erect, almost sessile; stigma 2-lobed. A pair of follicles 11-14 cm long, slender. Seeds 0.75-1.0cm, oblong, comose.

Fl.:Jun. - Sep.; Fr. rip.: Oct.-Jun.

Spn. Cited. : DARJEELING : Singtam, Darjeeling 1900m, 25.9. 1981, A. P. Das 0731.

Loc. Distrib. : DARJEELING : Endemic to W. Bengal (Reshete, Lebong, Suruk) [1800 - 2000m].

Loc. Distrib. : DARJEELING : Threatened; Rung Dung Valley (1200 - 1800m).

Gen. Distrib. : Endemic to Eastern Himalaya (Darjeeling).

var. darjeelingensis A.P. Das, TBRI 50(4): 109. 1987: Differt a varietate typica caulis glabris una serie pilis excepto, folis anguste, lanceolatis, basi et apice acuminatis bracteis 0.15cm, floribus parvioribus, tubis minus curvis (52°), albidis, coronae lobis ovatis, dense hirsutis.

Spn. Cited. : DARJEELING : Rungdung Valley, 1800m, 17.08.1982, A. P. Das 1146.

Loc. Distrib. : DARJEELING : Threatened; Rungdung Valley (1200-1800m).

Gen. Distrib. : Endemic to E. Himalaya (Darjeeling).

Ceropegia pubescens Wall., Pl. Asia. Rar. 2: 81, t. 187. 1831; FBI 4:73. 1883; Huber in Men, Soc. Broter. 12:47. 1957; FEH 1:260. 1966; FPK 65. 1981; EFPN 3:85. 1982; Fl. Ind. 16:28. 1984; TBRI 50(4):109. 1987.

Herbaceous, wiry sinistrorse twiner. Stem terete, slender, sparsely pubescent, internodes 16-30cm long, Petioles 3.0-5.0cm long; lamina 10-11.5x4.0-6.5 cm, broadly ovate - oblong, entire, acuminate, base rounded, membranous, sparsely pubescent above and on veins below, reticulate. Cymes, 3-10 flowered; bracts short; peduncles 1.5-4.5cm long, as long as petiole; pedicels 1.0-1.4cm long, glabrous; sepals 0.4-0.5cm long, linear, recurved, glabrous; corolla tubular, tube 4.0-5.0cm long, dirty purple, slightly inflated at base, subcylindric above; lobes 1.6-2.0cm, linear, spirally beaked, yellow with purplish tip; corona minute, ciliate. Pair of follicles 7.5-11cm long, slender. Seeds 0.35-0.5cm, ovate, comose.

Fl.: Jun. - Oct.; Fr. rip.: Oct. Jan.

Spn. Cited. : DARJEELING : 2100m, 05.7.1980, A. P. Das 0266.

Loc. Distib. : DARJEELING : Very common; Darjeeling, Senchal, Rimbick, Lava, Kafer, Neora Valley National Park (1200 - 2450m).

Gen. Distrib. : India :Meghalaya, N. Assam. E. Himalayas (Nepal-Bhutan), Tibet, Myanmar, W. China.

CRYPTOLEPIS R.Br.

KEY TO THE SPECIES:

1. Sinistrorse twiner; lamina 9.0-12.5x3.5-5.0cm, base cuneate.....*C. buchananii*
 1. Dextrorse twiner; lamina 5.2-8,5x2.5-4.0cm, base cordate.....*C. sinensis*

Cryptolepis buchanani Roem. & Shult. Syst. Veg.4.409.1819; FBI 4: 5.1883; BP 2:685.1903; TNB 91.1929; FEH 2:109.1971; EFPN 3:86.1982.

Nep: Dudhay Lahara

Shrubby sinistrorse twiner. Stem terete, hollow, slender with milky latex, nearly glabrous, yellowish green. Petioles 0.5-1.5cm long, nearly glabrous; lamina 9.0-12.5x3.5-5.0cm oblong - elliptic, entire, acuminate, base cuneate, leathery, both surfaces glabrous, nerves 30-50 pairs, reticulate. Flowers many in axillary cymes (diam. 1.5-3.0cm); peduncles 2.0-3.0cm long. Bracts ovate-lanceolate, 0.15-0.2cm long; bracteols minute c 0.15cm; pedicels short, divaricate, branches 0.3-0.5cm long, nearly glabrous. Sepals 5, 0.15x0.02cm, ovate, entire, acute; tube 0.7x0.2cm, yellow, lobes lanceolate, glabrous, yellowish - green; coronal scales clavate; pollinia c0.08cm in diam. Carpels 2; ovules many; styles distinct, stigma broadly conic. Pair of follicles in 2 branches 5.0-9.5cm, terete, straight, rigid, smooth. Seeds many, 0.55-0.70cm, oblong -ovate, compressed, comose in one end.

Fl.: May - Jun.; Fr. rip.: Sep - Feb.

Spn. Cited. : DARJEELING : Above Sevoke, 955m, 11.9.1996, *Das et Samanta* 1455; SIKKIM : Karfet Forest, Jorethang, 310m, 20.5.-1996, *Das et Samanta* 1082.

Loc. Distrib. : DARJEELING : Common; Samsing, River Teesta Valley, Kalijhora, Purbikhola, Latpunchor, Kalimpong (300-1000m); SIKKIM : Less common in Jorethang and Namchi areas (upto 1500m).

Gen. Distrib. : India : Foot Hills of Himalaya, Assam; Sri Lanka, Myanmar, China (E to W. & S.)

Cryptolepis sinensis (Lour.) Merr. in Philip. Journ. Obrm Sci. 15: 254. 1919; ssp. *sinensis*; Bullock in KB 282. 1955 in adnota -Li, woody Fl. Taiwan 797, f. 321. 1963; FEH 1:260. 1966; FPK 65. 1981; Nam. Chan. Fl. Pl. 156. 1987; TBRI 50(4): 110. 1987.

Pergularia sinensis Lour., Fl. Cochinchina. 169. 1790.

Cryptolepis elegans Wall. ex G. Don, Gen. Syst. 4: 82. 1837; FBI 4: 6. 1883; TNB 91. 1929; FPK 65. 1981.

Nep.: Dudhay Lahara

Shrubby dextrorse twiner with milky latex. Branches terete, slender, warty, greyish - yellow. Petioles 0.8-1.2cm long; lamina 5.2-8.5x2.5-4.0cm, elliptic - oblong, entire, acute, base cordate, nearly glabrous, yellowish beneath, green and shiny above, nerves 12-14 pairs, horizontal. Cymes branched axillary or terminal. Bracts 0.12-0.15cm long; pedicels 0.25-0.4cm long; sepals 0.5-0.8cm long, ovate, entire, obtuse; corolla yellow, tube short; lobes 1.3-1.8cm long, ovate-lanceolate, tip twisted; anthers short; stigma broadly conic. coronal scales elavate. Pair of follicles 11-20cm long, divaricate. Seeds 0.5-0.8 cm oblong, comose.

Fl.: May - Jul.; Fr. rip.: Oct. - Feb.

Spn. Cited. : DARJEELING : Singtam, Darjeeling 1850m, 27.6.1982, A. P. Das 1026; Samsing, 400m, 29.1.1995, *Das et Samanta* 0511.

Loc. Distrib. : DARJEELING : Less Common; Sukna, Kurseong, Pankhabari; Samsing, River Teesta Valley, Singtam, Kalimpong (200-2000m).

Gen. Distrib. : India : Tropical and Subtropical Himalayas; Malaysia, China, Taiwan.

CYNANCHUM L.

Cynanchum corymbosum Wt. Contrib. B. Ind. 56. 1834 (Photo -44).

Ne.: Dudhay Lahara

Large woody sinistrorse twiner. Stem with milky latex, terete, hollow, glabrous. Leaves opposite; petioles 2.0-3.5cm long, glabrous; lamina 10-13x4.0-7.0cm, orbicular or broadly ovate, entire, acuminate to cuspidate, basal lobes incurved with numerous glands, membranous. glabrous beneath, midvein much broader, laterals 6-8 paris.

Flowers many in axillary branched corymbs; peduncles upto 10 cm long; pedicels 0.25-0.3 cm long, quite glabrous; sepals c 0.15cm. ovate, obtuse, glabrous; petals 0.3-0.4cm, ovate, acute, connate, appressed yellowish white hairy outside. Corona 2, c0.1 cm, much longer than column. Pollina pendulous waxy; anthers c 0.05cm long, almost sessile. Pair of follicles 3.0x0.4cm, minutely and sparsely appressed brownish hairy. Seeds orbicular-ovoid, comose.

Fl.: Sep-Oct. ; Fr. rip.: Nov. - Jan.

Spn. Cited. : SIKKIM : Rhenek, 1020m, 05.9.1996, *Das et Samanta* 1371; Mangan 1310m, 26.9.1996, *Das et Samanta* 1502.

Loc. Distrib. : SIKKIM : Less common; Rishi, Pedong, Dikchu, Singhik, Phodong, Lingu (800 -1800m).

Gen. Distrib. : India : Sikkim, Meghalaya, Nicobar Island; Bangladash.

GYMNEMMA R. Br.

KEY TO THE SPECIES:

1. Lamina obovate, both surfaces pubescent; Sepals ovate-lanceolate.. *G. sylvestre*

1. Lamina linear-lanceolate, nearby glabrous except midribs; Sepals linear-oblong..

..... *G. thomsonii*

Gymnemma sylvestre (Retz.) R. Br. ex Schult. in Roem. Schult. Syst.Veg. 6:57.1819.

Gymnema thomsonii Hook. f. , FBI 4:32.1883; TNB 91. 1929; FPK 65.1981; TBRI 50(4): 115. 1987.

Nep: Dudhay Lahara.

Large shrubby sinistrorse twiner. Stem terete, pubescent, branches slender, petioles c 3.0cm long; lamina 4.0-6.0x2.3-5.cm, obovate, entiere, sometimes obscurely cuneate, acute to slightly acuminate, base rounded to cordate, membranous, both surfaces pubescent; nerves 5-7 pairs. Cymes branched, axillary, subglobose. peduncles 1.5-5.0cm long, brown pubescent; pedicels 0.2-0.4cm long, glabrous; sepals 5, 0.1-0.12cm long, ovate- lanceolate, entire, acute, pubescent; corolla campanulate, lobes shorter than calyx, silvery pubescent outside, nearly glabrous within. Stamens small; anthers tip minute; stigma conical. Fruits not seen.

Fl.: Mar. - Apr.

Spn. Cited. : DARJEELING : Panighata, 350m, 13.3.1994, *Das et Samanta* 0063.

Loc. Distrib. : DARJEELING : Less common; below 800m (100-800m)

Gen. Distrib. : India : Tropical and Subtropical Himalayas; Concon, Travancor, Tropical Africa.

Gymnema thomsonii Hook.f., FBI 4:32.1883; TNB 91. 1929; FPK 65.1981; TBRI 50 (4): 115.1987.

Shrubby slender sinistrorse twiner. Stem terete, internodes 11-14 cm long, glabrous. Petioles 0.9-1.8cm long, linear, glabrous; lamina 5.2-10.5x20-3.5cm, linear-lanceolate, entire or repand, acuminate, base acute to cuneate, nearly glabrous, except midribs. Flowers in cymes; peduncle as long as petiole, branched; pedicels upto 0.4 cm long. Sepals c 0.2cm, linear-oblong, united at base, hairy; petals yellow 0.2-0.3cm, linear, reflexed margins; stigma c 0.02cm. spreaded, tuberculate. Fruits not seen.

Fl. Jun-Aug.

Spn.Cited. : DARJEELING : Soom Forest, 1800m, 12.06.1983, A. P. Das 1439; Panighata, 350m, 14.3.1994, *Das et Samanta*, 0065; SIKKIM : Pangthang, Gangtok, 1910m, 20.11.1995, *Das et Samanta* 1013; Pelling, 1900m, 23.05.1996, *Das et Samanta* 1172.

Loc. Distrib. : DARJEELING : Rare; Birch Hill, Soom Forest, Ging, Panighata (upto 2000m); SIKKIM : Less common; Pangthang, Pelling-Gyalshing (upto 2000m).

Gen. Distrib. : India : Endemic to Darjeeling and Sikkim Himalayas.

HEMIDESMUS R. Br.

Hemidesmus indicus (L.) R. Br. in Mem: Wern. Soc. 1:56.1809 & Aiton, Hort. Kew 2:75.1811; FBI 4:5.1883; BP 2:686.1903; TBRI 50(40): 101.1987.

Periploca indica L., Sp. Pl. 211.1753.

Beng: Ananta-mal

Suffruticose slender shrubby dextror-sinistrorse twiner with an aromatic tuberous root-stocks. Stem terete with milky latex, pubescent, internodes 6.0-7.0 cm long, petioles 9.4-0.6cm long, hairy at base; lamina 4.0-6.0x1.2-2.0cm, broadly linear-lanceolate (mostly variable in size and shapes), entire, acuminate to caudate, base acute, glabrous above with white streaks along midribs, pale beneath. Flowers and fruit not seen here.

- Spn. Cited. : DARJEELING : 14-Farje, Neora Valley National Park, 2260m, 24.4.1995, *Das et Samanta* 0580.
- Loc. Distrib. : DARJEELING : Common; Samsing, Terai, Jholung, Deepchak, Kalimpong, Kurseong, Singla, Bijanbari (upto 3000m).
- Gen. Distrib. : Throughout India; Nepal, N. Myanmar, Sri Lanka.
- Note : (i) Chr. no. $2n = 22$ (Sreedevi, P. & Namboodiri, A. N. 1977).

MYRIOPTERON Griff.

Myriopteron paniculatum Griff. in Calc. Journ. Nat. Hist. 4:385.1844; FBI 4:11:1883; FA 3:279.1939; TBRI 50(4): 101.1987.

A small epiphytic shrubby dextrorse twiner. Branches slender, nearly glabrous, rooting from nodes. Petioles 0.2-0.25cm long; lamina 7.0-11x4.6-6.0cm, much variable, suborbicular or oblong - elliptic, entire, acuminate to slightly caudate, base rounded, membranous, glabrescent beneath, nerves indistinct. Flowers small in axillary lax paniculate cymes; peduncles thicker than branches; sepal minute, ovate, entire, glandular within; corolla rotate, lobes lanceolate, brown, densely tomentose within, nearly glabrous outsides. Stamens at the base of corolla; filaments connate; anthers conniving to the stigma. Follicles straight, longitudinal, membranous, wings many. Seeds comose.

Fl.: (Aug.).

- Spn. Cited. : DARJEELING : Soom Forest, 1600m, 01. 7. 1983 A. P. *Das* 1529.
- Loc. Distrib. : DARJEELING : Endemic; Found only at this place (1600 - 2200m).
- Gen. Distrib. : India : Darjeeling, Assam; Bangladesh, Myanmar, Malaysia.

PERGULARIA L.

Pergularia pallida Wt. & Arn. Contr. B. Ind. 42. 1834 ; FBI 4: 38.1883; BP 2:696.1981.

Nep.: Masa Lahara

A shrubby sinistrorse twiner with slender branches. Stem with milky latex, terete, semisolid, wiry pubescent, greyish-yellowish. Petioles 1.0-3.0cm long, pubescent;

lamina 6.5-10.2x3.6-8.0cm, ovate, entire, acuminate, base cordate, membranous, sparsely hairy but dense on veins and both surfaces. Flowers in subumbellate axillary cymes 2.0-2.5cm in diam; Bracts 2.-0.2cm, lanceolate, hairy, subsessile. Pedicels c 1.4cm long, glabrous. Sepals 5, entire, obtuse, densely pubescent outside, sparsely within. Corolla lobes 5, much longer than tubes, tubes 0.4-0.5cm long, glabrous with in except pubescent at base. Coronal spurs 0.5-0.6 cm. Stamens 5, adnate to the base of corolla tube, filaments connate, anthers with membranous tips. Follicles in pairs, terete, cylindric. Seeds ovate-concave with silky coma at the pointed end.

Fl.: May. - Jun.; Fr. rip.: (Oct.).

Spn. Cited. : SIKKIM : Karfet Forest, Jorethang, 310m, 20.5.1996, *Das et Samanta* 1080.

Loc. Distrib. : SIKKIM : Less common; Legship-Nandugaon (upto 840m).

Gen. Distrib. : India : Tropical Himalayas, Sikkim, Bihar, C. india, Bombay; Myanmar.

PERIPLOCA L.

Periploca calophylla (Wt.) Falc. in Proc. L. Soc. 1:115.1841; FBI 4; 12.1883; TSDD 56. 1896; TNB 91.1929; FEH 1: 262.1966 & 2 : 109.1971; EFPN 3:88.1982; TBRI 50(4): 122.1987.

Streptocaulon calophyllum Wt. Contr. B. Ind. 65.1834.

Large shrubby sinistrorse twiner with milky latex. Branches slender, nearly glabrous, woody, terete, dark green. Petioles 0.2-0.3cm long lamina 7.3-10x0.8-1.7cm, linear to lanceolate, entire or undulate, acuminate to caudate, base rounded, shiny above, rough below, nerves horizontal. Flowers in lax axillary cymes, subsessile, branches and pedicels slender. Sepals 0.23-0.3cm, ovate, glandular; corolla pinkish, lobes 0.4-0.5cm long, ovate - oblong, acute. Corona brownish. Stamens almost within corona; filaments short, broad.

Fl.: May. - Jun.

Spn. Cited. : DARJEELING : Purbikhola, Sevoke, 450m, 18.11.1994, *Das et Samanta* 0429; SIKKIM : Pelling, 1910m, 23.5.1996, *Das et Samanta* 1193.

Loc. Distrib. : DARJEELING : Less common; sevoke - Rambi, Rimbic. Teesta, Singtam, Rambi, Rimbic. Teesta, Singtam, Rung

Rung, Kafer, Todey-Tangta, Birch Hill (450-2200m); SIKKIM : Less common; Legship, Gyalshing, Pedong, Rishi (900-200m).

Gen. Distrib. : Himalayas (Kumaun-Sikkim). India : Assam, Gen. Distrib. : Meghalaya; Tibet, W. & C. China.

Note : (i) Used as ornament for its beautiful flowers.

TREUTLERA Hook. f.

Treutlera insignis Hook. f. in Hook., Icon. Pl. t. 1425.1883; FBI 4:45.1883; TSDD 57.1896; TNB 91.1929; FEH 1:262.1966; FPK 66.1981; EFPN 3:88.1982; TBRI 50(4) :129.1987.

Large sinistrorse twiner with milky latex. Stem solid, glabrous, yellowish. Petioles 0.4-1.0cm long; lamina 7.0-9.0x3.0cm, elliptic-oblong, entire-wavy, acuminate, base subcordate, lower whitish, light green above, thickly coriaceous with broad midribs, glabrous. Umbels axillary; peduncles 4.0-6.5cm long; pedicels 2.0-2.5cm long; flowers 2.2-2.5cm in diam. dark purple; sepals 0.21-0.3 cm long, ovate, entire, acute, ciliate throughout; corolla dark purple 0.6-0.8cm in diam, campanulate, lobes 0.4-0.6cm long, ovate, spreading Corona indistinct, adhere to the back of the anthers; anthers tip inflexed; stigmas 2, cuspidate, included. Pair of follicles 6.5-12.5cm long. Seeds 0.55-0.8cm smooth.

Fl.: Aug. - Sep.; Fr. rip.: Oct. - Nov.

Spn. Cited. : DARJEELING : Tiger Hill, 2450m, 07.5.1994, *Das et Samanta* 0218; Joributi, Neora Valley National Park, 2160m, 23.4.1995, *Das et Samanta* 0607; 14-Farie, 2260m, 24.4.1995, *Das et Samanta* 0579.

Loc. Distrib. : DARJEELING : Less common; Raman, Tiger Hill, Neoravalley National Park, Reshete, Tonglu - Kalapokhri, Gairibus (2100 - 3000m) SIKKIM : Less common; Rhenek, Rishi (upto 2400m).

Gen. Distrib. : Endemic to E. Himalayas (Nepal - Bhutan); India, Meghalaya, Assam.

TYLOPHORA Br.

Tylophora exilis Coleb. in Trans. L. Soc. 12.358, t.16.1818 ; FBI 4:44.1883; BP 2:698.1981.

A medium shrubby dextrorse twiner, stem terete, solid, slender, nearly glabrous. Petioles 2.3-2.7cm long, nearly glabrous; lamina 10.5-12.2x5.2-6.5cm, ovate-oblong, entire or slightly undulate, base rounded to acute, glabrous but hairy on margins near the base, succulent, glaucous, white below, midveins broad, distinct, lateral veins 4-6 pairs. Flowers and fruits not seen here.

Spn. Cited. : DARJEELING : Bamanpokri, 200m, 14.1.1995, *Das et Samanta* 0493.

Loc. Distrib. : DARJEELING : Less common; Bhuttabari, Tenth Mile (upto 1300m).

Gen. Distrib. : India : Darjeeling; Bangladesh, Malaysia.

Tylophora indica (Burm. f.) Merr. in Philip. Journ. Sci. 19: 373.1921; Santapu & Irani in Univ. Bomb. Bot. Mem. 4:74.1962.

Cynanchum indicum Burm. f., Fl. Ind. 70.17687.

Tylophora asthmatica (L. f.) Wt. & Arn. in W, Contr. Bot. Ind. 51.1834; FBI 4: 44.1883.

Nep. Anto mul

Large shrubby dextrorse twiner. Stem slender with ridges and furrows, hollow, hairy. Petioles 1.5-4.5cm long, slightly ribbed, pubescent; lamina 3.2-14x0.9-8.0cm, ovate-oblong, entire, acuminate, base rounded to subcordate, thinly succulent, both surfaces tomentose, midvein prominent, lateral veins 4-6. Flowers and fruits not seen here.

Spn. Cited. : DARJEELING : Sevoke, 450m, 26.3.1994, *Das et Samanta* 0097; SIKKIM : Pangthang, 1919m, 20.11.1995, *Das et Samanta* 1041.

Loc. Distrib. : DARJEELING : Rare; found Sevoke-Kalijhora - Rombi (450-1500m); SIKKIM : Less common; Gangtok - Pangthang (upto 2000m).

Gen. Distrib. : India : Darjeeling, Sikkim, Assam, Bangladesh, Sri Lanka, Myanmar, Malaysia.

Note : (i) Chr. no. $2n = 22$ (Sarkar, A. K., Datta , N. & Chatterjee, U. 1980).

ASTERACEAE Dumort. (Compositae *nom.cons.*)

KEY TO THE GENERA :

1. Plants not twining but scandent.....2
1. Plants exclusively twining.....3
2. Petiole very short; lamina obovate-oblong to elliptic-oblong; achenes 10 ribbed..
.....*Blumea*
2. Petiole upto 5.0cm long; lamina ovate-lanceolate; achenes no ribbed..*Synotis*
3. Stem terete or fistulose; lamina blunt-toothed.....*Mikania*
3. Stem terete, ribbed, flexuous, glabrous; lamina sinuate toothed.....*Senecio*

BLUMEA DC.

Blumea riparia (Bl.) Dc. Prodr. 5:444.1836; Kitamura in Acta Phytotax., Geobot. 23:70.1968; FEH 2:133.1971; EFPN 3: 17.1982; Nam .Chan. Fl. Pl. 65.1987.

Conyza riparia Bl. Bijdr. 899.1826. non, H.B.K

Blumea chinensis DC., Prodr. 5:444.1836 p.p.non

Conyza chinensis L., Hook. f., FBI 3:268.1881.

Perennial scandent shrub. Stem and branches terete, woody, ridged nearly glabrous, greyish - black, internodes 4.0-4.5cm long. Petioles very short; lamina 6.0-7.0x1.2-2.1cm, obovate - oblong to elliptic-oblong, denticulate, acuminate, base rounded, coriaceous, glabrous both surfaces. Involucral bracts c 0.3cm long, lanceolate - oblong; yellowish-white, sparsely hairy. brown in bud condition. Heads 0.7-1.4cm in diam, terminal or axillary lax paniculate racemes; peduncles upto 2.8cm long. pappus papery. Achenes 10-ribbed, pale brown oblong, nearly pubescent 0.4-0.6cm, copious.

Fl.: Oct. - Nov.; Fr. rip.: Nov. - Dec.

Spn. Cited. : DARJEELING : Rung Dung Valley, 1800m, 28.3.1983, A. P.Das 1315.

Loc. Distrib. : DARJEELING : Found only at Rung Dung Valley (1000 - 1900m).

Gen. Distrib. : India : Darjeeling - Assam, Meghalaya; E. Himalayas (Nepal - Bhutan); Myanmar, S. China, Indonesia, New Guinea.

Note : (i) Chr. no. $2n = 18$ (Malla, S. B., Bhattarai *et al.* 1977a).

MIKANIA Willd.

Mikania micrantha Kunth in H.B.K., Nov. Gen. & Sp. 4:134. 1820; FEH 2:139. 1971; EFPN 3:35. 1982.

M. scandens Willd., sensu Cl. Comp. Ind. 34. 1876; FBI 3: 244. 1881; FPK 54. 1981.

M. cordata (Burm. f) R.L. Robinson in contr. Grary Herb. 104:65. 1934; EFH 1:341. 1966.

Eupatorium cordatum Burm. f., Fl. Ind. 176, t. 58, t. 2. 1768.

Nep. Sakar Khanday; Tulbulay Lahara.

Slender herbaceous dextrorse twiner. Stem terete or fistulose, internodes 4.0-8.0 cm long, usually larger than upper nodes, nearly glabrous. Leaves opposite; petioles 0.4-5.5 cm long, puberulous; lamina 2.5-8.0x2.0-3.0cm, ovate-hastate, distantly blunt toothed, base rounded cordate or truncate - cuneate, coriaceous with glandular punctate, 5-nerved from base, tend to converge at tip. involucral bracts 5, 0.3-0.35cm, oblong, nearly glabrous, 3-nerved, distinct. Head in corymbose panicle, homogenous; peduncles 4.0-8.0 cm. sparsely hairy; secondary peduncles 1.0-2.0cm long; pedicels 0.2-0.4cm, capitula per heads, flowers 4-8 per capitula; stamens syngeneis, style c 0.1cm, erect, stigma bifid, wiry, coiled, nearly glabrous. Achenes; pappus numerous, hair like, 2.0-2.5cm long, white scabrid, homogenous.

Fl.: Sep.-Nov.; Fr. rip.: Oct. - Nov.

Spn. Cited. : DARJEELING : N.B.U. Campus 120m, 28.12.1996, *Das et Samanta* 1629; SIKKIM : Jorethang 300m, 28.10.1995, *Das et Samanta* 0835; Tadong 1450m, 24.4.1996, *Das et Samanta* 1253.

Loc. Distrib. : DARJEELING : Abundant; Dolka Forest, Sukna, Tenth Mile, Samsing, Siliguri, Poolbazar, Mirik, Kurseong, Kalimpong, River Teesta Valley. Rambi, (120 - 1550m); SIKKIM : Less common; Nandugaon, Deorali, Gangtok (300 - 1500m).

Gen. Distrib. : A native of South America but naturalised in India; Myanmar, Malaysia, Phillipines.

Notes : (i) Extract from this plant is used as poison
(ii) Used as fodder for cattle
(iii) Chr. no. 2n = (Dey, D. & Sharma, A.K.1968).

SENECIO L.**KEY TO THE SPECIES:**

1. Shrubby twiner; petiole 1.5-5.5 cm long; lamina broadly cordate; involucre bracts 0.5-0.65cm.....*S. araneosus*
 1. Herbaceous twiner; petiole upto 1.5cm long; lamina ovate-hastate; involucre bracts upto 0.5cm.....*S. scandens*

Senecio araneosus DC., Prodr., 6:364.1887; C. B.C, Comp.Ind.181. 1876; FBI 3:351.1881; FA 3:121.1939; TBRI 50(4):127.1987. (Photo-45)

S. arachnoides Wall. Cat. n. 3163.1831, nom. nud.

Nep: Tulbulay Lahara, Sakarkhanday

Shrubby twiner. Stem terete, solid, sparsely cottony, branches with grooved. Petioles 1.5-5.5cm, terete, sparsely hairy; lamina 4.5-10x2.5-9.0cm, broadly cordate, sinuate toothed, acuminate, base cordate, membranous, upper greyish-brown, silvery beneath. Involucre bracts 0.5-0.6cm, base bulbous, diam c 0.2cm, margin pale, persistent, deep greyish yellow; disc florets yellow; pappus copious, c 0.5cm long, white.

Fl.: Oct. - Dec.; Fr. rip.: Dec. - Jan.

Spn. Cited. : DARJEELING : Reshete, Neora Valley National Park, 2250m, 06.5.1995, *Das et Samanta* 0706.

Loc. Distrib. : DARJEELING : Less common; 14 - Farie, Rechilachak (1600 -2400m); SIKKIM : Less Common; Found only at Mulkhagra Basti, Rhenek (1500 - 2300m).

Gen. Distrib. : India : Sikkim - Darjeeling - Mishmi, Meghalaya; Sri Lanka, Indonesia.

Senecio wightianus DC. ex Wt. Contrib. Bot. Ind. 22.1834; FI 13:280.1995.

Senecio scandens Buch. Ham. ex D. Don, Prodr. Fl. Nep. 178.1825; FBI 3:352.1881; FA 3:122.1939; EFH 1:344.1966 & 2:140.1971; FPK 55.1981; EFPN 3:42.1982 [nom Wall., cat. 107, n. 3120.1831; nom. nud. non D. Don 1825] ; TBRI 50(4): 127.1987.

S. flexuosus Wall., cat. 107, n. 3110. 1831, nom. nud.

S. campyloides DC., Prodr. 6:370.1837; C.B.C, comp. Ind. 183.1876.

S. stipulatus DC., Prodr. 6:370.1837.

S. intermedius Wt., Ic. Pl. Ind. or 3:t.1153.1846.

Nep. : Jharhorecp

Herbaceous twiner. Stem and branches ribbed, flexuous, glabrous, young parts puberulous. Petioles 1.0-1.5cm, long, auricled at base pubescent; lamina 4.2-8.6x1.6-3.5cm, ovate-hastate or ovate to lanceolate, crenate or toothed, acuminate, base acute, coriaceous above, sparsely pubescent beneath, especially on veins; yellowish-green. Capitula lax; divericate corymbs; involucre bracts 10-12, 0.3-0.5 cm long, linear, oblong; peduncles 2.3-6.0 cm long; pedicels 0.3-1.0 cm, disciflorate diam c.0.5cm, yellow; ray florets few; male flowers c 0.3cm; anther yellow, flat diam. c 0.1 cm, numerous. Achenes quadrangulate 0.22-0.25 cm long, glabrous; pappus wiry, silky plumose hairy, white, upto 0.2-0.3 cm, long.

Fl: Oct. - Dec.; Fr. rip.: Dec. - Mar.

Spn. Cited. : DARJEELING : Jalapahar, 2200m, 19.4.1994, *Das et Samanta* 0134, North Point, 1950m, 08.5.1995, *Das et Samanta* 0201; Sukhia pokhari, 1900m, 24.3.1996, *Das et Samanta* 1254; SIKKIM : Pangthang, Gangtok, 1910m, 20.10.1995, *Das et Samanta* 1009.

Loc. Distrib. : DARJEELING : Very common; Sukiapokhari, Senchal, Baggaonra, Birch Hill (1000 - 2500m); SIKKIM : Common; Gangtok, Pangthang, Dzangu, Phadomchen (1000 - 2100m).

Gen. Distrib. : India : Himalaya, Nilgiri Hills; Meghalaya; Myanmar, Sri Lanka, China, Thailand, Philippines

Note : Chr. no. 2n = 20 (Mehra, P. N. et al 1965).

SYNOTIS (C.B.CI.) C. Jeff. et Y. L. Chen

KEY TO SPECIES :

1. Stem terete, turns whitish with maturing, base of lamina oblique, shallowly cordate and attenuate with the petiole; panicles dense, thyrsoid, main rachis straight.....*S. tetrantha*
1. Stem 2-ridged, remain green; base of lamina generally equal, deeply cordate with broadly apart rounded to slightly hastate lobes; panicles sparse, main rachis zig-zig.....*S. sikkimensis*

Synotis sikkimensis A. P. Das & A. K. Samanta sp. nov. (Fig. 3.28)

Perennial, suffrutescent scandent herb. Branches sparsely pubescent, mature stem 2 ridge, hollow. Leaves exstipulate, base half-amplexicauled; petiole slender, 2.5 to 6.0 cm, much longer in young shoots, almost glabrous, slightly flattened above,

green; lamina ovate-oblong, 5.0-20x1.8-9.7 cm, nearly entire to slightly or obscurely crenate, regularly mucronate (0.01 to 0.15 cm long) all along the margin, acuminate to caudate acuminate (upto 3.0 cm long) base broadly cordate with equal rounded or hastate basal lobes, slightly attenuate or not sometimes truncate in flowering shoot, herbaceous, light purple below, green and almost glabrous above, very sparsely pubescent below specially in the lower axiles, 5-nerved from base. Leaves much and gradually shorter in flowering shoot.

Panicles axillary and terminal, lax, upto 12 cm long; peduncle upto 3.8 cm, terete, primary branches 4 to 6, each with distinct and elongated (upto 1.4 cm) first internode, with narrowly linear-subulate and glabrous bracts at base; capitula never in aggregate, distinctly stalked, (0.2 to 0.4 cm long); mature capitula linear-oblong, upto 1.7x0.35 cm; bracteoles 6, unequal, linear-subulate to slightly ovate, outer to inner gradually longer, 0.1 to 0.5 cm long, upper four attached to the base of capitula, sparsely pubescent outside, margins of inner ones scarious; involucral bracts 5, free, in one row, upto 1.2x 0.22 cm, narrowly oblong-ovate, entire, tips rounded, sparsely pubescent, herbaceous, purple, scarious margined; florets 4 with 2 rays and 2 discs, all hermaphrodite; pappus of numerous, slender, minutely beakulate, off white, bristles, 0.8-0.9 cm long; tube of rays \pm 0.5 cm, slender, limb 5-lobed, 0.7 cm long, yellow; corolla of discs slender-tubular, over 1.0 cm long, 5-lobed; stamens 5. anthers upto 0.5 cm long, base with two tailed auricles; style exerted, lobes oblong-linear, equal, minutely papillate; ovary oblong-obovate, 0.17x0.09 cm, obscurely lobed; achenes triangular-ovate, with no longitudinal lobe or angle, glabrous.

Caulis porcatus. Lamina ad basin aequilatera, late cordata, lobis rotundatis and parum hastatis, ad marginem obscure crenata, sinus regulariter prominenter (0.0-0.15 cm longus) mucronatus. Paniculae laxae, Capitula haud aggregata, \pm 1.7 cm longa, lineari - oblonga, parum obovata in alabastro, bractee involucrales \pm 1.2x0.22 cm, angusta oblong - obovatae; radii 2, disci 2, exserti, pappi setae numerosae, albae, 0.8-0.9 cm longae; ovarium oblong-obovatum; achenia cuspidato-obovata, sine crista vel angulo, glabra.

Fl.: (Oct).

Spn. Cited. : SIKKIM : Rupsang Forest, Soreng, 1650m, 30.10.1995, *Das et Samanta* 0861; Mangan, 1300m, 26.09.1996, *Das et Samanta* 1517.

Loc. Distrib. : Sikkim : Rare; only few plants collected from Soreng and Mangan areas (upto 1560m).

Gen. Distrib. : Endemic to Sikkim Himalaya.

Synotis tetrantha (C. B. Cl.) C.J. Jeff. et Y. L. Chen in KB. 39(2): 308.1984; FI 13: 299.1995.

Senecio tetrantha DC. Prodr. 6: 370.1838; FBI 3: 352.1881; FEH 1: 344.1966; FPK 55.1981; EFPN 3:42.1982; TBRI 50 (4) : 127.1987.

Nep. : Tiplytal

Herbaceous scandent with perennial root-stocks. Stem and branches terete, leafy, almost glabrous. Petioles 2.5.-5.5cm long, terete to slightly ridged, yellowish pubescent; lamina 12-17x3.5-7.0cm, ovate-lanceolate, serrate, acuminate or mucronulate, base cordate, sparsely hairy above, and light brown pubescent on midveins below. Capitula small, axillary or thrysiform panicle. Peduncle densely pubescent; Involucral bracts 0.5-0.52x01-1.12cm, narrowly cylindrical, nearly glabrous; bracts 5-6, 0.4-0.6cm long, short, oblong, obtuse, scarious margins, nearly glabrous. Ray florets 2, 0.4-0.5cm long, linear, oblong, slightly shorter than style, tube 0.21-0.25cm long. Disc florets 2, 0.74-0.75cm, exerted. Achenes 0.22-0.25cm long, puberulous; pappus reddish-white, 0.4-0.55 cm long shorter than disc florets.

Fl.: Aug. - Oct.

Spn. Cited. : DARJEELING : Tiger Hill, 2450m, 30.9.1982, A. P. Das 1210.

Loc. Distrib. : DARJEELING : Found only in Tiger Hill - Senchal areas (1900-2500m).

Gen. Distrib. : E. Himalayas.

Note : (I) Used as ornament for its beautiful flowers.

BASELLACEAE Moq.

BASELLA L.

Basella alba L. Sp. pl. ed 1, 1:272.1753; FM 5: 300, f.1.1957; FEH 1: 79. 1966; EFPN 3: 171.1982; FB 1(2) : 197.1984; TBRI 50 (4) : 100.1987.

B. rubra L. , Sp. pl. ed. 1.1:272.1753; FBI 5: 20.1886, p.p. non L.

Beng. : Poi, Ban Poi; Nep. : Koi

Perennial much branched succulent, herbaceous glabrous twiners. Branches pendent, loosely twining, light green, obtusely angled or ribbed. Bulbils 0.6x6.4 cm, globular at the axil, stout when dry. Leaves simple. Petiole terete c 1.5 cm long, glabrous; lamina 3.5-6.0 x 3.0-5.5cm, broadly ovate to ovate-orbicular, entire acute

or acuminate, base acute to subcordate, glossy and succulent. Panicles axillary, lax, upto 22 cm long, branches spicate; rachis many ribbed, glabrous; flower pinkish to pale purple; pedicels very short absent; lobes of perianth 5, in 2 whorls, outer one shorter 0.1x0.1cm, inner tepals broadly ovate, oblong, elliptic, entire, incurved. Stamens 5, inserted at the mouth of tube; filaments very short, erect in bud; anthers versatiles. Ovary globose, glabrous; styles 3, free, stigmas oblong-clavate, papillose. Uricle globose to ovoid, indehiscent, deep purple red orange on ripening, 1-seeded.

Fl.: Sep. - Oct.; Fr. rip.: (Nov.)

Spn. Cited. : DARJEELING : Kalimpong, 1500m, 26.10.1996, *Das et Samanta* 1630; SIKKIM : Mangan, 1350m, 26.9.1996, *Das et Samanta* 1521.

Loc. Distrib. : DARJEELING : Less common; Collected from cultivated and semiwild condition; Kalimpong, Mangpo (upto 1600m); SIKKIM : Less common; Singhik, Rang Rang, Makha (upto 1450m).

Gen. Distrib. : Throughout India; Tropical Asia and Africa.

Notes : (i) Used as vegetables and fodder for goats and cows.
(ii) Chr. no. 2n = 44 (Fathima, T. *et al.* 1971a,b).

CAESALPINIACEAE R. Br.

KEY TO THE GENERA :

1. Plants with branchelets with opposite paired unbranched circinate tendrils; stems without prickles.....*Bauhinia*
1. Plants without tendrils; stems prickly.....*Caesalpinia*.

BAUHINIA L.

KEY TO THE SPECIES:

1. Lamina 6.0-9.4x4.5-7.0cm broadly ovate, nerves 5-9; flowers small; pods 2.5-5.0cm long, elliptic, nearly glabrous.....*B. scandens*
1. Lamina 16-18x18-25cm, suborbicular, nerves 11-13; flowers medium; pods 23-26cm long, rusty brown pubescent.....*B. vahlii*

Bauhinia scandens L., Sp. pl.ed.1.374.1753; EFPN 2: 108.1979; FB 1(3) : 634.1987 (Photo-49,50,52, Fig. 3.5)

B. anguina Roxb., Fl. Ind. ed.2(2): 328.1832; FBI 2: 284.1878.

Beng. : Gandagila; Nep: Nagbelee.

Glabrous liana. Young branchlets with smooth, terete, opposite paired unbranched circinate tendrils. Petioles 6.0-8.0cm long, glabrescent; lamina 6.0-9.5x4.5-7.0cm, broadly ovate, entire, broadly obcordate, dissected 1/3 to 1/2 of the length, each terminal lobe, caudate-acuminate, base cordate, both surfaces nearly glabrous, nerves 5-9, mostly 7. Racemes 15-18cm long, slender, sometimes axillary and copious terminal panicles; bracts small, linear-lanceolate; pedicels 0.3-0.6cm long; calyx 2.5x0.5cm, campanulate, teeth c 0.1cm, deltoid, finely pubescent above; petals 1.5-2.0cm long, spatulate, white, 2 times larger than calyx, lateral nerves many; fertile stamens 2, filaments 0.1-1.4cm long, anther 0.6x0.02cm; staminodes 2; ovary 0.2-0.3cm long, stalked, flat, 0.7x0.15cm; style minute; stigma hooded c 0.2cm, pointed. Pods 2.5-4.5x1.5cm, elliptic, thin, flat, glabrous, 1-2 seeded. Seeds orbicular, compressed, smooth.

Fl.: Sep. - Oct.; Fr. rip.: Dec. - Mar.

Spn. Cited. : DARJEELING : Sevoke, 450m, 26.3.1994, *Das et Samanta* 0094; Purbikhola, 550m, 18.11.1995; SIKKIM : Jorethang, 310m, 20.5.1996. *Das et Samanta* 1075.

Loc. Distrib. : DARJEELING : Less common; Nimbong, Peshok, Singla, Sukna, Tenth Mile, Mahanamda-Wild Life Sanctuary, Munsong, Latpunchor, Bamanpokri; (150 - 1500m); SIKKIM Less common; Found Jorethang and Pedong areas (up to 1000m).

Gen. Distrib. : India : Tropical Himalayas, Sikkim; Bangladesh, Malaysia.

Notes : (i) Stem used in religious purposes.
(ii) Chr. no. $2n = 28$ (Bir, S.S. & Kumari, S.1973).

Bauhinia vahlii Wt. & Arn., Prodr.297.1834; FBI 2:279.1878; TSDD 31.1896; TNB 55.1929; FA 2:142.1938; FEH 1:141.1966 & 3: 57.1975; EFPN 2: 108.1979; FB 1(3):634.1987 (Photo-29).

Phanera vahlii (Wt.&Arn.) Benth., pl. Jungh 263.1852.

Beng. : Chehur : Nep. : Bhorla

Large woody liana. Young stem densely brown-pubescent, mature mostly warted, young shoot bearing circinate tendrils in opposite pairs. Stipule 1.0x0.4cm, oblong, deciduous, adnate to petiole, simple, broader than length. Petioles 1.5-20cm long; lamina 16-18x18-25cm suborbicular, variable, entire, obcordate, dissected 1/3 from tip, lobes obtuse or rounded, base deeply cordate, membranous, brown, pubescent

on veins above and margins but dense beneath, nerves 11-13 from base. Corymbose terminal, dense with numerous flowers; bracteols 2, 0.65x0.15cm, linear-lanceolate, acuminate, much hairy above less below; peduncles upto 15cm long, terete, brown-pubescent; outer pedicels upto 6.0cm, inner ones c 4.0 cm long, covered with appressed brown hairs. Buds 12x0.6cm. ovoid-acute, finely appressed brown hairy; calyx splits into 2-lobes, 1.0-2.0x0.5-0.6cm, free at apex, in early stage of flowering, tube 1.0-1.5cm long, cylindrical, slender, pubescent; petals 2.0-3.0x0.5-0.8cm, obovate, white, subequal, acute, base cuneate, midveins prominent, laterals many, divergent, inner nearly glabrescent, densely pubescent outside. Fertile stamens mostly 2, sometimes 3, filaments 2.4-3.0cm long, anther 0.5-0.6 x 0.1-0.2cm, red Ovary 3.0-5.0cm long flat, densely hairy, shortly stalked; style 0.01-0.02cm long, coiled; stigma 0.05-0.1cm in divin. Pods 23-26.5x5.9-7.5cm, oblong, woody, rusty brown. Seeds 8-12, 2.3-3.5x1.5-2.5x0.1-0.2cm, oblong, shiny smooth, dark brown.

Fl.: Apr. - Jun.; Fr. rip.: Dec. - Jan.

Spn. Cited. : DARJEELING : Sukna, 132m, 13.5.1994, *Das et Samanta* 0223.

Loc. Distrib. : DARJEELING : Common; Solok-Yangmakum, Sevoke, Tenth Mile, Guling, Rangeet Valley (132 - 3000m).

Gen. Distrib. : E. Himalayas (Kumaun-Bhutan); India : Bihar.

Note : (i) Leaves used for the preparation of rope/ plate/ & umbrella (ii) seeds are edible & (iii) used medicinally.

CAESALPINIA L.

KEY TO THE SPECIES :

1. Pods flaccid, thickly prickly; stipules pinnate; 3-5 foliate; pinnae 8-11 pairs; racemes supraxillary.....*Caesalpinia bonduc*
1. Pods thin with no prickly; exstipulate; pinnae 4-10 pairs; panicles terminal.....*C. cucullata*

Caesalpinia bonduc (L.) Roxb., Fl. Ind. ed. 2(2) : 362. 1832; FEH 1:141.1966; EFPN 2:109.1979; FB 1(3) : 623.1987.

Guilandina bonduc L., Sp. pl. 381. 1753.

G. bonducella (L.) Flem. in Asiat. Rcs. 11:159.1810; FBI 2:254.1875; JASB 66(2) : 226.189.

Eng.: Fever nut

Large scrambling shrubs, generally forms a dense hedge. Stem terete, prickly throughout. Stipules leafy, 3-5 foliate. Leaves upto 80cm long, evenly tripinnate,

pinnae 6-11 pairs, 9.5-20cm, recurved prickles at base; with petiole 0.8-1.0cm long; petiolule c 0.5cm, subopposite, slightly ribbed; lamina 1.0-4.0x0.65-2.5cm, elliptic, entire, acute, mucronate, base rounded; above glabrous, pubescent beneath. Racemes supraaxillary; peduncles upto 60cm long; bracts 0.8-1.0cm, lanceolate, reflexed, caducous; pedicels 0.7-0.85cm long, terete; finely pubescent towards base. Flowers unisexual; anthers rudimentary in female flowers; ovary rudimentary in male flowers. Sepals 5, 0.6-1.0x0.2-0.31cm, oblong, reflexed, brown pubescent. Petals yellow 0.35-0.7x0.2-0.3cm, oblanceolate, clawed, 0.25-0.3cm, upper petal 0.4-0.4x0.25-0.4cm, ovate; stamens 10, free, filaments 0.6-1.0cm, villous, anthers uniform; ovary 0.7-0.8x0.25-0.3cm, ovoid, densely bristly. Pods 6.0-9.0cm long, ellipsoid, with much spiny (upto 1.0cm long). Seeds 1-2, 2.0x1.5x1.2cm, subglobose, with dark parallel concentric lines around hilum.

Fl.: Aug. - Sep.; Fr. rip.: Sep. - Nov.

Spn. Cited. : DARJEELING : Siliguri, 125m, 20.3.1997, *Das et Samanta* 1631.

Loc. Distrib. : DARJEELING : Common; Kalijhora, Rambhi, Suruk (200-1000m).

Gen. Distrib. : Pantropic.

Caesalpinia cucullata Roxb. Hort. Beng. 32.1814; Fl Ind. ed. 2(2) :358.1832; Httink in Reinw. 9: 22.1974; EFPN 2:109.1979; FB1 1(3):623.1987 (Photo-12) (Fig. 3.7).

Mezoneuron cucullatum (Roxb.) Wt. & Arn., Prodr. 283.1834; FBI 2:258.1878; TSDD 30. 1896; BP 1:447.1903; TNB 53.1929; FA 2:123.1939; FEH 1:158.1966; FPK 28.1981.

Nep. : Bokshi - Kanra

Large scrambling shrubs. Stem terete, stout with dark scattered prickles. Branches almost glabrous; exstipulate; leaves 12-26 cm long, evenly bipinnate, rachis with scattered hooked prickles, pinnae 4-10, long stalked, leaflets 4-6 pairs; petioles 2.5-2.8cm long, glabrous; petiolule 0.2-0.35cm long, ribbed, subopposite; lamina 3.0-6x1.7-3.5 cm, ovate, entire, shortly acuminate, base rounded both surfaces glabrous, shiny above. Panicles terminal upto 50 cm long; pedicels 0.3-0.8cm long, terete, jointed at the middle; calyx glabrous, yellowish, variable in size, tube very short; lowest tube longest, connate 5.0x0.35cm, upper lobes 0.45x0.25cm; corolla yellow, upper petals 0.53-0.78x0.91-1.15cm, flabelliform, clawed (0.02-0.03cm), others broadly elliptic 0.45-0.75x0.35-0.48cm. Stamens exerted, declinate; filaments

2.0-3.0 cm long, nearly glabrous; anthers c 0.01cm; ovary 0.3-0.01cm, swollen at middle. Pods 2-4, in a bunch, membranous shiny, light-reddish brown, indehiscent, 5.5-9.2x2.3-2.8cm, oblong-lanceolate, wings 0.6-0.7cm, one large flat seed at the middle 2.0x1.7cm, orbicular, compressed, smooth, funicle 0.5-1.0m long.

Fl.: Oct. - Dec.; Fr. rip.: Jan. - Mar.

Spn. Cited. : DARJEELING : Samsing, 400m, 29.1.1995, *Das et Samanta* 0505; Tenth Mile, 150m, 14.3.1995, *Das et Samanta* 0557; SIKKIM : Karfet Forest, Jorethang, 310m, 29.10.1995, *Das et Samanth* 0858.

Loc. Distrib. : DARJEELING : Common below 500m; SIKKIM : Less common; Found only at Jorethang (upto 450m).

Gen. Dstrib. : E. Himalayas and S. E. Asia, Malaysia, China.

CAMPANULACEAE Juss.

CODONOPSIS Wall.

KEY TO THE SPECIES:

1. Pubescent twiner.....2
 1. Glabrous twiner.....*C. japonica*
 2. Racemes axillary or terminal; lamina subentire.....*C. affinis*
 2. Racemes axillary; lamina serrate-dentate.....*C. inflata*

Codonopsis affinis Hook. f. & Thoms. in J. L. Soc. 2:12.1857 & 38: 389.1908; Anthony in Nat. Bot. Gard. Edinb. 15:180.1926; EFH 1:326.1966; EFPN 3:50.1982; TBRI 50 (4):110.1987.

Nep.: Syal Ko Moot

Small dextrorse twiner with perennial tuberous root-stocks. Branches, slender, soft, glabrous. Petioles 0.7-2.2cm long; lamina 2.0-8.0x1.4-4.0cm, ovate-oblong, subentire, acute, deeply cordate, sparsely pillose above, villous beneath. Axillary or terminal racemes, 1-2 flowered; peduncles 2.0-10cm long, terete, wiry villous at base, white. Sepals lobes 1.2-1.5x0.3-0.5cm, ovate lanceolate, narrowed upward, entire, acuminate, membranous, nearly glabrous, yellowish-green; corolla green or purple, 1.4-1.8cm long in mouth, 0.4-1.5cm across, lobes triangular, slightly curved, tip purpled. Stamens 5, free on disc. filaments slender c 0.8cm long, glabrous, brown; anthers 0.4x0.05cm with pointed tips, yellowish-brown. Stigmas 3-lobed. Capsules 1.5-1.8cm long, beak 0.4-0.5cm. Seeds many, 0.1x0.5cm, ellipsoids, smooth, yellowish - brown.

Fl.: Aug. - Sep.; Fr. rip.: Sep. - Dec.

Spn. Cited. : DARJEELING : Tiger Hill, 2500m, 30.8.1981, A. P. Das 0649.

Loc. Distrib. : DARJEELING : Less common; Rimbick, Raman, Senchal -Tiger Hill, Sukiapokhari, Lava, Neora Valley National Park (2200-2650m).

Gen. Distrib. : E. Himalayas (Nepal - Sikkim).

Note : (i) Used as ornament for its beautiful flower & , medicinally.

Codonopsis inflata Hook. f., & Thoms. in Hook., 3: Him. Pl. t: 16, c. 1855; Journ. L. Soc. 2:13. 1857; FEH 1:326.1966; FPK 57.1981; EFPN 3:51.1982; TBRI 50(4):110.1987; Nam. Chan. Fl. Pl. 136.1987 (Fig. 3.26).

Campanumaea inflata (Hook. f.) Cl. in FBI 3:436.1881.

Nep.: Syal Ko Moot.

Perennial herbaceous dextrorse twiner with tuberous root-stocks. Stem slender, branches subterete, hairy Throughout, internodes 9.5-11.0cm long. Petiols 2.0-5.0cm long, sparsely pubescent; lamina 4.4-6.6x2.6-5.6cm, ovate, serrate-dentate or crenate-dentate, acute to acuminate, broadly (deeply) cordate, membranous, sparsely pillose above, almost glabrous beneath. Axillary racemes, 2-3 flowered; peduncles 3.5-4.5cm long, ribbed; pedicels 1.3-3.5cm long, wiry, glabrous; sepals 1.2-1.4x0.3-0.4cm, ovate-lanceolate, entire, acuminate, base rounded, glabrous; corolla 2.0-3.0 cm long; lobes 1.0x0.5cm, ovate-lanceolate, veined with yellow and purple; mouth c 1.8cm across; Stamens 5, 0.6x0.2cm, whitish-yellow; filaments c 0.3cm long; erect, nearly glabrous; ovary 3-celled; style cylindrical, stigmas with short lobed; Berries 2.5x3.5cm cylindrical, glabrous, nerves distinct, deep sky blue on maturity, 5-gonal disc, dark purple. Seeds 0.1x0.05cm, ellipsoids, smooth, glistening deep orange.

Fl.: Aug.-Oct.; Fr. rip.: Sep. - Dec.

Spn. Cited. : DARJEELING : Tiger Hill, 2500m, 04.10.1994, Das et Samanta 0404; Neora Valley National Park 2050m, 29.4.1995, Das et Samanta 0656; SIKKIM : Pangthang, Gangtok, 1850m, 20.11.1995, Das et Samanta 1032.

Loc. Distrib. : DARJEELING : Less common; Tiger Hill - Senchal, Kafer, Batasia Loop, Manebhanjan, Neora Valley National Park (2000-2700m); SIKKIM : Rare; Found only at Pangthang - Vareng (1800 - 2500m).

Gen. Distrib. : Endemic to E. Himalayas (Darjeeling - Sikkim - Nepal-Bhutan).

Note : (i) Used as ornament for its beautiful flowers.

Codonopsis javanica (Bl.) Hook. f., 3. Him. pl. 116, t. 1613. 1855; Moeliono & Tuyu in FM 6(1): 118. 1960; FEH 3:109. 1975 (Fig. 3.27).

Campanumaea javanica Bl. Bijdr. 727. 1826; FBI 3: 435. 1881.

Nep.: Syal Ko Moot.

Perennial herbaceous dextrorse twiner with tuberous root-stocks. Stem terete, shiny, glabrous. Leaves subopposite to almost alternate. Petioles 1.5-4.0cm long, wiry, glabrous; lamina 2.0-5.9x1.4-3.2cm, broadly ovate, crenate-serrate, acute, base deeply cordate, membranous, glaucous beneath, nerves 5-7, divergent. Flowers solitary, axillary; pedicels 2.5-4.0cm long; calyx tube adnate to ovary; lobes ovate-lanceolate 1.6-1.8x0.6-0.8cm, nearly glabrous; corolla greenish-white with purple veins 2.0-23.0cm long mouth; 1.8-2.2cm across, lobes recurved; stamens 5, inserted; filaments 0.2-0.25cm long, anthers 0.35-0.4cm long, narrow; ovary bulbous, 4-celled; style erect, stigma 5-lobed, glabrous. Berries c1.5cm, in diam globose to hemispheric broader than long, with persistent sepals. Seeds many, 0.1x0.05cm, ellipsoids, smooth, black-purple.

Fl.: Aug. - Oct.; Fr. rip.: Sep. - Dec.

Spn. Cited. : DARJEELING : Mirik, 1600m, 05.9.1994, *Das et Samanta* 0317.

Loc. Distrib. : DARJEELING : Rare; Mirik, Kafer, Baggaonra, Palmajua, Rimbick (1500 - 2500m).

Gen. Distrib. : E. Himalayas (Darjeeling-Bhutan) Meghalaya; Myanmar; Malaysia, China, Thailand.

CAPRIFOLIACEAE Adans.

KEY TO THE GENERA :

1. Plants rambling; lamina subentire or sinuate-toothed; racemes drooping, generally with conspicuous bracts.....*Leycesteria*
1. Plants twining; lamina entire; racemes or panicles never drooping but inflorescence bearing branch may drop itself.....*Lonicera*

LEYCESTERIA Wall.**KEY TO THE SPECIES:**

1. Inflorescence terminal; bracts large, almost foliaceous, covering fruits.....
*L. formosa*

1. Inflorescence axillary; bracts smaller, never covering the fruits..... *L. gracilis*

Leycesteria formosa Wall., in Roxb., Fl. Ind. ed. Carey, 2:181.1824; FBI 3:16.1880; TNB 74.1929; FEH 1:317. 1966 & 2:124.1971; EFPN 2:195.1979; FPK 41.1981; TBRI 50 (4):118.1987.

Nep.: Dhongray.

Rambling shrubs. Stem terete, hollow, branches fistular, internodes 6.0-17cm long, nearby glabrous. Leaves opposite; petioles 0.5-1.2cm long, purplish, long hairy; lamina 5.0-13x30-5.5cm, ovate to broadly lanceolate (often variable), entire-undulate, acuminate, base rounded, nerves 5-9 pairs, diverging, whitish beneath. Spikes axillary, drooping, upto 5.0 cm long; bracts 1.3-2.1cm long, purplish, ovate, entire, repand- acuminate, hairy at margin; calyx unequally 5-lobed; awl-shaped, c 0.4 cm long, brownish; Corolla 1.3-2.0cm, white-purplish, funnel shaped, 5-lobed, reflexed. Stamens 5, filaments 0.18-0.21cm; ovary obovoid 0.3-0.5cm long, brown, style c 1.5cm long, exerted. Berries c 1.0cm, subglobose with persistent bracts. Seeds many.

Fl.: May-Jun.; Fr. rip.: Sep.-Nov.

Spn. Cited. : Alubari, Neora Valley National Park, 2280m, 11.10.1997, *Das et Samanta* 1640; Jorebungalow-Tiger Hill, 2400m, 12.7.1981, *A. P. Das* 0512.

Loc. Distrib. : Common; Lava, Senchal-Tiger, Neora Valley National Park, Rimbick, Tonglu (2100-3100m).

Gen. Distrib. : Himalaya (Kasmir-Bhutan). India : Meghalaya, Khasia Hills; S&E Tibet, N. Myanmar.

Leycesteria gracilis (Kurz.) Airy- Shaw in Hook., Icon. Pl. "Ser. 5". 2:t. 3166. 1932; FEH 1: 317. 1966 & 2:124.1971; EFPN 2:195.1979 (Fig. 3.17).

Lonicera gracilis Kurz. in JASB 39(20): 77.1870.

Leycesteria glaucophylla (Hook.f. & Thoms.) Hook.f. FBI 3;16.1880, excl. diagn.; TSDD 46. 1896; TNB 74.1929; FEH 1:317. 1966 & 2:124.1971; EFPN 2:195.1979.

Nep.: Dhangray

Radiate slandent shrub up to 5m long. Stem terete, solid, branched, nearly glabrous, brownish. Stipules 1.5cm, erect or reflexed. Petioles 0.5-1.0cm, narrow, flat, auricled;

lamina 6.0-11x2.3-4.5cm, ovate-elliptic, subentire or sinuate-toothed, acuminate-shortly caudate, base rounded-oblique, leathery, coriaceous upper surface deep brown, lower silvery appearance, with wooly pubescent, reticulate. Bracts short, ovate-subulate. Axillary panicle, few flowered in paired. Calyx lobes 0.16-0.20cm. Ovary 5-celled, glabrous. Berries ellipsoid, 1.6-1.7cm long, 7-8 celled, many seeded. Seeds minute, ellipsoid.

Fl.: Oct. - Dec.; Fr. rip.: Feb. - Jun.

Spn. Cited. : DARJEELING : Rechilachak, Neora Valley National Park, 2100m, 23.4.1995, *Das et Samanta* 0606.

Loc. Distrib. : DARJEELING : Less common; Tonglu, Rimbick, Neora Valley National Park, Sukiapokhari (1900 - 2750m); SIKKIM : Less common; only found at Phadamchen (upto 2500m).

Gen. Distrib. : E. Himalayas (Nepal - Bhutan); N. Myanmar, W. China.

LONICERA L.

KEY TO THE SPECIES:

1. Leaves entirely glabrous above.....2
1. Leaves much hairy above at least on midveins.....3
2. Lamina broadly oblong-lanceolate, acute; corolla light yellow.....*L. japonica*
2. Lamina ovate, acute to acuminate; corolla white.....*L. glabrata*
3. Lower 3-pairs of vein nearly opposite; leaves smaller (3.09.8x1.6-3.5cm).....
.....*L. acuminata*
3. All veins distinctly alternate; leaves much larger (5.5-13x1.8-5.5cm).....4
4. Lamina almost glabrous above except serious mid-vein, serious below.
.....*L. macrantha*
4. Lamina hispid on both the surfaces.....*L. hispida*

Lonicera acuminata Wall. ex Roxb., Fl. Ind. ed. Carrey & Wall. 2:172.1824; FBI 3:10.1880; TSDD 46.1896; TNB 74.1929; FEH 1:318.1966; EFPN 2:195.1979.

Shrubby dextrorse twiner. Stem terete, hollow, brownly villous. Petioles 0.5-0.7cm long, ribbed, brownly; lamina 3.0-10x0.6-4.0cm, oblong, entire, acute to slightly acuminate, base cordate, young more villous than mature, blackish brown upper, lower yellowish brown. Bracts linear and bracteols subquadrate, ciliate. Terminal, many flowered often axillary 2 flowerd. Calyx teeth glabrate, corolla funnel-shaped tube 0.6-0.8cm lobes with pubescent. Stamens densely hairy. Style dense fulvous hairy. Fruits armed with ciliate calyx teeth.

Fl.: Jun. - Jul.; Fr. rip.. Sep. - Dec.

Shrubby sinistrorse twiner. Stem terete, shallow; yellowish-white hispid, throughout. Petioles 0.6-1.0cm long, wiry, densely pillose; lamina 3.1-9.5x1.0-3.0cm elliptic-oblong, entire, acuminate, base cordate or acute, densely hispid above in young, but in mature less hispid above than below. Flowers and fruits not seen.

- Spn. Cited. : SIKKIM : Deorali, Gangtok, 1450m, 19.11.1995, *Das et Samanta* 0980.
- Loc. Distrib. : SIKKIM : Rare; found only at Deorali (1400 -1800m).
- Gen. Distrib. : India : Temperate and Alpine Himalayas, Sikkim; Central Asia and Siberia.

Lonicera japonica Thunb., Fl. Jap. 89.1784; Enum. S pern. Jap. 2:43.1952; FEH 1:318.1966; EFPN 2:196.1979 & 18:84.1983; TBRI 50(4): 118.1987.

Scandent shrub. Branchlets weak, lamina elliptic-lanceolate nearly glabrous. Bracts small, linear. Flowers axillary or terminal cymes in pairs. Corolla whitish-yellow, tube slightly pinkish.

Fl.: May - Dec.

- Spn. Cited. : DARJEELING : Kurseong, 1500m, 30.9.1982, *A. P. Das* 1174.
- Loc. Distrib. : DARJEELING : Common in gardens, often escapes (upto 2200m).
- Gen. Distrib. : China, Japan and Korea.
- Note : (i) Chr. no. $2n = 18$ (P. W. F. M. & Wieffering, T.H. 1979)

Lonicera macrantha (D.Don) Spreng., Syst. Veg. 4(2): 82.1827; TSDD 46.1896; Rehder. in Am. Rep. Miss. Bot. Gard. 14:154.1903; FEH. 1: 317.1966; EFPN 2:195.1979; TBRI 50(4): 101.1987.

Caprifolium macranthum D.Don, Prodr. Fl. Nep. 140.1825.

Lonicera macrantha (D.Don) DC, Prodr.4:333.1830; FBI 3:10.1880.

Nep.: Duarilara

Large shrubby sinistrorse twiner. Stem terete, hollow, deep brown, hispid, hairs upto 0.1-0.3cm long; branchlets densely pillose. Petioles 0.6-1.0cm long, ribbed, densely pillose; lamina 7.0-13x2.5-6.0cm, oblong-elliptic, entire, acuminate to shortly caudate, base cordate, coriaceous, above glabrescent, below brownly villous, dense

at midveins and margins. Bracts 0.32-0.35cm long, linear. Branch end bearing spikes, many flowered, faintly yellow. Calyx tube nearly glabrous, lobes linear, bristly hairy; corolla tube upto 5.0cm long, 2-lipped, hairy, lobes c1.5cm, fruits crowned with hairy calyx teeth.

Fl.: May - Jun. ;Fr. rip.: Jul. - Oct.

Spn. Cited. : DARJEELING : Tung Sung, 2050m, 28.3.1983, A. P. Das 1291.

Loc. Distrib. : DARJEELING : Rare; Tungsung, Rung-Dung Valley, Lopchu, Joributi, Neora Valley National Park (1650 - 2350m).

Gen. Distrib. : E. Himalayas (Nepal - Bhutan); India : Assam, Meghalaya; Myanmar, China, Taiwan.

Notes : (i) Members of *Lonicera*, used as ornaments for their their beautiful flowers by the local people.

(ii) Chr. no. $2n = 18$ (Mehra. P. N. & Bawa. K. S. 1969)

CELASTRACEAE R. Br.

KEY TO THE GENERA :

1. Leaves alternate; lamina entire; liana with no roots.....*Celastrus*
 1. Leaves opposite; lamina serrate; epiphytic root climbers.....*Euonymus*

CELASTRUS L.

KEY TO THE SPECIES:

1. Flowers terminal in panicles.....*C. paniculatus*
 1. Flowers in axillary, umbellate cymes or cymes aggregated into panicles.....2
 2. Evergreen, almost woody lianas; lamina ovate-elliptic; capsules cylindric, 1-seeded.....*C. monospermus*
 2. Deciduous, woody lianas; lamina oblong-elliptic; capsule globose; seeds 3-5.....
*C. stylosus*

Clastrus monospermous Roxb., in Hort. Beng. 18.1814. nom. nud.; Fl. Ind. Carey 2:394.1824; ed. 2,1:625.1832; TSDD 19.1896; TNB 36.1929; monosperma D.Hou in Ann.Miss. Bot. Gard. 42.244.1955; EFPN 2:89.1979; FA 1:269.1982; TBRI 50(4):109.1987; FB 2(1):123.1991.

Catha benthamii Gardn. et Champ. in Hook.,Kew. Journ. 1:310.1849.

Celastrus championii Benth. in Hook., Kew. Journ.3:334.1851; FA 1:269.1982.

C. benthamii (Gard.et Champ.) Rehd. et Wils. in sang. pl. wils. 2:358.1916.

C. annamensis Tardieu, in Gen. 1, Indo- China.suppl. 1:803 f. 98t. 7.1948.

Nep.: Thumbrungrik

Large shrubby dextrorse twiner, almost lianas. Stem woody, branches ridged, lenticellate. Stipules linear; petioles 0.2-1.2cm long wirey, ribbed, nearly glabrous; lamina 4.5-10.5x1.2-5.0cm, ovate-elliptic, serrate, acuminate to shortly caudate, base acute to cuneate, membranous, both surfaces nearly glabrous, obscurely veined. Plants dioecious. Peduncles axillary, umbellate cymes, diam 0.03-0.4cm, cymes aggregated into panicles; pedicels 0.1-0.2cm long; male calyx cupshaped, deeply 5-lobed, lobes 0.06-0.08cm, ovate, entire, acute; petals 0.15-0.16cm long, ovate-oblong, greenish-white. Stamens 0.15-0.17cm long, slender, glabrous. Female flowers not seen. Capsules 2.0-2.5x0.8-1.0cm, cylindric, valves 1.1-1.7cm long; seed 1, covered with large fleshy aril.

Fl.: Apr. - Jan.; Fr. rip.: Aug. - Sep.

Spn. Cited. : DARJEELING : Reshete, 2240m, 06.5.1995, *Das et Samanta* 0714.

Loc. Distrib. : DARJEELING : Neora Valley National Park, below Kurseong College, Sonada, Rangeet Valley, Lachung, Mangpo (1000 - 2400m).

Gen. Distrib. : E. Himalayas (Darjeeling-Bhutan) Assam, Meghalaya, Manipur; N. Myanmar and China.

Celastrus paniculatus Willd., Sp. Pl. 1:1125.1797; FBI 1:617.1875; FEH 1:189.1966; EFPN 2:89.1979; FB 2(1):122-123.1991. *subsp. paniculatus*.

Nep: Bhainsay Lahara

Large woody twiner. Stem terete, young shoot downy, often lenticellate, green. Stipules minute, linear; petioles 0.8-2.0cm long, ribbed, nearly glabrous; lamina 6.5-12.5x3.0-7.0cm, ovate-elliptic to suborbicular, crenate serrate often serrated upto the tip, acuminate to slightly caudate, base rounded, membranous, both surfaces nearly glabrous, nerves 6-7, distinct. Plants dioecious. Panicles axillary or terminal, peduncles upto 12cm long, terminal branches 0.2-0.3cm long with few flowered, clustered; pedicel short; calyx cup shaped, shortly lobed, 0.04-0.05 cm, oblong, toothed; corolla cup-shaped, petals 0.2-0.25x0.1-0.15cm, ovate-elliptic, greenish white, glabrous; filaments 0.1-0.15cm long, flat, nearly glabrous; anthers c 0.1cm long, reniform. Ovary free from disc, 3-celled, ovules 2 in each cell. Capsules 1.0-1.3x 0.5-0.6cm, globose. valves 0.7-1.0 cm; seeds 0.1x0.5cm, ellipsoids, brown.

Fl.: Jun.-Jul.; Fr.: Sep.-Dec.

- Spn. cited : DARJEELING: Hill Cart Road, Darjeeling, 2150m, 21.5.1981, *A.P.Das* 0434.
- Loc. Distrib. : DARJEELING: Rare; Found only at this place (1600-2150m).
- Gen. Distrib. : Endemic to E. Himalaya.
- Note : (i) Chr. no. $2n = 46$ (Khosla, P.K. & Mehra, P.N. 1974.).

Celastrus stylosus Wall. in Roxb., Fl. Ind. ed. Carey. 2:401:1824; FBI 1:618.1875 ut *stylosus* p.p; TSDD 18.1896; TNB 35.1929; Ding Hou in Ann. Miss. Bot. Garden.42:244.1955 & FM 6(2): 237.1962; FEH 1:189.1966 & 2:71.1971; EFPN 2:891979; FA 1:269.1982 (Rep.). *C. stylosus sensu* FBI, p.p. (Fig. 3.4)

Gymnosporia neglecta Wall. ex Laws. in FBI 1:619.18

Large woody liana. Stem terete, solid, frequent lenticellar, warted, greyish. Stipules linear; petioles upto 6.0 cm long, obscurely ribbed, warted; lamina 2.8-10x1.2-6.0cm, oblong-elliptic, shallowly serrate, acuminate, base cuneate, membranous, yellowish-green, both surfaces glabrous, middle nerves distinct. Cymes usually just below the leafy shoots. Pedicels 0.3-0.5cm long, puberulous, flowers many; male calyx 2.0-2.5cm in diam, cup-shaped, lobes 5, 1.2-1.4cm long rounded; petals 5, 0.3-0.35cm oblong, greenish - white; female flowers like as males but with staminodes and pistil, ovary on a disc, style short, stigma 3 lobed. Capsules 1.0-1.3cm in diam, globose, 3-valved, brown; valves 0.7-0.95x0.55-0.75cm long; seeds 3-5, ellipsoid, covered with fleshy yellow aril.

Fl.: Mar. - May ; Fr. rip.; Jul.- Oct.

- Spn. Cited. : DARJEELING : Rechilachak, Neora Valley National Park, 2450m, 23.3.1995, *Das et Samanta* 0597, Reshete, 2250m, 06.5.1995, *Das et Samanta* 06796; SIKKIM : Nandugaon, belwo Namchi, 840m, 21.5.1996, *Das et Samanta* 1131.
- Loc. Distrib. : DARJEELING : Common; Kurseong, Mangpo, Chitray, Takdah, Senchal, Lepchajagat, Neora Valley National Park (1500 3000m); SIKKIM : Rare; Nandugaon, Dentam, Lachen (840-2400m).
- Gen. Distrib. : E. Himalaya (Darjeeling-Sikkim-Khasia Hills), India; Assam, Meghalaya; Nepal, S. Tibet, Indonesia and Lesser Sunda Island.

EUONYMUS L.**KEY TO THE SPECIES:**

1. Lamina ovate-lanceolate; diam of flowers 0.6-0.8cm; capsules globose, echinate
*E. echinatus*
1. Lamina elliptic-ovate; diam of flowers 0.5-0.6 cm; capsules subglobose, smooth..
*E. vagans*

Euonymus echinatus Wall. in Roxb., Fl. Ind. ed. Carey, 2:410.1824; Royle, 3. Bot. Him. t. 31.1.1839; FBI 1:611.1875; TSDD 18.1896; p.p.-Sprange in KB 1908:32.1908; TNB 35. 1929; Blakclocck in KB 1951: 274.1951; EFH 1:189.1966; FPK 22.1981; FA 1:265.1982(Rep.); TBRI 50 (4):113.1987; FB 2(1):118.1991.

Nep.:Chure Lahara

Shrubby root-climber. Stem much branched, 4-ribbed; stipules small, caducous; petioles 3.0-4.5 cm long; lamina 5.0-10x1.7-1.1cm, ovate-lanceolate, crenate-serrate, acuminate, base cuneate, lateral veins widely spreading, distinct above, less so below. Cymes axillary, 3-15 flowered; peduncles 2.0-3.5cm long; flowers 0.6-0.8 cm in diam; calyx lobes 4, concave white or greenish 0.18-0.23cm; petals suborbicular; stamens 4, filament subulate; anther bicelled; style short, stigma 3-angular. Capsules 0.6-0.8 cm in diam, globose, echinate c 0.21cm.

Fl.: Apr. - Jun.; Fr. rip.: Aug. - Oct.

- Spn. Cited. : DARJEELING : Rambi Forest, 2100m, 08.11.1981, A. P. Das 0763.
- Loc. Distrib. : DARJEELING : Common; Birch Hill, Kafer, Senchal-Sukiapokhari, Lava, Neora Valley National Park (1900-3550m); SIKKIM : Less common; Found in North and South Districts (2500 - 3500m).
- Gen. Distrib. : Temperate Himalayas (Darjeeling, Sikkim, Bhutan & Kashmir).

Euonymus vagans Wall.in Roxb., Fl. Ind. ed. Carey,2:412.1824; FBI 1:611.1875; FEH 1:190.1966 & 2:71.1971; EFPN 2:90.1979; TBRI 50(4): 114.1987; FB 2(1): 118.1991.

Large shrubby root-climber on trees or rocks. Stem terete, glabrous. Branches 4-ridged, radiate. Petioles 0.3-0.5cm long, slightly ridged, glabrous; lamina generally 1.8-6.0x1.2-2.3cm, elliptic-ovate or lanceolate but much variable in shape and size of lamina, serrate, acute to caudate-acuminate, base rounded or cuneate, glabrous, dark green above, puberulous rusty yellow-brown beneath, midvein prominent, lateral

veins alternate at 60° angle with midvein. Cymes axillary many flowered; bracts 2; peduncle, 1.0-2.0cm long; pedicels 0.2-0.8cm long, flowers minute; 0.3-0.5cm in diam; calyx lobes 4, 0.1-0.14x0.1cm, concave. Petals 4, white, 0.15-0.2cm long, suborbicular, acute. Stamens 4, on disc; filaments 0.06-0.08cm long, anthers c0.05cm, bitheous. Female flowers not seen. Capsule 0.6x1.0cm, subglobose, 2-4 rounded lobes, smooth.

Fl.: Apr. - Jun.; Fr. rip.; Sep.- Dec.

Spn. Cited. : DARJEELING : Joributi, Neora Valley National Park, 2160m, 23.4.1995, *Das et Samanta* 0603.

Loc. Distrib. : DARJEELING : Very common; Darjeeling-Neora Valley National Park, Kafer, Lava (2000 - 2400m); SIKKIM: Less common; Gangtok, Singhik, Chungthang (1600 - 2050m).

Gen. Distrib. : India : Temperate Himalaya, Darjeeling; SIKKIM : Nepal, S. E. Tibet and W. China.

COBAEACEAE D.Don

COBAEA Cav.

Cobaea scandens Cav., Ic. 1:2, tt. 16, 17, 1791; TBRI 50(4):109.1987.

Nep.: Sheti Lahara

Profusely branched shrubby climber. Stem slightly ridged, glabrous, internodes 1.5-9.5cm long. Stipules large (2.5-3.5cm long) foliaceous; leaflets 3 pairs, opposite, the terminal pair modified into slender tendrils; lateral lamina 7.0-8.5x2.7-3.0cm, lanceolate to elliptic, entire, acute, base acute, nearly glabrous, membranous, costae 6-7 pairs, divergent. Flowers axillary, showy, solitary pendulous. Calyx tube very short, 5-ribbed, lobes 5, foliaceous 2.5-3.0 cm long, enter, apiculate, base rounded; corolla 4.5-5.0cm long, campanulate, longer than calyx, lobes ovate to linear, elongated; stamens 5, inserted at the base of corolla, filaments c 5.0cm long, erect, glabrous; anther exerted, versatile, 2-locular, disk large and deeply lobed; ovary 3-locular, style 3-lobed, ovules 2, stigmas 3-fid. Capsules 1.8-2.8x1.5-2.1cm, septically 3-valved at base, seeds compressed, winged.

Fl.: Jun. - Feb.

Spn. Cited. : DARJEELING : Observatory Hills, Darjeeling, 2150m, 04.10.1994, *Das et Samanta* 1052.

- Loc. Distrib. : DARJEELING : Garden plant, rarely naturalised (upto 2100m).
- Gen. Distrib. : Native of Mexico.
- Notes : (i) Used as ornament for its beautiful flowers.
(ii) Chr. no. $2n = 52$ (Flory, W. S. 1937) [Love, A. & Love. D.1961b] .

COMBRETACEAE R. Br.

COMBRETUM Loef.

KEY TO THE SPECIES:

1. Flowers pentamerous; fruits oblong, 5-winged, glabrous, brownish.....*C. roxburghii*
 1. Flowers tetramerous; fruits globose, 4-winged, dark brown with laciniate scales....
*C. flagocarpum*.

Combretum flagocarpum C.B. Cl. in FBI 2:455.1878; EFPN 2:167.1979; FB 2(1): 307.1991 (Fig. 3.15).

Nep.: Sheti Lahara

Large shrubby sinistrorse twiner. Stem terete, rusty puberulous. Leaves generally opposite, very often alternate or ternate. Petioles 0.5-0.7cm long slightly winged with white hairs; lamina 9.0-12x3.5-7.0cm, broadly oblong - elliptic, entire, acute to shortly acuminate, base cuneate, upper surface with glandular punctate or peltate scales and dense pubescents on midveins, lower surface with sessile glands. Bracts and bractoles linear, subsessile. Spikes paniced, from upper leaf axils or terminal; peduncle 2.0-9.0cm long, calyx 4.0-6.0cm long, teeth 4, erect, 0.06-0.15cm, triangular, constricted above, densely glandular; petals 4, narrowly obovate, longer than calyx lobes, pinkish-white; stamens numerous, filaments 0.3-0.4cm long, wirey, glabrous; anther c0.05cm, orbicular, bithecous; ovary subulate; ovules pendulous; Fruits 4-winged, dark brown with laciniate scales.

Fl.: May - Aug.; Fr. rip.: Nov. - Dec.

Spn. Cited. : DARJEELING : Latpunchor, 1100m, 17.5-1995, *Das et Samanta* 0730.

Loc. Distrib. : DARJEELING : Common; Sukna, Rambi-Mangpo, Singla, River Teesta Valley (upto 1300m).

Gen. Distrib. : India : E. Himalaya (Darjeeling - Sikkim); Nepal, Bhutan. upper Myanmar.

Combretum roxburghii Spreng. Syst. Veg. 2:331.1825; Exell in FM 4(5):544.1954; BBSI 5:106.1964. EFPN 2:167.1979.

C. decamdrum Roxb., Pl. corom. 1:t.59.1796, nom Jacq. 1760; Cl. in FBI 2:425.1878; TNB 660. 1929; FEH 1:220.1966; FPK 34.1981; FB:2(1):306.1991.

Beng.: Atundi; Nep.: Kalilahora

Woody liana with long pendent branches, pubescent. Petioles 0.2-1.3cm long; lamina 7.0-15x2.5-7.5cm, oblong-elliptic to lanceolate, entire - serrate, acuminate, base rounded, glabrescent above, veins pillose beneath. Racemes, numerous, panicled, terminal, villous; bracteols linear, persistant; calyx 0.5-0.6cm, cup-shaped, constricted above, lobes 0.5-0.2cm, triangular; petals 5, greenish white, oblong-acute or exceeding the calyx lobes, pubescent. Fruits 2.0-3.5cm long, oblong, 5-winged, smooth, brownly.

Fl.: Apr. - Jun.; Fr. rip.: Sep.-Oct.

Spn. Cited. : DARJEELING : Sevoke, 450m, 16.4.1994, *Das et Samanta* 0054; way to Purbikhola, Sevoke, 950m, 11.9.1996, *Das et Samanta* 1434.

Loc. Distrib. : DARJEELING : Very common; Bhuttabari, Pankhabari, Peshok, Gairibas, Yangmakum, Tindharia, Kalimpong (upto 1200m); SIKKIM : Less common; Singhik, Yaksum, Lachen, Namchi; Dentam (1200-2500m).

Gen. Distirb. : Darjeeling -Sikkim Himalayas; Punjab, North Decan, Andamans; Nepal, Myanmar, W. China.

Notes : (i) Used in medicinal purposes.
(ii) Chr. no. $2n = 26$ (Mehra, P. N. & Khosla, P. K.1969,1972).

CONVOLVULACEAE Juss.

KEY TO THE GENERA :

1. Fruits berry; stem hairy throughout; lamina lustrous-white silky below...*Argyria*.
1. Fruits capsular; stem nearly glabrous or muricate; lamina never white silky below.2
2. Flowers in simple racemes.....*Porana*.
2. Flowers in simple or branched cymes, sometimes paniculate.....3
3. Cymes terminal, much branched-paniculate.....*Erycibe*
3. Cymes axillary, clustered.....4.
4. Corolla tube narrow but expanded at the mouth; sepals elongated in fruit; pollen exine no spinescent.....*Merremia*.

4. Corolla tube gradually expanded to dilated limb; sepals elongated in fruit; pollen exine spinescent.....*Ipomoea*.

ARGYREIA Lour.

Arygyreia roxburghii Choisy in Mem. Soc. Phy. Hist.Nat. Geneve 6:419.1834; FBI 4:185.1883; TSDD 58.1896; FA 3:343.1939; EFPN 3:105.1982. (Photo-11).

A. roxburghii var *ampla* (Choisy) Cl. in FBI 4:185.1883.

Perennial shrubby dextrorse twiner with many pendent branches. Stem terete, semisolid, slightly ribbed with matted hairs. Petioles 5.0-10 cm long, villose; lamina 9.0-11x10-10.5cm, ovate-cordate, entire, acute slightly villous above, silky villous below. Cymes lax, irregularly compound; peduncles 2.0-3.0cm long; bracts 1.3-1.5x0.2-0.3 cm, ovate-lanceolate, often outer bracts with leafy petiole; pedicels 0.4-0.6 cm, terete, hairy; sepals 5, free, 1.0x0.03cm, elliptic-lanceolate, entire, shortly acuminate, nearly glabrous inside, silky villous outer; corolla campanulate, tube 5.0-6.0cm long, violet, outer hairy, inner glabrous, limbs shortly lobed; stamens 5, included, filaments 1.7-2.7cm long, erect, violet hairy at base, upper smooth; anthers 0.4x0.2 cm, oblong, straight, basifixed, yellow, bithecous. Disc annular, carpel 2, 4-celled, 1-ovule in each locule, style 1, filiform, lower part flat, slightly curved, white, nearly glabrous; stigmas 2, sessile, globose. Fruiting calyx 5, persistent, 0.8-1.2cm long, ovate, entire, acute, silky. Berries 1.5-1.7 cm in diam; globose, dry indehiscent. Seeds 3-4, 0.5-0.7x0.4-0.5cm, subglobose, silky.

Fl.: Aug.-Sep.; Fr. rip.: Oct. - Dec.

Spn. Cited. : DARJEELING : Tindharia, 950m, 09.12.1994, *Das et Samanta* 0270; N.B.U. Campus, 120m, 28.2.1994, *Das et Samanta* 0022; Panighata, 350m, 09.12.1994, *Das et Samanata*, 0455; SIKKIM : Jorethang, 310m, 29.10.1995, *Das et Samanta* 0855; Gyalshing, 1550m, 23.4.1996, *Das et Samanta* 1162; Pangthang, 1900m, 28.4.1996, *Das et Samanta* 1245.

Loc. Distrib. : DARJEELING : Abundant; Siliguri, Suruk, Kalijhora, Mangpo, Kumai, Pankhabari; Yangmakum; (110-1950m) SIKKIM: Very common; Jorethang-Gangtok, Pakhyong, Pangthang (300-2000m).

Gen. Distrib. : India : Darjeeling - Sikkim, Assam; Nepal.

ERYCIBE Roxb.

Erycibe paniculata Roxb. Pl. corm. 2:31, t. 159.1798; Wt., Ill, Ind. B.t. E. 226.1850; FBI 4:180.1883 (excl.syn. *E. rheedii* BP.); BP 2:724.1903; Bot. Bih & Ori.4:605.1922.

Porana paniculata Roxb. Pl. corom. 3 : 31,t.235.1819; FBI 4:222.1883; FEH 1:265.1966; EFPN 3:108.1982.

Beng.; Badulpati, Bhui Kumara, Bibi Kand.

Large shrubby sinistrorse twiner. Stem, terete, solid, branched, sub-tomentose, internodes 8.5-14 cm long. Petioles 2.0-4.0cm long, hairy; lamina 3.0-8.5x1.6-5.8cm, elliptic or ovate-oblong, entire, acuminate, base deeply cordate, leathery when dry, pubescent above, glabrous beneath. Panicles terminal; no. of branches 2, each branch with many flower; peduncles 6.0-7.0cm long, subbracteate; pedicels 0.2-0.25 cm long, villous. Sepals 0.3x0.5 cm, suborbicular, sparsely hairy out. Corolla pale white c1.0cm long, campanulate, tube hirsute outside, limb shortly lobed. Stamens 5, filaments c0.1 cm long, erect, adnate to corolla throat, nearly glabrous; anthers c0.01cm long, yellow, apiculate, base spreading. Ovary 0.1x0.05cm, one chambered, ovules 4, basally placed; style c 0.15cm, stigmas 2 lobed. Capsules 0.8-1.0 cm long, ellipsoid, pulpy on ripening. Seed 1, glabrous.

Fl.:Oct. - Dec.; Fr. rip.: Jan. - Mar.

Spn. Cited. : DARJEELING : St. Mary's, Kurseong, 1550m, 03-10-1994, Das et Samanta 0367.

Loc. Distrib. : DARJEELING : Less Common; Tindharia, Mangpo, Kalijhora, River Teesta Valley, Kalimpong (upto 1550m).

Gen. Distrib. : Himalayas (Nepal - Bhutan); Myanmar, also cultivated at tropics.

IPOMOEA L.**KEY TO THE SPECIES:**

1. Leaves always deeply dissected at least over 50% of the depth; lobes 5.....2
1. Leaves unlobed or lobes less than 50% of the depth.....3
2. Leaves palmately 5-7 lobed; densely hairy throughout; flowers in crowded heads; corolla dull yellow.....*I. pestigridis*.
2. Leaves pinnatisect (6-14 pairs of pinnae); glabrous shiny; flowers pedicellate, in peduncled cyme; corolla red.....*I. quamoclit*.
3. Stem always muricated, shiny.....*I. muricata*
3. Stem never muricate, glabrous or pubescent.....4
4. Leaves glabrous; corolla red; inflorescence branched, flowers distinctly pedicellate; bracts minute*I. angulata*.

4. Leaves densely pubescent below; corolla purplish; inflorescence unbranched, flowers crowded at the tip of peduncle; bracts upto 2.5 cm long.....*I. purpurea*.

Ipomoea angulata Lam. tabl. Encycl. 1:464.1753; RBSI 16(1): 192.1953; FD 233-234.1963.

Quamoclit phoenicea (Roxb.) Choisy in Mem. Soc. phys. Geneve. 6:433.1833.

Ipomoea phonicea Roxb. in Fl. Ind. 2:92.1824.

I. coccinea Cl. FBI 4:199.1883.(non. L.)

Quamoclit coccinea Cooke PL. Pres. Bomb. 2: 261.1904 (non Moench)

Annual glabrous sinistrorse twiner. Petioles 6.0-8.0cm long, wirey glabrous, lamina 3.0-8.0x3.0-7.0cm broadly rounded ovate, entire, or 5-8 lobed, acuminate, with a mucro, base broadly cordate, membranous nearly glabrous, nerves 6, divergent. Cymes lax; peduncles upto to 13cm long, hairy at base; few-many flowered; bracts inconspicuous. Pedicels 0.5-1.5cm long, sepals 5, 0.2x0.1cm, elliptic - oblong, acuminate with upto c 0.3cm long needle like. Corolla red, tube over 2.0cm long. Stamens 5, included; filaments c0.5cm long, unequal, filiform; anthers 0.2x0.1 cm, bithecous; ovary c0.05cm; style c1.7 cm long, stamens numerous, exerted, wiry, glabrous; stigmas 2-celled, globose. Capsules ellipsoid, septa thin, persistent. Seeds 4, puberulous, black.

Fl.: Oct.-Feb.; Fr. rip.: Feb.-Apr.

Spn. Cited. : DARJEELING : Panighata, 09.12.1994, *Das et Samanta* 0446; SIKKIM : Jorethang, 310m, 29.10.1995, *Das et Samanta* 0845.

Loc. Distrib. : DARJEELING : Common; throughout the altitude (110-500m); SIKKIM: Less common; found only at Jorethang (upto 500m).

Gen. Distrib. : Introduced from tropical America but now naturalised in India.

Note : (i)Chr. no. $2n = 28$ (Sharma , A.K. & Datta, P. C. 1958; Vij, S.P. *et al.* 1977)

Ipomoea muricata (L.) Jacq. Hort. Schoenbr. 3: 40,t.323, 1798 (non Cav. 1799); FBI 4:197.1883; RBSI 16(1):191.1753.

Convolvulus muricatus L. Mant. 44.1767.

Calonyetion muricatum G. Don, Gen. Syst. 4:264.1837.

Large shrubby biennial dextrorse twiner. Stem terete, hollow, sparsely muricate,

throughout. Stipules short, deciduous. Petioles 3.5-12 cm long, soft, nearly glabrous; lamina 7.0-9.0x6.5-10cm, broadly ovate, entire, acute to slightly acuminate to caudate, base deeply cordate, nearly glabrous beneath, sparsely pubescent above, dense on veins; nerves 7-9. Flowers not seen. Fruiting peduncles axillary, upto 15 cm long, terete, branched; pedicel 1.5-3.0cm long, glabrous. Fruiting calyx 1.5-2.0x0.4-0.8cm, elliptic-ovate; entire, acuminate, nearly glabrous. Capsules 2.3-2.5x1.5-2.0cm globose, apiculate; seeds 3-4, 0.7x0.5cm, ovate-oblong, nearly glabrous.

Fr. rip.: Oct. - Feb.

Spn. Cited. : SIKKIM : Jorethang, 310m, 28.10.1995, *Das et Samanta* 0821.

Loc. Distrib. : SIKKIM : Common below 300m, Nayabazar - Namchi;

Gen. Distrib. : India : Sikkim Himalayas, Decan Hills; Japan.

Note : Chr. no. $2n = 30$ (Sharma, A. K. & Datta, P.C. 1958) & 32 (Rao, K. V.R.1940 [D. 1955]).

***Ipomoea pes-tigridis* L., in Sp. Pl. 1:162.1753.**

Beng. Ghiabati, Languli-lata.

Medium shrubby sinistrorse twiner. Stem terete, shiny with densely appressed needle-like 0.3-0.4 cm white hirsute hairs. Petioles 1.5-7.5cm long, terete, hirsute; lamina deeply palmately 5-9 lobed, 5.0-8.0cm in diam, lobes 4.0-5.5x1.2-2.5 cm, oblong-elliptic to oblong, entire acute to acuminate, narrowed at base, membranous, densely hirsute above, less beneath. Involucral bracts numerous, outer 1.3-1.5x0.4-0.5cm, ovate - oblong, entire, acute, hirsute on both surfaces; inner ones c0.5cm small, acute. Heads 1.0-2.5cm few flowered; peduncles 1.5-2.5cm long, terete, hirsute. Sepals 0.5x0.08cm, ovate-lanceolate, entire, acute, hirsute, hairs upto 0.5 cm long with swollen base; corolla white or pinkish 2.0-2.5cm long, infundibuliform, narrow; lobes 5, 0.3-0.4cm long, slightly widened, acute, densely hirsute. Stamens 5, epipetalous; filaments 1.5-2.1cm long, subequal, anthers 0.01-0.15cm, hastate; ovary cylindrical c 0.1cm in diam. Ovary 4-celled, 1 in each locule; style very short, filiform; stigma capitate, nearly glabrous. Capsules 1.0-1.8cm in diam ovoid, 4-seeded, slightly grey tomentose.

Fr. rip.: Oct. - Feb.

Spn. Cited. : SIKKIM : Jorethang, 310m, 28.10.1995, *Das et Samanta* 0798.

Loc. Distrib. : SIKKIM : Common around Jorethang (upto 350m).

Gen. Distrip. : India; Malaysia, China, Tropical E. Africa.

Note : (i) Chr. no $2n = 26, 28$ (Sampath Kumar, R. 1968) & 28 (Sampath Kumar, R. 1978, 79) & 30 (Bir. S.S & Sidhu, M. 1980).

Ipomoea purpurea (L.) Roth. Bot. Abh. 27.1787; FBI 4:200.1883; Oststroom in Blume 3:496.1940; FEH 1:265.1966 & 2:110.1971; FPK 68.1981; EFPN 3:107.1982; TBRI 50 (4): 117.1987.

Convolvulus purpurea L., Sp.Pl.ed. 2, 1:219.1763.

Pharbitis hispida Choisy. in Men. Sol. Phys. Geneve, 6:438.1833.

Perennial shrubby sinistrorse twiner. Branches terete, slender, internodes 6.5-10cm long, sparsely hirsute. Petioles 2.1-3.4cm long, terete, white hairy; lamina 6.0-13x6.0-10cm, broadly ovate-cordate, entire or 3 lobed, acute, base subcordate, membranous, sparsely hairy. Cymes axillary, umbellate, 3-5 flowered; peduncles upto 12 cm long, pubescent throughout; bracts 2, 0.5-0.6 cm long, linear, acute, pubescent. Sepals 5, free, subequal 1.6x0.2cm, elliptic-oblong, hirsute at base, persistent; corolla infundibuliform, tube 4.0-6.0cm long, mouth 3.5-5.0cm in diam purples; lobes 5. Stamens 5, filament short, inserted at the base of corolla and alternating with corolla lobes; anthers 0.3-0.4cm long, included, basifixed, smooth, bithecous; ovary 4-celled, style 2.5-3.5cm long, erect, hairy; stigma papillose. Capsules 0.7-1.1 cm, ovoid. Seeds 0.3-0.4cm long, ovoid, glabrous, black.

Fl.: May - Dec.; Fr. rip.: Dec. - Apr.

Sp. Ciated. : DARJEELING : Jaldhaka, 400m, 26.1.1994, *Das et Samanta* 0007; Mirik, 1500m, 05.9.1994, *Das et Samanta* 0397; SIKKIM : Fifth Mile, Gangtok, 1720m, 18.11.1995, *Das et Samanta* 0953.

Loc. Distrib. : DARJEELING : Common; Lopchu, Kurseong, Lava, Today, St. Mary's. Samsing, Kalimpong (upto 2100m); SIKKIM: Less common; Gangtok, Gyalshing-Pelling (upto 2000m).

Gen. Distrib. : Native of America but naturalised in Africa and Asia.

Note : (i) Chr. no. $2n = 30$ (King, J. R. & Bamford, R. 1937) & 32 (Sampath Kumar, R. 1979).

Ipomoea quaimoclit L., Sp. pl. 159.1753; FBI 4:199.1883; FEH 1:265.1966; FPK 68.1981.

Convolvulus ipenatus Desr. in Lam. Encyl. Meth.3: 567.1791;

Quamoclit vulgaris Choisy in Mem. Soc. Phy. Geneve 6: 434.1833.

Beng. : Kam-lata, Taru-lata

Medium herbaceous annual sinistrorse twiner. Stem terete, slender, glabrous, internodes 4.7-5.6cm long. Petioles 1.0-2.0cm long; lamina 5.0-10x1.5-7.0cm, pinnatisect, pinnae 6-14, linear to lanceolate. Flowers axillary, solitary or clustered in cymes. Bracts inconspicuous; peduncles upto 8.0cm long; pedicels 1.5-2.5cm long; calyx tubular, lobes 0.5x0.2 cm, elliptic, membranous, hairy, corolla crimson, tube 2.5-5.5cm long, funnel shaped, lobes 0.45-0.6cm long, triangular. Stamens 5, filaments 1.2-1.8cm long, erect, hairy; anther 0.2x0.05 cm, exerted; ovary 4-celled, ovules 4, one in each locule; style 1.5-2.0cm long, longer than stamens, nearly glabrous; stigma 0.07-0.09cm long, globose. Capsules 0.59-0.8cm long, ovoid; seeds 4, black, almost glabrous.

Fl.: Jun. - Sep.; Fr. rip.: Aug. - Nov.

Spn. Cited. : DARJEELING : N.B.U. Campus, 120m, 16.11.1994, *Das et Samanta* 0440; SIKKIM : Jorethang, 300m, 28-10-1995, *Das et Samanta* 0810.

Loc. Distrib. : DARJEELING : Common; Dolka Forest - Naxalbari, Samsing, Kurseong, River Teesta Valley, Kalimpong (upto 1500m); SIKKIM : Less common; Jorethang, Nayabazar, Nandugaon, below Namchi, Legship (upto 350m).

Gen. Distrib. : Native of tropical and subtropical America, naturalised in other tropical and subtropical regions.

Note : (i) Used medicinally.

MERREMIA Dennst.

KEY TO THE SPECIES:

1. Lamina broadly ovate; 5-7 lobed.....*M. vitifolia*
1. Lamina lanceolate, entire.....2
2. Flowers 2-3; lamina base acute; stem wirey, weak.....*M. hirta*
2. Flowers 3-12; lamina base cordate; stem moderately strong.....*M. umbellata*.

Merremia hirta in Philip. J. Sc.Bot. 7:244.1912; Oostroom in Blumea 3:307. 1939 & FM 4:442.1953. (Fig. 3.22).

Convolvulus hirtus L., sp. pl. 159.1753.

Ipomoea linifolia Bl., Bijdr. 721.1825; FBI 4:205.1883.

Annual slender, herbaceous dextrorse twiner. Stem terete, much branched, hairy, internodes 3.0-4.5cm long. Petioles 1.0-1.3cm long, ribbed, brownish hairy; lamina 4.3-6.0x1.5-1.8 cm, ovate-oblong, entire, mucronate, base cuneate, sparsely pubescent above, glabrous beneath. Cymes paniculate; peduncles 6.0-8.0cm long, few flowered. Bracts minute, ovate, acute, glabrous; pedicels 0.5-0.6cm long. Sepals free, 0.5x0.2 cm, elliptic-obtuse, nearly glabrous. Corolla 1.5-1.7x0.4-0.5 cm, subcampanulate, yellow with 5 striations, glabrous. Stamens 5, filaments 0.5-0.8 cm long; ovary c 0.4 in diam, globose, style 1.0-1.3 cm long, stigma 2-fid. Capsules 1.0-1.5x0.5-0.6cm, ovoid, 4-seeded, 1 in each chamber. Seeds 0.35-0.4 long, subglobose, nearly glabrous.

Fl.: Feb.-Jun.

Spn. Cited. : DARJEELING : N. B. U. Campus, 120m, 11.4.1994, *Das et Samanta* 0436; Mahananda Wild Life Sanctuary, 150m, 14.3.1997, *Das et Samanta* 1923.

Loc. Distrib. : DARJEELING : Common throughout (upto 350m).

Gen. Distrib. : India; Malaysia, Australia.

Merremia umbellata (L.) Hallier f in Bot. Jahrb. 16:552.1893; *Oostroom in Blumea* 3:333.1939 & FM 4:448.1953; FEH 2:110.1971 & EFPN 3:107.1982; Nam. Chan. Fl. Pl.368.1987.

Convolvulus umbellatus L. (Hallier) f. var. *orientalis* Hallier f. in BSBG 35:270.1896 ; Sp. Pl. 155.1753.

Ipomoea cymosa (Desr.) Roem .& Shult., syst. 4:241.1819; FBI 4:211.1883.

Shrubby slender, dextrorse twiner. Stem slightly angular, nearly glabrous. Petioles 0.9-2.0cm long, densely hirsute at base; lamina 10-11x2.3-3.0 cm, hastate - elliptic to oblong, entire subserrate, acute, base subcordate. Cymes compact corymbose, 5-12 flowered, peduncles 3.0-3.5cm long. Bracts orbicular, caducous; pedicels 1.4-1.6cm long, calyx lobes 5, 1.2-1.5x0.4-0.6cm in bud, ovate-lanceolate, mucronate, subequal, nearly glabrous; corolla white, campanulate 3.3-3.5 cm across, hirsute at tip. Stamens 5, inserted, filaments 0.8-1.0cm long, wirey, nearly glabrous; anthers 0.2x0.05cm, yellow, included. Ovary 0.2x0.1cm, conical, style 0.7-0.8cm long, erect, slender, glabrous, stigmas 2, globose, slightly curved. Capsules 0.6-0.7 cm in diam, ovoid, mucronate. Seeds subglobose, densely hairy.

Fl.: Feb. - Apr.; Fr. rip.: May - Jun.

Spn. Cited. : DARJEELING : Panighata, 350m, 13.3.1994, *Das et Samanta* 0082; Sukna, 132m, 24.4.1994, *Das et Samanta* 0151, Tenth Mile, 130m, 14.3.1995, *Das et Samanta* 0560.

Loc. Distrib. : DARJEELING : Abundant in foot-hill regions (upto 1400m).

Gen. Distrib. : India; Malaysia, Australia, Tropical E. Africa, Seychelles & Tropical Asia.

Merremia vitifolia (Burm. f.) Hallier f. in Bot. Jahrb. 16:552.1893; Oostroom in Blumea 3:329 & FM 4:448.1953.

Convolvulus vitifolius Burm.f., Fl. Ind. 45,t.18,f.1.1768.

Ipomoea vitifolius (Burm.f.) Bl. Bijdr.709.1825; FBI 4:213.1883.

Large shrubby sinistrorse twiner. Stem terets, many ribbed with long white hairs. Petioles 1.2-4.0cm long, densely hirsute; lamina 5.0-11x4.0-10.5 cm, broadly ovate, palmately 5-7 lobed, lobes dentate, acute - acuminate, base cordate, membranous; surfaces and margins sparsely hirsute. Cymes 1-7 flowered; peduncles 2.0-5.0cm long, sparsely hairy; bracts minute, nearly glabrous; pedicels 1.0-1.5cm long, hirsute; sepal 1.5-2.0x1.0-1.5cm, ovate-lanceolate, entire, obtuse and mucronate (2.0cm long), acute, hirsute with glandular at base, 0.15-0.20cm long; corolla 1.0-2.0x0.5-0.17cm, campanulate, light-yellow. Stamens 5, filaments short, filiforms; anthers hastate, usually twisted; ovary 4-celled, ovules 4, one in each locule; style filiform, stigmas 2-fid, globose. Capsules 0.8-1.0cm in diam, globose 2-celled, 4-seeded. Seeds smooth, black.

Fl.: (Mar.)

Spn. Cited. : DARJEELING : Panighata, 350m, 13.3.1994, *Das et Samanta* 0037; St. Mary's, Kurseong, 1550m, 14.3.1994, *Das et Samanta* 0089; Sevoke, 450m, 26.3.1994, *Das et Samanta* 0096.

Loc. Distrib. : DARJEELING : Abundant throughout (300-1600m).

Gen. Distrib. : Throughout India; Nepal, Myanmar, Malaysia.

Porana grandiflora Wall. in Roxb., Fl. Ind. ed. Carey 2:41.1824; FBI 4:221.1883; TNB 95.1929; FEH 1:265.1966; KB 24:455.1970; FPK 69.1981 EFPN 3:108.1982; TBRI 50(4): 123.1987.

Ipomoea cuspidata D. Don Prodr. Fl. Nep. 98. 1825; FBI 4:215.1883.

Dinetopsis grandiflora (Wall.) Roberty in Candollea 14:27.1952.

Large slender dextrorse twiner. Stem terete, nearly glabrous. Petioles 3.0-5.5 cm; lamina 6.0-12x4.0-10 cm, broadly ovate-cordate, entire, acuminate to caudate, base rounded to deeply cordate, pubescent above, glabrous below. Racemes, peduncles upto 8.0cm long pubescent, 4-12 flowered; bracts 0.3x0.1cm; linear, pubescent, enlarges in fruits. Sepals 0.5-0.6cm, linear lanceolate, acuminate, sparsely hairy, Corolla purplish, 2.5-3.5cm long, campanulate, tube narrow, limb c 0.45 cm across, nearly glabrous; stamens 5, adnate to corolla tube. Ovary 0.1x0.2cm, swollen, 2 celled; style 1, over 0.2cm long, linear, glabrous; stigma c0.1cm in diam, subglobose. Capsules 1.0-1.4cm, subglobose; seeds glabrous.

Fl.: Aug. - Sep.; Fr. rip.; Oct. - Jan.

Spn. Cited. : DARJEELING : Lebong Cart Road, Darjeeling, 1900m, 04.10.1994, *Das et Samanta* 0393; SIKKIM : Nandugaon, 28.10.1995, *Das et Samanta* 0814.

Loc. Distrib. : DARJEELING : Less common; Sukiapokhari, Senehal, Kafer, Takdah, Mall-Lebong, Lava Rimbick-Raman, 14-Farie (1500-2200m); SIKKIM : Found around Jorethang-Namchi area (800 -1500m).

Gen. Distrib. : E. Himalaya (Nepal - Bhutan).

CUCURBITACEAE Juss.

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Biswarea tonglensis (Cl.) Cogn. in DC., Monog. Phan. 3:403.1881; BBSBB 21(2):16.1882; Pfl.-reich IV-275. II. 88.175.1924; RBSI 17:65.1959; EFH 1:321.1966; EFPN 2:177.1979; FFI II:10.1982. TBRI 50(4):107.1987; FB 2(1):267.1991.

◦ *Warea tonglensis* Cl. in J. Lin. Soc. Bot. 15:129.f.1-8.1876. FBI 2:612.1879, non Nitt all.

Large herbaceous annual climber. Stem slender, terete-ribbed, glabrous. Tendrils 2-3 fid, glabrous. Petioles 3.0-8.5cm long; lamina 11-17x9.5-15 cm, broadly ovate, palmately 5-7 lobed, each lobe oblong-lanceolate, broadly serrate, caudate to acute, emerginate, sparsely pubescent above, glabrous below. Racemose or rarely solitary; ebracteate. Plants dioecious. Male peduncles 10-15 cm long; pedicels 1.0-2.1cm long, erect; hypanthium 3.0-3.2cm long, narrowly campanulate, slightly swollen at middle; 5-lobed, ovate, entire; corolla yellow, lobes 3.0-5.0x1.0-2.2cm, ovate, entire, acute. Stamens 3, filaments 0.4-0.5cm, filiform, nearly glabrous; anthers yellowish-white 0.7x0.5cm, connate, conduplicate 1-2 celled; pistillode 0.6-0.8 cm long. Female peduncles upto 10cm long, flower solitary, other parts like that of males; staminode 0, ovary oblong, style filiform, stigma 3. Fruits 10.5-11.5x3.5-4.5cm, oblong. Seeds many, 1.1-1.5x0.6-1.0cm, oblong or elliptic, brownish compressed, smooth.

Fl.: Jun. - Oct. ; Fr. rip.: Sep. - Dec.

Spn. Cited. : DARJEELING : Tiger Hill, 2400m, 12.7.1981, A. P. Das 0508.

Loc. Distrib. : DARJEELING : Rare; Senchal - Tiger Hill, Chitray, Rambh, Manebhanjan-Tonglu (2000- 3000m).

Gen. Distrib. : Endemic to Eastern Himalaya. India : W. Bengal, Sikkim, Assam, Manipur; Nepal.

COCCINIA L.

Coccinia grandis (L.) Voigt. Hort. Suburb. Calc. 59:1845; AAZ 4:229.1965; FID 16.1978; EFPN 2:177.1979; FFI 2:24.1982.

Bryonia grandis L., Mant.Pl. 1:126.1767.

Cephalandra indica Naud., Ann.Sci.Nat. Ser.5'. 5 :16.1869; FBI 2:621.1879 (Excl. Syn.); FA 2:329. 1982.

Coccinea cordifolia Cogn. in DC., Monog.Phan. 3:529.1881, excl. basionym; RBSI 17:117.1959.

Beng: Telakucha, Kundri, Bhimb, Bankundri

Herbaceous perennial spreading climber with tuberous root-stocks. Stem angulate, much branched, glabrous or sparsely pubescent. Tendril simple, often bifid, glabrous. Petioles 2.0-4.0cm long, slender 3-5 angled or lobed, shiny; lamina 2.5-8.0x2.2-4.5cm, broadly ovate-cordate, palmately lobed, entire to minutely denticulate, acute, base cordate, glistening glands on lower surface towards base, 3-5 nerved, lateral two, branched again. Plants mainly dioecious, often monoecious. Male flower solitary; pedicel 4.0-5.5cm long, subfiliform; hypanthium 1.0-1.2cm long, campanulate, lobes 6, 0.3-0.4cm, lanceolate, glabrous, corolla white, 5-partite, 3.0-4.0cm long, triangular, pubescent inside, glabrous outside. Stamens 3, from the base of corolla; filaments 0.2-0.25cm long, anther 0.6-0.7cm thick, connate. Female flower solitary; pedicels 2.5-3.0 cm long; calyx and corolla as that of males. Staminode 3, subulate, ovary 1.3-1.7cm long, fusiform, style slender, glabrous, stigma 3-lobed. Fruits 4.0-8.0x2.5-3.5 cm, oblong -ovoid, or subglobose, bright scarlet on ripening, but marked with white streaks when young. Seeds 0.6-0.8 cm embedded in pulp, reddish, yellowish gray.

Fl.: Jun. - Dec.; Fr. rip.: Aug.- Dec.

Spn. Cited. : DARJEELING : N.B.U Campus, 120m, 23.5.1995, *Das et Samanta* 0774; SIKKIM : Jorethang, 310m, 19.4.1997, *Das et Samanta* 1632.

Loc. Distrib. : DARJEELING : Abundant almost many places of foot - hill regions (120 -1550m); SIKKIM : Common; Jorethang - Karfet Forest, Nandugaon, Nayabazar. (upto 500m).

Gen. Distrib. : Tropical parts of India; Myanmar, Sri Lanka, China, Japan, Malaysia, Africa.

Notes : (i) The whole plant used as medicine against allergic & diabetes etc.
(ii) the young shoots used as vegetables. (iii) fodder for cows & goats
(iv) Chr.no. $2n = 24$ (Bhar, N. C. Datta, K. B. 1981.

CYCLANTHERA Schr.

Cyclanthera pedata (L.) Schrader in Linnae 8.Litt. Ber.: 23.1881 ; FEH 1:322.1966; KB 3(4):796.1980; FFI 2:45.1982; FB 2(1):262.1991.

Momordica pedata L. sp. pl. 1;1009.1753; FFI2:45.1982.

Nep. : Olachato

Annual herbaceous climber. Stems minutely ribbed, slender, glabrous. Tendril 3-fid, young glabrous, mature pubescent. Petioles 2.2-9.5cm long; lamina 4.0-9.0x1.2-2.6cm, elliptic, palmately 3-5 lobed, dentate-serrate, acuminate, base cuneate, membranous, white dotted above, pubescent below. Male and female flowers on the same axile. Male peduncle 6.0-11.5cm long, wirey; pedicels 0.15-0.2cm long. Sepals 0.23-0.29cm; corolla yellow, lobes c 0.2cm long; filaments 0.06-0.08cm long; anther 0.1-0.12cm. Female flowers not seen. Fruiting stalk 2.5-3.0cm. Fruits greenish-white, 2.5-4.3x1.0-1.6cm, ovate - oblong, profusely setose hairy, sharp tips 0.1-0.3cm. Seeds 0.95x0.55cm, ovoid deposited on basal end.

Fl.: Jul. - Aug. ; Fr. rip.: (Sep.).

Spn. Cited. : DARJEELING : Mirik, 1500m, 09.5.1994, *Das et Samanta* 0302;
SIKKIM : Singling Basti, Soreng, 1520m, 30.10.1995, *Das et Samanta* 0867.

Loc. Distrib. : DARJEELING : Common; in Mirik area (1500m); SIKKIM : Common in low altitude areas (upto 1800m).

Gen. Distrib. : Native of tropical South America, generally cultivated in India.

Notes : (i) Fruits edible

(ii) Chr. no. $2n = 32$ (Mckay, J. W. 1930, 1931; Resende, F. 1937)

DIPLOCYCLOS (Endlicher) Post & Kuntz.

Diplocyclos palmata (L.) Jeifr. in KB 15:352.1962; BBSB 22(2):190.1968; EFPN 2:178.1979; FFI II:48-49.1982; FB 2(1):255.1991.

Bryonia palmata L., Sp. pl. 1: 1012.1753 excl. syn.; FFI II:48.1982; Nam. Chan.FI. Pl. 194.1987.

B. laciniosa Auct non(L.), Naudin Sp.pl. 1013.1753 p.p. excl typ; FBI 2:622, 1879 excl.syn., BP 1:526.1981.

Bryonopsis laciniosa (L.) Naudin in Ann. Sci.Nat. 4 ser. 12:141.1959; Cogn. et Harms in pfl.- reich IV-275.II.88:160,f, 16.1924; RBSI 17(1):135.1959; FEH 1:322.1966.

Beng. : Mala; Hind: Gargu-naru; Nep.: Bonkakra.

Large annual herbaceous climber. Stem terete, angulate, elongate, nearly glabrous. Tendrils 2-3 fids, smooth, yellowish-green. Petioles 2.4-6.0cm long, terete. Leaves palmately 3-5 lobed; lamina lobes 4.0-10x4.1-8.0cm, elliptic, denticulate or undulate,

acute, base rounded, upper scabrous, lower glabrous. Male pedicels 0.5-1.5cm long, flowers clustered at the axil. Hypanthium 0.2-0.4x0.3-0.6cm, campanulate, lobes spreading, subulate, glabrous; corolla 5-partite, yellowish, shortly papillose. Stamens 3, filaments 0.1-0.15cm long, anther flexuous. Female flowers fasciculate, clustered at the same axil of male flowers. Calyx and corolla as that of males. Ovary 0.5-0.8cm, ovoid, style slender, stigma 3, bilobed, staminode 3. Fruits 2.0-2.5cm in diam ovoid, yellowish-green with 7 vertical white striations, 1.2-1.7cm thick. Seeds 0.5-0.7cm, ovoid, margins thick, corrugate with mucronate face.

Fl.: Aug. - Oct.; Fr. rip.: Sep. - Jan.

Spn. Cited. : DARJEELING : Kalijhora, Rambli 450m, 13.12.1994 *Das et Samanta* 0467; N.B.U. Campus 120m, 02.11.1995 *Das et Samanta* 0903; SIKKIM : Karfet Forest, Jorethang, 310m, 29.10.1995; *Das et Samanta* 0467.

Loc. Distrib. : DARJEELING : Common; Rambli, Sukna, Kalimpong, Soom Forest, Peshok, Kumai, Takdah, Goke 1600m; SIKKIM: Common; only recorded from Jorethang and its adjacent areas (300 -1500m).

Gen. Distrib. : India : West Bengal, Bihar, Orissa, Assam, Tripura, Maharastra, Andhra Pradesh, Madhya Pradesh, Karnatak, Tamilnadu, Kerala; Africa Arabica, Pakistan, Malaysia, Myanmar, Sri Lanka, China, Australia.

Note : (i) Chr. no. $2n = 24$ (Roy, R.p. & Mishra, A.R. 1962).

EDGARIA CI.

Edgaria darjeelingensis Cl. in J. Lin.Soc. 15:113.1876; FBI 2:632.1879; Cogg.et Harms in pfl.-reich IV-275,II. 66:177,F. 41.1916; RBSI 17:65.1959; FEH 1:321.1966; EFPN 2:177.1979; FPK 37.1981; FFI 12:49-50.1982; TBRI 50(4) :112.1987; FB 2(1):268.1991.

Large perennial herbaceous climber. Stem slender, ridged, densely glandular hairy. Tendril 2-fid, robust. Petioles 4.0-6.5cm long, slender; lamina 6.0-10.5 x 4.0 - 6.9 cm, ovate, entire or slightly lobed - denticulate, deeply cordate, sinus rounded, acute to shortly acuminate at the attachment with the petiole. Plant dioecious. Male flowers in racemose or rarely solitary; peduncles 11-14cm long, slender almost glabrous, 9-15 flowered; pedicels 0.5-0.8cm long, ebracteate. Male hypanthium 1.5-2.0cm long, infundibuliform, lobes 5,0.25-0.3cm long, glabrous; corolla subrotate, white, lobes 5,0.1-0.15cm, ovate, entire. Stamens 3, included, filaments c 0.03cm long, anther head 0.5-0.8cm, oblong; pistillode 0.3-0.4cm, subulate; female peduncle

solitary, branched, many flowered. Sepals and petals as that of males. Staminode nil; ovary narrow, obovoid, 3-celled; style elongated, stigma 3, oblong, 2-fid. Capsules trigonous, dehiscent downwards from tip. Seeds 1.0-1.2cm oblong, pendulous, compressed.

Fl.: Jun. - Nov.; Fr. rip.: Sep. - Dec.

Spn. Cited. : DARJEELING : Below T. B. Hospital, Kurseong, 1540m; *Das et Samanta* 0177; SIKKIM : Pangthang 1910m, 23.11.1995, *Das et Samanta* 1018; Gyalshing 1530, 23.5.1996, *Das et Samanta* 1138.

Loc. Distrib. : DARJEELING : Abundant between 1450-3000m; SIKKIM: Common; Pangthang, Pelling - Gyalshing. (1500 - 2200m).

Gen. Distrib. : India : West Bengal, Garwal - Sikkim Himalaya; Bhutan,

Note : (i) Chr. no. $2n = 20$ (Sarkar, A.K. *et al.* 1974).

GOMPHOGYNE Griff.

Gomphogyne cissiformis Griff. pl. contor.26:t.4.1837 in adnot.; FBI 2:632.1879; FFI 2:51.1982; FB 2(1):269-270.1991(Photo 40).

var. villosa Cogn. in Monog. phan 3.925.1881.RBSI 17(1):186.1959; FFI 11:94.1982:FB 2(1): 270-1991.

Herbaceous medium shrubby climber. Stem and branches slender. Tendril 2-fid, glabrous. Leaves pedately 5-9 foliolate; petioles 2.2-3.5cm long; lamina 2.5-3.5x0.5-1.1cm, oblanceolate, serrate, acuminate, base narrow or connate, nearly glabrous. Plants dioecious. Male flowers not seen; female flowers few in axillary fascicles, usually 2 at maturity; peduncles 2.5-3.5cm long bracts, subulate; pedicels 1.5-2.0cm long, lanceolate, narrow, acute; corolla lobes 0.2-0.3x0.1-0.15cm, ovate-lanceolate, trinerved, entire. Fruits ellipsoids with spiny tip; obscurely marginate 0.5x0.3cm, rounded at base, blackish brown on ripening. Seeds 0.6-1.0cm, tuberculate.

Fl.: Sep. - Oct.; Fr. rip.; Oct. - Dec.

Spn. Cited. : SIKKIM : Fifth Mile, Gangtok, 1700m, 18.11.1995, *Das et Samanta* 0940.

Loc. Distrib. : DARJEELING : Common; Munsong, Lava, Kafer, Lopchu (1400-2200m); SIKKIM : Rare; Gangtok, Lachung (1400-2300m).

- Gen. Distrib. : India : West Bengal, Sikkim, Arunachal Pradesh, Himachal Pradesh, Uttar Pradesh, Garwal; Bhutan, Malaysia, Philippines, East China.
- Note : (i) Chr. no. $2n = 32$ (Roy, R.P. & Trivedi, R. N. 1966).

GYMNOPETALUM Arnott.

Gymnometalum cochinchinense (Lour.) Kurz. in J. Asi. Soc. Beng. 40:57.1871; FBI 2:611.1879; BP 1:518.1903 (Repr. ed. 1:377.1963); Bot. Bih. Ori. 3:389.1922 (Repr. ed. 2:406.1961); FFI 2:53.1982.

Bryonia cochinchinensis Lour. Fl. Coch. 595.1790.

Herbaceous climbers with perennial root stocks. Stem slender, scabrous. Tendrils simple, filiform. Petioles 2.5-3.8cm long, slender; lamina 4.0-6.5x2.5-5.5 cm, shortly 3-lobed, denticulate, acuminate, base cordate, both surfaces scabrid. Male flowers solitary or in racemes of 3-8 flowers; peduncles 3.0-15cm long; bracts ovate-oblong deeply toothed; pedicels 0.1-0.3cm long; hypanthium 0.25-0.3x0.3-0.4cm, subcylindric, lobes 0.5-0.6cm long, linear-subulate, spreading; corolla white, lobes 2.2-3.0cm, oblong ovate; stamens 3, included; filaments 0.2-3.0cm long, free, anthers connate 1-locular, conduplicate; pistillode 1-3; female peduncle c7.0cm long; calyx and corolla like that of males. Fruits 4.0-5.0x2.1-3.0cm, ovoid - oblong, angular red on ripening. Seeds 0.7-0.8cm, compressed.

Fl.: Jul-Sep.; Fr. rip.: Sep.-Nov.

Spn. Cited. : DARJEELING : Rambh, 450m, 10.06.1997, *Das et Samanta* 1636.

Loc. Distrib. : DARJEELING : Common; Kalijhora, Ryang, Lesh River Valley (upto 900m).

Gen. Distrib. : Himalaya (Nepal-Bhutan), Assam; Myanmar, China, Malaysia.

Note : (i) Chr. no. $2n = 22$ (Islam, A.S. & Saha, B.1951)

GYNOSTEMMA BI.

Gynostemma pentaphylla (Thunb.) Makino in Bot. Mag. Tokyo. 16:179.1902; Hara, En. Sperm. Jap. 2:80.1952; FEH 1: 323.1966; EFPN 2:179.1979; FPK 37.1981; TBRI 50(4):115.1987; FB 2(1):270.1991 (Photo-38).

Vitis pentaphylla Thunb. Fl. Jap. 105.1784.

Gynostema pedata Bl., Bijdr.23.1825; FBI 2:633.1879; Gamble Fl.Pres. Mad. 3:542.1919; FA 2:231.1939; RBSI 17:188.1959; FFI II:56.1982.

Perennial herbaceous pubescent climber. Stem many ridged, solid, glabrous. Tendrils simple, nearly glabrous. Leaves pedately 3-5 foliolate; petioles 3.5-7.0cm long; lamina 3.5-8.4 x 1.8-3.0cm long, ovate-lanceolate, serrate, acuminate, base rounded or attenuate, pubescent on veins above, subglabrous beneath. Plants dioecious. Flowers in axillary diffuse panicles, yellowish - green. Male peduncles 15-30cm long, flexuous; calyx short, 3-5 lobes, 0.05-1.0cm, acute; corolla 5 partite, greenish -white, rotate, lobes 0.2 - 0.25cm, subulate, denticulate; stamen 5, united below, anthers erect, bithecous; female panicles short, many flowered; Calyx and corolla like that of males;ovary spherical. Fruit small, 1.5 - 2.0cm diam, glabrous. Seeds 1-3, 0.25-0.35cm, trigonous, compressed.

Fl.: Jul. - Oct.; Fr. rip.: Sep. - Nov.

Spn. Cited. : DARJEELING : Birch Hill, 2100m, 19.4.1994, *Das et Samanta* 0133; North Point, Darjeeling, 1950m, 04.10.1994, *Das et Samanta* 0388; Rechila Danda, Neora Valley National Park, 2550m, 28.4.1995, *Das et Samanta* 0643; Way to Purbikhola, 780m, 11.9.1996, *Das et Samanta* 1460.

Loc. Distrib. : DARJEELING : Very common; Birch Hill, 14-Farie to Takdah, Jorebungalow, Sukiapokhari, Rimbick, Raman-Lava. (1700-2600m).

Gen. Distrib. : India : Arunachal Pradesh, Assam, Himachal Pradesh, Darjeeling, Sikkim, Himalayas, Tamil Nadu, Tipura, Uttarpradesh, Bengal,; Nepal, Myanmar, Sri Lanka, Malaysia, China, Japan, Philippines.

HERPETOSPERMUM Hook. f.

Herpetospermum pedunculosum (Sernge) Baill., Hist. pl. 8:445.1886; Cogn. et Harms! pfl. reich IV-275.II. 88:176.1924; RBSI 17:68:1959; FEH 1:323.1966; EFPN 2:179.1979. TBRI 50(4):116.1987; FB 2(1):267.1991.

Bryonia pedunculosa Seringe in DC., Prodr. 3:306.1828.

Rampinia herpetospermoides C.B.Cl. in J. Lin. Soc. 15:130,f.9-15.1876.

Herpetospermum cardigerum Wall. ex C.B.Cl. in FBI 2:613.1879; cogn. in DC., Monogr. Phan.3:404.1881.

Herbaceous climber. Stem slender, ridged, internodes 5.0-6.6 cm long, pubescent. Tendrils 2-fid. nearly glaborous. Petioles 2.5-6.5cm long, solid, glabrous; lamina

3.5-12.5x3.5-9.7cm, ovate, distantly 3-lobed, crenate-dentate, acuminate, base cordate - rounded, leathery, pubescent on both surfaces, reticulate, green. Plants dioecious. Male peduncles upto 12cm long, ebracteate, subglabrous; flower solitary often more in raceme; pedicels c 2.1cm, erect; hypanthium 2.0-2.5cm long, infundibuliform, tubular below; calyx lobes 5, 0.8-1.8cm long, subulate, elongate; corolla yellow 2.0-3.0cm, campanulate, lobes 2.0-3.0cm long, ovate, glandular outside; filaments free 0.4-0.6cm long, filiform; anthers 0.5-0.6cm long, oblong, included in the calyx tube; pistillode 0.35-0.5cm long, subulate; female peduncle upto 3.0cm long hairy; flower solitary; pedicel 0.4-0.5cm, hairy; calyx and corolla like that of males; staminode nil, style weak, stigma 3, oblong. Fruits 6.5-7.5x2.5-4.0cm, trigonous, sinuate - cordate stiffly hirsute. Seeds many, 1.0-1.2cm oblong, compressed, light - grey, open, indistinctly 3-lobed, subglabrous.

Fl.: Aug. - Sep.; Fr. rip.: Oct. - Nov.

Sp. Cited. : DARJEELING : St. Mary's, Kurseong, 1550m, 04.10.1994, *Das et Samanta* 1056.

Loc. Distrib. : DARJEELING : Rare; Kurseong, Senchal - Tiger Hill, Rimbick, Tonglu, Neora Valley, Natinal Park, Jalapahar, Rambh (1600-3000m).

Gen. Distrib. : India : W. Bengal, Himalayas(E & W), Assam, Himachal Pradesh, Sikkim, Manipur, Uttar Pradesh; Nepal, S. Tibet and S-W China.

HODGSONIA Hook.f.& Thoms.

Hodgsonia macrocarpa (Bl.) Cogn. in DC. Monog. Phan. 3:349.1881; FEH 1:323.1966; FFI 11:60.1982; FB 2(1) : 263.1991.

Trichosanthes macrocarpa Bl., Bijdr. 935.1826.

Hodgsonia heteroclita Hook.f. & Thoms. in Proc. L. Soc. 2:257.1853; FBI 2:606.1879.

Nep : Ghew Phool.

Large shrubby perennial climber. Stem branched, angular, nearly glabrous. Tendrils bifid, terete, glabrous. Petioles 4.5-7.2cm long, ribbed; lamina coriaceous 15-27x8.0-31cm, suborbicular, base cordate, 3-5 lobed, lobes oblong, apiculate, both surfaces glabrous, basal nerves 5, strong glandules at base, distinctly reticulate below. Plants dioecious. Male flowers in racemes; peduncles 5.0-28cm long, thick, striated with brown tomentum; bracts oblong-lanceolate, fleshy glabrous; pedicels upto 1.0cm

long; hypanthium 7.7-10cm long, nearly glabrous; calyx lobes 5, c 0.05cm with glands; corolla rotate upto 5.0cm long, yellow, white within; lobes 3-nerved, fimbriate, fringes 10-15cm long; stamens 3, anthers exerted, connate, 1 or 2 celled, conduplicate; female plant not seen here.

Fl.: Mar.-May; Fr. rip: Jul.-Aug.

Spn. cited. : DARJEELING : Rambh, 450m. 10.06.1997, *Das et Samanta* 1636.

Loc. Distrib. : DARJEELING : Less common; Rambh-Kalijhora, River Teesta Valley, Kalimpong (up to 1200m).

Gen. Distrib. : E. Himalaya (Darjeeling-Bhutan); Assam; Myanmar, Malaysia, China.

LUFFA Miller

KEY TO THE SPECIES :

1. Lamina palmately 5-7 angled, apex acute; fruits elongate to clavate-oblong.....

.....*L. acutangula*

1. Lamina palmately lobed, apex acuminate; fruits ellipsoid-cylindrical..*L. aegyptiaca*.

Luffa acutangula (L.) Roxb., Hort. Beng. 70.1814; Fl 3:713.1832; FBI 2:615.1879; Cooke, Fl.Pres.Bomb. 1:532.1903; Duthie, Fl. Upper-Gang. pl.1:367.1903; BP1:520.1903; Gamble, Fl. Pres. Madr. 3:533.1919; Bot. Bih. Or.3: 396.1922; FA 2:331.1938. KB 34:792.1980; FF 12:67.1982; FB 2(1):256.1991.

Cucumis acutangula L., Sp.Pl.1;1011.1753.

Luffa acutangula var. *amara*(Roxb.) Cl. in FBI 2:615.1879.

L. kleinii Wt. & Arn., Prodr. 344.1834.

L. umbellata (Klein ex Willd) Roem. Syn. Monog.2;63.1846.

Beng. :Jhinga; Hind.: Taroi.

Annual herbaceous climber. Stem angular, solid, internodes upto 12cm long, sparsely pubescent. Tendril 3-fid, subhispid. Petioles 6.0-10cm long, scabrous; lamina 11-17cm, palmately 5-7 angled, dentate acute, base nearly rounded. Bracts 0.25.6-0.6 x 0.15-0.4cm, ovate, freshy green glistering glands on upper surface. Flowers axillary; male and female flowers from same axil. Male peduncles 10-12cm long, many flowered; pedicels 0.2-0.3cm long, hypanthium 0.5x-0.3cm, campanulate; calyx, lobes 5, ovate-lanceolate, hispid. Petals 5, 1.8-2.0x2.0 - 2.5cm. obcordate, pale yellow with black striations, nerves 7, acute, subglabrous; stamens, 3, free, bearded at the base of calyx tube; filaments 0.2-0.4cm, deposited at base; anthers exerted, oblong; female pedicels 1.2-1.5cm long; calyx and corolla as that of males; ovary

2.1x0.2cm, subglobose, ten angulate, apex constricted. Fruits 11-24x6.0-9.0cm, elongate, clavate-oblong, 10 ribbed, obtuse or nearly acute. Seeds 1.0-1.2x0.6-0.8cm, ovate, narrowly winged, compressed, black, smooth or slightly tubercled.

Fl.: Sep.-Oct; Fr. rip.: Nov.-Dec.

Spn. Cited. : DARJEELING : N.B.U. Campus, 120m, 10.2.1997, *Das et samanta* 1627; SIKKIM : Jorethang, 320m, 29.10.1995, *Das et Samanta* 0840.

Loc. Distrib. : DARJEELING : Abundant in foot hill regions (upto 350m).

Gen. Distrib. : India : W. Bengal, Assam, Bihar, Tripura, Arunachal Pradesh, Maharastra, Tamil Nadu; Sri Lanka, Myanmar, Malaysia, South Africa, China.

Notes : (i) Fruits edible & (ii) used medicinally (iii) Chr. no. $2n = 52$ (Roy, R. P. et al 1968); 39 (Roy, R.P.& Datta,B.1972) ; 26 (Datta, B. & Roy, R.P. 1972,1976).

Luffa aegyptiaca Mill., Gaard.Dict. "ed 8" 4:500.1785; FBI 2:614.1879; Exell in J. Bot.71.352.1933; Bennet. Fl. Howrah 358.1979; FB 2(1);256.1991.

L. cylidrica auct. pl.non (L.) Roem.: RBSI 17(1);75.1959; KB 15:355.1962; EFPN 2:179.1979; FFI II:70.1982.

Beng.: Dhundul, Ghia- torui, Ghiroula, Bin Ghiroula; Nep.: Bon Giroula.

Large annual climber. Stem slender, ribbed, glabrous. Tendrils 3-fid, nearly glabrous. Petioles 3.0 -10cm long, stout and scabrous; lamina 10-15x9-14cm, palmately lobed, distantly dentate, acuminate, base cordate, coarsely pubescent on both surfaces, with glistering glands above. Plants monoecious. Bracts 0.25-0.65x0.15-45cm, ovate-elliptic, glandular. Male peduncles 10-15cm long, 15-20 flowered; pedicels 0.4-0.5cm long; hypanthium short, broadly campanulate; calyx lobes 0.9-1.0cm, apex rounded; petals 2.5-5.0x1.5-3.5cm, obcordate; stamens 3 or 5, filaments 0.6-0.7cm long, villous at base; anthers oblong; female peduncle upto 10cm long; ovary elongated 2.0x0.4cm, softly hairy. Fruits 15-45x5.0-9.5cm, ellipsoid-cylindric, smooth with 10 dark longitudinal lines. Seeds 1.2x0.7x0.2cm, ellipsoid, smooth, black, margin shallowly or narrowly winged.

Fl.: Oct. - Nov.

Spn. Cited. : DARJEELING : N.B.U. Campus, 120m, 03.1.1994, *Das et Samanta* 0232; SIKKIM : Karfet Forest, Jorethang, 310m,

29.10.1995, *Das et Samanta* 0841.

Loc. Distrib. : DARJEELING : Abundant throughout the foot hill regions (upto 250m); SIKKIM : Very common around Jorethang (upto 350m).

Gen. Distrib. : Throughout the tropical countries.

Notes : (i) Young fruit is edible (ii) Chr. no. $2n = 24$ (Sarkar, A.K. ; Chakraborty M. *et al.* 1971) ; 26 (Bhadhuri, P. N. & Bose, P. C. 1945) ; 24, 26 (Sharma, A. K. & Sharma, A. 1957).

MELOTHRIA L.

KEY TO THE SPECIES :

1. Plants monoecious.....*M. mucronata*
 1. Plants dioecious.....2
 2. Fruits neither angled or rostrate; corolla tube narrow, white.....*M. heterophylla*.
 2. Fruits 9 angles, rostrate; corolla campanulate, creamy.....*M. angulata*

Melothria angulata Chakravarty in JBNHS 50:899.1952; RBSI 17(1):165.1959; FFI II:78.1982 (Photo-34).

Zehneria angulata (Chakravarty), Ellis in BBSI 9:8.1967.

Herbaceous tendril climber. Stem minutely ribbed, intronodes 6.0-11cm long. Tendril simple, slender, glabrous. Petioles 1.5-1.7cm long, glandular; lamina 4.0-7.5x1.5-1.7cm long, glandular; lamina 4.0-7.5x1.5-6.2cm, palmately 5-lobed, minutely denticulate, acute, scabrous and glands throughout above and scabrous only below, nerves 5, lateral 2, branched. Plant dioecious. Male peduncle 0.05-0.6cm long slender, glabrous flowers in subumbellate, towards apex many flowered; pedicels 0.2-0.8cm long, filiform; hypanthium c 0.5x0.3cm; sepals 0.2-0.4cm long, subulate; Corolla c0.15cm, yellow, hairy; stamens 3, filament 0.25-0.3cm long, anther, suborbicular. Female flower solitary; sepals and petals like that of males. Ovary 0.8-1.3cm long, ellipsoid, hairy; stalked 0.7-0.9cm long, puberulous. Fruits strongly 9-angular, 1.6-6.5x1.5-2.5cm, rostrate, many seeded. Seeds 0.5-0.8x0.3-3.4x0.18-0.2cm, oblong, turgid, strongly merged.

Fl.: Apr.; Fr. rip.: Oct. - Nov.

Spn. Cited. : DARJEELING : NBU Campus, near Law Canteen, 120m, 02.11.1995, *Das et Samanta* 0907; SIKKIM :Karfet Forest, Jorethang, 310m, 29.10.1995, *Das et Samanta* 0854.

Loc. Distrib. : DARJEELING : Rare; only collected from N.B.U. Campus; SIKKIM : Rare; only collected from Jorethang (upto 350m).

Gen. Distrib. : E. Himalaya (Darjeeling): India: Karnatak, Tamil Nadu.

Melothria heterophylla (Lour.) Cogn. in DC., Monog. Phan 3:618.1881; RBSI 17:159.1959; FEH 1:324.1966; FFI 2:80.1983 (Photo-54).
x
26

Beng.: Bankumdri, Kundri; Nep.: Golkakri.

Herbaceous climber with Perennial tuberous root stocks. Stem robust ribbed, internodes 7.0 - 10 cm long, glabrous. Tendril simple, very long, glabrous. Petioles 0.5-1.2cm long; lamina 4.0-10.5x3.5-5.8cm, broadly ovate- oblong (much variable in size and shapes) distantly dentate, acute to mucronate, base almost rounded, coriaceous, punctate above, glabrous below. Male flowers in axillary fascicles. Peduncles 0.6x0.01-0.14cm; hypanthium 0.4-0.5cm long, campanulate; calyx lobes 0.15-0.2cm, ovate oblong or subulate, nearly glabrous; corolla yellowish-white 0.3x0.2cm, oblong, obtuse, nearly glabrous; filaments 0.1-0.2cm, anther 0.1x0.1cm, densely ciliate; female flowers solitary on short peduncles; hypanthium 0.3-0.4cm, campanulate, toothed, subulate; petals 0.6-0.8x0.3-0.4cm, brownish, truncate; ovary c0.1cm, ellipsoid. Fruits 4.0-6.0cm oblong, cylindric, red on ripening; seeds many, 0.45-0.7cm, subglobose, smooth.

Fl.: Jun-Sep.; Fr. rip.: Sep.-Dec.

Spn. Cited. : DARJEELING : N.B.U. Campus, 120m, 02.11.1995, *Das et Samanta* 0907; SIKKIM : Karfet Forest, Jorethang-310m, 29.10.1995, *Das et Samanta* 0854; Nandugaon, 840m, 21.5.1996 *Das et Samanta* 1084; Gyalshing, 1530m, 23.5.1996, *Das et Samanta* 1148; Rhenek, 1040m, 05.9.1996, *Das et Samanta* 1336.

Loc. Distrib. : DARJEELING : Abundant; Singla, Rung Dung, Sukna, Tenth Mile, Nimbong, Lebong, Sevoke, Yangmakum (upto 1800m); SIKKIM : Very common; Jorethang, Pelling, Deorali, Soreng, Mangon (upto 1900m).

Gen. Distrib. : E.Himalaya India; Nepal, Burma, Pakistan, Bangladesh, Sri Lanka, Malaysia, China.

Notes : (i) Whole plant used as fodder for cow & goats. (ii) leaves & shoots edible. (iii) Chr. no. $2n = 22$ (Bhattaja. S. *et al.* 1978b); 26 (Sarkar, A. K. 1973a) ; 48 (Kumar, L. S. S. & (Vishveshwaraiah, S.1951).

Melothria mucronata (Bl.) Cogn. in DC. Monog. Phan. 3:608.1881; Gamble, Fl. Pres. Madr. 3:538.1919(Repr. ed.) 1:380.1957; FFI 2:84.1982.

Bryonia mucronata Blume bijdr. 923.1826.

B.mysorensis Ann. in Hook.J.Bot. 3:275.1841.

Zehneria bauriana Cl. in FBI 2:624. 1879(non.Endl.)

Herbaceous tendril climber. Stem many ribbed, weak, semisolid, nearly glabrous. Tendril simple, subfiliform, nearly glabrous. Petioles 1.2-2.8cm long, glabrous; lamina 3.5-8.0x2.5-5.8cm, broadly ovate, often 3-lobed, denticulate acute, sinus often 1.2-1.5cm deep, cordate, gland dotted above, smooth below, nerves 5, lateral 2 again branched. Plant monoecious. Male peduncles 2.0-5.8 cm long, 0.21.0.23cm long, glabrous; hypanthium 0.1-0.12cm, campanulate, lobes narrow, triangular; Corolla 0.22-0.25cm long, ovate, hairy; stamens 3, filaments 0.23-0.25cm long, anther 0.05x0.05cm; female peduncle 0.7-0.8cm long, flower solitary; sepals and petals like that of male. Ovary 0.8x0.1cm, ellipsoid, style c 0.3cm long, stigmas 3-fid, diam (0.0) cm. Fruits not seen

Fl.: Sep.-Oct.

Spn. Cited. : DARJEELING : Mokaibari, Kurseong, 850m, 02.10.1994, *Das et Samanta* 0341; SIKKIM : Jorethang, 310m, 20.10.1995, *Das et Samanta* 0830; Mangan, 1350m, 26.9.1996, *Das et Samanta* 1520.

Loc. Distrib. : DARJEELING : Rare; Kurseong - Pankhabari (upto 1000m); SIKKIM : Rare; Singhik and below Namchi (300-1600m).

Gen. Distrib. : India; Darjeeling - Sikkim, Assam, Karnataka, Kerala, Maharastra, Tamil Nadu; China, Malaysia.

MOMORDICA L.

KEY TO THE SPECIES :

1. Plants monoecious; male bracts do not enclose the bud or flower; fruits irregularly tubercled.....*M. charantia*
1. Plants dioecious; male bracts enclosing the bud and base of male flower.....2
2. Male bracts plicately folded; lamina never sinuate or lobed, dentate-crenate....
.....*M. dioica*
2. Male bracts never plicate; lamina deeply sinuate to 3-5 lobes and nver crenate or dentate.....*M. cochinchinensis*.

Momordica charantia L. Sp.Pl.ed. 1;1009.1753; FBI 2:616.1879; Cooke, Fl. Pes.Bomb. 1:528.1903; Duthie, Fl. Upper-Gang. pl. 1:369.1903; BP 1:521.1903; Gamble Fl. Pes. Madr. 3:532.1919; Bot. Bih. Or., 3;394.1922; FEH 1: 324.1966; FA 2:330.1982 (Rep.); FFI 2;89.1982; FB 2(1): 128.1991.

Nep : Karela, Kaira, Khagtong.

Annual herbaceous climber. Stem branched, slightly ridged, puberulous. Tendril simple, slender, minute pubescent. Petioles 2.0-5.0cm long, subglabrous; lamina 3.0-7.0cm long and broad, reniform or suborbicular, 5-7 lobed, sinuate-dentate, acuminate, base constricted, 5-nerved from base, outer 2, pedately divided, median and lateral nerves thickly pubescent. Plant monoecious. Bracts leafy 0.5 - 1.5cm, orbicular-cordate, entire, mucronate, pubescent. One male and one female flowers borne from same axil. Male peduncles upto 10cm long, slender, puberulous, bracteate at the middle; hypanthium short, campanulate; corolla yellow, 1.4-1.9 x 0.07-0.12cm, lobes obovate, emerginate; stamens 3, filament short, anthers oblong; female peduncle 4.0-10cm long, slender, sometimes bracts at base. Ovary filiform, muriculate. Fruits 8.0-15cm long, triangular, tuberculate, oblong, 3-valved. Seeds many, 1.2-1.6x0.65-0.85cm, oblong, compressed, base as well as apex subtridentate, sculptured on surfaces.

Fl. : Apr-May; Fr. rip. : (Aug.).

Spn. Cited. : DARJEELING : N.B.U. Campus, 120m, 09.10.1995, *Das et Samanta* 0734; SIKKIM : Karfet Forest, Jorethang, 310m, 28.10.1995 *Das et Samanta* 0817.

Loc. Distrib. : DARJEELING : Common throughout the altitude (upto 150m); SIKKIM : Common around Jorethang areas (upto 350m).

Gen. Distrib. : India. Tropical Asia and Africa Indo-Malaysia, widely cultivated.

Notes : (i) Fruits & leaves edible. (ii) Chr. no. $2n = 22$ (Ayyangar, K.R. & Sampath Kumar, R. 1978).

Momordica cochinchinensis (Lour.) Spreng. Syst. Veg. 3:14.1826; FBI 2:618.1879; Fl. Pres. Bomb. 1:530.1903; FUGP 1:370.1903; BP 1:522.1903; Fl. Pes. Madr. 3:532.1919; FA 2:330-331.1982; FFI II:92.1982 (Photo-41).

Muricia cochinchinensis Lour. Fl. Cochinch.2:596.1790.

Beng. : Golkakhar, Kakrol

Large stout climber with perennial tuberous root-stocks. Stem ridged, internodes 8.0-9.0cm long, smooth. Tendril simple, glabrous. Petioles 7.0-7.5cm long, glandular hairy; lamina 9.5-10x8.0-8.5cm, cordate-ovate, undulated, distantly denticulate, often 3 lobed, acute, base emerginate, punctate beneath. Plants dioecious. Male flowers

solitary, peduncle upto 15cm long; bracts 2.5-4.0 x 3.5-5.0cm, almost sessile, orbicular - reniform, outside villous, inner scabrous; hypanthium 1.4-1.6 x 0.6-0.7cm long (oblong - lanceolate, acute); calyx lobes 5, almost scabrous, dotted hairs at margins; corolla whitish yellow 0.7 x 0.5cm, ovate-lanceolate, or ovate-oblong, entire, acute, nerves 6, parallel; stamens 3, filaments 0.2-0.3cm long, thick with black and white spots, anther oblong, disc glandular; female peduncles 5.0-15cm long, bracteate, pubescent; calyx and corolla like that of males. Ovary ovoid-oblong, style slender, stigma bifid. Fruits 10-15cm, ovoid, fleshy. Seeds 0.6-0.8cm, ovate, compressed, sculptured, grey.

Fl.: Aug.-Oct.; Fr. rip.: (Nov.)

Spn. Cited. : DARJEELING : Dolka Forest, Bengdubi, 110m, 08.9.1996, *Das et Samanta* 1396.

Loc. Distrib. : DARJEELING : Common, below 300m; Sometimes cultivated.

Gen. Distrib. : India : Assam, W. Bengal, Tamil Nadu, Uttar Pradesh, Andaman Nicobar Island,; Myanmar, Malaysia, China, Specific Islands and Philippines.

Note : (i) Chr. no. $2n = 28$ (Sen, R. & Datta, K. B. 1975).

Momordica dioica Roxb. ex Willd. Sp. pl. 4:605.1805; FBI 2:617.1879 (excl. syn.); BP 1:521.1903; FA 2:330.1938; FFI 11:94.1982.

Herbaceous perennial climber with tuberous root-stocks. Stem ribbed, glabrous. Tendrils simple, coiled sinistrorsely, nearly glabrous. Petioles 3.2-5.0cm long; lamina 4.0-11x3.5-8.0cm, broadly ovate, lobes 3-5 distantly denticulate, mucronate, base cordate. Male peduncle axillary, solitary, slender upto 14cm long; bracts 2.0-2.5cm, ovate, foliaceous, nearly glabrous often ciliated. Hypanthium short, campanulate; lobes 5, 0.6-1.5x0.6-0.7cm, oblong, acute, densely villous; corolla lobes 2.0-2.8x1.5-2.1cm, oblong, obtuse, yellow. Female peduncles 13-15cm long; ebracteate; calyx lobes 0.65-0.8cm narrowly triangular; corolla lobes like that of males. Ovary ovoid, oblong, dense hairy. Stamens 3, filament short, free. Ovary oblong; style slender, stigma 3. Fruits 2.5-5.0x1.8-3.0cm, ellipsoid, densely soft echinate. Seeds 0.7x0.6cm, ovoid, with narrow neck, minutely corrugated.

Fl. : Aug.-Oct.; Fr. rip.: (Nov.)

Spn. Cited. : DARJEELING : NBU Campus, 120m, 23.5.1995, *Das et Samanta* 0775.

- Loc. Distrib. : DARJEELING : Less common; at foothill regions (upto 1100m).
- Gen. Distrib. : Throughout India; Myanmar, Sri Lanka, China.
- Note. : (i) Fruits edible.

MUKIA Arnott.

Mukia maderaspatana (L.) Roem. Fam. Sys. Mon. 2:47.1846; EFPN 2:179.1979; KB 34:794.1980; FB 2(1):128.1991(Photo-22).

Cucumis maderaspatana L., sp.pl. 1012.1753; FPK 37.1981; FFI II:83.1982.

Mukia scrabella (L.f.) A. in Hook. J. Bot. 3:276.1841; FBI 2:623.1879 excl. syn; FPK 37.1981.

Melothria maderaspatana (L.) Cogn. in DC., Monog. Phan. 3:623.1881; RBSI 17:141.1959; FEH 1:323.1966; FPK 37.1981; FFI I2:83.1982.

Beng.: Bilari; Ankh phodki bel

Annual herbaceous climber. Stem slender, ribbed, hispid. Tendril simple, slender, elongate, sparingly hirsute; petioles 3.0-3.5cm long; lamina 7.5-8.0x4.5-5.0cm, ovate, entire, or minutely denticulate or 3-5 lobed, acute, both surfaces hispid, basal sinus 1.0-1.5cm, deep. Plants monoecious. Male peduncle c 3.0cm long, wirey, glabrous. Flower 4, 2 in each branch; pedicels 0.1-0.2cm long; hypanthium 0.2-0.3cm, campanulate; calyx lobes 5, 0.1-0.15cm, erect, subulate; corolla 5, lobed, 0.2-0.4cm, ovate; stamens 3, filaments c 0.6cm, shortly pillose; anthers oblong, ciliate, base 2-fid, appendiculate. Female flower solitary, sometimes subfasciculate. Calyx and corolla like that of males. Berry 1.5-2.0 X 0.5-1.0cm, globose, shortly stalked, red on ripening, juicy, turgid. Seeds 0.35x0.24x0.15cm, ovoid-oblong, turgid, grey, marginate, base apiculate.

Fl.: Jun. - Oct. ; Fr. rip.: Sep. - Dec.

Spn. Cited. : DARJEELING : N.B.U. Campus, 120m, 01.16.1994, *Das et Samanta* 0248; SIKKIM : Jorethang, 310m, 28.10.1995, *Das et Samanta* 0836; Nandugaon, 840m, 21.5.1996, *Das et Samanta* 1116.

Loc. Distrib. : DARJEELING : Abundant in foot-hill regions (upto 1050m); SIKKIM : Common in between Jorethang and below Namchi (upto 1000m).

Gen. Distrib. : Throughout India; Myanmar, Malaysia, China, Africa, Australia, New Zealand, Philippines.

Note : (i) Chr. no. $2n = 24$ (Baquar, S. R. & Hussain, S.A.1967).

SECHIUM Browne

Sechium edule (Jacq.) Swart., FIO 2:1150.1800; JJB 3:36-40 Curt. 1926; FA 2: 332.1938; FEH 1:325.1966; EFPN 2:181.1979; FFI 2:100.1982; TBRI 50(4): 126.1987; FB 2(1): 262.1991.

Sicyos edulis Jacq. Enum. Pl. Cairb 32:1760; FFI 2:101.1982;

Chayota edulis (Jacq.)Jacq. Sel. Stirp. Amer. 125, t. 245.1870.

Sechium americana Poir in Lam. Encycl. Meth. Bot. 7:50.1783.

Nep : Squas; Quash

Medium shrubby climber with tuberous perennial root-stocks. Stem much branched, semisolid, glabrous. Tendril 3-5 fid, glabrous. Leaves simple; petioles 9.0-10cm long, terete, glabrous; lamina 15x15cm, broadly ovate 3-lobed, emarginate, acuminate, base rounded, membranous, softly tomentose, palmately reticulate, 6-nerved, green. Plants monoecious. Male and female flowers borne at the same axil; male flowers racemose; peduncles upto 30cm long, many flowered; pedicels c 0.1cm, hypanthium hemispheric; calyx lobes 0.6cm long, elongate, nearly glabrous, corolla small, yellowish, rotate, lobes 5, ovate-lanceolate; stamens 3, filament c 0.1cm, anthers c 0.2cm long; female flowers solitary; calyx and corolla like that of males. Ovary subsessile, ovoid; style 0.20-0.35cm, stigmas 5-6 lobed, subglobose. Fruits 10x7.0cm, pearshaped, greenish yellow, fleshy, 1-seeded. Seeds ovate, compressed, smooth.

Fl.: Jul. - Oct. ; Fr. rip.: Sep. - Nov.

Spn. Cited. : DARJEELING : Mirik, 1500m, 05.8.1994, *Das et Samanta* 0306.

Loc. Distrib. : DARJEELING : Abundant; Tindharia, Kurseong, Birch Hill, Singtam, Kalimpong (800-2400m).

Gen. Distrib. : India. W. Bengal, Sikkim, Himachal Pradesh, Uttar Pradesh, Karnataka, Cultivated at the hills of India; Native of Tropical America, Sri Lanka.

Notes : (i) Shoots edible & (ii) unripe fruits used as vegetables (iii) Chr. no. $2n = 24$ (Sanjappa, M. 1979, Taxon 28 (1,2/3) : 274.

THLADIANTHA Bunge

Thladiantha cordifolia (Bl.) Cogn. in DC., Monog. Phan., 3:424.1881; KB 14:462.1860; FFI 2:102.1983; FB 2(1):251.1991.

Luffa cordifolia Bl., Bijdr. 929.1826.

Thladiantha dubia sensu Cl. in FBI 2:631.1879, non Bunge.

T. calcarata Cl. in J. Lin. Soc. Bot. 15:26.1876. nom.nud.; cogn. in DC., Monog. Phan 3:423.1881; RBSI 17:125.1959; FPK 37.1981; TBRI 50(4):251.1987.

Momordica calcarata Wall. cat. n.6740.1828, nom.nud.

Nep: Bunkarela

Large spreading herbaceous much branched climber, with perennial root stocks. Stem ridged, solid sparsely hairy but dense at nodes. Tendrils simple, hairy. Petioles 2.0-3.5cm long, terete, much shorter than lamina forming groove, greyish villous; lamina 3.5-5.7x2.7-5.0cm, broadly ovate or deeply cordate, denticulate, acute, base cordate, villous, costa divergent, reticulate. Plants dioecious. Bracts 2.0-2.5cm long, broadly ovate; Male peduncle c0.9cm long, villous; flowers many; hypanthium 0.6-0.8cm long, campanulate; calyx lobes 0.8-1.0cm, narrow recurved, acute to acuminate, densely villous; corolla golden yellow, lobes 1.5-2.5cm, ovate, slightly pubescent; stamens 5, free, inserted at the margin of calyx tube, posterior unequals, interior equal, filaments 0.2-0.4cm, recurved, hairy; female flower solitary; peduncle 3.0-4.0cm long, slender; ovary 1.0-1.4cm, ellipsoid, wooly. Fruits 2.5-3.0cm, oblong-subcylindric, nearly glabrous, green often interspersed with black. Seeds many, 0.44-0.5cm, ovoid, compressed, base subacute, rugose.

Fl.: May. - Aug.; Fr. rip.: Jun. - Oct.

Spn. Cited. : DARJEELING : Below St. Mary's, Kurseong, 1500m, 04.5.1994 *Das et Samanta* 0174; SIKKIM : Fifth Mile, Gangtok, 1700m, 18.11.1995, *Das et Samanta* 0936; Nandugaon, Jorethang, 840m, 21.5.1996, *Das et Samanta* 1089.

Loc. Distrib. : DARJEELING : Common; Mangpo, Birik, Kurseong, Singtam, Sonada, Birch Hill, Senchal, Takdah, Mangpo(1500-2000n); SIKKIM : Less common; Tadong, Gangtok (840-1800m).

Gen. Distrib. : E. Himalaya. India: W. Bengal, Assam, Meghalaya, Manipur, Arunachal Pradesh, Andhra Pradesh; Myanmar, China, Malaysia.

TRICHOSANTHES L.

KEY TO THE SPECIES:

1. Lamina never lobed.....*T. dioica*
1. Lamina deeply or moderately lobed.....2
2. Plants glabrous.....3
2. Plants hispid.....4
3. Lamina palmately 3-7 lobed; tendril bifid.....*T. bracteata*
3. Lamina moderately 3-5 lobed; tendril 3-fid.....*T. lepiniana*
4. Lamina gland dotted above; male raceme 4-8 flowered.....*T. cordata*
4. Lamina not gland dotted; male raceme 6-8 flowered.....*T. wallichiana*

Trichosanthes bracteata (Lour.) Voigt Hort. Suburb. Calc. 58. 1845; RBSI 17(1):44. 1959; FBI 2:607. 1879; FPK 37. 1981; FFI 2:109. 1982; TBRI 50(4):129. 1987.

Modeca bracteata Lam., Encyl. Meth. Bot. 4:210. 1796.

Trichosanthes palmata Roxb. FI 3:704. 1832; FBI 2:606. 1879.

Nep. Indrayam, Makal, Makirla

Herbaceous climbers. Stem stout, branched, nearly glabrous. Tendrils 3-fid, nearly glabrous. Petioles 3.0-9.5cm long, slightly striated. Leaves 8.0-16x6.0-13cm; lamina mostly variable in size and shapes, broadly ovate, subentrie (palmately 3-5 lobed), denticulate, acute, base deeply cordate, membranous, nearly glabrous on both surfaces but scabrous on nerves. Plants dioecious. Male racemes with few flowered, peduncles upto 25cm long, puberulous; bracts 0.3-0.4cm long, ovate, pendulous; pedicels thick, very short; hypanthium 2.1-2.5 cm long, narrowed to the tube, striated longitudinally; calyx lobes lanceolate, erect, acuminate; corolla 2.0-2.5 x 0.5-1.0cm yellow, lobes 5, oblong, fimbriate; stamens 3, inserted at the calyx tube, filament 0.1-0.2cm long, anther 1.2x0.4cm; female flowers axillary, solitary; pedicels 2.0-2.5cm long. Fruits with longitudinal orange streaks. Seeds many embedded in green pulp, 1.2x0.5x0.2 cm, ovate - oblong, emerginate, base attenuate, milky white.

Fl.: Jul. - Aug.

Spn. Cited. : DARJEELING : North Point, Darjeeling, 1900m, 10.4.1994, *Das et Samanta* 0379; Senchal, 2350m, 07.5.1994, *Das et Samanata* 0203; Mirik, 1600m, 05.9.1994, *Das et Samanta* 0315; Kalimpong, 1550m, 08.10.1996, *Das et Samanta* 1242; SIKKIM : Burtuk, 1700m, 28.6.1995, *Das et Samanta* 0794; Fifth Mile, Gangtok, 1720m, 18.11.1995, *Das et Samanta* 0948; Jorethang 310m, 20.5.1996, *Das et Samanta* 1069; Gyalshing, 1530m, 23.5.1996, *Das et Samanta* 1210.

Loc. Distrib. : DARJEELING : Common; Senchal, Jorebungalow, Singtam, (1800-2400m); SIKKIM : Common; Gyalshing - Pelling, Jorethang, Tadong (1500-2000m).

Gen. Distrib. : Himalaya (Simla-Bhutan), Myanmar, Malaysia, China, Japan, North Australia.

Note : (i) Chr. no. $2n = 44$ (Thakur, G. K. 1973).

Trichosanthes cordata Roxb. [Wall. Num. List, No. 6686A] Fl. Ind. ed. 2. 3: 703. 1832; FBI 2: 608. 1879; BP 1: 518. 1981; FA 2: 328. 1982; FFI 2: 110. 1982; FB 2(1): 265. 1991.

T. microsiphon Kunt. in JASB 2: 308. 1872; FFI II: 110. 1982.

Beng. : Bhoikumara

Perennial herbaceous climbers with large tuberous root stocks. Stem much branched, quadrangular, sparsely hairy, internodes upto 15cm long. Tendrils 2-3 fid, stout glabrous. Petioles 4.0 - 7.0cm hairy, terete, semisolid, puberulous; lamina 8.0 - 15.5 x 6.5 - 11.5cm, broadly ovate-cordate, dentate serrate to slightly lobed, acute to shortly acuminate, dark green above with short scattered hairs on both surfaces. Plants dioecious. Male racemes 4-8 flowered; peduncles 12-17cm long, striated; pedicels 1.0 - 1.5cm long, thick; hypanthium 4.0-6.0cm, campanulate, villous; calyx lobes 1.4-1.6cm erect, denticulate, acuminate; corolla papillose, 5 lobed, oblong, fimbriate; stamens 3, filaments 0.1-0.12cm long, glabrous, anthers 1.3-1.4 x 0.3-0.4cm; female flowers solitary, subsessile, calyx and corolla as that of males. staminode 0. Ovary 1.5-2.0cm, oblong, style slender, stigma 3-fid. Fruits 4.0 - 8.0cm, globose, glaucescent, scarlet on ripening. Seeds many, 1.0 - 1.2 x 0.2-0.2cm ellipsoid, variable in size, black with raised margins, remain embeded in black soft pulp.

Fl.: Jun. - Sep.; Fr. rip.: Sep. - Dec.

Spn. Cited. : DARJEELING : N.B.U. Campus, 120m, 16.6.1994, *Das et Samanta* 0249; Latpunchor, 800m, 17.5.1995, *Das et Samanta* 0775.

Loc. Distrib. : DARJEELING : Common; Dolka Forest, River Teesta Valley, Peshok, Deepchak, Kalimpong, (110-900m).

Gen. Distrib. : India. E. Himalaya, W. Bengal, Sikkim, Assam, Bihar, Manipur, Meghalaya, Tripura, Tamil Nadu; Bhutan, Myanmar, Bangladesh, Malaysia, Singapore.

Trichosanthes dioica Roxb. [Wall. Num. List No. 6692A, B.C. nomen] Fl. Ind. ed. 3: 701. 1832; FBI 2: 609. 1879; FUGP. 1: 364. 1903; BP1: 517. 1903; Bot. Bih. & Ori. 3: 388. 1922; FA

2:329.1982; FFI 2:114.1982; TBRI 50(4):129.1987; FB 2(1):264.1991, Photo-37

Beng.: Patol

Perennial herbaceous climber. Stem slender, branched, 4-ridged, hairy at ridges, internodes 6.0 - 7.0 cm long; Tendrils slender, 2-fid, scabrous. Petioles 2.0 - 3.0cm long, rough; lamina 7.0-7.5x4.5-5.0cm, broadly ovate-oblong, sinuate-dentate, acute, base cordate, basal lobes 1.0-2.0cm deep, narrow round, rigid, sparsely scabrous, basal veins 5, white, lower 2-branched, reticulate. Plants dioecious. Male racemes axillary, solitary; peduncles 2.0-5.0cm long, hairy, yellowish-green; hypanthium 3.0-4.0cm long, elongate, cylindric narrowed above; calyx 5-lobed, oblong; petals 5, oblong, fimbriate, striated; stamens 3, inserted at the calyx tube; filaments short, anthers included, free, subsessile, 0.25-0.35x0.12-0.15cm, oblong; female plants not seen in wild.

Fl.: Apr. - Jun.

Spn. Cited. : DARJEELING : N.B.U. Campus, 120m, 03.4.1994, *Das et Samanta* 0231.

Loc. Distrib. : DARJEELING : Less common; NBU Campus - Siliguri (upto 350m).

Gen. Distrib. : Cultivated throughout warmer parts of India, sometimes escaping, found in wild condition.

Notes : (i) Used in medicinal purposes. (iii) Chr. no. $2n = 22$ (Bhadhuri, P. N. & Bose, P.C. 1947); 22, 44 (Islam. A. S. *et al.* 1974).

Trichosanthes lepiniana (Naud.) Cogn. in DC., Monog. Phan. 3:377.1881; JBNHS 43:380.1942; RBSI 17:48.1959; FEH 1:325.1966; FFI 2: 116.1982; TBRI 50(4): 129.1987; FB 2(1):266.1991(Photo-37).

Involucraria lepiniana Naud. in Huber, Cat II.1868.

Nep: Indrenee

Semiwoody medium shrubby climber with root stocks. Stem quadrangular, internodes upto 18cm long, glabrous. Tendrils 2-3 fid, glabrous. Petioles 4.0-6.0cm long, robust, glabrous; lamina 10-15 x 8-12cm, palmately 3-5 lobed, distantly dentate, acute, base cordate, membranous, 5-veins from base, branched, densely scaly along veins beneath. Plants dioecious. Male peduncle upto 18cm long, ensheathed by two large obcordate strongly serrated bracts, thin membranous; hypanthium 3.5 - 6.0cm, cylindric; calyx lobes 1.2-1.5cm, subulate; petals 2.0-3.0 cm, ovate, deeply laciniate, lacina fimbriate; stamens 3, inserted at the calyx tube, filaments 0.18-0.20cm long,

anthers 1.3-1.4x0.3-0.4cm; female peduncle 2.0- 3.5cm long; ovary oblong, glabrous. Fruits 6.0-7.5cm, ovoid, smooth on ripening Seeds 1.1-1.5cm oblong, shortly rugose, black.

Fl.: Jul. - Aug.; Fr. rip.: Aug. - Nov.

Sp. Cited. : DARJEELING : St. Mary's, Kurseong, 1550m, 04.5.1994, *Das et Samanta* 0170; Mirik, 1600m, 05.9.1994, *Das et Samanta* 0296; SIKKIM : Burtuk, 1565m, 28.6.1995, *Das et Samanta* 0792.

Loc. Distrib. : DARJEELING : Less common; Rungi-Rung, Mirik, Kurseong, River Rangeet Valley, Rimbick (1900-2400m); SIKKIM : Common; Gangtok, Soreng, Singhik, Makha, Rong Rong (1500-2000m).

Gen. Distrib. : India: Himalaya (W. Bengal, Sikkim), Tamil Nadu, Nagaland; China, Japan Malaysia.

Note : (i) Fruits and seeds poisonous to man.

Trichosanthes wallichiana (Ser.) Wt. in Ann.& Mag. Nat. Hist.8:270.1842; FEH 1: 325.1966; EFPN 2:181.1979; FFI 2:123.1982; FB 2(1): 266.1991.

Involucaria wallichiana Ser.in Mem. Soc. phys. Hist. Nat. Gen. 3(1): 25,t.5.1825.

Trichosanthes multiloba Cl. in FBI 2:607.1879.

Nep: Indrayanee

Large annual, herbaceous spreading climber. Stem terete, slightly ridged, sparsely pubescent. Tendrils 2-fid, ribbed, scabrous. Leaves palmately 3-9 lobed, lobes oblong, lanceolate, denticulate, acute with mucrono; lamina 12-26x11-16 cm, ovate - orbicular or suborbicular, acute to acuminate, base subcordate, membranous, scabrous with scattered bristles on both surfaces, nerves 3 from base. Plants dioecious. Male peduncle upto 30 cm long, 6-12 flowered, pubescent; bracts 2.0-3.0cm long, broadly ovate, toothed appressed; hypanthium 5.0-6.0cm; calyx lobes 1.0-1.5cm long; petals 3.0-5.0cm long, obovate, nearly glabrous, 3 - nerved, dull-white; stamens 3, inserted at the base of calyx tube, filaments short, anther 1.2-1.3x0.25-0.3cm long; female peduncle upto 4.0 cm long; ovary oblong, style short, glabrous stigmas 3. Fruits 5.0-6.5cm, ovoid; seeds many 1.3-1.8cm, margin angulate.

Fl.: Jul. - Aug.; Fr. rip.: Sep.- Nov.

Spn. Cited. : DARJEELING : Makaibari, below Kurseong, 1000m, 03.10.1994, *Das et Samanta* 0362.

- Loc. Distrib. : DARJEELING : Rare; Below Kurseong, Samsing; Bijanbari, Birrick Forest, Guling, RungDung Valley; SIKKIM : Less common; W. Sikkim areas (upto 2400m).
- Gen. Distrin. : India : Darjeeling, Sikkim, Assam, Meghalaya, Myanmar; Malaysia, China, Japan.
- Notes : (i) Raw seeds lethal to man. (ii) Chr. no. $2n = 22$ (Malla, S. B. Saiju, H. *et al.* 1977).

CUSCUTACEAE Dumortier

CUSCUTA L.

KEY TO THE SPECIES:

1. Stem reddish-yellow or orange; flowers in globose head.....*C. sinensis*.
 1. Stem pale-greenish-yellow; flowers in umbellate clustered or in short racemes...
*C. reflexa*.

Cuscuta reflexa Roxb. pl. corom. 2:3,t.104.1798. var. *brachystigma* Engelmann in Trans. Acad. sci. St. Louis. 1:519.1859; FEH 1:262.1966; EFPN 3:106.1982.

C. anguina Edgw. in Trans. Lin. Soc. 20:87.1851.

C. reflexa var. *anguina* (Edge.) Cl. in FBI 4:226.1883.

Beng : Algusi lata, Haldialgusi; Nep. : Binajori, Panhelo Lahara.

Leafless golden yellowish to yellow, rarely greenish-yellow glabrous, slender sinistrorse twining but a total stem parasites forming haustoria all along the stem. Stem very long, branched, glabrous, pale-greenish-yellow, sometimes dotted with red. Flowers solitary or in umbellate clusters of 2-4 or in short racemes. Peduncles upto 2.0cm long, pubescent; bracts small, ovate-oblong, fleshy; pedicels very short often absent. Sepals 4-5, 0.3x0.2cm, subequal, free; corolla 0.8x0.3 cm, ovoid or campanulate, teeth 4, acute oblong, united at base, glabrous; scales at the base of corolla, emerginate; stamens 4-5, inserted at the throat of corolla tube, filaments c 0.05cm, linear; anthers c 0.2x0.1cm, oblong, 4-celled, slightly exerted; ovary c 0.2cm long, ovoid, 2-celled, ovules 4, orbicular, style c 0.15cm, stigma 0.1-0.12cm, acute, slightly curved inward, glabrous. Capsules 1.1-1.4x0.5-0.6cm depressed globose, rough or irregularly breaking up; seeds 1-4, smooth.

Fl.: Sep. - Dec.; Fr. rip.: Dec. - Apr.

Spn. Cited. : DARJEELING :Dudhia, Panighata, 340m, 23.10.1996, *Das et Samanta* 1623; SIKKIM : Fifth Mile, Gangtok, 1760m, 18.11.1995, *Das et Samanta* 0946.

- Loc. Distrib. : DARJEELING : Common in foot-hill regions (upto 500m);
SIKKIM : Less common; Kaiom, Gangtok (upto 1900m).
- Gen. Distrib. : Throughout India; Afganistan, Sri Lanka, N. Malaysia,
W. China,
- Notes : (i) Used for the preparation of medicine
(ii) Chr. no. $2n = 42$ (Sharma, A. K. & Chatterjee, A.
K.1959).

Cuscuta sinensis Lam., Encycl. 2:229.1786; FBI 4:226. 1883; Bot. Bih. & Ori. Pt 4:606.1922.

Slender herbaceous sinistrorse twiner. Stem orange coloured, terete, glabrous, haustoria numerous. Flower solitary, stalked in crowded fascicles forming almost globose heads. Calyx lobes 5, scarious, c. 0.2x0.15cm, obtuse, divided half way; corolla campanulate, lobes 5, shortly fimbriate, shortly acuminate; scales 5, near the middle of tube. Stamens 5, inserted, filament c 0.4cm long; ovary c 0.15cm long, 2-celled; styles 2, filiform c. 0.07cm long; stigma capitate. Capsules c 0.35 cm long, dry, irregularly dehiscent.

Fl. : (Sep); Fr. rip.: (Dec.).

- Spn. Cited. : DARJEELING : NBU Campus, behind Vidyasagar Mancha,
120m, 08.9.1997, *Das et Samanta* 1639.
- Loc.Distrib. :DARJEELING : Rare; very few plants seen only behind
Vidyasagar Mancha.
- Gen. Distrib. : India: Darjeeling, Bihar, Orissa; Sri Lanka, Bangladesh,
Burma, Nepal, China, Malaysia.

DILLENACEAE Salisbury

TETRACERA L.

Tetracera sarmentosa (L.) Vahl, Symb. Bot.3:70.1794 ssp.*sarmentosa*; TNB 8.1929; Hoogland in Blumea 9:588.1959; FB 1(2):356.1984; F11:15.1993.

Delima sarmentosa L., Gen. pl. ed.5.1754; FBI 1:31.1872; BP 1:195.1981.

Tetracera asiatica ssp. *zeylanica* Hoogl. in Reinwardtia 2;196.1953.

Nep. : Monkyourik.

Scandent Shrub. Branched, scabrid, sparsely tomentose. Petioles 0.6-0.8cm long, with tomentum, dense at base; lamina 7.0-11x3.4-5.0cm, ovate - elliptic, serrate, obtuse or shallowly serrate towards tip, sparsely strigose in veins, lateral nerves 10-14 pairs, rough with finely pillose both surfaces. Flowers and fruits not seen.

Spn. Cited. : DARJEELING : Bhuttabari, Garubathan, 250m, 25.2.1995,
Das et Samanta 0533.

Loc. Distrib. : DARJEELING : Rare; Found Bhuttabari and Bengdubi
areas only (upto 300m).

Gen. Distrib. : India: W. Bengal, Sikkim, Assam, Meghalaya.

ELAEAGNACEAE Juss.

ELAEAGNUS L.

KEY TO THE GENERA & SPECIES:

1. Fruits druplike 2.0-2.5 cm long; rusty brown above, silvery with scattered brown scales below.....*E. conferta*.
1. Fruits pyreiform 0.8-1.2 cm long; rusty brown with silvery scales above, densely silky below.....*E. pyreiformis*.

Elaeagnus conferta Roxb., Fl. Ind.ed. Carey 1:460.1820; FEH 1:217.1966& 2:86.1971; FB 2(1):214.1991(Photo-28).

E. arborea Roxb., Fl. Ind. ed. Carey 1:46.1820. FEH 1:216.1966.

E. latifolia L., Sp. pl. ed. 2:177.1762, sensu FBI 5:202.1890,p.p.non.L. TSDD 67.1896; TNB 113.1929; FPK 92.1981; BP 2:908.1981(Photo-28).

Nep.: Goeli, Jarila, Malinrho.

Much branched shrubby rambler. Branches terete, often spinose, sparsely hairy with silvery appearance. Petioles 1.0-1.2cm long, slightly ridged; lamina 10-12x3.2-4.0cm, ovate - elliptic to elliptic-oblong, entire or slightly repand, acuminate to slightly caudate, rusty brown above on drying, silvery beneath with scattered brown scales, midveins distinct, matted pubescent. Flowers 2-4, greenish outside, yellowish inside, in condensed axillary fascicle. Pedicels 0.2-0.3cm long, terete silvery - scaly. Perianth tube 1.7-2.0cm long, upper part campanulate; lobes 4, 0.3-0.5x0.2 cm, broadly triangular - ovate, entire, acute, base cuneate, scaly outside, glabrous inside. Stamens 4, epipetalous, inserted at the base of perianth throat; filaments 0.1-0.12cm long or almost sessile; anthers 0.1-0.12cm long, bithecous; ovary cylindric, style 0.3-0.4cm long, hairy, stigma lateral; fruiting pedicels 0.5-0.7cm long, fruit drupaceous 1.5-2.0x0.5-0.8cm, ellipsoid with thin pericarp, enclosed by persistent acresent perianth base; seeds with hard shiny testa.

Fl.: Oct-Nov. Fr. rip.: Mar. - May.

Spn. Cited. : DARJEELING : Rechilachak, Neora Valley National Park, 2455m, 23.4.1995, *Das et Samanta* 0587.

Loc. Distrib. : DARJEELING : Less common in upper hill regions of Neoral Valley National Park. (2000-2700m).

Gen. Distrib. : India. Subtropical and temperate Himalayas, Sikkim, Meghalaya; Bhutan, Nepal, Myanmar, Malaysia, China.

Note : (i) Chr. no. 2n = 28 (Malla, S. B. *et al.* 1979).

Elaeagnus pyreiformis Hook. f. in FBI 5:202.1886; FB 2(1): 215.1991.

Nep. : Gweli

Spreading shrubby rambler. Stem terete with stout blunt spines, surface silvery, covered with brown scales. Petioles 0.9-1.2cm long, slightly ridged, sparsely hairy; lamina 5.0-9.0 x 1.7- 3.5cm, ovate - elliptic to oblong, entire or slightly repand, acute, base cuneate, rusty brown on drying with silvery scales above, densely silvery scaly below. Flowers 4-10 in axillary racemose, clusters with 0.4-0.7cm rachis. Pedicels 0.2-0.5cm long; perianth tubular, constricted above the ovary tube 0.6-0.7cm long; lobes c.2cm, triangular - ovate. Stamens 4, adnate to perianth throat; filaments short (c0.05cm); anthers 0.1cm long; style 0.2-0.3cm long, with stellate hairs at base, stigma lateral. Pyrenes 0.8-1.1x0.3-0.5cm, basal sterile part 0.2-0.3 cm, middle part pyreiform, 7 ridged, enclosing perianth base thin dry and shiny, yellow-brown scaly. Seed 1, 0.5-0.6cm, obovoid with acute tip, cuneate below glabrous.

Fl.: Sep. - Dec. ; Fr. rip.: Jan. - Apr.

Spn. Cited. : DARJEELING : Samsing, 400m, 29.1.1995, *Das et Samanta* 0516.

Loc. Distrib. : DARJEELING : Rare; found around Samsing areas. (upto 1100m).

Gen. Distrib. : E. Himalayas (Darjeeling-Bhutan). India : Assam, Meghalaya, Mismi Hills.

General Notes : Species of *Elaeagnus* fruits edible.

EUPHORBIACEAE Juss.

Croton caudatus Geiseler, Monog. Croton 73.1807; FBI 5:388.1887; TNB 118.1929; FEH 1:177.1966, FPK 93.1881; EFPN 3:195.1982; FB 1(3):793.1987(Photo-3).

Nep.: Hallonray, Suparey.

Large scandent shrub. Stem terete, orbicular scaly and slightly ribbed, stellate tomentose when young, old glabrescent. Stipules 0.08-0.1cm long, lanceolate, pinnatifid. Petioles 1.5-4.5 cm long with two gland (diam. 0.03-0.04cm), stalk 0.05-0.6cm at apex; lamina 5.0-12x2.8-9.0cm, broadly ovate, dentate, acute to acuminate, base cordate, leathery, sparsely stellate, dense on nerves of both surfaces, 5-nerves from base. Plants monoecious. Racemes terminal, many flowered; bracts 0.1-0.11cm, subulate, hairy; peduncles upto 20 cm long and pedicels (0.4-0.7cm) densely tomentose. Male flower 0.4x0.2cm; sepals 5, slightly connate at base 0.3x0.2cm. ovate, yellowish; style short, stigmas 3. Capsules 2.0-2.5x1.3x1.0 cm, ovoid, stellately hispid. Seeds obscurely 3-gonous.

Fl.: Apr. - May ;Fr. rip.: Jun. - Oct.

Spn. Cited. : DARJEELING : Latpunchor, 950m, 17.5.1995, *Das et Samanta* 0766.

Loc. Distrib. : DARJEELING : Common in foot hill forests (upto 1200m).

Gen. Distrib. : Tropical Himalayas; Sri Lanka, Malaysia, S. China.

FUMARIACEAE DC.

DICENTRA Bernh.

KEY TO THE GENERA AND SPECIES:

1. Annual climbers, lamina ovate-elliptic; 5-6 veins from base; nectariferous glands c0.35-0.5cm.....*D. scandens*.
1. Perennial climbers with root-stocks; lamina broadly ovate; 3-6 veins from base; nectariferous glands very short.....*D. paucinervia*.

Dicentra paucinervia K. R. Stern in Brittonia 13:45,f.31,1-8.1961; FEH 1:104.1966; FB 1(2):383.1984; TBRI 50(4):111.1987;

Perennial root-stock climber. Stem slender, weak, much branched. Leaves bipinnate, lower leaflets opposite. Petioles 1.2-1.5cm long; lamina 3.0-5.0x1.5-2.5cm, broadly ovate, entire, 3-6 veins from base. Racemes pendent, 7-10 flowered. Bracts scarious, acuminate; corolla yellow, cordate. outer petals 1.6-2.1x0.3-0.4cm, inner petals 1.2-1.6cm long; filaments united nectarifrous gland short; ovary elongate, ovules many,

style slender, stigma flattened. Capsules 1.2-2.0x0.4-0.8cm, ellipsoid; seeds papillate.

Fl.: Aug. - Sep.; Fr. rip.: Sep. - Nov.

Spn. Cited. : DARJEELING : Takdah, 1600m, 06.9.1981, A. P. Das 0677.

Loc. Distrib. : DARJEELING : Rare; Found around Takdah areas. (1600-2800m).

Gen. Distrib. : India : W. Bengal, Sikkim, Assam, Meghalaya; N. & E. Myanmar.

Dicentra scandens (D. Don) Walp., Rep. 1:228.1842(non Hook. f.&Thoms. in FBI 1:12.); Stern in Brittonia 13:46, f. 32.1961; FEH 1:104.1966; EFPN 2:35.1979; FPK 12.1981; FB 1(2):382.1984; TBRI 50(4):111.1987.

Dielytra scandens D. Don, Prodr.Fl. Nep. 198.1825.

Dicentra thalictrifolia (Wall.) Hook. f.& Thoms., Fl. Ind.1:273.1855 & FBI 1:121.1872.

Annual herbaceous slender climber. Stem much branched, weak, pendent. Petioles 1.2-1.6cm long, nearly glabrous; lamina 0.9-3.5x1.0-3.0cm, ovate-elliptic, entire, obtuse, base cuneate, 5-7 nerves from base, middle one branched, sometimes leaflets modified into tendrils. Corymbs pendulous, 7-10 flowered; peduncles c 2.0cm long; bracts and bracteols 0.2-0.3cm long, lanceolate; sepals 1.5-2.5cm long, triangular; petals yellow, 1.8-2.0cm long, slightly hooked at apex 0.4-0.5cm, nectariferous glands 0.35-0.5cm. Capsules 2.0-3.5cm long, ellipsoid. Seeds 2-seriate, black shiny.

Fl.: Aug. - Sep.; Fr. rip.: Sep. - Oct.

Spn. Cited. : DARJEELING : North Point, Darjeeling, 1950m, 04.10.1995, *Das et Samanta* 0373; SIKKIM : Pakhyong, 1600m, 20.10.1996, *Das et Samanta* 0398.

Loc. Distrib. : DARJEELING : Abundant on bushes throughout its altitudinal range of distribution (1800-2500m); SIKKIM : Very common in Hilley, Ranipool (1600-2600m).

Gen. Distrib. : E. Himalaya (Nepal-Bhutan), Meghalaya; Myanmar, W. China.

Note : (i) Flowers used as ornament for its beautiful flower.

GENTIANACEAE Pax.

KEY TO THE GENERA AND SPECIES :

1. Annual herbaceous twiner; petioles 2.5-3.0cm long; lamina minutely denticulate, acuminate; corolla pink; seeds deep brown.....*Gentiana speciosa*.
1. Perennial herbaceous twiner; petioles 0.5-1.4 cm long; lamina minutely serrate; acuminate-caudate; corolla yellowish-brown; seeds blackish-brown.....
.....*Tripterosperrum volubile*.

GENTIANA L.

Gentiana speciosa (Wall.) Marq. K. B. 1931:70.1931; H. Smith in Nat. Nat. Bot. Gard. Edinb. 26:244.1965; FEH 1:255.t.4b .1966; EFPN 3:93.1982; TBRI 50(4):115.1987.

Crawfordia speciosa Wall. , Tent. Fl. Nap. 64, t. 48.1826; FBI 4:106.1883.

Annual herbaceous twiner, stem terete, slender, shiny, internodes 5.2-6.0cm long, yellowish brown. Leaves opposite. Petioles 2.5-3.0cm long; lamina 4.2-8.5x1.2-3.0cm, ovate - lanceolate, minutely denticulate, acuminate, base rounded, glabrous, 3-nerved from base. Axillary solitary racemes, 2-3 flowered, pink, drooping. Pedicels 2.0-3.5cm long; bracts 0.4-0.5 cm, lanceolate; calyx 1.3-1.5cm, campanulate, lobes triangular, acute, nearly glabrous; corolla purple, upto 0.5 cm long, tubular - bellshaped, 5-lipped; Stamens attached at the middle of corolla, acuminate; style 0.6-0.8cm long. Capsules 3.0-4.0cm long, cylindric, Seeds c 0.2 cm, winged, deep brown.

Fl.: Aug. - Nov.; Fr. rip.: Nov. - Jan.

Spn. Cited. : DARJEELING : Jorebungalow, 2000m, 04.10.1994, *Das et Samanta* 0398.

Loc. Distrib. : DARJEELING : Less common; Darjeeling-Sonada, Rimbick- Raman, Gairibas. Ghoom, Tiger Hill, Lava, Neora Valley National Park (1800-3000m); SIKKIM : Less common; Jalung, North Sikkim around 2500m.

Gen. Distrib. : E. Himalaya; India: Assam, Manipur, Tipura, Meghalaya; Nepal, Bhutan, Tibet, Myanmar.

Note : (i) Flowers used as ornament.

TRIPTEROSPERMUM Champ.

Tripterosperrum volubile (D.Don) Hara in JJB 40:21. Jan. 1965; H. Sm. in NRBGE 26:244.1965; FEH 1:258.1966; EFPN 3:98.1982; TBRI 50(4):129.1987;

Gentiana volubilis D. Don, Prodr.Fl. Nep. 126.1825.

Crofordia fasciculata Wall. Tent. Fl. Nep. 63.t.47.1826; FBI 4:107.1883.

C. japonica var. *luteoviridis* (Cl.) Cl. in FBI 4:108.1883.

C. affinis Wall. ex Cl. in FBI 4: 107.1883.

Tripterosperrum japonicum (Sieb. et Zucc.) Maxim., Cl. in FBI 4:108.1883.

Perennial herbaceous twiner. Stem terete, slender, internodes 7.5-9.0 cm long, nearly glabrous, greenish-yellow. Petioles 0.5-1.4 cm long; lamina 4.9-7.0x1.8-2.5cm, ovate-lanceolate, minutely serrate, acuminate to caudate, base rounded, glabrous above, villous beneath, nerves 3, parallel, convergent. Axillary, solitary racemes. Pedicel 0.4-0.5cm long; calyx tubular 1.5-2.5x0.4-0.7cm, 5-lipped; linear, pointed tip. membranous, nearly glabrous, yellowish green in young, brown at maturity; corolla 3.5x1.0cm tubular - campanulate. 5-lipped, 0.5-0.6cm, ovate, acute; stamens included; filaments c 1.6cm long, slender, smooth, yellow; style 0.4-0.5 cm long. Berry 4.5-5.0x1.2-1.4 cm, elliptic, succulent, tip c 0.6 cm long, linear, smooth, deep brown - blackish brown. Seeds c 0.2cm, flat, winged, blackish - brown.

Fl.: Jun. - Oct.; Fr. rip.: Oct. - Dec.

Spn. Cited. : DARJEELING : North Point, Darjeeling, 1950m, 04.10.1994, *Das et Samanta* 0389; Joributi, Neora Valley National Park, 2160m, 23.4.1995, *Das et Samanta* 0609; Darjeeling, 2000m, 24.11.1994, *Das et Samanta* 1235; SIKKIM: Pangthang, 1910m, 20.11.1995, *Das et Samanta* 1027.

Loc. Distrib. : DARJEELING : Less common; Birch Hill, Baggaonra, Darjeeling, Sukiapokhari, Gairibas, Neora Valley National Park, Lava (1800-300m); SIKKIM : Rare; Found Gangtok - Pangthang areas only (1900-2800m).

Note : (i) Fruits used as ornament.

HYDRANGIACEAE Dumort

HYDRANGEA L.

Hydrangea anomala D. Don, Prodr. Fl. Nep. 211.1825; FBI 2:405. 1878; TNB 63.1929; Meclintok in Proc. Calif. Acad. Sci. 29:196, ma 5.1957. subssp.; FEH 1:114.1966; EFPN 2:157.1979; TBRI 50(4):116.1987; FB 13):520.1987.

H. altissima Wall., Tent. Fl. Nep. 2:t.50.1826; FBI 2:404.1878; TSDD 37.1896.

H. glabra Hayata in Journ. coll. sc. Univ. Tokyo 25(19):89,t.6.1908.

Nep.: Simakung.

Shrubby root climbers. Stem branched, terete, sparsely hairy, deep brown, lower internodes (c 5.6 cm) longer than upper (4.0cm). Petioles 3.2-6.5cm long, flat, base with spreaded structure, villous; lamina 3.4-5.5x20-4.0cm, entire to serrate with acute tip, acuminate, base cuneate, young pubescent throughout, but at maturity pubescent only on veins. Corymbs much branched, terminal diam upto 2.5 cm; Bracts 0.5-1.3x0.1-0.2cm, nearly glabrous. Calyx 0.21-0.25 cm, lobes acute, glabrous; corolla 0.5-0.6x0.2-0.4cm, cordate; petals fall down with a cap, glabrous. Stamens 0.3-0.4 cm, sparsely hairy at filament.; styles 2 or 3 spreading. Capsules 0.3-0.4 cm long, subglobose. Seeds compressed, winged.

Fl.: Apr. - May; Fr.rip.: Aug. - Oct.

Spn. Cited. : DARJEELING : Alubari, Neora Valley National Park, 2480m, 28.4.1995, *Das et Samanta* 0646; Reshete, 2260m, 06.5.1995; *Das et Samanta* 0699; Jalapahar, 2250m, 07.5.1995, *Das et Samanta* 0211.

Loc. Distrib. : DARJEELING : Jalapahar-Jorebungalow, Senchal, Lava 14-Farei, Neora Valley National Park (2100 - 2800m).

Gen. Distrip. : Temperate Himalayas, India, Garwal-Bhutan; N. Myanmar, China, and Taiwan.

Note : Chr. no. 2n = 24 (Malla, S. B. Saiju, H. et al. 1977).

ICACINACEAE Miers.

NATSIATUM Ham.

Natsiatum herpeticum Buch.- Ham. ex Edinb., New phil. J.16:314.1834; FBI 1:595.1875; TSDD 17.1896; TNB 34.1929; FA 2:253.1936; FEH 1:191.1966; EFPN 2:87.1979; BP1:326.1981; FB 2(1): 135.1991 (Fig. 3.9).

Lep.: Sumgoorik; Nep.: Pinace Lahara.

A shrubby twiner. Stem woody, ridged, hairy, internodes upto 15cm long; petioles 1.5-10cm long, ribbed appressed-strigose hairy; lamina 5.0-14x3.5-15cm, broadly ovate to rounded ovate, distantly or coarsely dentate to serrate, acute to caudate - acuminate, base cordate, coarsely scabrid and densely hairy on veins above, stiff matted hairy beneath, 7-9 nerves from base, divergent, each extended upto a tooth or sinus of margin. Racemes axillary, pendulous, upto 3.0-12cm long, many flowered; peduncles slender, matted hairy throughout; bracts linear-subulate 0.2-0.3cm long plumose; pedicels 0.15-0.25cm long, hairy; Male calyx 5-lobed, coannate, upto

0.3cm, densely hairy; petals 5, free; fertile stamens 5, in outer whorls, antisepalous, staminodes 5 with a gland at base. Pistillode minute. Females like males but all stamens reduced to staminodes; styles short, 2-3 lobed, Drupes 1.0 cm, long, obliquely ovoid, 1-celled, compressed.

Fl.: Nov.-Jan.; Fr. rip.: Feb.

Spn. Cited. : DARJEELING : Jal dhaka, 400m, 06.2.1994, *Das et Samanta* 0017; Mangpo, 1300m, 12.12.1994, *Das et Samanta* 0466; Panighata, 350m, 13.1.1995, *Das et Samanta* 0093; Bamanpokri, 220m, 14.1.1995, *Das et Samanta* 0487.

Loc. Distrib. : DARJEELING : Common in foot-hill regions (upto 1500m); SIKKIM : Less common; North Ringu-Mangan areas (upto 1500m).

Gen. Distrib. : E. Himalayas (Darjeeling-Sikkim Khasia Hills), Assam; Nepal and Bangladesh, Myanmar, China, Thailand.

LARDIZABALACEAE Decaisne

HOLBOELLIA Wall.

KEY TO THE VARIETIES:

1. Leaflets digitately 7-9 foliolately; peioles 1.5-8.1 cm long; lamina 2.3-10x0.7-3.4cm, narrowly lanceolate, flowers 3-5 in axillary fascicles.....var. *angustifolia*.

1. Leaflets digitately 3-6 foliolate; petioles 1.5-9.5 cm long; lamina 2.5-10.1x0.7-4.9cm, broadly ovate to elliptic or ovate-oblong; 3-7 flowers in axillary subcorymbose.....var. *latifolia*

Holboellia latifolia Wall., Tent.Fl. Nep. 24, t. 16.1824; FBI 1:108.1872; TSDD 4.1896; TNB 13.1929; FEH 1:92.1966; EFPN 2:32.1979; FPK 12.1981; FA 1:61.1982; FB 1(2):330.1984; TBRI 50(4):116.1987; FI 1:423.1993 (Photo-17 and 32).

var. *latifolia*

Lep.: Kanphal; Nep. : Gufla

Shrubby twiner. Stems terete obscurely ribbed, glabrous. Leaves exstipulate, digitately 3-6 foliolate; laterals much smaller, gradually longer towards the middle; Petioles 1.5 - 9.5cm long; petiolule 0.2-3.6cm; lamina of median leaflet 2.5 - 10.1x0.7-4.0 cm, broadly ovate to elliptic or ovate to oblong, entire, acute to acuminate, base cuneate to rounded, shiny above, pale beneath, 3 nerved from base. Subcorymbose, axillary. Plants dioecious. Peduncle 0.8-2.3cm long, 3-7 flowered; pedicel 0.2-2.3cm,

flowers 1.6-1.7cm long. Bracts 2.0-4-0.7cm, linear to narrowly lanceolate, entire, acuminate, puberulous. Sepals 6 in 2 whorls, 0.5-0.8x0.15-0.2cm, ovate to elliptic, greenish to purplish white, sparsely hairy to glabrous. Petals 6, 0.01-0.3cm, orbicular, minute. Stamens 6, free, filament almost absent; anthers 0.3-0.4cm, apiculate, 4-celled; pistillodes 0.12-0.15cm long (in female flowers); carpels 0.8-1.0cm long, free, linear - ellipsoid, staminode, minute; style short, stigma oblong. Berries 6.0-9.0x2.5-4.0cm, ellipsoid, white to purple; seeds 0.8x0.6cm, ovoid, compressed, blackish smooth.

Fl.: May - Jul.; Fr. rip.: Oct. - Nov.

Spn. Cited. : DARJEELING : Meghma, 3000m, 17.4.1994m *Das et Samanta* 0110; Lebong, 1800m, 19.4.1994, *Das et Samanta* 0135; Alubari Neora Valley National Park, 2420m, 23.4.1995, *Das et Samanta* 0595; SIKKIM : Fith Mile, Gangtok, 1720m, 19.11.1995, *Das et Samanta* 0937; Pangthang, 1910m, 20.11.1995, *Das et Samanta* 1036.

Loc. Distrib. : DARJEELING : Very common; Tonglu, Kurseong, Birch Hill, Darjeeling, Neora Valley National Park, Lava, Rimbick.(1800-3000m); SIKKIM : Less common; Gangtok-Soreng, Gyalshing-Pelling, (1700-1900m).

Gen. Distrib. : India: Himalaya (Kumaun - NEFA), Manipur, Meghalaya, N.Assam; W. China.

Notes : (i) Ripe fruits edible. (ii) Chr. no. $2n = 32$ (Malla, S. B. & Bhattarai, S. *et al.* 1979a) ch. no. of *H. latifolia*.

var. *angustifolia* (Wall.) Hook. f. & Thoms. in FBI 1:FBI 1:108.1879; TNB 1929; FEH 1:92.1966; EFPN 2:32.1979 (Fig. 3.2.3B).

H.angustifolia Wall., Tent. Fl. Nep.24,t, 16.1824; FI 1:423.1993.

Leaves digitately 7-9 foliolate; Petioles 1.5-8.1cm long, petiolule 0.2-3.0cm long; lamina 2.3-10x0.7-3.4cm, narrowly lanceolate, entire, acute to acuminate, base rounded to cuneate. Peduncles 0.2-2.3cm long; pedicels 0.4-1.3cm long, flowers 3-5 in axillary fascicles 1.2-1.4cm long, sepals 6, ovate - elliptic to lanceolate, sparsely hairy to glabrous, greenish purple. Stamens 6; anthers 0.4-0.6x0.1cm, Berries ellipsoid. Staminode and pistillode as that of var.*latifolia*. Seeds smooth, blackish, nearly compressed.

Fl.: Mar. - May.

- Spn. Cited. : DARJEELING : 14-Farje, Neora Valley National Park, 2260m, 22.4.1994, *Das et Samanta* 0578; SIKKIM : Pangthang, 1910m, 20.11.1995, *Das et Samanta* 1014.
- Loc. Distrib. : DARJEELING : Less Common; Kafer, Darjeeling, Lava, Neora Valley National Park (1500-2500m); SIKKIM : Rare; Found only Gyalshing and Pelling areas (1800-2400m).
- Gen. Distrib. : E. Himalayas (Darjeeling - Sikkim).

MALPIGHIACEAE Juss.

KEY TO THE GENERA :

1. Calyx with an ovate-oblong glans at base; style-1; samaras with 3-radiately wings*Hiptage*
1. Calyx bears no glands; style 3; samaras surrounded by suborbicular wings.....*Aspidopterys*

ASPIDOPTERYS Juss.

Aspidopterys nutans (Roxb.) Hook. f. in FBI 1:421.1874; FEH 1:172. 1966; EFPN 2:74.1979; Nam.Chan. Fl. PI 50.1987; FB 2(I) : 42.1991.

Hirea nutans Roxb., HB 34.1814.

Nep. : Shubung Lahara.

Dextrorsely twining liana. Petiole 3.0-4.0cm long, slightly channeled, puberulous; lamina 8.5-12.5x4.0-10.5cm, broadly ovate, entire, acute, base rounded, glabrous above, sparsely white pubescent below, nerves 5-6 pairs, alternate. Flowers absent. Samaras 2.5-3.5x2.0-2.3cm, broadly elliptic, dense white pubescent.

Fr. rip.: Oct.-Nov.

Spn. Cited. :DARJEELING : Ryang 500m, 17.3.1995, *Das et Samanta* 0567.

Loc. Dostrib. : DARJEELING : Less common; Sukna, Teesta Valley, Kalimpong (upto 1800m).

Gen. Distrib. : E. Himalaya (Nepal-Sikkim), Assam; Myanmar, Thailand, China.

Aspidopterys wallichii Hook. f. in FBI1: 421.1874; Parker, A. Forest Fl. Punjab 57.156 (3rd ed.); Duthie, FUGP 118.1960; Fl. Punjab 21(I): 47.1948 (Photo-36 & Fig. 3.29)

Nep. : Shubung Lahara

Large shrubby twiner. Stem terete, glabrescent but much hairy at nodes, internodes upto 15cm long. Leaves simple. Petioles 2.0-3.0cm long, terete with appressed tomentum; lamina 9.0-14x4.0-8.0cm, broadly ovate, entire, acuminate to caudate, base subcordate, membranous, glabrous above, white tomentose below, nerves 3 at base; axillary or terminal panicles, pendulous; peduncle appressed white hairy; bracts 0.1-0.15cm long, subulate; pedicels 0.3-0.8cm in flower but 1.0-1.5cm in fruits. Sepals 5, 0.2-0.4 cm long; petals 5, 0.3-0.4cm, oblanceolate spreading; stamens 8, on a ring of 0.2cm diam; filaments c. 0.15cm long, erect; anther c 0.1cm; ovary c0.2x0.3cm, style 0.2cm, erect; stigmas 3, curved spatulate. Samaras pale - yellow 2.5-3.2x2.0-2.5cm, broadly elliptic to orbicular to oblong, winged, white appressed tomentose, hilum distinct upto 1.0cm long.

Fl.: Jul. - Sep.; Fr. rip.: Oct.

Spn. Cited. : SIKKIM : Rishi, Rhenek, 910m, 06.9.1996, *Das et Samanta* 11370; Mangan. 1320m, 24.9.1994, *Das et Samanta* 1431.

Loc. Distrib. : SIKKIM : Less common; Rhenek-Singhik (800-1500m).

Gen. Distrib. : W. Tropical Himalayas; India; W. Malaysia, China, Indonesia.

HIPTAGE Gaertn.

Hiptage bengalensis (L.) Kurz in JASB 43(2) : 134.1874; EFPN 2 ; 74.1979; FB 2(1) : 40.1991.

Banisteria benghalensis L., Sp.l. 427.1753.

Hiptage madablota Gaertn; *Fruct.* 2:169 t. 116.f. 4.1791 ; FBI 1: 418.1874.

Nep. : Charpatay Lahara.

Twining liana. Stem terete, glabrous young parts appressed tomentose. Leaves exstipulate; petioles 0.6-7.0cm long, glabrous, lamina 8.5-18x3.5-8.0cm, ovate-lanceolate, entire, acuminate, base cuneate, glabrous. Racemes axillary; peduncles 5.0-7.0cm long, appressed tomentose; bracts c 0.2cm long, lanceolate; flowers upto 2.0cm in diam. fragrant; calyx tube c 0.2cm long with ovate-oblong, gland outside, lobes 5, 0.35x0.2cm, oblong, rounded; petals 5, yellow at base 1.0-1.2cm long, elliptic to obovate, reflexed, fimbriate, clawed; stamens 10, declinate, filaments cuneate at the base, anthers oblong; ovary 3-lobed; style l, circinate, stigma 2. Samaras 3.2-4.5 cm long, oblanceolate with 3- radiating wings, 1 seeded.

Fl.: Feb.-Apr.; Fr. rip.: May-Jal.

- Spn. Cited. : DARJEELING : N.B.U. Campus, 120m, 20.06.1997. *Das et Samanta* 1637.
- Loc. Distrib. : DARJELEING : Less common; Siliguri, N.B.U. Campus (up to 950m).
- Gen. Distrib. : India : Darjeeling, Assam, Sri Lanka, Myanmar, Andaman Nicobar Island, China.

MENISPERMACEAE Juss.

KEY TO THE GENERA :

1. Lamina peltate; base broadly rounded-cordate.....2
1. Lamina not peltate; petiole attached to the base.....4
2. Cymes axillary paniculate.....3
2. Cymes axillary umbellate.....*Stephania*
3. Bracts suborbicular, upto 1.5 cm long; drupes subglobose with out any projections*Cissampelos*
4. Shrubby twiner with thread like hanging aerial roots; stem much lenticellate.....*Tinospora*
4. Shrubby twiner with no aerial roots.....5
5. Lamina ovate-oblong; base deeply cordate with acute tipped lobes..*Parabaena*
5. Lamina suborbicular, rounded-truncate.....*Pericampylus*
6. Base of lamina cordate; scabrid above, matted wooly beneath.....*Tinospora*
6. Base of lamina truncate; glabrous both surfaces.....*Tiliacora*

CISSAMPELOS L.

Cissampelos pareira L. Sp. pl. ed.1:1031.1753; FBI 1: 103.1872 var. *hirsuta* (Buch.-Ham. ex DC.) Forman in KB 22: 356.1968; FEH 2:35.1971 EFPN 2:27.1979;FB 1(2):338.1984; FI 1:317.1993.

C. hirsuta Buch.-Ham. ex DC., syst.1:535.1817.

C.pareira L., sp. pl. 1031 1753 p.p.; FBI 1:103.1872; TSDD 4.1896; FA 1:52.1982.

C. nepalensis Rhodes, Phytologia 30:475.1975.

Nep: Batulpati; Dolbole Lahara, Tamarke; Tamshaprip.

Medium shrubby dextrorse twiner. Stem and branches striated, internodes 7.0-10cm long, nearly pubescent. Petioles 2.5-8.4cm long, terete, pubescent; lamina 4.5-7.0x6.0-7.5cm, peltate, broadly ovate, entire, acute, mucronate, base slightly cordate to rounded, nearly glabrous above, grey tomentose below (upto 1.1 cm long). Bracts minute, 1.3-1.5cm, acrecent, yellowish green; cymes axillary. Male peduncle 2.5-3.0 cm long, slender, many flowered, hairy; pedicels 0.1cm, wirey; sepals c 0.1x0.01cm, oblanceolate; petals c 0.02cm, connate; staminal column c 0.05cm; female sepals c 0.05cm, obovate; petals 0.04x0.07-0.11cm. reniform,

broader than sepals. Ovaries c 0.1cm, ovoid, pillose; style c 0.05cm. Drupes 0.4-0.5cm in diam, reddish on ripening, subglobose.

Fl.: May - Sep.; Fr. rip.: Sep. - Oct.

Spn. Cited. : DARJEELING : Sukna, 132m, 15.5.1994, *Das et Samanta* 0219; Latpunchor, 1050m, 17.5.1995, *Das et Samanta* 0724; SIKKIM : Jorethang, 310m, 28.10.1995, *Das et Samanta* 0819.

Loc. Distrib. : DARJEELING : Abundant; Sevoke, Rambhi, Kalijhora, Panighata, Bamanpokri, Takdah, Sukipokhari (132-2000m); SIKKIM : Less common; Jorethang-Nandugaon, Legship, Ravongla, Singtam (upto 800m).

Gen. Distrib. : Tropical and subtropical regions in India; Pakistan, Nepal, Bhutan, Bangladesh, Malaysia.

Notes : (i) Fibre extracted from stem-used in rope making.
(ii) Chr. no. $2n = 24$ (Sobha, V. Ramanchandran, K. 1979).

CYCLEA Wt.

KEY TO THE SPECIES :

1. Plants hispid throuhout; lamina deltoid-ovate; drupes obovate.....*C. barbata*
1. Plants glabrous; lamina broadly ovate-cordate; drupes orbicular.....*C. bicristata*.

Cyclea barbata Miers. (in Ann. Mag. Nat. Hist. Ser. 3, 18:19.1866; nom, nud.)
Contrib., Bot. 3:237.1871; KB 14:76.1960. *C. wallichii* Diels in Engl., Pflanzenr. 46 : 314.1916; Calder in RBSI 11(1) : 39.1926; FI 1 : 322.1993.

Slender shrubby sinistrorse twiner with tuberous root-stocks. Stem and branches slightly ribbed, young hispid. Leaves simple, alternate. Petioles 3.0-9.0cm long, ribbed, sparsely hairy but dense at tip; attached with c 2.0cm from base of lamina; lamina 6.0-17x4.0-11cm, peltate, deltoid - ovate, entire, acuminate with mucrona, base truncate to rounded, shiny above, glabrous except margins, appressed villous beneath, palmately 9-nerved, branched, densely hairy. Plant dioecious. Axillary paniculate cymes; peduncles 10-24 cm long; bracteols linear, puberulous; pedicels, 0.1-0.15cm long; male flowers not seen; female calyx campanulate; sepals 4, 0.14-0.18x0.7-0.8cm, ovate- obovate, entire, obtuse, base cuneate, nearly glabrous; petals 0.4-0.5cm long, cyathiform 4-lobed, 0.04-0.05x0.02-0.03cm, glabrous; ovary small, style 0.1-0.15cm, weak; stigma 0.3-0.3 cm in diam, 4-lobed. Drupes ovoid, horse - shoe shaped endocarp. Seeds curved.

Fl.: Aug. - Oct. ; Fr. rip.: Nov. - Feb.

Spn. Cited. : DARJEELING : Sukna, 132m, 24.4.1994, *Das et Samanta* 0153; Bamanpokri, 200m, 14.10.1995, *Das et Samanta* 0490; Rambi 450m, 13.12.1995, *Das et Samanta* 0573; Dolka Forest, Bengdubi, 110m, 08.9.1996, *Das et Samanta* 1396; SIKKIM : Jorethang, 310m, 28.10.1995, *Das et Samanta* 0812.

Loc. Distrib. : DARJEELING : Common in foot-hill region (upto 500m); SIKKIM : Less common; Jorethang - below Nayabazar (upto 350m).

Gen. Distrib. : Tropical and subtropical Himalayas, Assam, Silent Valley Kerala, Java.

Cyclea bicristata (Griff.) Diels in pfl.Ht. 46:317.1910; TNB 12.1929; FEH 2:35.1971; FPK, 11.1981; FB 1(2):47.1984, TBRI 50 (4): 111.1987; FI 1:322.1993.

Lophophyllum bicristatum Griff. Notul.4:313&. Icon. pl. Asia. 491.1854; FBI 1:105.1872; FA 1:53.1982.

C. populifolia Hook. & Thoms., FI Ind.202.1855.

Nep. : Tambarkey

Large shrubby dextrorse twiner. Stem terete, solid, hairy at nodes. Petioles 3.5-6.5 cm long, terete, hairy; lamina 7.0-11x5.5-10.5cm, broadly ovate-cordate, entire, acute, base cordate, pubescent beneath, 7-9 nerved. Axillary paniculate cymes; flowers green, clustered; male sepals 4-5, 0.1-0.15cm in a cupshaped calyx, fleshy; petals absent. Staminal column 0.11-0.15cm, anthers 4-5, at a margin of a peltate disc, female sepals 4, c 0.1cm long, free; petals absent. Ovary ovoid, almost as long as sepals; style short, 3-lobed. Fruits c 0.4cm in diam, stony, inperforate with 4-rows of 12-15 peg like projections, margin distantly hooked, embryo waxy, horse-shoe shaped c0.2cm long.

Fl.: Mar. - May; Fr. rip.: Apr. - May.

Spn. Cited. : DARJEELING : Mirik, 1550m, 05.9.1994, *Das et Samanta* 0320; Latpunchor, 1200m, 17.5.1995, *Das et Samanta* 0750; SIKKIM : Singling Basty, Soreng, 1520m, 30.10.1995, *Das et Samanta* 0870; Deorali, Gangtok, 1450m, 19.11.1995, *Das et Samanta* 0970.

Loc. Distrib. : DARJEELING : Common; Rung Dung Valley, Kurseong, Mirik, Tindharia, Pankhabari Forest (110-1800m); SIKKIM : Common; Tadong-5th Mile, Soreng (upto 1900m).

Gen. Distrib. : S. E. Himalayas, (Darjeeling-Sikkim) Meghalaya, Manipur; Bhutan.

PARABAENA Miers.

Parabaena sagittata Miers. ex Hook.f. & Thoms. Fl. Ind. 181.1855 & FBI 1:96.1872; TSDD 4.1896; TNB 3.1929; FI 1:346.1993.

Nep. : Karpati - Lahara

Large shrubby dextrorse twiner. Stem terete, solid, obscurely many ribbed, nearly glabrous to sparsely pubescent, internodes upto 9.5cm long, brownish villous. Petioles 2.0-7.5cm long, densely pubescent; lamina 5.0-14x2.0-9.0cm, ovate - oblong, subentire or shallowly or distantly dentate, acuminate-apiculate, base hastate with acute tipped lobes, membranous, sparsely hispid above, matted brown hairy beneath; 7 veins, digitate from base. Cymes axillary 2.5-8.5cm long, dichotomously branched, hairy; flowers creamy white. Male sepals 0.14-0.24cm long, oblong, sparsely pubescent; petals 0.1x0.04cm, ovate-cuneate, rough or scarious margined, often 3-lobed; stamens 6, column upto 0.01cm long; female sepals 0.07x0.06cm orbicular, hairy; style 0.02-0.04cm long, slightly curved stigma 2, foliar. Drupes 0.65-0.7x0.4-0.5cm ovoid, greenish; stony, inperforate covered with thick spines on back.

Fl.: May - Jun.; Fr. rip.: Sep.-Dec.

Spn. Cited. : DARJEELING : Latpunchor, 1000m, 17.5.1996, *Das et Samanta* 1060; Purbikhola, 900m, 11.9.1996, *Das et Samanta* 1471; SIKKIM : Nandugaon, Jorethang, 840m, 21.5.1996, *Das et Samanta* 1107.

Loc. Distrib. : DARJEELING : Less common; Sevoke, Rambh, below Mangpo, Munsang, Singla (upto 1200m); SIKKIM : Less common; Jorethang-below Namchi (upto 1000m).

Gen. Distrib. : E. Himalayas (Nepal - Bhutan) India : Meghalaya, Assam; Myanmar, Malaysia.

PERICAMPYLUS Miers.

Pericampylus glaucus (Lam.) Interp.Rumph. Herb.Amb. 219.1917; TNB 13.1929; FEH 1:94.1966 & 2:36.1971; EFPN 2:28.1979; KB 22: 367.1968; FB1(2):336.1984; FI 1(2):330.1993.

Menispermum glaucum Lam., Encyl.Mith 4:100.1979.

Cocculus incanus Colebr. in Trans.Linn. Soc. Lond. 13:57.t.17. 1882.

Pericampylus incanus (Colebr.) Hook.f., & Thoms., Fl.Ind. 13:57.1855 & FBI 1: 102.1872; FA1:52.1982.

Nep: Pipal-pati Lahara.

Medium shrubby twiner with tuberous root-stocks. Stem warted, branches pubescent, greyish. Petioles 2.0-3.5cm long; inserted 0.3-1.0cm from base of lamina; lamina 3.5-8.3x2.2-5.9cm, suborbicular, entire to slightly repand, acute, mucronate, base rounded to truncate or slightly cordate, finely tomentose above, densely brownish pubescent below. Cymes axillary; male sepals greenish yellow, outer most 0.75-0.76cm, lanceolate, pubescent, inner 0.15x0.1cm, obovate; petals 0.1x0.05cm, oblanceolate, recurved, cuneate; stamens 6, 0.15x0.05cm, free; female flower: staminodes 6, 0.07cm, clavate, adnate to petals; ovary 0.04cm ovoid; style 2-partite. Drupes 0.5-0.7cm in diam, subglobose, blackish purple.

Fl.: Feb. - May; Fr. rip.: Jun - Sep.

Spn. Cited. : DARJEELING : Latpunchor, 900m, 17.5.1995, *Das et Samanta* 0798; SIKKIM : Gyalshing, 1530m, 22.5.1996, *Das et Samanta* 1149.

Loc. Distrib. : DARJEELING : Common; Takdah, Kalimpong, Kalijhora, Latpunchor, Kurseong (upto 1750m); SIKKIM: Less common; Gyalshing - Pelling (upto 2000m).

Gen. Distrib. : E. Himalayas (Nepal-Bhutan), India; Myanmar, Malaysia, S. China.

STEPHANIA Lour.

KEY TO THE SPECIES :

1. Lamina alway sentire; deltoid.....2
1. Lamina slightly lobed or dentate; ovate to orbicular.....3
2. Branches glabrous; umbels 3-4 rayed.....*S. elegans*
2. Branches pubescent; umbels 5-6 rayed.....*S. japonica*
3. Male sepals obovate, glandular papillose; lamina 3.5-13x5.4-10.2cm.
.....*S.glandulifera*
3. Male sepals oblong, glabrous; lamina 8.0-14.5x7.0-12cm.....*S. glabra*

Stephania elegans Hook.f.& Thoms., Fl.Ind. 1:195.1855; FBI 1:103.1872; TSDD 4.1896; Diels in Pfl. Ht.46:273.1910; TNB 12.1929; FEH 1: 95.1966 & 36.1971; EFPN 2:28.1979; FPK 11.1981; FA 1:51.1982; FB 1(2):337.1984; TBRI 50 (4): 128.1987; FI 1:333.1993.

Shrubby slender dextrorse twiner with a tuberous root-stock. Stem terete, slightly ribbed, branches glabrous, internodes 5.5-6.5cm long. Petioles 2.0-4.0cm, inserted c

0.2 cm from the base of lamina; lamina 4.5-9.7x2.5-6.2cm, peltate, deltoid, entire, acuminate, base truncate, nearly glabrous, light green, nerves 5-7. Cymes axillary, umbellate, 3-5 rayed; peduncles 3.0 - 5.0cm long; pedicels 0.05-0.1 cm; male sepals 0.15x0.1cm, obovate, acuminate; petals 0.1x0.05cm, broadly ovate, purple; staminal column c 0.1cm; female sepals 0.45x0.1cm, obovate; petals 0.06x0.05cm broadly obovate, fleshy. Drupes 0.5-0.6 cm in diam obovoid, red on ripening, succulent.

Fl.: May - Aug.; Fr. rip.: Oct. - Dec.

Spn. Cited. : DARJEELING : Singtam, 1800m, 27.6.1982, *A. P. Das* 1016; SIKKIM : Burtuk, Gangtok, 1700m, 28.6.1995, *Das et Samanta* 0781; Soreng, 1520m, 30.10.1995, *Das et Samanta* 0868; Pangthang, 1750m, 20.11.1995, *Das et Samanta* 1010.

Loc. Distrib. : DARJEELING : Common; Sukna, Kafer, Lava, Baggoanra, Badamtam, Birch Hill (132-2200m); SIKKIM : Common; Singling Basty, Gangtok (300-2000m).

Gen. Distrib. : India : Tropical and subtropical Himalayas, Assam, Meghalaya, Naga Hills.

Stephania glabra (Roxb.) Miers. in Ann. Mag. Nat. Hist." Ser. 3"(18):14.1866; TNB 12.1929; FEH 2:36.1971; EFPN 2:28.1979; FB 1(2):336.1984; FI 1:334.1993.

Cissampelos glabra Roxb. , Fl. Ind.ed.2 (3):840.1832.

Stephania rotunda auct. non Lour.: Hook. f., Fl.Ind. 197.1855; FBI 1:103. 1872 P.P.,non -Lour. TSDD 4.1896.

S. delavayi auct. no Diels: FEH 94.1966.

Nep: Tamarke Lahara, Nimi Lahara, Bakuli Lahara,

Medium herbaceous sinistrorse twiner. Root-stock tuberous. Stem slender, slightly ribbed, nearly glabrous. Petioles 5.0-14cm long, inserted 1.5-3.0cm from base of lamina; lamina 8.0-14.5x7.0-12cm, broadly ovate - suborbicular, entire, acute, often mucronate, base rounded, membranous, glabrous digitately 7-9 nerved. Cymes axillary often slightly extra-axillary; peduncles 2.0-3.5cm, slender, umbellate in male, generally stronger in female, 7-13 rayed; pedicels 0.1-0.4cm. Male sepals 2, 1.0x0.5cm, oblong, entire, acute, nearly glabrous; petals 2, 0.1-0.15x0.1cm, orbicular with marginal glands at the middle; stamens connate into column, filament c0.1cm, anther 0.05x0.02cm; female sepals and petals similar to male. Ovary c 0.1 cm long, ovoid. Drupes 0.5-0.7cm in diam, suborbicular, reddish on ripening.

Fl.: Mar. - Jun.; Fr. rip.: May - Sep.

- Spn. Cited. : DARJEELING : Tindharia, 940m, 20.6.1994, *Das et Samanta* 0256; Bhuttabari, Garubathan, 200m, 11.3.1995, *Das et Samanta* 0562; Latpunchor, 1050m, 17.5.1995, *Das et Samanta* 0741; SIKKIM : Nandugaon, 840m, 21.5.1996, *Das et Samanta* 1121.
- Loc. Distrib. : DARJEEING : Common; Sukna, Bamanpokri, below Mangpo, Rambhi, Yangmakum, Nimbong, Birrik Forest, (upto 1450m); SIKKIM : Commom arround Jorethang and Nandugaon areas (up to 1100m).
- Gen. Distrib. : India : Tropical and temperate Himalayas (Simla - Bhutan) Assam; Malabar Hills, China, Thailand.
- Notes : (i) Used medicinally & (ii) fibre used as fishing line.
(iii) Chr. no. $2n = 26$ (Guha, S. 1979).

Stephania glandulifera Miers. in contr. Bot. 3:220.1871; TNB 12.1929; FEH 1:95.1966 & 2:36.1971; EFPN 2:28.1979; FA 1:52.1982; FB1(2):337.1984; TBRI 50(4):101.1987; FI 1:334.1993.

S. rotunda auct non Lour.:Hook .f., & Thoms., Fl.Ind. 197.1855; FBI 1:103.1872 p.p., non Lour.; TSDD 4.1896.

Nep. : Tambarkay: Chechu; Robji.

Slender shrubby sinistrorse twiner with tuberous root stocks. Petioles 4.0-10cm long, inserted 2.0-3.0cm from base of lamina; lamina peltate, 3.5-13x5.4-10.2cm, broadly ovate, entire to broadly crenate, acute to subacute, base rounded, glabrous. Cymes axillary, umbellate often borne on matured branches; peduncles 3.0-8.0cm long. Male sepals obovate, glandular papillose, near apex; petals absent. Staminal column c 0.2cm in diam. Femal flowers calyx and corolla like that of males. Fruits globose c0.35-0.64cm in diam.

Fl.: Feb. - May; Fr. rip.: Jul. - Oct.

- Spn. Cited. : DARJEELING : Sukna, 132 m, 15.5.1994, *Das et Samanta* 0219.
- Loc. Dirstrib. : DARJEELING : Common; Soom Forest, Nimbong Kurseong, Tindharia, Panighata, Neora Valley National Park (132 - 1800m).
- Gen. Distrib. : India : Tropical and subtropical Himalaya, Assam, Meghalaya; Nepal, Bhutan.
- Notes : (i) Used medicinally (ii) Chr. no. $2n = 24$ (Malla, S. B. *et al.* 1979); 26 (Bhattarai, S. *et al.* 1977b).

Stephania japonica (Thunb.) Miers. in Ann. Mag. Nat. Hist. Ser. 3, 3, 18:141. 1866; Fl. Pres. Madr. 29(21):1915; KB 2:49.1956; FB 1(20):337.1984; FI 1:49.1993.

Menispermum japonicum Thunb., Fl. Jap. 193.1784; FEH 1:95.1966. var. *discolor* (Miq.) Forman in KB 1956(11): 56.1956; EFPN 2:28.1979.

Cissampelos hernandifolia Willd., Sp. pl. 4:861.1805; FBI 1:103.1872; BP 1:208.1903; Bot. Bih. Ori. 2:17.1921; TNB 12.1929; FA 1:51.1982.

Stephania hernandifolia (Willd.) Walp., Rep. 1:96.1842; FBI 1:103.1872.

Nep. : Tambarkay Charchary, Lahara,

Stender shrubby dextrorse twiner with tuberous root stocks. Stem obscurely many ribbed, sparsely pubescent. Petioles 5.0-6.5cm long, terete, sparsely tomentose; lamina peltate, 5.0-10x3.0-8.0cm, deltoid, entire, acute to acuminate, base rounded, membranous, glabrous above, thinly tomentose beneath, 8-10 nerved. Cymes umbellate, 2- tiered, 5-6rayed in each and a terminal umbel; peduncles 2.0-3.0cm long; secondary peduncles 0.5-0.8cm long; terminal tier 0.15-0.2cm, pubescent; bracts 2.0.1-0.11cm long, subulate, acuminate, densely white tomentose; flowers sessile; sepals 6, 0.12-0.15x0.05-0.06cm, oblanceolate; petals 3-4, 0.03-0.08x0.03cm, obovate, glabrous. Staminal column 0.02-0.03cm. Female sepals and petals as in males; ovary nearly ovoid; style short; stigma minute. Drupes 0.45-0.5 cm in diam, globose, red on ripening.

Fl.: Jun. - Jul.; Fr. rip.: Sep. - Dec.

Spn. Cited. : DARJEELING : N.B.U. Campus, 120m, 26.8.1996, *Das et samanta* 0294; SIKKIM : Jorethang, 320m, 28.10.1995, *Das et Samanta* 1506.

Loc. Distrib. : DARJEELING : Very common; Dolka Forest, Sevoke, Jaldhaka, Samsing, Kalimpong (up to 1450m); SIKKIM : Less common; Jorethang - Nandugaon areas (upto 850m).

Gen. Distrib. : Tropical Himalaya; India; Myanmar, Malaysia, China, Africa, Australia.

Notes : (i) Roots and leaves used medicinally for the prevention of septic and stomach disorders (ii) Chr. no. 2n = 22 (Sarkar, A. K. ; Datta, N. & Chatterjee, U.1980).

TILIACORA Colebr.

Tiliacora acuminata (Lam.) Hook.f. & Thoms. in Fl. Ind. 1 : 187.1855; KB 30:90.1995.

Menispermum acuminatum Lam., Ency. 4: 101.1797.

Tiliacora racemosa Colebr in Trans. L. Soc. 13 : 67, t.6, 1822; FBI 1:99.1872.

Large twining shrubs. Branches terete, minutely many ribbed, puberulous. Petioles 6.0-8.0cm long, minutely many ribbed, nearly glabrous; lamina 10-16x6.0-10cm, broadly ovate, entire, caudate to acuminate, base truncete, both surfaces glabrous, nerves 5 from base, divergent. Flowers and fruits not seen here.

Spn. cited. : SIKKIM : Mangan, 1350m, 26.9.1996, *Das et Samanta* 1506.

Loc. Distrib. : SIKKIM : Rare; only collected from Mangan areas (upto 1800m).

Gen. Distrib. : E. Himalayas (Darjeeling-Sikkim); Orissa; Sri Lanka, Singapore.

TINOSPORA Miers.

Tinospora cordifolia (Willd.) Hook.f., & Thoms., Fl. Ind. 184.1855& in FBI 1:97.1872; FI 1:347.1993.

Menispermum cordifolium Willd., Sp. Pl. 4:826.1806; Fl. Ind. 3:8.1855.

Cocculus cordifolius (Willd.)DC., syst.1:517.1818.

Beng: Gharol; Gulancha, Nep: Gurjo.

Large shrubby twiner with numerous slender much long thread like hanging aerial roots. Stem terete, many ribbed when young, shiny much lenticillate when old, internodes 8.0-12cm long. Petiole upto 10cm long, glabrous, 2-ribbed; lamina 6.0-12x6.0-10cm, broadly ovate, entire, acuminate, base cordate, membranous, scabrid above matted wooly beneath, 5 veined from base, glandules at the base of veins. Flowers and fruits not seen here.

Spn. Cited. : SIKKIM : Karfet Forest, Jorethang, 310m, 28.10.1995, *Das et Samanta* 0834.

Loc. Distrib. : DARJEELING : Common in foot hill forests (up to 350m); SIKKIM: Rare; Jorethang - Nandugaon, below Namchi, Legship, Nayabazar (up to 900m).

- Gen. Distrib. : E. Himalayas; (Kumaon - Bhutan), India : Assam, Orissa, Gujrat, Maharastra, Karnatak, Tamil Nadu, Kerala; Myanmar, Sri Lanka, China.
- Notes : (i) Used medicinally for the treatment of rheumatism, gonorrhoea and tuberculosis (ii) Chr. no. $2n = 24$ (Sanjappa, M. 1978); 26 (Datta, N. & Chatterjee , U. 1980).

MIMOSACEAE R. Br.

KEY TO THE GENERA :

1. Plants climbing by tendrils; not prickles.....*Entada*
 1. Plants climbing by prickles (scramber)2
 2. Pods jointed, upto 10 cm long, falcate, flat; seeds more than 8..... *Mimosa*
 2. Pods not jointed upto 15 cm long, oblong; erect; seeds 4-8.....*Acacia*

ACACIA Willd.

Acacia intsia(L.) Willd.sp.pl.FBI 2:297.1878; TNB 56.1929; FB1(3): 642.1987.

Nep.; Arore-Arori, Harari, Khanra.

Large shrubby stout scrambler often lianas. Stem solid, branches downy, sparsely covered with minute hooked prickles, young parts greyish brown pubescent, mature deep brown pubescent. Leaf rachis 5-10cm, pinnael 4-6 pairs. Leaves bipinnate, leaflets 16-37 pairs or more on each pinnael; petioles 3.0-4.0cm long, pulvinous short, upto 0.03cm, obscurely angled, dense brown pubescent, curved minute prickles; pinnae subsessile 0.7-0.9x0.15-0.2cm, oblong-elliptic, entire, cuspidate, base slidely overlapping, both surfaces glabrous. Petiolule 0, male and female flowers not seen. Pods 0.6-0.7 cm stalked, 11-15x2.6-2.9cm, oblong, straight; unequal, cuneate at base, margin rimed, tip oblong, young pubescent, mature glabrescent, shiny dark brown, 4-8 seeded or more.

Fl.: Jun.-Jul.; Fr. rip.: Oct.-Feb.

Spn. Cited. : DARJEELING : Panighata, 350m, 09.12.1994, *Das et Samanta* 0450.

Loc. Distrib. : DARJEELING : Common; in foot hill regions (upto 400m).

Gen. Distrib. : E. Himalayas; Sri Lanka, Maylasia.

Note : Chr. no. $2n = 26$ (Bir, S. S. & Kumari, S. 1978a).

Acacia torta (Roxb.) Craib in KB 1915:410.1915; Ali, FWP 36:8.1973 (Photo - 33)

Mimosa torta Roxb. Fl. Ind. 2:566.1832.

Acacia pennata sensu Baker in FBI 2:297.1878 p.p.

Nep.: Arahari, Arare.

Large shrubby scrambler. Stem and branches solid deeply ribbed, thickly curved stout prickles, brown, young parts pubescent. Axillary bud often forming hook, terete, solid, sparsely hairy. Leaves bipinnate, pinnae 8-20pairs, subsessile, slightly curved, leaflets over 100, sessile 1.0x0.5 cm oblong - elliptic, obtuse, unequal, slightly glabrous, overlapping. Flowers and fruits not recorded.

Spn. Cited. : DARJEELING : Panighata, 350m, 13.3.1994, *Das et Samanta* 0064; Ryang, 550m, 17.3.1995, *Das et Samanta* 0566.

Loc. Distrib. : DARJEELING : Very common; Teesta, Sevoke, Bamanpokri, Dolka Forest, Nimbong, Peshok, Rangpo (upto 1250m).

Gen. Distrib. : C & E. Himalayas, (Kumaon-Bhutan); Myanmar, Sri Lanka, Malaysia, China, Tropical Africa.

ENTADA Adans.

Entada rheedii Spreng. Syst. 2:325.1827, *subsp. sinohimalensis* (Grierson & Long) Panigrahi in Taxon 34(4) : 714-715.1985; FB1(3):638.1987. (Photo-5&51, Fig. 3.11)

E. pursathe DC. Prodr.2:425.1825.

Entada scandens Sensu FBI p.p.non(L.) Benth. in Prodr. 2:425.1825; FBI 2:287.1878; TSDD 31.1896; TNB 55.1929; FA 2:149.1939; FB 1(3):638.1987.

E.pusaetha DC., *subsp. sinohimalensis* Grierson & Long in Note Roy. Bot. Gard. Edinb. 37(2):348.1979.

Nep.: Pangra, Pangro, Takto Khajim.

A large liana. Stem and branches terete, ribbed, yellowish-green glabrous. Stipules 0.4-0.7cm, subulate, leaves bipinnate 15-30cm. Petioles 3.5-5.0cm long, pulvinous 0.2-0.25cm; rachis 8.0-14cm long, brownish tomentose, pinnae 2 pairs, 6.5-11.5cm, leaflets 4.0-7.0x2.0-3.0cm, elliptic to ovate lanceolate, entire, obtuse to shortly acuminate, base oblique to rounded membranous, pubescent at midrib above, glabrous beneath, nerves indistinct, terminal leaflets ending in bifid glabrous tendrils. Unbranched solitary fascicled axillary extraxillary spikes 10-25cm long, flowers

numerous mostly bisexual male flowers on the upper part of the spikes. Pedicels 0.1-0.2cm. calyx 0.05-0.6 cm, campanulate obscurely 5-toothed greenish nearly glabrous; petals free, yellowish - green, 0.3-0.4x0.15-0.2cm, oblong-lanceolate to elliptic, entire, acute, connate at base, glabrous; stamens 10, free, filaments 0.4-0.5cm long, anthers bearing deciduous apical glands; ovary almost sessile; style larger than stamens, stigma concave, upward. Pods 30-100cm long, constricted between seeds, seeds 3.5-5.0cm in diam, suborbicular, compressed upto 0.2 cm thick, reddish brown, smooth-shiny.

Fl.: Feb. - Jun.; Fr. rip.: Oct. -Dec.

Spn. Cited. : DARJEELING : Kalimpong, 1500m, 02.2.1995, *Das et Samanta* 0572; Latpunchor, 950m, 17.5.1995, *Das et Samanta*. 0721.

Loc. Distrib. : DARJEELING : Less common; Below Kurseong, Sevoke, Purbikhola, Guling, River Teesta Valley (150-1600m).

Gen. Distrib. : E. & C. Himalayas, Sikkim; Nepal, Sri Lanka, Malaysia,

Notes : (i) Seeds used for curling dresses and (ii) also seeds used medicinally for the treatment of glandular swellings.

MIMOSA L.

Mimosa himalayana Gamble in KB 1920,4.1920;FB 1(3):639.1987.

M. rubicaulis Lam., Encycl. Meth. 1:20.1783; FBI 2:291.1978 p.p; RBSI 4:107.1910; FEH 1:159.1966 & 3:76.1975; FB 1(3): 639.1987.

M.rubicaulis Lam. *subsp. himalayana* (Gamble) Ohasi, EFPN 2; 126.1979.

Nep.: Arore, Arhrikanra.

Large scrambling shrubs. Stem slender, deeply ribbed. Young stem almost glabrous, old stem tomentose brownish with 2 rows of recurved prickles (c 0.2cm) pale brown. Stipules 0.2-0.3cm, subulate. Leaves bipinnate 10-20cm long; petiole 3.0-5.0 cm; pinnae 6-12 pairs or more leaflets 10-20 pairs on each pinnae; lamina 3.0-0.5x-0.10.15cm, obliquely linear-oblong, entire, obtuse, base oblique, cuneate membranous, sparsely pubescent above, dense beneath. Heads c 1.0cm in diam. solitary or fascicled in the axil of the upper leaves. Peduncles 1.5-2.0cm long, prickly; bracts 0.2-0.3 cm linear - spatulets, minute; pedicels almost sessile, with prickles and hairs, reddish violet or pink. Calyx c.0.05cm, campanulate; petals 0.3x 0.1 cm oblong, entire, subacute, pinkish - white, base rounded, sparsely hairy. Stamens 8-

10, free, filaments suberect, filiform, anthers c 0.1cm, bicelled. Ovary 0.1x0.05 cm, nearly globose; style coiled anticlockwisely; stigma upward, entire, glabrous. Pods 7.0-10x1.2-1.8 cm, falcate, flat, thin, both sutures rimed, acute, base cuneate, nearly glabrous, shiny 0.5-1.0cm stalked; seeds 6-9, 0.6-0.7cm in diam.

Fl.: Sep. - Oct.; Fr. rip.: Nov. - Dec.

Spn. Cited. : DARJEELING : Purbikhola, Sevoke, 450m, 18.11.1994, *Das et Samanta* 0433; N. B. U. Campus, 120m, 02.11.1995. *Das et Samanta* 0905; SIKKIM: Jorethang, 310m, 20.4.1996, *Das et Samanta* 1070.

Loc. Distrib. : DARJEELING : Abundant in foot hill regions (up to 500m); SIKKIM : Less common; Melli, Jorethang, Pedong (upto 900m).

Gen. Distrib. : Himalaya (Kashmir - Bhutan); Afganisthan.

Note : (i) Chr. no. $2n = 26$ (Mehra, P. N. & Hans, A. S. 1969).

MORACEAE Link.

FICUS L.

Ficus hederacea Roxb., Fl. Ind. ed. 2, (3):538.1832; corner in G.Bull.(Sing.)18:18.1960; & 21:58.1965; FEH 1:53.1966; FPK 100.1981; EFPN 3:210.1982;FB 1(1):98.1984; TBRI 50(4):100.1987.

F. fruticosa Wall., cat. 161,n.4501.1831,nom. nud.

F. scandens Roxb., Fl. Ind. ed. 2,(3):536.1832; nom Lam, 1788; FBI 5:526.1888, non Lam. TNB 126.1929.

F. fruticosa Roxb., Fl. Ind. ed. 2,3:533.1832.

Shrubby root climbers. Stem terete, solid, internodes 3.0-5.0cm long, hairy. Stipules 2, 0.5-0.8cm long. ovate, acuminate; petioles 1.0-1.7cm long, sparsely hairy; lamina 3.5-8.0x2.5-4.5cm, ovate-lanceolate or ovate-elliptic, entire, acute to acuminate, coriaceous often with white dotted glands; base rounded, upper surface glabrous or sparsely rugose, densely rugose beneath, nerves 3-from base, laterals, altrnate 5-6pairs. Flowers and fruits not seen.

Spn. Cited. : DARJEELING : Sevoke, 450m, 26.3.1994, *Das et Samanta* 0105; Birch Hill, 2100m, 08.5.1994, *Das et Samanta* 0209; Samsing, 400m, 29.1.1995, *Das et Samanta* 0520.

Loc. Distrib. : DARJEELING : Very Common; Panighata, Kalijhora, Rambi, Peshok, Mangpo, Kalimpong (400-2100m).

Gen. Distrib. : Tropical - temperate, W. & E. Himalayas. India : Meghalaya, Assam, Andaman; Bangladesh, Myanmar, S. China.

MYRSINACEAE R. Br.

EMBELIA Burm.

KEY TO THE SPECIES :

1. Stem hollowed; branches lenticellate; lamina ovate-lanceolate.....*E. floribunda*
 1. Stem solid; branches spinescent; lamina ovate-elliptic.....*E. ribes*.

Embelia floribunda Wall. in Roxb., Fl. Ind. 2:291.1824; FBI 3:514.1882; TSDD 53.1896; TNB 85.1929; FA 3:171.1939; FPK 61.1981; EFPN 3:75.1982; TBRI 50(4):113.1987.

Beng.: Bhaibirrung ; Nep. : Himalchari, Patiamilo

Medium scandent shrub. Stem terete, hollow, brownish-white lenticellate. Petioles 0.5-1.0cm long; lamina 11-22x2.5-4.5cm, ovate-lanceolate, narrowed at both ends, entire shortly caudate to acuminate, base rounded to cuneate, glabrous, nerves slender, distinct. Flowers and fruits not seen.

Fl.: Nov. - Jun.

Spn. Cited. : DARJEELING : Lebung 1850m, 08.5.1994, *Das et Samanta* 0206.

Loc. Distrib. : DARJEELING : Less Common; Rung Dung Khola, Tungsung, below Jalapahar (1700-200m).

Gen. Distrib. : India ; Sri Lanka, Nepal, Bhutan, Tibet Myanmar, Malaysia, and China.

Embelia ribes Burm. f., Fl. Ind. 62,t.23.1768; FBI 3:513.1882; TSDD 53.1896; TNB 85.1929; FEH 1:242.1966; TBRI 50(4):113.1987 (Fig. 3.24).

Beng. : Bhaibirrung; Nep.: Himalchari.

Medium scandent shrub. Stem terete solid, rusty pubescent. Petioles 0.3-1.0cm long with 2 horny upward or curved spines, slightly ribbed upto midrib; lamina 5.5-12x1.7-3.5cm, ovate - elliptic to ovate-lanceolate, dentate to entire, acute to acuminate, base acute to cuneate, both surfaces glabrous except midveins, nerves 15-16 pairs, alternate forming about 80° angle with midrib. Panicle terminal, fascicle; peduncle upto 12 cm long branches 1.0-6.0 cm; pedicel 0.2-0.3cm, rusty brown. Flowers 4-10 in each branch 0.2x0.1cm, white; sepals 5, acute, connate at base,

densely hairy; petals 5, 0.18x0.08cm. Stamens numerous, filaments c 1.5cm, filamentous, anther bithecous; ovary 0.1-0.12 cm ovoid. Fruit 0.3-0.4cm in diam, globose, succulent, with 1-2 seeds.

Fl.: (May).

Spn. Cited. : DARJEELING : Purbikhola, Sevoke bridge, 850m, 18.11.1994, *Das et Samanta* 0418; SIKKIM : Rhenek, 900m, 06.9.1994, *Das et Samanta* 1360; Mangan, 1350m, 26.9.1996, *Das et Samanta* 1507.

Loc. Distrib. : DARJEELING : Very common; Latpunchor, Rambhi (600-1500m); SIKKIM : Common; Pedong, Dikchu, Phodong, (800-1500m).

Gen. Distrib. : India ; Nepal, Bhutan, Sri Lanka, Malaysia, S. China.

Note : (i) Leaves used as fodder for cows and buffaloes.

OLEACEAE Hoff. & Link

JASMINUM L.

Jasminum dispernum Wall. in Roxb., Fl. Ind. ed Carey 1:99.1820; Pl. Asia. Rar. 3:t, 274.1832; FBI 3:602.1832; TSDD 54.1896; TNB 88.1929; Kobuski in J. Ann. Arb. 13:164.1932; FEH 1:251.1966; FPK 63.1981; EFPN 3:80.1982; TBRI 50(4):117.1987 (Photo-4).

Nep.: Hare-Lahara, Irbo-Lahara, Tirpat Lahara.

Medium shrubby sinsitrose twiner. Stem terete or obscurely angled, solid nearly glabrous, internodes upto 18cm long. Stipuls minute, persistent. Leaves 3-4 foliolate; petiole 1.0-2.0cm long, articulate; terminal one larger than lateral; terminal lamina 6.0-11x1.8-7.0cm, ovate to lanceolate, enter, sometimes slightly repand, acuminate, base slightly cordate to rounded, glabrous above, puberulous beneath; lateral lamina slightly smaller, ovate- lanceolate, entire, acuminate cordate, cymes axillary or terminal, paniculate; peduncles 1.0-3.0cm long; bracts minute, linear to ovate; pedicels 0.3-0.6cm long; glabrous; mostly 3 flowered with greenish spotted glands; stamens 5, spreading, filaments 0.3-0.4cm long; anthers 0.6x0.2cm, versatile, 2-celled; ovary planced on a short gynophore 0.2-0.3cx0.1-0.15cm, ovoid, ovules numerous, glabrous, styles 3, 0.3-0.4cm long at maturity cornate and white hairy at base; stigma 3, discoid.

Fl.: Dec. - May.

- Spn. Cited. : DARJEELING : Jalapahar, 2250m, 07.5.1994, *Das et Samanta* 0197; way to Mulkhagra Basti Neora Valley National Park, 2400m, 29.4. 1995, *Das et Samanta* 0647; SIKKIM : Soreng, 1560m, 30.10. 1995, *Das et Samanta* 0889; Fifth Mile, Gangtok, 1720m, 18.11.1995, *Das et Samanta* 0958; Pangthang, 1900m, 20.11.1995, *Das et Samanta* 1033.
- Loc. Distrib. : DARJEELING : Very common; North Point - Lebung, Neoravally National Park (1200-2450m), SIKKIM : Common; Burtuk, Gangtok, Panthang, Pakhyong, (1500-2350m.)
- Gen. Distrib. : India : Himalayas, Assam, Meghalaya, Manipur; China, Thailand.
- Note : (i) Chr. no. $2n = 26$ (Malla, S. B ; Bhattarai. S. *et al.* 1977b)

PAPILIONACEAE R. Br. *nom.cons.* (Fabaceae *nom.alt.*)

KEY TO THE GENERA :

1. Leaves 3-foliolate.....2
1. Leaves pinate with more than 3 leaflets.....10
2. Pods terete.....3
2. Pods flat.....4
3. Plants with no stinging hairs.....*Dysolobium*
3. Plants with stinging hairs on fruits and calyx.....*Mucuna*
4. Plants glabrous; lianous.....5
4. Plants puberulous / densely hairy; herbaceous.....6
5. Petiole 8.0-25.5 cm long.....*Butea*
5. Petiole 5.5-7.0cm long.....*Pueraria* (*P. sikkimensis*)
6. Racemes upto 27 cm long, much hairy; lamina entire or 2-3 lobed.....(*Pueraria phaseoloides*)
6. Racemes 6.0-9.0 cm; always lamina unlobed.....7
7. Standard broadly elliptic.....*Shuteria*
7. Standard oblong.....8
8. Seeds arillate.....*Cajanus*
8. Seeds non-arillate.....9
9. Stipels subulate; stipules linear-lanceolate.....*Dumasia*
9. Stipels linear; stipules semisagittate.....*Vigna*
10. Tendril climbers.....11
10. Twiners.....14
11. Whole leaflets modified into tendril.....12
11. Tendrils are modified upper leaflets only.....13
12. Tendril unbranched.....*Lathyrus aphaca*
12. Tendril much branched.....*Pisum* (some cultivars)
13. Tendril 2-3 fid.....*Vicia*
13. Tendrils more than 3-fid.....*Pisum*

14. Pods winged on one or both sutures.....	<i>Derris</i>
15. Plants lianous.....	<i>Wisteria</i>
15. Plants shrubs.....	16
16. Stamens monadelphous.....	<i>Milletia</i>
16. Stamens diadelphous.....	17
17. Stamens 9, the odd one absent.....	<i>Abrus</i>
17. Stamens (9)+1.....	<i>Dalbergia</i>

ABRUS L.

Abrus pulchellus Wall. [cat.199, n.5819.1831-1832, nom.nud.] ex Thwait.Enum. pl. zeyl. 91.1859; FBI 2:175.1876; TSDD.27.1896;

RBSI 4:105.1910; TNB 49.192; KB 24:246.1970; EFPN 2:103.1979; FPK 25.1981; FA 2: 62. 1982; FB 1(3) : 655. 1987 (Fig. 3.16).

A. fruticosus auct.non.wall.ex Wt. & Arn., Breteler in Blumea 10: 612.1960; FEH 135.1966 & 2 : 61.1971; EFPN 2:103.1979.

Nep. : Maspati- Lahara.

Shrubby slender dextrorse twiner. Stem and branches terete, solid, hairy. Stipule 0.4-0.5cm long, lanceolate, much hairy 0.1-0.15cm long. Leaves paripinnate, 6.0-10cm; leaflets 6-10pairs; petioles 2.5-3.5cm long, pulvinous; petiolule 0.01-0.1cm sessile. Stipule 0.4-0.5cm, subulate, hairy; upper leaflets lamina longer than lower; lamina 2.0-4.0x0.7-1.0cm, oblong-obtuse, entire, mucronate, base rounded, membranous, sparsely appressed white pubescent beneath, glabrous above, midvein distinct, lateral obscure, rachis ending in minute bristles. Racemes axillary or terminal; peduncles 6.0-8.8cm long, acrocent; pedicels 0.3-0.4cm long; sepals 0.3-0.5cm with short broad teeth; petals 1.0-1.2cm long, pinkish; standard 1.2x0.8cm obovate, wings 1.1x0.2cm; keel 1.3x0.35cm, curved and sharply pointed. Stamens diadelphous (9)+1, filaments 0.5-0.6cm, anthers 0.3x0.005cm, bithecous; ovary linear, upward flat; stigma curved papillose. Legumes 5.5-6.0x0.4-0.5cm, oblong, sparsely hairy; seeds 6-12, 0.5x0.3 cm, oblong, compressed, brown with a pale -yellowish, funicle 0.04cm, around subterminal hilum.

Fl.: Aug. - Oct.; Fr. rip.: Nov. - Dec.

Spn. Cited. : DARJEELING : Salgroove, N.B.U. Campus, 120m, 14.10.1994, *Das et Samanta* 0238; Samsing, 400m, 29.1.1995, *Das et Samanta* 0510; SIKKIM : Jorethung, 320m, 29.10.1995, *Das et Samanta* 0807.

Loc. Distrib. : DARJEELING : Rare; Siliguri, Tenth Mile, River Relli, Sevoke (100-700m); SIKKIM : Rare; Rishi and around Jorethang areas (upto 850m).

Gen. Distrib. : India : Darjeeling-Sikkim, Himalayas; Myanmar, Sri Lanka, Malaysia, E. Asia, China, Guinea.

Note : (i) Chr. no. $2n = 22$ (Sobti, S. N. & Singh, S. D. 1961) ; 24 (Sharma, A. & Sharma, A. K. 1967-68, Chaudhuri, R. K. *et al.* 1969).

BUTEA Roxb.

Butea parviflora Roxb., Fl. Ind. 3:248.1832; FT 1:147.1981; FB 1(3):688.1987.

Spatholobus roxburghii Benth. in Miq. Pl. Jungh. 238.1852; FBI 2:193.1876; TSDD 28.1896; TNB 50.1929; FA 2:193.1982.

Nep.: Baldengra, Birali Lahara, Gaunji Lahara.

Very large woody evergreen sinistrorse twiner. Stem much branched, obscurely angled; branches pendent, sparsely hairy, brown. Stipules 0.3-0.4x0.6cm, broadly triangular, deciduous. Leaves trifoliolate, imparipinnate; petioles 6.5-25.5cm long, ribbed, nearly glabrous; petiolule 3.5-5.0cm; terminal lamina 13-20 x 7.0-13cm, broadly ovate-elliptic, oblique, (often variable), entire, acute to shortly acuminate, base cuneate, leathery, glabrous above, sparsely pubescent beneath, especially on veins; laterals asymmetric, midvein of terminal leaflets almost medianly placed but midvein of laterals 1/3 from upper margin; Bracts minute, linear, caducous. Panicles terminal, elongating in a fruit; peduncles 5.0-20cm long, nearly glabrous; pedicels upto 0.3cm; calyx 0.5x0.4cm, campanulate, lobes short, acute, upper two connate, silky velvety; corolla 0.65-1.2cm, creamy-white, standard 0.8-1.0x0.5-0.8cm broadly ovate, larger than keel, emerginate; wings free; keel 0.25-0.5x0.2-0.3cm, slightly straight; androecium diadelphous; ovary stalked, ovule 2, style incurved, stigma papillose. Pods 11-14x2.8-3.0cm, rim 0.2-0.3cm, covered with thick soft brown-velvety hairs; constriction obscure; 1-seeded at the terminal part in an ear like projections, dehiscing from tip.

Fl.: Jul. - Oct.; Fr. rip.: Dec.-Mar.

Spn. Cited. : SIKKIM : Namchi, 800m, 14.2.1995, *Das et Samanta* 0544.

Loc. Distrib. : SIKKIM : Less common; Jorethang-Nayabazar, Legship (300-500m).

Gen. Distrib. : E. & W. Himalayas; Sri Lanka, S.E. Asia, China.

Note : (i) Leaves used as fodder for cow, buffalo and goats.

CAJANUS DC.

Cajanus scarabaeoides Thou, ex R. Grah. in Wall. cat. n.5580; FB 1 (3): 703.1987.

Atylosia scarabaeoides (L.) Benth., FPM 1 (2):369.1918; Bot. Bih. Ori. 3:274.1922; Fl. Rai Durg. & Raj. 91.1985.

Dolichos scarabaeoides L., sp. pl. 726.1753.

Cantherospermum pauciflorum Wt. & Arn., Prodr. 225.1854.

C. scarabaeoides (L.) Baill. in Bull. Soc. L. Paris 1:384.1883; supp. Bih. & Ori. 52.1950.

Biennial herbaceous slender sinistrorse twiner. Stem terete, much branched, finely pubescent. Stipules and stipel minute, linear, caducous. Leaves imparipinately trifoliate; petioles 2.0-2.5cm long, petiolule 0.4-0.6cm, both terete, nearly glabrous; terminal largest than laterals; terminal lamina 3.0-5.0x1.7-2.5cm, ovate, entire, acute, mucronate, base rounded, laterals 2.0-4.0cm, elliptic, entire, mucronate, base cuneate, pubescent both surfaces, pale pubescent beneath, nerves 3, distinct; bracts caducous; corymbs, axillary; peduncles 0.5-1.3cm long; pedicels 0.5-0.6cm long, flowers 1-5; calyx campanulate, teeth 5, unequal 0.5-0.8cm, lanceolate, dense hairy; corolla yellow, standard 0.7-0.9cm obovate, wings 0.6-1.5cm, oblong; keel 0.6x2.5cm, lunate. Stamens 10, diadelphous (9) +1, filament 0.4-0.5cm, anther 0.3-0.5cm, bithecous. Pods 1.5-2.0x0.3-0.5cm, densely appressed, softly brown pubescent, grooves straight. Seeds 3-5, 0.4-0.5x0.2-0.3cm, oblong, dark brownish-purple, glossy, sparsely hairy.

Fl.: Aug. - Oct.; Fr. rip.: Oct.-Apr.

Spn. Distrib. : DARJEELING : N. B. U. Campus, 120m, 29.9.1994, *Das et Samanta* 0329; SIKKIM : Jorethang, 320m, 28.1.1995, *Das et Samanta* 0842.

Loc. Distrib. : DARJEELING : Abundant in foot-hill regions (upto 300m); SIKKIM : Less common; Jorethang - Nayabazar, Soreng, Tendong (300 - 2700m).

Gen. Distrib. : W. Himalayas; Malaysia, China, Madagascar, Africa (introduced).

Notes : (i) Whole plant used as fodder for cow, goat and buffaloes.
(ii)Chr. no. $2n = 22$ (Sanjappa, M. 1978).

DALBERGIA L. f.**KEY TO THE SPECIES :**

1. Twiner dextrorsely, often forming hooks with 6.0-10cm diam of loop.....*D. volubilis*
1. Twine sinistrorsely, branches never form any hook.....2
2. Leaflets 5-7, much larger, terminal one c 9.0x4.5cm; pods elliptic falcate.....*D. rimosa*.
2. Leaflets many, 10-30; terminal one never larger than c5.0x1.5cm; pods oblong elliptic.....3
3. Stipules 0.04-0.05cm long, lanceolate; petioles 0.5-0.6cm long; young stem and leaf rachis densely villose.....*D. pinnata*.
3. Stipules 0.5-0.8cm long, ovate-oblong; petioles 2.0-4.0cm long; young stem and leaf rachis glabrous.....*D. stipulacea*.

Dalbergia pinnata (Lour.) Prain in ABCG 10 (1): 44.1904; Merr. in Philip. J. Sci. Bot. 5:96.1910.& Enum.2:296.1923 & Trans. Amre. Philip. Soc. n. s.24:205.1935; TNB 52.1929; EFPN 2:114.1979; FB 1(3):653.1987.

Derris pinnata Lour., Fl. Coch.432.1790.

Dalbergia tamarandifolia Roxb., Fl. Ind. 3:333.1832; FBI 2:234.1876; FEH 2:64.1971; TSDD 29.1896; BP 1:411.1981; FA 2:105.1982. (Rep.).

Nep. : Siris - Lahara.

Large sinistrorse twiner. Stem terete, much branched, branches loosely twining; covered with dense brown pubescence. Stipule 0.04-0.05cm, lanceolate, deciduous. Leaves 5.0-12cm, imparipinnate; petioles 0.5-0.6cm long, terete, much hairy; petiolule c 0.05cm; leaflets 12-28, middle lamina larger than below; lamina 1.5-1.9x3.0-5.0cm, oblong, entire, obtuse - emarginate, base oblique, membranous, both surfaces pubescent, sparse above, dense beneath, nerves obscure in young, strong when matures. Bracts and bracteoles 0.11-0.15cm, ovate, nearly glabrous. Panicles axillary 2.1-3.2cm in diam. brown pubescent. Calyx 0.3-0.4cm, campanulate, a pair of bracteoles at base, dense pubescent, corolla milky white, clawed upto 0.3cm, standard orbicular, deflexed, wings broader and keel auricled with long slender claws. Stanens 9-10, monadelphous. Pods 3.5-6.9x1.1-1.3cm long, oblong stalked, brown, nearly glabrous, 1-3 seeded.

Fl.: Mar - July; Fr. rip.; Oct. - Dec.

Spn. Cited. : DARJEELING : Latpunchor, 1000m, 17.5.1995, *Das et Samanta* 0778.

Loc. Distrib. : DARJEELING : Less common; Godak - Todey, Peshok, Latpunchor, Thosum, Guling, Kurseong (1500-3000m).

Gen. Distrib. : E. Himalayas. India: Sikkim, Meghalaya; Nepal, Bhutan, Malaysia, Asia, China.

Dalbergia rimosa Roxb., Fl. Ind. ed. 2(3): 233.1832; FBI 2:232.1876; ABGC 10:38,t.11.1904; FEH 2:64.1971; FB 1(3):653.1987.

Nep. : Tatebiri.

Stout shrubby sinistrorse twiner. Stem terete, solid, sparsely hairy, branches brownish hairy. Leaves exstipulate, 12-20cm, oddly pinnate. Petioles 2.5 - 3.5cm long, pulvinous, terete brownish condensed hairy at base; petiolule of lateral leaflets 0.3-0.6cm, terminal 1.5-1.7cm; terminal one larger than laterals, lateral lamina 4.0-7.0x2.5-3.5cm, ovate, entire, mucronate, base cuneate; terminal lamina 8.0-10x3.5-4.5cm, ovate-obovate, entire, mucronate shiny above, pubescent both surfaces, median nerve distinct, laterals 18-28, parallel. Bracts c 0.08cm, obovate, entire, acute. Panicles axillary and terminal; peduncle 7.0-14 cm; pedicels short, flowers 0.4x0.2cm, scented; Sepals 5, united, c 0.2cm, included teeth, subequal, obtuse to subacute, ciliate, sparsely hairy; petals c 0.3cm, yellowish; wings c 0.25cm, keeled c 0.22cm; Stamens (9) +1 in a bundle, unequal in length, filament upto 0.2cm, anther c 0.01cm, bithecous; ovary 0.33x0.07cm, elliptic - falcate. Seeds 1 or 2, 0.04x0.02cm.

Fl.: (May); Fr. rip.: (Oct.).

Spn. Cited. : DARJEELING: Latpunchor, 1050m, 17.5.1995. *Das et Samanta* 0733.

Loc. Distrib. : DARJEELING : Less common; Kalijhora-Latpunchor (upto 1200m).

Gen. Distrib. : S & E Himalayas. India: Assam, Meghalaya; Myanmar, China, Thailand.

***Dalbergia stipulacea* Roxb.**, Hort. Beng. 53.1814; Fl. Ind. ed. 23: 233.1832; FBI 2:237.1876; JASB 66(2):451.1897; FEH 1: 148.1966 & 2: 64.1971 & 3: 62.1975; EFPN 2: 115.1979; FB 1(3) : 653.1987.

Nep.: Lahara siris.

Large shrubby sinistrorse twiner. Stem terete, ribbed when dry, shiny glabrous. Stipule 0.5-0.8cm long, ovate-oblong, deciduous. Leaves 8.0-20cm, unevenly paripinnate; petioles 2.0-4.0cm long; petiolule 0.2-0.3cm long; lamina of upper leaflets larger than lower; upper leaflet lamina 3.5-5.0x0.8-1.8cm, ovate - oblong, entire, obtuse,

base rounded or cuneate, glabrous above, appressed pubescent beneath; lower lamina 2.3-3.2x1.0-0.8cm. Flowers not seen. Pods 6.5-8.0x2.0-3.5cm, oblong - elliptic, glabrous; 1-seeded.

Fr. rip.: Apr. - Jun.

Spn. Cited. : DARJEELING : Ryang 550m, 17.3.1995, *Das et Samanta* 0565.

Loc. Distrib. : DARJEELING : Common; Teesta Valley-Ryang, Yangmakum, Samsing, Garubathan, Rangeet Valley (upto 1500m).

Gen. Distrib. : E. Himalaya. India: Sikkim, Assam, Meghalaya; Bhutan, Asia, Malaysia, China, Thailand.

Dalbergia volubilis Roxb., Cor. pl. 2: 43, t. 191. 1805; Fl. Ind. ed, 2(3): 231. 1832; FBI 2: 235. 1876; EFPN 2: 115. 1979; FB 1(3): 655. 1987 (Photo-27).

Large woody dextrorse twiner often forming hooks of 6.0-10cm diam. Stem terete, solid, branched, internodes 6.0-8.0cm long, shiny, sparsely hairy. Leaves 8.0-13cm, unevenly paripinnate; pinnae 10-13; petioles 0.6-0.8cm, terete sparsely hairy; petiolules 0.1-0.15cm; lamina of lower leaflet 1.5-4.5x1.0-1.75cm, ovate - oblong, entire, obtuse, base rounded or cuneate blackish-green above, yellowish-green beneath, nearly glabrous midvein minute prominent than laterals; lamina of upper leaflets 1.2-2.0x0.7-1.0cm, puberulous throughout. Panicles 2.0-3.0cm, terminal or axillary. Calyx teeth 0.2-0.3cm; petals purplish, clawed 0.15-0.2cm; standard 0.4-0.5cm, roundish; wings and keel 0.4-0.5cm. Pods 4.0-8.0cm long, oblong-elliptic, 1-2 seeded.

Fl.: Jan. - Mar.; Fr. rip.: Apr. - Jun.

Spn. Cited. : DARJEELING : Tenth Mile, Salugara, 130m, 28.1.1995, *Das et Samanta* 0503; Sevoke, 450m, 21.2.1996, *Das et Samanta* 1063.

Loc. Distrib. : DARJEELING : Less common; Kalijhora, Rambhi, Teesta Valley, Bagrakote (upto 500m).

Gen. Distrib. : c and E. Himalayas (Nepal - Sikkim); Myanmar, Sri Lanka, E. India.

DERRIS Lour.**KEY TO THE SPECIES :**

1. Panicals 7.0-15cm long; leaflets 5-9, lamina oblong to obovate-oblong, long cuspidate; standard with 2 callose thickening at base.....*D. cuneifolia*.
 1. Panicals 15-20cm long; leaflets 7-9, lamina ovate to ovate oblong, shortly cuspidate; standard with out cellose thickning at base*D. ferruginea*.

Derris cuneifolia Benth. *longipedicellata* Thothathri in BB59 3(2):19tt.7.1961; EFPN 2:115.1979; FFI 8:15.1980;FB 1(3):657.1987.

Nep.: Baiari

Shrubby twiner. Branches terete, slightly ribbed, puberulous. Leaves upto 30 cm long; leaflets 5-9, petiolue short; lamina 6.5-10x30-5.0cm. ovate-elliptic, entire, shortly acuminate, base cuneate, minutely puberulous beneath at young. Flowers and fruits not seen.

Spn. Cited. : DARJEELING : Mangpo, 1300m, 13.12.1994, *Das et Samanta* 0468.

Loc. Distrib. : DARJEELING : Less common ; Sevoke, Rambi, Mangpo (upto 1300m); SIKKIM : Less common in foot-hill region (upto 500m).

Gen. Distrib. : E. Himalaya (Nepal-Sikkim).

Derris ferruginea (Roxb.) Benth. in Miq. pl. Jungh 1:252. 1852; FBI 2:245.1878; FFI 8:18.1980; FB 1(3) : 657. 1987.

Robinia ferruginea Roxb. Fl.Ind. 3:329.1832.

Woody twiner. Stem terete, solid, slightly ribbed, glabrous. Leaves 17-24.5 cm long, brown pubescent; leaflets 7-9; petioles 2.5-6.5 cm long; terminal petiolule upto 2.0 cm long, lamina of terminal leaflets 7.0-10x3.0-4.2 cm, obovate-elliptic, entire, caudate, base cuneate, petiolule of lateral leaflets 0.2-0.35cm; lamina 5.0-6.5x2.5-3.6 cm, obovate-elliptic, entire, caudate, base cuneate, both surfaces glabrous. Flowers and fruits not seen here.

Spn. Cited. : DARJEELING : Bamanpokri, 200m, 03.5.1997 *Das et Samanta* 1634.

Loc. Distrib. : DARJELEING : Less common; Sukna, Bhuttabari, Mangpo (up to 1300m).

Gen. Distrib. : E. Himalaya (Darjeeling-Sikkim); Bangladesh, Myanmar.

DUMASIA DC.

Dumasia villosa DC. in Ann.Sci. Nat.Ser. 4 (1):257,t, 44 & Prodr. 2:241.1825; Mem. Legum. 257.t.44.1826; FBI :183.1876; RBSI 4:105.1910; FEH 156.1966 & 3:63.1975; EFPN 2:120.1979; FA 2:64.1982; FB 1(3): 696.1987; TBRI 50(4): 112.1987.

D. congesta Grah. [in wall. cat. 190.n.5524.1831-1832, nom.nud.] ex Whight & Arn. Prodr; Fl. Ind. Ori. 206.1834.

Perennial herbaceous sinistrorse twiner. Stem terete, slender with greyish hairs. Stipules 0.5-0.6cm long, linear-lanceolate; stipels c 0.2cm, subulate. Leaves trifoliolate; petioles 1.2-5.8cm long; terminal lamina 3.0-5.0x1.0-3.5cm, ovate, entire, mucronate, base cuneate, membranous, densely greyish pubescent below; lamina of lateral leaflets 2.0-4.5x1.3-3.0cm ovate-broadly elliptic, both surfaces villous; midvein prominent, laterals obscure. Racemes 3.0-6.0cm long lax, axillary in pairs; flowers 12-22, subsessile; bracts and bracteols 0.3-0.4x0.2cm, subulate, setaceous, obliquely truncate with adpressed hairs; corolla 0.5x0.2cm, yellow, standard and wings 0.6-0.7x0.2-0.3cm, oblong each; keel 0.4-0.5x0.25-0.3cm oblique, appressed pubescent. Stamens diadelphous (9)+1, filaments erect, yellow. Ovary linear; style elongated, flattened above, stigma capitate. Pods 1.5-2.5x0.2-0.3cm, flat, velvety appressed hairs. Seeds 3-4, blue black, glaucous.

Fl.: Sep. - Oct.; Fr. rip.: Sep. - Nov.

Spn. Cited. : DARJEELING : Tindharia, 940m, 20.6.1994, *Das et Samanta* 0281; Mangpo, 1300m. 13.12.1994, *Das et Samanta* 0470; Samsing 400m, 29.1.1995, *Das et Samanta* 0509 ; SIKKIM : Soreng, 1520m, 30.10.1995, *Das et Samanta* 0882; Deorali, 1450m, 19.11.1995, *Das et Samanta* 0982; Pelling, 1900m, 23.5.1996, *Das et Samanta* 1163.

Loc. Distrib. : DARJEELING : Very common; below Kurseong, Takdah, Kafer. Lava, Ryang. Ging (350 -2100m); SIKKIM : Common; Soreng, Gyalshing, Namchi, Rhenek (900-2000m).

Gen. Distrib. : India; E Himalayas; Myanmar, Sri Lanka, Malaysia, China, Madagascar, S. America and Thailand. Africa.

Notes : (i) Whole plant used as fodder for cows and goats.
(ii) Chr. no. $2n = 20$ (Bir, S. S. & kumari, S. 1978a).

DYSOLOBIUM Prain

Dysolobium grande Prain in JASB 66:427.1897; TNB 50.1929; FA 2:83.1938; BP 1:384.1981; FB 1(3): 697.1987(Photo-7).

Phaseolus velutinus Baker in Hk. FBI 2:204.1876.

Beng.: Janglimotor, Patteil.

Large shrubby sinistrorse twiner. Stem terete, solid, branched, shallowly ridged, internodes upto 20cm long, densely greyish brown pubescent throughout; nodes swollen, latex absent. Stipule 0.5-0.65cm, linear-lanceolate. Leaves 3-foliolate; petiole 2.5-7-8cm long, terete, ribbed; terminal petiolule 2.0-2.5cm long; lateral 0.3-0.4cm long, base swollen, dense hairy; lamina of terminal leaflet 11-16.5x4.0-6.5cm, entire, acute to slightly acuminate, base truncate; lateral 7.0-13x3.5-6.5cm, glabrous except mains veins and lateral veins; distinctly 3-nerved, main veins densely hairy than lateral veins. Racemes, flowers many in long peduncle. Calyx lobes 4, lower lobe longer than upper; petals reddish, clawed, longer than sepals; standard 2.0-2.5cm, broadly orbicular, wings recurved, keel strongly incurved; style bearded lower to apex; Pods 15x2.0cm, cylindric-terete, dense brownly tomentose; ridge septate, dehiscence by shrinkage of valves; seeds 4-8, flat, 0.6cm diam, greyish brown, hilum rounded, rim like aril.

Fl.: Feb. - May; Fr. rip.: May - Jun.

Spn. Cited. : DARJEELING L : Bamanpokri, 200, 14.1.1995, *Das et Samanta* 0485.

Loc. Distrib. : DARJEELING : Less common; Found only arround Bamanpokri areas. (upto 300m).

Gen. Distrib. : Endemic to E. Himalayas (Darjeeling - Sikkim).

***Lathyrus aphaca* L.**, Sp. pl. ed, 1, 729.1753; FBI 2:176.1876; FEH 158.1966; EFPN 2:123.1979.

Beng.: Janjlimotor, Patteil.

Annual herbaceous climber. Tendril simple, nearly glabrous. Stem slender, much branched, glabrous. Stipules in pairs, appressed to stem, leafy, entire, truncate, hastate (0.4-1.9x3.0-4.6cm), smooth; leaflets aborted, modified into tendril; peduncle larger than stipules. Petals white. Pod oblong, 4-6 seeded.

Fl.: Feb. - Apr.

Spn. Cited. : DARJEELING : St. Mary's Hill, Kurseong, 1550m, 20.3.1983, A. *P Das* 1256.

Loc. Distrib. : DARJEELING : Rare; Ging, Singtam, NBU Campus (upto 1800m).

Gen. Distrib. : E.Himalayas; Europe, America and W. Asia.

Note : (i) Chr. no. $2n = 14$ (Bir, S. S. & Sharma, A. K. 1980b); 28 (Singh, M. K. & Singh, U. 1969).

MILLETIA Wt. & Arn.

KEY TO THE SPECIES :

1. Pods nearly glabrous.....*M. pulchra*
 1. Pods tomentose.....2
 2. Leaves 3-5 foliolate; standard ovate; petals yellowish..... *M. cinerea*
 2. Leaves 7-9 foliolate; standard obovate; petals crimson.....*M. extensa*

Milletia cineria Benth. Pl. Jungh.249.1853; FBI 2:106.1876; TSDD 26.1896; TNB 47.1929; FEH 1:159.1966 & 3:67.1975; EFPN 2:125.1979; BP 1:406.1981; FA 2:28.1982; FB 1(3):658.1987 (Photo-15)

Nep. : Mantiorrik, Maukap-rik.

Large woody shrubby sinistrorre twiner. Stipule 0.4-0.6cm, subulate, persistent greyish hairy. Leaves 11-21cm, 3-5 foliolate; petioles 3.5-5.5cm long, terete, swollen base, sparsely hairy but condensed at base; petiolules 0.2-0.5cm long, ribbed, hairy; lamina of terminal leaflets 4.0-12x4.0-5.0cm, elliptic - obovate, entire, shortly acuminate, base rounded, membranous, above glabrous, sparsely pubescent on veins; lamina of lateral leaflet smaller towards base than terminal. Peduncle upto 17cm long, pubescent throughout, mostly racemes but flowers in terminal, branched panicle; flowers violet 1.5x1.0cm; pedicels c 0.3cm long, terete; calyx lobes 5, 5.0.5x0.2cm, velvety hairy throughout; petals crimson; standard 1.2x0.9cm, broadly ovate, above glabrous, densely silky beneath; wings 0.6x0.3cm, obovate; keel 0.1x0.03cm, nearly glabrous; stamens monadelphous, filaments c 0.7cm, curved, glabrous. Anther c 0.1cm, base united, hairy. Ovary flat, c 1.0cm, stigma curved. Pods 12x1.8cm flat, thick, 1.3-1.5cm, velvety torulose.

Fl.: May - Jun.; Fr. rip.: Sep. - Jan.

Spn. Cited. : DARJEELING : Latpunchor, 860m, 17.5.1995, *Das et Samanta* 0767.

Loc. Distrib. : DARJEELING : Rare; Lebong, Ging, Latpunchor, Birrik, Singla, Sukna (132 - 1200m).

Gen. Distrib. : Himalayas (Nepal - Bhutan). India: Assam; Myanmar, W. China.

- Notes : (i) Leaves used as fodder for cows and buffaloes.
 (ii) Chr.no. 2n = 16 (Mehra, P. N. & Hans, A. S. 1969, 1971)

Milletia extensa (Benth.) Baker FBI 2:109.1876; FEPN 2: 215.1979; FB 1(3): 658.1987.

Otosema extensa Benth. in Miq., pl. Jungh. 249.1852.

Milletia auriculata Baker ex Brandis, Fl. Ind. 138. 1874; FBI 2:108.1876; TSDD 26.1896; Brandis, Ind. Tr. 220.1906; TNB 26.1929; FEH 1:158.1966 & 3: 67.1975; BP 1: 407.1981; FA 2:29.1982; FB 1(3): 658.1987.

Nep.: Kurku.

Large stout woody sinistrorse twiner. Stem terete, glabrous blackish brown, branches showy. Exstipulate; stipel 0.1- 0.2cm, subulate. Leaves 12-26cm, 7-9 foliolates, mostly 7 foliates; petioles 8.0-11cm long, obscurely angled, base swollen c 0.2cm in diam, pubescent; terminal petiolule 2.0-2.5cm, lateral 0.2- 0.5cm, both articulated, terminal articulation 1/3 of the length, densely pubescent; lamina 8.0-16x4.0 - 8.0cm, obovate-oblong, entire, subacute to shortly acuminate, base rounded, membranous, pubescent much above, less beneath mostly on veins, midribs prominent, lateral veins 6-10 pairs. Racemes 11-15cm, axillary in clustred; peduncle 5.5-18cm long; pedicel 0.1-0.2cm long, terete, both densely pubescent throughout; flowers 0.6x0.3cm, yellowish-white; calyx 0.3x0.2cm, cupshaped, teeth short, dense hairy, petals yellowish-green, standard 0.8-1.2cm, suborbicular, 2-lobed at apex, wings and keel longer than standard, dense hairy althrough. Stamens 10 in clustered; filaments 0.2-0.3cm, erect; anther c 0.05cm, bithecous; ovary flat c 0.3cm, covered with matted hairs. Style c 0.1cm, stigma c 0.05cm, papilose. Pod compresed 10-15cm long; woody, densely brown tometoses. Seeds mostly 4-6 or 8, 1.5x1.0 cm, broadly elliptic, deep brown smooth.

Fl.: Apr. - Jun.; Fr. rip.: Nov. - Feb.

Spn. Cited. : DARJEELING : Sukna, 132m, 24.4.1994, *Das et Samanta* 0220; Baikunthapur Forest, 150m, 11.11.1995, *Das et Samanta* 0928.

Loc. Distrib. : DARJEELING : Less common; Tenth Mile-Sukna, Guling, Kalijhora, Rangpo, Goke (upto 500m).

Gen. Distrib. : Himalayas (Kashmir - Bhutan); China.

Notes : (i) Leaves Used as fodder for cows and buffaloes.

Milletia pulchra (Benth.) Kurz. JASB 42.69.1873; Pegu Report B, 44.1875; FBI 2:104.1876; FPK 26.1981; FA 2:25.1982.

Mundulea pulchra Benth. in Miq., pl. Jungh. 248.1852.

Nep.: Kurkus.

Large lianas, branched, glabrous. Petioles short; lamina 5.0-7.5x0.2-2.1cm, ovate - elliptic, entire, minutely serrate, caudate, base cuneate, membranous, glabrous both surfaces, above brown, below yellowish. Racemes pendulous; flower pinkish, petals pink, standard glabrous; stamens monadelphous.

Fl.: May - Jun.

Spn. Cited. : DARJEELING : Behind Darjeeling Govt. College (Birch Hill), 2100m, 03.5.1981, A. P. Das 0437.

Loc. Distrib. : DARJEELING : Rare; Found around Birch Hill areas (upto 2350m).

Gen. Distrib. : E. Himalayas; India; Meghalaya, Assam; Myanmar and Philippines.

MUCUNA Adans.

KEY TO THE SPECIES :

1. Large liana; stem almost glabrous; seeds 8-15; pods 25-4cm long..*M. macrocarpa*.
1. Annual shrubby twiner; seeds 2-6; pods 5.0-14cm long.....2
2. Stem densely strigose; stipules c 1.5 cm, lanceolate; corolla 5.0-7.0 cm long; calyx tube 1.0-1.5 cm long.....*M. nigricans*
2. Stem almost glabrous, stipules c 0.4cm, linear-needle shaped; corolla c 0.5 cm; calyx tube 0.5-0.7 cm long*M. prurita*.

Mucuna macrocarpa Wall., Pl. As. Rar. 1:41, t. 47.1830; FBI 2:186.1876; TSDD 27.1896; TNB 49.1929; FEH 2: 67.1971; EFPN 2:126.1979; FPK 27.1981; FA 2:67.1982; 1987. FB 1(3): 686.1987.

Nep. : Baldengra.

Large woody dextrorse twiner. Branches terete, slender. Stipule small, caducous. Leaves trifoliate; petioles 10-13cm long, glabrous. Terminal leaflets largest; lamina 11-20x5.5-8.7cm, ovate, entire, cuspidate, rounded; lateral lamina 9.0-10x3.5-5.0cm, broadly elliptic, entire, obtuse or subacute, base rounded, subcoriaceous, appressed pubescent beneath; midvein, medianly placed, lateral 1/3 from the upper margin, lateral nerves 5-7 pairs. Racemes in axillary fascicles; peduncles up to 15cm; calyx 1.0-1.5cm long, teeth 0.2-0.5cm, with appressed brown irritating bristles; corolla

5.0-8.0cm, greenish-white; standard c 3.0cm, greenish white, ciliate near apex, wings 4.0-6.0cm, dark purple, ciliate apex; keel 4.0-5.0cm, greenish purple. Stamens 10, diadelphous. Pods 25-40 cm, woody, constricted. Seeds 8-15 discoid, black.

Fl.: Apr. - Jul.; Fr. rip.: Aug. - Sep.

Spn. Cited. : DARJEELING L: Birch Hill. 2100m, 08.5.1994, *Das et Samanta* 0205; Neora Valley National Park 2340m, 01.5.1995, *Das et Samanta* 0676; Latpunchor, 1200m, 17.5.1995, *Das et Samanta* 0762; SIKKIM : Soreng, 1560m, 30.10.1995, *Das et Samanta* 0881; Fifth Mile, Gangtok, 1700m, 18.11.1995, *Das et Samanta* 0958; Pangthang, 1910m, 20.11.1995, *Das et Samanta* 1022.

Loc. Distrib. : DARJEELING : Less common; Rimbick, Birch Hill, Neora Valley National Park, Lava, Sukiapokhari (1800 - 2450m); SIKKIM : Less common; Gangtok - Pangthang (1500 - 2000m).

Gen. Distrib. : E. Himalayas, Meghalaya, Nepal - Bhutan, S. E. Asia, China and Japan.

Mucuna nigricans (Lour.) Staud. Nom. Bot. "ed.2", (2):163.1841; FEH 1:160.1966 & EFPN 2:126.1979; Bot. Mag. Tokyo 94:100.1981; FPK 27.1981; FB 1(3) : 686.1987 (Photo-55).

Citta nigricans Lour., Fl. Cochinch. 456.1790.

Mucuna imbricata DC., Prodr. 2:406.1825; FBI 2:185.1876; TSDD 27.1896; TNB 49.1929; FA 2:66.1982.

Mucuna nigricans (L.) DC., Prodr.2: 405.1885; sensu FBI 2:187.1876, p. p.; TSDD 27.1896; RBSI 4:105.1910; TNB 49.1929; FHD 259.1976; EFPN 2: 126.1979; BP 1: 400. 1981; FB1 (3):687.1987.

Nep.: Baldengra, Kaoso.

Large woody sinistrorse twiner. Branches slender, glabrescent, Leaves 2.5x2.0cm, Leaflets 3, lamina of terminal leaflets 9.0-14x4.5-9.5cm, entire, acute-mucronate, base rounded, glabrous above, few appressed grey brown hair beneath. Racemes in axillary fascicles; calyx tube 1.0-1.5cm, teeth 0.6-1.2cm, hairy with irritating bristles; corolla 5.0-7.0cm, blackish-purple; standard 3.0-5.0cm, wings and keel 5.0-5.5cm, each. Pods 14x5.0cm, oblong, suture with simple, oblique lamellae, covered with profuse deciduous, irritating blackish brown bristles; 2-4 seeded, smooth, grey with blackish striations.

Fl.: Jun. - Aug.; Fr. rip.: Dec.-Apr.

- Spn. Distrib. : SIKKIM : Karfet Forest, Jorethang, 310m, 28.10.1995, *Das et Samanta* 0801; Mangan, 1350m, 26.9.1996, *Das et Samanta* 1516.
- Loc. Distrib. : SIKKIM Rare; Jorethang, Nayabazar, Singhik (300 - 1500m).
- Gen. Distrib. : E. Himalayas, (Sikkim, Nepal - Bhutan), S.E. Asia, Malaysia, China.

Mucuna prurita Hook., Bot. Misc. 2:348.1830 nom. superfl; FPM 356.1918.

Beng. : Alkushi ; Nep. : Kaochir, Kasso.

Annual sinistrorse twiner. Stem slender, terete with appressed hairs, glabrescent when mature; Stipule c 0.4cm, linear-needleshaped. Leaves 3-foliolate, middle smallest than laterals; middle petiole 4.0-8.0cm long; petiolule 0.4-1.9cm long; middle lamina 4.0-7.0x2.5-3.4cm, ovoid, entire, acute, base rounded, membranous, whitish-green, glabrescent above with fine grey silky pubescent beneath; midvein 1/3 from lower margin; lateral lamina 9.0-11x5.0-6.5cm, rhomboid. Racemes; peduncles 15-30cm long, drooping, pedicels 0.1-0.5cm long; calyx tube 0.5-0.7cm, appressed silvery pubescent intermingled with some longer fine brownish irritating bristles; corolla 0.4-0.5x0.1-0.2cm purplish; stamens 0.2x0.1cm. Pods 5.6-7.8x0.8-1.5cm terete. with irritating brownish bristles, 0.2-0.3cm, long, 4-6 compartments. Seeds 4-6, 0.76-0.1.35x0.85cm, oblong-ellipsoid, blackish, smooth whitish axil surrounds the hilum.

Fl.: Aug. - Sep.; Fr. rip.: Nov. - Jan.

- Spn. Cited. : DARJEELING : N.B.U. Campus. 120m. 02.11.1995, *Das et Samanta* 0904.
- Loc. Distrib. : DARJEELING : Bamanpokri, Paglajhora, Singla (upto 550m).
- Gen. Distrib. : Subtropical Himalaya, Myanmar, Sri Lanka, Malaysia, S.E. Asia.
- Note : (i) Chr. no. $2n = 22$ (Bir, S. S. & Kumari, S. 1978b); (Lackey , J. A. 1980).

PUERARIA DC.**KEY TO THE SPECIES :**

1. Large shrubby sinistrose twiner (almost lianous); leafless during flowering; stipel obscure or missing.....*P. sikkimensis*
1. Herbaceous dextrorse twiner with annual stem; in leafy plant flowers; stipel distinct.....2
2. Peduncle c 15 cm long; leaflets much larger; terminal leaflet upto 11x10cm, margins entire to wavy to sinuate.....*P. phaseoloides* var. *subspicata*
2. Peduncle upto 8.0 cm long; leaflets unlobed ...*P. phaseoloides* var. *phaseoloides*.

Pueraria phaseoloides (Roxb.) Benth. in Journ. Lin. Soc.Beng. 9:154.1867; FBI 2: 199.1876; TNB 50.1929; EFPN 2:128.1979; FA 2:82.1982; FB 1(3): 693.1987(Fig.3.2)

Dolichos phaseoloides Roxb., Fl. Ind. 2(3):316.1832.

var. *phaseoloides*

Herbaceous pendent sinistrose twiner. Stem terete, solid, internodes 7.0-13cm long, brown hairy. Stipules 0.2-0.25cm long, subulate; stipel 0.4-0.6cm. Leaves 5.5-8.5cm, linear-lanceolate, trifoliate; petiole 2.5-5.0cm long, hairy; petiolule of terminal leaflets 1.3-1.5cm long; lamina of terminal leaflets 3.5-4.3x2.5-4.5cm, obovate, entire., acute, cuneate hairy on both surfaces, nerves 4-6 pairs, alternate; lamina of lateral leaflets 3.0-4.1cm, ovate-rhomboidal. Racemes; calyx 0.6-0.8cm, divided at middle; teeth terminate into bristles, appressed hairy; petals 1.2-2.0cm long, purple. Pods 4.5-12x0.15-0.3cm, appressed hairy, 10-20 seeded. Seeds smooth.

Fl.: Sep. - Oct.; Fr. rip.: (Nov.)

Spn. Cited. : DARJEELING : Sukna, 132m, 24.4.1994, *Das et Samanta* 0239; Salgroove, N.B.U. Campus, 120m, 29.9.1994, *Das et Samanta* 0327.

Loc. Distrib. : DARJEELING : Abundant; Jaldhaka, River Teesta Valley, Samsing, Jholung (upto 450m).

Gen. Distrib. : Foot Hills of E. Himalayas. India; Nepal - Bhutan, Myanmar, Malaysia, Thailand.

Notes : (i) Whole plant used as fodder for cows and goats.
(ii) Chr. no. $2n = 22$ (Larsen, K. 1971).

var. *subspicata* (Benth.) Van der Maesen [cf. FB 1(3):693.1987]

Pueraria subspicata Benth. in J. Linn. so. 9:125.1867; FBI 2:199.1876.

Large herbaceous dextrorse twiner. Stem 4 ribbed, covered with soft brown hirsute hairs. Stipule 0.5-0.6 cm, ovate, basifixed with long hairs; stipels 0.3-0.5cm, linear-lanceolate, hairy. Leaflets 3-foliolate. Petioles 8.8-12 cm long, ribbed, with brownish hairs; petiolule of two lateral leaflets shorter than middle one; lamina 7.0-11x7.0-10cm, broadly ovate-elliptic (mostly variable in size and shapes, deeply lobed), entire, acute to acuminate, base cuneate, membranous, above green with bristly hairs, beneath with grey and densely matted hairs, bracts and bracteoles 0.5x0.2cm, lanceolate, nerves many, Racemes; peduncles upto 27cm long, ribbed, with appressed hirsute hairs; pedicels c 0.3cm, Flowers 3.3x1.5cm; calyx 1.4x0.3cm, toothed, covered with bristly hairs; corolla larger than calyx, pink; standard 2.7x2.5cm, rounded, with spurred; wings 4.0x2.1cm, oblong; keel 2.5x0.8cm, oblanceolate. Stamens in whorls; filaments erect, slightly curved c 0.3cm; anther c 0.1cm, yellow; ovary 2.3x0.15cm, hairy. Pods 4.0-12x0.8-1.0cm, basically larger than typical variety, appressed pubescent throughout. Seeds 10-20, appressed pubescent.

Fl. (Nov.); Fr. rip.: (Dec.)

Spn. Cited. : DARJEELING : Salgroove, N.B.U. Campus, 120m, 11.2.1995, *Das et Samanta*, 0900; Deepchak, Kalimpong. 1260m, 04.9.1996, *Das et Samanta* 1301; SIKKIM: Rhenek. 807m, 05.9.1996, *Das et Samanta* 1300.

Loc. Distrib. : DARJEELING : Less common; Found only at Kalimpong and N.B.U. Campus areas (upto 1350m); areas (upto 1350m); SIKKIM : Less common; Found only Rishi, & areas (upto 1400m).

Gen. Distrib. : Tropical Himalayas; India: Sikkim; Myanmar, Malaysia
China.

Pueraria sikkimensis Prain. in JASB. 66:419.1879; FB 1(3): 691.1987.

Nep.: Birali Lahara.

Exclusively large woody liana, twining sinistrorsely. Leafless during flowering. Stem terete, solid, internodes 10-12cm long, shiny. Leaves 15-20cm, 3-foliolate, terminal larger than laterals. Petioles 5.5-7.0cm long; petiolule 0.5-1.0cm long, upper part swollen 0.05x0.02cm, blackish; lamina of terminal leaflets 14.5-19x8-10.7cm, broadly ovate, entire, acute - shortly caudate, base rounded, membranous, sparsely pubescent; nerves 8 pairs; lamina of lateral leaflets 12-16x7.5-10cm, oblong-elliptic, entire, shortly caudate, base cuneate 6-8 pairs of nerves. Racemes; peduncle 10-

18cm long, extended upto 30cm, brownish pubescent; pedicel c 0.2cm; calyx, 0.45-0.50cm, brownish pubescent; petals 0.6x0.2cm, pale blue, wings dark blue; standard suborbicular; filaments c 0.05cm, staminal column c 0.05cm; ovary 0.1cm, linear; style flattened above, stigma capitate.

Fl.: Feb. - Mar. ; Fr. rip.: Apr. - Jun.

Spn. Cited. : DARJEELING : Salgrove, N.B.U. Campus, 120m, 26.8.1994, *Das et Samanta* 0292; Purbikhola, 550m, 18.11.1994, *Das et Samanta* 0439.

Loc. Distrib. : DARJEELING : Less common; Khaprail - Siliguri, Kumai, Dudhay (110-800m).

Gen. Distrib. : E. Himalayas. India : Darjeeling, Sikkim - Khasia Hills; Myanmar, Malaysia, China.

SCHUTERIA Wt. & Arn.

Schuteria involucrata (Wall.) Wt. & Arn., Prodr. Fl. Ind.Or 207:1834; FBI 2:182.1876; Van Thuan in Anders. ser. 2,12:298.1972; JJB 50:305.1975; EFPN 2:130.1979 var. *involucrata*;

Glycine involucrata Wall., PAR 3:22,t. 241.1832.

Shuteria glabrata Wt. & Arn., Prodr. Fl. Ind. Or 207.1834; FBI 2:181.1876; RBSI 4:105.1910; FEH 1:163.1966; FEH 3:55.1975; EFPN 2:130.1979; FPK 27.1981.

S. vestita Wt. Arn., Prodr. Fl. Ind. OR. 207.1834; fbi 2: 181.1876.

Shuteria involuerate (Wall.) wt. & Arn. var. *glavrats* (Wt. & Arn.) Ohashi.

Herbaceous wirey dextrorse twiner. Stem slender, with densely hirsute. Stipels 0.6-0.8x0.16-0.2 cm, lanceolate, entire, acute-acuminate. Leaves 3-foliolate; petiole 4.0-6.5cm long, shallowly ribbed, white hairy, upto 0.3cm long; terminal petiolules 1.0-15cm; lateral petiolule three times shorter than terminal, base swollen, densely pubescent; lamina of terminal leaflets 3.0-5.0x2.0-3.0cm, entire, acute to subacute, base rounded-slightly cordate, subcoriaceous, sparsely pubescent on both surfaces. Bracts and bracteols many, 0-5x0.2cm, linear-lanceolate, persistent. Copious racemes, many flowered; peduncle 6.0-9.0cm long; pedicel 0.4-0.5cm long; calyx 5-lobed, upper lobes 0.3x0.01cm, lanceolate- cuspidate, densely hairs; petals 0.8-1.2cm, reddish brown, longer than sepals; standard broadly elliptic; wings oblong; keels recurved, dense hairy. Pods 2.0-3.5x0.4-0.5cm, linear, flat. Seeds 4-6, greyish, dark 0.3x0.2cm reniform; smooth.

Fl.: Sep. - Dec.; Fr. rip.: Nov. - Jan.

- Spn. Distrib. : DARJEELING : Below Kurseong College, Kurseong, 1500m, 04.5.1994, *Das et Samanta* 0160.
- Loc. Distrib. : DARJEELING : Very common; Yangmakum, Ging, Singtam, Singla, Peshok, Guling, Kurseong, Tung, Lebong (upto 1950m).
- Gen. Distrib. : Himalaya (Simla - Bhutan); Nepal, Myanmar, Sri Lanka, China, Thailand.
- Note : (i) Whole plant used as fodder for cows and goats.

VICIA L.

KEY TO THE SPECIES :

1. Flowers solitary, axillary, almost sessile.....2
 1. Flowers with distinct peduncle and pedicel, fruits 2-seeded..... *V. hirsuta*
 2. Fruits 4-seeded..... *V. tetrasperma*
 2. Fruits with 6-9 seeds *V. sativa*

Vicia hirsuta (L.) Gray, Nat. Arn. Brit. Pl. 2, 614. 1821; FBI 2:177.1876; FEH 1:165.1966 : EFPN 2:132.1979; BP 1:367.1981; FB1 (3):1987(Fig.3.18).

Ervum hirsutum L., Sp. pl. ed.1: 738.1753

Beng. : Musur-chana.

Annual herbaceous tendril climbers. Stem 4-ribbed, diam of rib c 0.1cm, much branched, sparsely hairy. Tendril branched, formed by the modification of leaf rachis. Stipules 0.2-0.4cm long, obliquely lanceolate, white hairy or eglandular. Leaves 4.0-7.0cm, imparipinnate, leaflets 5-8 pairs. lamina of lateral leaflets 0.7-1.9x0.1-0.2cm, linear, entire, mucronate, minutely hairy; peduncles shorter than leaf; 2-6 flowers in racemes; peduncles 3.0-4.2cm; pedicels 0.1-0.11cm, calyx 0.25-0.30cm, campanulate, 5-lobed; petals creamy, 0.35-0.45cm; standard pink, 0.3-0.6x0.1-0.16cm; adherent, wings 0.2-0.3cm, keel c0.2cm. Pods 0.6-0.9cm, oblong with persistent calyx, acute at both ends, 0.8-1.2cm. Seeds 0.3 cm diam, yellowish-green but become blackish grey when dry, compressed smooth.

Fl.: Jan. - Mar.; Fr.rip.: Feb.-Apr.

Spn. Cited. : DARJEELING : N. B. U. Campus, 120m, 10.3.1995, *Das et Samanta* 0548.

Loc. - Distrib. : DARJEELING : Less common; Found only around N.B.U. Campus areas (upto 350m).

Gen. Distrib. : Native of Europe; Nilgiri Hills; Nepal, America, Africa,

Notes : (i) Whole plant used as fodder for cows and goats.
(ii) Chr. no. $2n = 28$ (Sinha, M. K. et al. 1971); 12 (Sareen, T. S. & Trehan, R. 1976, 1977).

Vicia sativa L. Sp.Pl. 736.1753; FBI 2:178.1876; BP 1:366.1981; FB 1(3): 725.1987. (Fig. 3.19).

Beng.: Ankari; Nep.: Chatrimatri Matra.

Annual herbaceous tendrill climber. Stem 4-ribbed, solid, obscurely downy green, hairy; rachis terminate into branched tendrill. Stipules 0.4-0.8cm, obliquely lanceolate. Leaves 2.5-5.0cm; petioles 0.6-0.7cm long, hairy; petiolule 0.1-0.12cm long; leaflets 4-6 pairs; lamina of lateral leaflets 1.5-2.5x0.2-0.3cm, oblanceolate, entire, mucronate, base cuneate. Flowers solitary, axillary, subsessile; calyx tube 0.5-0.6cm long, teeth 0.15-0.5cm, lanceolate, subulate; petals purplish, c0.10-0.16cm; standard c0.7-1.0cm, broadly ovate; wings 0.5-0.9x0.25cm, oblong-ovate, with slender basal auricles; keels c 60.35x0.15cm, curved and rounded. Pods 2.7-4.1x0.2-0.5cm, flat with two sutures, glabrescent. Seeds c0.6-0.8x0.2cm subglobose.

Fl.: Jan. - Mar.; Fr.rip.:Feb.-Apr.

Spn. Cited. : DARJEELING : N.B.U. Campus, 120m, 10.3.1995, *Das et Samanta* 0547.

Loc. Distrib. : DARJEELING : Less common : N.B. U. Campus, Siliguri, Takdah, Jholung, Kurseong (upto 1500m).

Gen. Distrib. : Native of Africa; Asia, Australia (naturalised).

Note : (i) Used as fodder for cows and goats.

Vicia tetrasperma (L.) Schreber, Spicil, Fl. Lipa. 26.1771; FBI 2:177.1876; EFJ 3:70.1975; TBRI 50(4):130.1987; FB1 (3):725.1987.

Annual herbaceous climber. Stem slender, large, much branched, terete, hairy. Tendrill formed by the modification of leaf rachis, much branched, hairy. Petiole and petiolules short; leaflets paripinnate, 3-4 pairs; lamina 1.6-2.0x0.1-0.5cm, linear-elliptic, entire, obtuse-mucronate, base cuneate. Peduncles 1.0-3.5cm long, axillary as long as leaves; 1-2 flowered; pedicel short; sepals and petals each 4; petals liliac. Pods 1.5-2.0x0.3-0.4cm, linear-oblong. Seeds compressed.

Fl.: Mar. - May; Fr. rip.: Aug. - Sep.

- Spn. Cited. : DARJEELING : Birch Hill, 2000m, 20.4.1992, A. P. Das 0742.
- Loc. Distrib. : DARJEELING : Birch Hill - Lebong (2200-1900m).
- Gen. Distrib. : Himalayas; Europe.
- Note : (i) Chr. no. $2n = 14$ (Sweschnikowa, G & I.N. [Fedorov] , Bir, S. S. & Sidhu, S. 1969, 1967) ; 14, 28 (Tatuno, S & Kodama, A. 1965).

VIGNA Savi

Vigna vexillata (L.) A. Rich., Hist. Fis., Pol. Nat. Isla Cuba 11:191.1845; ESS .Fl.Cuba 440.1846; FB 2:206.1876; TNB 50.1929; KB 24:553.1970; FEH 72.1975; EFPN 2:133.1979; FA 2:84.1982; TBRI 50(40:101.1987; FB 1(3):700.1987.

Phaseolus vexillatus L. Sp. Pl. ed. 1, 724.1753.

P. puliniensis Wt., Icon. 1:t.202.1839.

Annual herbaceous climber. Stem terete, slender, wide with deflexed brown hairs, glabrescent when mature. Stipules lanceolate, basifixed. Leaflets membranous; lamina lanceolate, acute to acuminate, base rounded. Peduncles with 2-4 flowers; petals large. Pod 4.0-9.0x0.5-1.0cm, glabrescent, brownish hirsute.

Fl.: Jul. - Sep.; Fr. rip.: Oct. - Nov.

- Spn. Cited. : DARJEELING : Deepchak, Kalimpong, 1260m, 04.9.1996, Das et Samanta 1273.
- Loc. Distrib. : DARJEELING : Rare; Ging-Kalimpong (1100 -1650m)
- Gen. Distrib. : India; Sri Lanka, Tropics & Subtropics of Asia, Australia, Africa.
- Note : (i) Chr. no. $2n = 22$ (Marechae , R. 1969, 1970).

WISTERIA L.

Wisteria chinensis DC., Prodr.2:390.1825; TBRI 50 (4): 130 .1987.

Woody dextrorse twiner. Stipules c 0.3cm, lanceolate; leaves 7.0-18cm, imparipinnate; petioles 3.5-5.0cm long, shallowly ridged, sparsely pubescent; petiolule 0.2-0.4cm long, terete densely pubescent; lamina of terminal leaflets 2.5-3.8x1.5-2.0cm, ovate-lanceolate, entire, acute, base rounded, membranous, lower

surface much hairy than above; lamina of lateral leaflets 4.0-5.5x1.2-2.0cm, ovate lanceolate, entire, slightly caudate, base cuneate, densely hirsute on both surfaces, midvein distinct, laterals 5-6 pairs. almost opposite. Racemes terminal, dense, flowered yellow. Peduncle upto 12 cm long, densely hairy; pedicels 0.5-0.7cm long, densely hairy. Calyx c 0.5 cm diam, campanulate, 4-lobed, lobes 0.25-0.3cm, ovate, entire, dense hairy; corolla 1.2-1.5x0.7-0.8cm, papilionaceous, shallowly lobed; wings 1.2-1.4x0.8-1.0cm, thinly veined; keel 1.0-1.3x 0.5-0.6cm; Stamens 10, diadelphous; filament 1.1cm, wing, 0.5x0.01cm, bithecous; ovary flat densely villous. Fruits not recorded.

Fl.: Apr. - May.

Spn. Cited. : DARJEELING : Birch Hill, 2100m, 19.4.1994, *Das et Samanta* 0137.

Loc. Distrib. : DARJEELING : Rare; Birch Hill - Jalapahar, (1500 2400m).

Gen. Distrib. : A native of China.

Note : (i) Chr. no. $2n = 16$ (Sareen, T. S. & Trehan, R. 1977).

PASSIFLORACEAE Juss.

KEY TO THE GENERA :

1. Tendrils simple corona numerous in 4-5 whorls; plants strongly dioecious.....
*Passiflora*
 1. Tendrils branched; corona absent; plants dioecious or monoecious.....*Adenia*

ADENIA Forss.

Adenia cardiophylla (Mast.) Engl. Bot. Jahrb. 15 : 573.1893 & in Engl. & Prantl. Pfln. 3. 6a.84.1893 FB 2(1):231.1991(Photo-35).

Large shrubby sinistrorse twiner upto 30m long. Stem terete, nearly glabrous. Tendrils extraxillary, branched, glabrous. Petioles 3.0-5.0cm long, a pair of subglobose sessile gland (diam 0.15-0.3cm) at the junction of lamina base and petiole; lamina 8.5-15x7.0-13cm broadly ovate-cordate, entire often 3-lobed. acute, base rounded - cordate, 3-5 nerved at base, both surfaces glabrous. Peduncles upto 15cm long, branches wirey; pedicels 0.3-0.8cm long, articulated, glabrous, many flowered; calyx tube c 1.0cm long, 5-toothed, c 0.3cm in diam; petals 5, white, 6.5x2.0cm, narrowly triangular, spotted pale brown, 3-lipped, entire, inserted at the mouth of calyx tube; stamens 5, filaments 0.25-0.5cm, wirey, united at base; anthers 0.4x0.08cm, linear-ovate, oblong, 2-celled, yellowish-white, hastate at base; disc

glands 5, c 0.2cm, opposite to sepals; ovary 0.4-0.45x0.25-0.4cm, ellipsoid; style 0.1-1.2cm; stigmas laciniate, connate at base. Berries obovoid, gynophore distinct 3.0-6.0cm long. Fruits not seen.

Fl.: May-Aug.

Spn. Cited. : DARJEELING : Latpunchor, 960m; 15.5.1995, *Das et Samanta* 0736.

Loc. Distrib. : DARJEELING : Rare; Pankhabari - Kodaibari (700 - 1000m)

Gen. Distrib. : India : Assam, Sikkim, Meghalaya.

PASSIFLORA L.

KEY TO THE SPECIES :

1. Flowers axillary, solitary and deeply 3-lobed; corona with white-purplish at base.*P. edulis*
1. Flowers many on axillary peduncles; berries subglobose.....*P. geminiflora*
2. Lamina broadly and deeply 3-lobed; corona with violet at base*P. foetida*

Passiflora edulis Sims. in Bot. Mag.45/t.1989.1818; Bull. Dept. Med. Pl. Nep. 7:90.1976; EFPN 2:177.1979; Deb, Fl. Trip. St. 1:251.1981; FA 2:323.1938(Repr.1982); TBRI 50(4):121.1987; FB 2(1):230.1991.

Nep.: Garandil.

Large shrubby climber. Stem terete, solid, internodes upto 15cm long. Tendrils simple, axillary, nearly glabrous, coiled sinistrorsely. Stipules 0.6-0.7cm long, linear. Petioles 1.0-2.0cm long, terete, ribbed, glabrous, 2-distinct gland at lamina base; lamina 5.5-9.5x4.0-11 cm, broadly ovate, deeply 3-lobed, bluntly serrated, acute to acuminate, base acute. Flower axillary solitary (diam. c 1.5cm) on 4.0-5.0cm long pedicels; sepals 5, free, 2.5-3.0x1.0cm, oblong, coarsely serrate; petals 5, 2.2-2.9x0.5-0.6cm, oblong, white; corona fleshy, white, purplish at base in 4-5 whorls concave to cupshaped 1.2-2.5cm long, presented in between perianth and androecium; stamens 5, opposite to the petals; anthers 2-celled; androgynophore c 0.1 cm long. Berries 4.0-5.5 cm long, globose, yellow or purplish on ripening. Seeds many 0.5-0.6x0.3-0.4cm oblong, compressed.

Fl.: Mar. - Aug.; Fr. rip.: Aug. - Oct.

Spn. Cited. : DARJEELING : Below Kurseong, Mokaibari, 800m, 10.3.1994, *Das et Samanta* 0358; Mirik, 1600m, 05.9.1994, *Das et Samanta* 0318; Darjeeling, 2000m, 13.5.1996, *Das et Samanta* 1249; SIKKIM: Deorali, 1460m, 19.11.1995, *Das et Samanta* 0989; Gyalshing, 1530m, 20.3.1996, *Das et Samanta* 1137.

- Loc. Distrib. : DARJEELING : Less common; Cultivated ; (100-2000m);
SIKKIM : Less common; Tadong, Pelling - Gyalshing;
Sombare (upto 1800m).
- Gen. Distrib. : A native of Brazil.
- Notes : (i) Ripe fruits are edible to taste and leaves as fodder for
cows and goats.
(ii) Chr. no. $2n = 18$ (Beal, P. R. 1969).

***Passiflora foetida* L. Sp. Pl. 959.1753; FA 2:322.1939.**

Small shrubby climber. Stem terete, semisolid, slightly ribbed, densely glandular hairy; hairs straight. light-yellow, smooth, needle like. Tendrils extraxillary, simple, terete, coiled sinistrorsely, hairy. Stipules foliaceous, fragmented 0.4-0.6cm long; petioles 3.5-5.0cm long, terete, glandular hairy; lamina 5.3-6.7x4.6-6.0cm, broadly ovate, trilobed, regularly serrate, acute, base rounded to cordate, upper surface much pubescent than lower, membranous. Flowers axillary, solitary; bracts 2, foliaceous, 2.0-2.5x1.0-1.5cm, finely bipinnatifid, enlarged in fruits, segments gland tipped sticky; pedicels 0.5-0.7cm long terete, puberulous; calyx tube 0.2-0.3cm long; lobes 5, greenish-white, broadly ovate-lanceolate, 1.0-1.5x0.5-0.6cm with cirrhose or needle like tip; petals 5, white, alternating with sepals 1.0-1.2x0.4-0.5cm, ovate lanceolate, 1-nerved, corona numerous, filiform, pale violet at base, white at tip; androgynophore 0.5-0.7cm, greenish-white with greenish spotted glands; stamens 5, spreading, filaments 0.3-0.4cm long; anthers 0.6x0.2cm, versatile, 2-celled; ovary placed on a short gynophore 0.2-0.3x0.1-0.15cm, ovoid, ovules numerous, glabrous; styles 3, 0.3-0.4cm long at maturity connate and white hairy at base; stigma 3, discoid. Berries 1.6-1.7cm across, globose, covered with persistent, net like sticky bracts; seeds many, 0.4x0.3cm, oblong, compressed arillate.

Fl.: Jun. - Aug.; Fr. rip.: Aug. - Oct.

- Spn. Cited. : DARJEELING : N.B.U. Campus, 120m, 14.4.1994, *Das et Samanta* 0068.
- Loc. Distrib. : DARJEELING : Common; Dolka - Panighata, Naxalbari, Jholung, Baggracot - Bamanpokri (upto 300m).
- Gen. Distrib. : A native of America and fairly naturalised in North Bengal and Darjeeling Foot - Hills.

Passiflora geminiflora D. Don, Prodr. Fl. Nep. 223. 1825; De Wilde Blumea 20:243. 1972; FB 2(1):229. 1991 (Photo-23).

Perennial herbaceous tendrils climbers with suffrutescent base, c 0.5cm in diam. Stem terete, solid, green, hairy, internodes 3.5-4.5cm long; stipules 0.5-0.6cm long, linear, nearly glabrous. Petioles 3.5-5.0cm long, with a pair of glands below middle; lamina 3.7-4.9x2.8-3.4cm, ovate, entire, acute to obtuse, base rounded to shallowly cordate, deep brown above, glaucescent below, nerves 3, from base, convergent Axillary cymes; flowers many on two short peduncles; Pedicels upto 2.5cm long; calyx tube 0.5-0.6cm, campanulate; lobes 5, short; petals 5, free, c.0.9cm; corona filiform; stamens 5; ovary ovoid on a very short gynophore; style 0.4-0.5cm long, glabrous. Berries 1.0-1.5cm in diam, globose, purplish. Seeds many, oblong, compressed.

Fl.: Aug. - Sep.; Fr. rip.: Oct. - Nov.

Spn. Cited. : DARJEELING : Mirik, 1550m, 05.9.1994, *Das et Samanta*, 1058; Kalimpong, 1500m, 04.9.1996, *Das et Samanta* 1308; SIKKIM : Burtuk, 1800m, 28.6.1995, *Das et Samanta* 0786; Soreng, 1560m. 30.10.1995, *Das et Samanta* 0883; Deolari, 1450m, 19.11.1995, *Das et Samanta* 0983.

Loc. Distrib. : DARJEELING : Common; Darjeeling - Sonada; Lebong, SIKKIM : Less common; Singling Basty, Tadong, Chungthang (1200-2000m).

Gen. Distrib. : Eastern Himalaya, Assam; Nepal, Myanmar.

Note : (i) Chr. no. $2n = 18$ (Janaki Amal, E. K. [D. 1945] ; 20 (Storey, W. B. 1950) ; 22 (Bowden, W. M. 1945b; Havey 1966).

PIPERACEAE C.A. Agardh.

PIPER L.

KEY TO THE SPECIES:

1. Lamina with 3-armed stellate hairs below.....*P. peepuloides*
1. Lamina glabrous or slightly puberulous.....2
2. Bracts never peltate; lamina orbicular-ovate.....*P. attenuatum*
2. Bracts peltate; lamina ovate to ovate-lanceolate.....3
3. Rarely climbing; fruiting spike not interrupted..... *P. pedicellatum*
3. Always climbing; spikes interrupted.....4
4. Drupes 0.35-0.40 cm in diam; fruiting spikes cylindric.....5
4. Drupes 0.18-0.30 cm in diam; fruiting spikes elongated.....*P. mullesua*

5. Lamina slightly oblique.....*P. sylvaticum*
 5. Lamina base never oblique.....6
 6. Lamina base 7.3-12.5x3.0-7.5cm; male spikes c 6.0cm long; stamens
 3..*P. suipiqua*
 6. Lamina 10-20x5.0-12cm; stamens 2.....7
 7. Male peduncles upto 4.0cm long.....8
 7. Male peduncles more than 6.0cm long.....*P. nigrum*
 8. Female spikes c 2.5 long; lamina ovate-cordate.....*P. longum*
 8. Female spike 6.0-10cm long; lamina usually ovate.....*P. chaba*

Piper attenuatum Miq., Syst. Pip. 306.1843; FBI 5:92, 1886; FB 1(2) : 347.1984.

Nep.: Chabo., Pipal.

Shrubby root climber, upto 2.5cm long. Stem and branches stout, but soft, become compressed grooved when dry, greenish-yellow, glabrous, lower internodes 8.0-8.5cm long, upper 2.0-3.5cm long; stipule 0.5-0.65 cm, subulate; petioles 2.5-6.5cm long, angled, greenish-yellow, hairy upwards; lamina broadly cordate lower 8.0-9.5x7.0-10cm, slightly broader than length, orbicular-ovate; upper 4.5-7.0x2.5-5.0cm, entire, pellucid, acute to acuminate with a mucrona, base cordate-truncate, membranous, almost glabrous above, hairy on veins, nerves mostly 7, but sometimes 7-9 from base, lateral divergent except middle. Plants dioecious. Male spike c 0.03cm long, cluster; stamens 3, sessile; adnate to oblong basifixed bracts (0.1-0.12m), winged, decurrent (4-5cm long) rachis; female spikes (upto 10cm long) with adnate bracts bearing its end on ovoid ovary (0.05cm long); bracts shorter than spike; stigma obscurely 4. Drupes 0.2x0.15cm, globose, loosely aggregated glabrous, sessile, 0.35-0.4cm across, black.

Fl.: Aug. - Dec.; Fr. rip.: Dec. - Mar.

Spn. Cited. : DARJEELING : Darjeeling, 2000m, 07.7.1996, *Das et Samanta* 1248.

Loc. Distrib. : DARJEELING : Less common; Birch Hill-Lebong, Guling, Singla, Goke, Rangeet and River Lesh (200 - 2200m).

Gen. Distrib. : India. : E. Himalayas, Assam & Nilgiri Hills, Meghalaya, Indonesia, Philippines.

Note : (i) Fruits edible.

Piper chaba Hunter in Asiat. Res. 9 : 391.1809.

Nep. : Chaba

Much branched shrubby slender climber; rooting from nodes; stem terete, solid,

glabrous warted, greenish-brown; stipule caducous. Petioles upto 1.5cm long, auricled, rusty brown; lamina 6.0-15x3.5-7.0cm oblong-ovate, entire, acuminate, base unequally cordate, membranous, thinly coriaceous, glabrous above, puberulous and gland dotted below, 5-7 nerved, apart 2.0-3.0cm from base. Plants dioecious. Bracts peltate. Flower axillary, solitary. Male spike 5.0-7.0cm long, pedicel 1.5-2.0cm long; stamens 2, within adnate bracts; female spike 1.0-2.0cm, peduncle as long as male spike, ensheathed by adnate bracts; stigmas 4. Drupes 0.35-0.40cm.

Fl.: Apr. - May; Fr. rip.: Aug.-Dec.

Spn. Cited. : DARJEELING : Latpunchor, 850m, 17.5.1995, *Das et Samanta* 0743.

Loc. Dist. : DARJEELING : Common; Found around Latpunchor areas (upto 1200m).

Gen. Distrib. : Generally cultivated in parts of India and Malayan Island.

Note : (i) Leaves edible.

Piper longum L. Sp. Pl. ed. 1:29.1753; FBI 5:83.1886; FEH 1:43.1966; 2:14.1971; EFPN 3:181.1982; FB 1(2) : 348.1984.

Nep. : Pipla, Piplamul, Piplulmul.

Shrubby slender root-climber. Stem softly puberulous, internodes upto 11cm long; axillary bud needle like upto 0.3cm, hairy; petioles 4.0-4.5cm long, amplexicauled, brown hairy; lamina 7.0-11x5.0-8.5cm, broadly ovate- cordate, entire, acute to bluntly acuminate, base deeply cordate, sinus auriculate rounded, membranous, rusty hairy at margins, gland dotted upwards above, veins 7, divergent. Male spike slender 3.5-8.0cm; peduncles 2.5-4.0 cm; bracts peltate, stalked; stamens 2, anthers inclined, included. Female spikes 1.2-2.5cm, cylindrical; peduncles 1.1-2.5cm; stigma 3-4. Drupes fleshy 0.12-0.21cm in diam, globose, densely coherent.

Fl.: May-Aug.; Fr. rip.: Nov.-Feb.

Spn. Cited. : DARJEELING : Mangpo, 1300m, 13.12.1995, *Das et Samanta* 0481; SIKKIM : Mangan, 1350m, 26.9.1996, *Das et Samanta* 1533.

Loc. Distrib. : DARJEELING : Less common; Guling, Goke, Singla, Jholung, Yangmakum, Sukna, Mangpo(600-1350m); SIKKIM : Rare; Singhik, Phodong, Yaksum (upto 2000m).

Gen. Distrib. : India: W. Bengal, Sikkim, Assam, Meghalaya; Bhutan Nepal, Sri Lanka, Malaysia.

Note : (i) Leaves and fruits used medicinally.

Piper mullesua D. Don, Prodr. Fl. Nep. 20.1825; FEH 1:43. 1966; EFPN 3: 181.1982; FB 1(2): 342.1984 (Fig 3-8).

P. guigual D. Don. Prodr. Fl. Nep. 20.1825.

Chavica Sphaerostachya Miq. Syst. Pip. 279.1843.

C. mullesua Miq. Syst. Pip. 280. 1843.

Piper brachystachyum Hook. f. FBI 5: 87.1886, nom. Superfl.

Nep.: Dalay Chabo, Peepila

Small shrubby root climber with pendent branches. Stem terete, much branched, slender, glabrous but lower stem warted, internodes 3.5-8.5cm long; petioles 0.5-1.5cm long, slender, slightly auricled, nearly glabrous; lamina 5.5-11x2.3-5.5cm, ovate to elliptic to lanceolate, entire, caudate to acuminate, base acute-slightly unequal, membranous, glabrous above, minutely gland dotted below, nerves 5, 2 from base, 3 originated slightly above, convergent, axillary bud minute, persistent. Plants dioecious. Male spike slender, 2.5-7.0cm long, erect; peduncles 0.25-0.35cm long; bracts peltate, almost sessile; stamens 2, anther reniform, bithecous; female spike shortly stalked upto 0.35cm, globose, upto 1.2cm, rachis almost glabrous; ovary c 0.15cm, shortly cylindric, stigma 3, minute. Drupes 0.18-0.3cm in diam, clustered.

Fl.: Aug.-Sep.; Fr. rip.: Aug.-Dec.

Spn. Cited. : DARJEELING : Birch Hill, 2100m, 17.6. A.P. Das 1004; Samsing, 420m, 29.1.1995, *Das et Samanta* 0517.

Loc. Dist. : DARJEELING : North Point-Jorebungalow, Takdah, Lava-Kafer, Todey, Rimbick, Raman, Kurseong, Mangpo (400-2150m).

Gen. Distrib. : India : Himalayas (Himachal Pradesh-Bhutan) Meghalaya, Assam of Manipur.

Note : (i) Ripe fruits edible.

***Piper nigrum* L.** Sp.pl. ed. 1:29.1753 (Photo-6).

Beng. : Golmorich, Kala-mirich.

Medium root climber. Stem terete, solid, rusty villous; branches slender, glabrous; auricled from axillary buds, blackish brown when dry. Petioles 0.6-1.0cm long, slightly winged, puberulous; lamina of lower leaves 2.5-5.0x1.5-3.5cm, broadly ovate, entire, acute-caudate, base cordate, glabrous above, finely pubescent below, nerves 5-7; lamina of upper leaves 6.0-12x2.0-6.0cm, ovate to elliptic to lanceolate, membranous, both surfaces glabrous, greenish-yellow, nerves strongly alternate. Spikes globose, bracts of female spike forming a short hemispherical cup below the ovary, without raised margin. Drupes large, 0.25-0.30cm, globose.

Fl. : Jun.-Jul.

Spn. Cited. : DARJEELING: Latpunchor, 900m, 17.5.1995, *Das et Samanta* 1053; SIKKIM.: Burtuk, Gangtok, 1700m, 28.6.1995, *Das et samanta* 1125; Mangan, 1350m, 26.9.1996 *Das et Samanta* 1508.

Loc. Distrib. : DARJEELING : Rare; Rambh - Mangpo, (400-1200m); SIKKIM.: Less common; Dikchu-Makha, Singtam (800-2000m).

Gen. Distrib. : India : Tropical Himalaya, Assam, Malabar; Sri Lanka, Singapore, Malaysia.

Note : (i)Seeds used as spice.

***Piper pedicellatum* C. DC.**, in Journ. Bot.4. 1866.164; FB 1(2): 349.1984.

P. boehmeriifolium Wall. [cat.no.6654 A.1832, nom. nud.] ex DC. Prodr.16(1):348.1869; FBI 5:85.1886; TNB 104.1929; FA 4:35.1940; FEH 1:43.1966; EFPN 3:181.1982; FB 1(2):349.1984; TBRI 50 (4): 123.1987.

Nep.: Bhalay Chabo; Long pipla.

Shrubby slender root climber. Stem terete, sparsely hairy, dense at nodes. Petioles 0.6-0.8cm long, rusty hairy; lamina 8.0-13x5.5-8.2cm, broadly ovate-elliptic, entire, caudate, base narrowed, cuneate to cordate, membranous, upper surface almost glabrous, lower rusty brown, especially on veins, 5 nerved, 3 from base, rests c 0.3cm above from base. Plants dioecious. Spikes solitary. Male spikes flexuous, slender, 10-20cm long; peduncles 1.5-2.0cm, bracts stalked, stout, peltate; stamens 2, slightly shorter than bracts; anther almost sessile, female peduncles upto 10cm long, rusty hairy; ovary c 0.1cm in diam, almost sessile; stigmas 3-5. Drupes subovoid, obtuse, densely coherent 0.14-0.15 cm across.

Fl.: May - Sep.; Fr.rip.: Sep. - Feb.

Spn. Cited. : DARJEELING : Kurseong, 1550m, 31.3.1983, A. P. Das, 1358.

Loc. Distrib. : DARJEELING : Mangpo, Purbikhola, Lebong - Ging, Jholung, Nimbong, River Teesta Valley (350 - 2200m).

Gen. Distrib. : E. Himalaya. India: Assam, Meghalaya; Nepal - Bhutan, N.Myanmar.

Piper peeploides Roxb. [Hort. Beng. 4.1814, nom. nud] Fl. Ind. ed Carey, 1:159.1820; FBI 5:83.1886; TNB 104.1929; FEH 1:43.1966; FPK 89.1981; EFPN 3:181.1982; FB1 (2): 348.1984; TBRI 50 (4) :123.1987.

Beng.: Janglipan, Pipla; Nep: Rukhpeepla.

A medium slender root climbers. Stem and branches spreading, terete-old stem warty. Petioles 0.4-1.2cm long, slightly winged, nearly glabrous; lamina 4.5-12x3.0-6.0cm, linear or oblong-ovate, entire, caudate-acuminate, base subcordate - oblique, membranous, nerves 3-5 from base, glabrous above, 3-armed small stellate hairy below towards base. Plants dioecious. Spikes lateral to petiole. Male spike with upto 0.5cm long peduncle; spike upto 5.5 cm long; stamens 3-4, with peltate bracts; female spike upto 2.0cm, short peduncled. Drupes 1.6-1.0cm, globose, minute.

Fl.: Oct. - Dec.; Fr. rip.: Feb. - Mar.

Spn. Cited. : DARJEELING : Birch Hill 2100m, 13.6.1981, A. P. Das 0474; SIKKIM : Tadong, Gangtok, 1500m, 11.5.1996, Das et Samanta 1247.

Loc. Distrib. : DARJEELING : Common; Nimbong, Kumai, Yangmakum, Birch Hill - North Point, Singla, Badamtam; (600-2000M); SIKKIM : Less common; Deorali and its surroundings (up to 1500m).

Gen. Distrib. : Temperate Himalayas. India : Manipur, Meghalaya, Assam; Nepal, Bhutan, Myanmar, W. China.

Note : (i) Leaves and fruits used medicinally.

Piper sui-piqua Ham.ex. D. Don, Prodr. Fl. Nep. 20.1825; EFPN 3:181.1982; FB 1(2):350.1984.

P. nepalense Miq., Syst. Pip.318.1843; FBI 5:49.1886; FEH 1:43.1966; EFPN 3:181.1982.

Nep.: Danklay Chabo.

Shrubby root climbers. Branches slender, terete, glabrous, slightly striate when dry; axillary bud c1.0cm, glabrous. Petioles 0.8-1.8cm long, nearly glabrous; lamina 7.0-14x 3.0-5.5cm, oblong to elliptic to lanceolate, entire, caudate to shortly acuminate, base of lower leaves oblique and the upper leaf cuneate, thinly coriaceous, both surfaces glabrous, greenish - yellow above, rusty brown or yellow below; nerves 5-7, alternate. Plants dioecious. Male spikes c 6.0cm long; peduncle 0.8-1.0cm; long slender, flexuous; stamens 2-3, puberulous, bracts sessile, 0.1x0.05cm, subulate, gland dotted; female spikes upto 8.0cm long, peduncle up to 1.5cm, stigma 4. Drupes 0.51 - 0.71 cm, ovoid, scattered, sessile.

Fl.: May - Aug.; Fr. rip.: Aug. - Jan.

Spn. Cited. : DARJEELING : Lepchajagat, 2100m, 20.9.1981. A. P. Das 0699; SIKKIM : Nandugaon, below Namchi, 840m, 21.5.1996, Das et Samanta 1125.

Loc. Distrib. : DARJEELING : Common; Sukiapokhari - Sonada, Bijanbari, Mangpo, Nimbong(1800-2450m); SIKKIM : Less common; Nandugaon - Namchi, Ravongla, (800 - 2100m).

Gen. Distrib. : Endemic to E. Himalayas (Garwal - Bhutan); India : Assam, eghalaya.

Note : (i) Ripe fruits edible.

Piper sylvaticum Roxb. Hort. Beng. 4.1814; Fl. Ind. 1 : 156.1820, FBI 5:84.1886; FB 1(2) : 348.1984.

P. Thomsonii (C.Dc) Hook.f. in FBI 5:87.1886.

Nep.: Pahari pipal.

Medium shrubby root-climber, upto 4m long. Stem succulent but become angular and furrowed when dry, glabrous, greenish - yellow, node articulate, rooting from nodes; petioles 1.2-5.0 cm long, glabrous; lamina of lower leaves 4.5-10.5x3.9-9.5cm broadly cordate, entire, acute to acuminate, base acute to subcordate-oblique, upper narrow, 5.0-8.0x4.0-6.0cm ovate-elliptic-oblong, membranous, above glabrous, often pubescent below, gland dotted towards base, nerves 7, lower 4, middle 3, extended upto tip; stipule narrow, indistinct. Male spike 3.0-7.0cm, peduncles 0.2-0.4cm long; bracts peltate almost sessile, stamens 2; female spike 3.6-8.0cm, cylindric. Ovary c 0.05cm; stigma 3-4; bracts persistent. Drupes 0.25-0.30cm, globose.

Fl.: Mar. - May; Fr. rip.: May - Jun.

- Spn. Cited. : DARJEELING : Neora Valley National Park, 2400m, 29.4.1995, *Das et Samanta* 0648; Dolka, Bagdogra, 110m, 08.9.1996 *Das et Samanta* 1373; Mangpo, 1350m, 26.9.1996, *Das et Samanta* 1510. SIKKIM : Jorethang, 320m, 28.10.1995, *Das et Samanta* 0802.
- Loc. Distrib. : DARJEELING : Common; Rontong-Sukna, Bengdubi - Siliguri, Kalijhora, Samsing, Jholung, 14-Farie (100-2450m); SIKKIM : Less common; Nayabazar, Legship, Singhik. Gyalshing. Ravongla (300-1600m).
- Gen. Distrib. : Tropical and subtropical Himalayas, India : Bengal, Assam; Nepal.

POLYGONACEAE Juss.

KEY TO THE GENERA :

1. Stem twining.....*Fallopia*
1. Stem never twining.....2
2. Stem, petiole and midvein prickly.....*Persicaria* (without *P. chinensis*)
3. Flowers in crowded (capitate) on peduncle.....*Persicaria* (*P. chinensis*)
3. Flowers in much branched panicle.....*Aconogonum*

ACONOOGONUM (Meisn.) Reich.

Aconogonum molle (D. Don) Hara var. *molle* FEH 1: 68.1966; op. cit. 2:21.1971; PK 86.1981; EFPN 3:172.1982; FB 1(1): 156.1983; TBRI 50 (4):104.1987.

Polygonum molle D. Don, Prodr. Fl. Nep. 72.1825; FBI 5:50.1886; TSDD 63.1896; TNB 103.1929; Spring. Fl. Sikk. Him., f. 164.1963; FB 1(1):156.1983.

Coccoloba tonaa D. Don, Fl. Nep. 74.1825.

Ampelygonum molle (D. Don) Roberty et Vantier in Boissire 10:31.1964.

var. *molle*, Hara, FEH 1:68.1966; EFPN 3:172.1982.

Nep.: Thotne

Large straggling bushy shrubs, sending branches upto the forest canopy. Stem many ribbed villous or with spreading or deflexed appressed hairs at nodes. Ocre 0.5-0.6cm long, membranous, appressed pubescent, 5-8 nerved, paralld, yellowish-green, fragile, base half sheathing; petioles 1.0-2.5cm, terete with plumose hairs; lamina 5.0-12x1.5-4.5cm elliptic-lanceolate, entire, acuminate, base cuneate or rounded, densely pubescent on major veins. villous beneath. Panicles thyrsoid, axillary and terminal, upto 20 cm long, densely pubescent c 0.3cm long; bracts

rounded, hairy; ocre 0.1-0.11 cm long; flowers sessile, minute; perianth 5-cleft, milky white, lobes oblong - elliptic, shiny, persistent. Stamens 8, alternating with perigynous glands. Styles 3, free. Nuts ovoid, or 3-gonous, small 0.2-0.3cm long, enclosed in baccate perianth.

Fl.: Sep. - Oct.; Fr. rip.: Sep. - Nov.

Spn. Cited. : DARJEELING : Meghma, 300m, 17.4.1994, *Das et Samanta* 0216; North Point, Darjeeling, 1950m, 04.10.1994, *Das et Samanta* 0384; Joributi, Neora Valley National Park, 2160m, 23.4.1995, *Das et Samanta* 0618; Kurseong, 1500m 26.10.1996, *Das et Samanta* 1237; SIKKIM: Tadong, Gangtok, 1400m, 20.5.1995, *Das et Samanta* 1240; Pangthang, 1910m, 20.5.1995, *Das et Samanta* 1044.

Loc. Distrib. : DARJEELING : Very common; Gairibas, Neora Valley National Park, 14-Farie, Darjeeling (1500-3200m); SIKKIM : Common; Gangtok - Deorali (1400-2000m).

Gen. Distrib. : Himalaya, India: N. Myanmar, West China, Indonesia.

Note : (i) Young shoots edible and used medicinally.

var. frondosum (Meisn.) Hara in FEH 1:68.1966; EFPN 3:172.1982; FB 1(I) : 156.1983; TBRI 50 (4) : 109.1987.

Polygonum paniculatum Bl. Bijdr. 533 (Dec. 1825; Mar. 1826); FBI 5:49.1886.

P. frondosum Meisn. in DC., Prodr. 14:137.1856; FBI 5:50.1996.

Nep. : Thotne.

Shrubby quite glabrous; leaves generally 11.5-17.6x6.2-8.8cm, texture of lamina firmer; panicles axillary.

Spn. Cited. : DARJEELING : Kurseong, 1500m, 24.09.1981, *A. P. Das*, 0772.

Loc. Distrib. : DARJEELING : Less common; throughout the altitudinal range of distribution (900-1800m).

Gen. Distrib. : Himalaya; Java.

var. rude (Meisn.) Hara in FFH 1:68.1966; 2:22.1971; EFPN 3:172.1982; FB 1(I) : 156.1983; TBRI 50(4): 104.1987.

Polygonum rude Meisn. in DC., Prodr. 14:137.1856; FBI 5:49. 1886.

Nep.: Thotne.

Similar to var. *molle* but stem and petiole retrosely hariy. Leaves softly hariy beneath or on veins only; panicles distinctly hirsute with flexuous hairs.

Spn. Cited. : DARJEELING : Hill Cart Road, 2100m, 18.06.1981, A. P. Das 0496.

Loc. Distrib. : DARJEELING : Less common; Rambh, Jalapahar, Sukiapokhari, Lepchajagat - Manebhanjan (upto 2250m).

Gen. Distrib. : E. Himalayas.

FALLOPIA Adans.

Fallopia convolvulus(L.) Holub. in Folia. Geobot. Phyt. Praha 6:176.1971; EFPN 3:174.1982; FB 1(1):169.1983; TBRI 50 (4): 114.1987.

Polygonum convolvulus L., Sp.Pl. 364.1753; FBI 5:53.1886.

Biderykie convolvulus (L.)Dumort., Fl. Belg.18.1827.

Nep: Ratnowla.

Annual herbaceous unarmed sinistrorse twiner. Stem much branched, slender, slightly ribbed, internodes 6.0-10cm long, shiny, glabrous, pinkish when matured. Ocre 0.35-0.4cm long, tubular, membranous. Petioles 1.3-4.5cm long, terete, finely pubescent; lamina 2.5-6.0x2.0-3.5cm, ovate, entire or slightly repand, caudate to acuminate, base rounded to deeply and broadly cordate. Flowers in axillary fascicles and in terminal cymes; peduncles upto 4.5cm long; pedicels c 0.2cm; perianth c 0.3 cm, pink 5 partite, segments obtuse, green, outer segments 3 keeled, often narrowly winged (c.0.02cm) increasing upto 0.5cm in fruit; stamens 8 filaments 0.1-0.11 cm long, anthers 0.15-0.16cm; ovary c 0.15cm cylindric; style 3, very short; stigma capitate. Achenes shiny black 1.0-2.1x0.4-0.7 cm, trigonous. tapering below, rounded above; enclosed by perianth.

Fl.: Jul.-Nov.

Spn. Cited. : DARJEELING : Below Darjeeling Govt. College, 1900m, 03.11.1979, A. P. Das 0035.

Loc. Distrib. : DARJEELING : Common; North Point - Lebong (1900-2200m).

Gen. Distrib. : Himalaya; Europe, Asia, Africa, China, Japan.

PERSICARIA L.**KEY TO THE SPECIES :**

1. Plants not prickly.....*P. chinensis*
1. Plants with recurved prickles on stem/petiole/midvein.....2
2. Flowers in spike; stipule large foliaceous.....*P. perfoliata*
2. Flowers capitate; stipules open-tubular.....3
3. Prickles minute in a row on stem; lamina narrowly lanceolate.....*P. thunbergii*
3. Prickles not in row; lamina triangular-oblong with two basal lobes.....
.....*P. strigosa*.

Persicaria chinensis (L.) H. Gross. in Engl., Bot. Jahrb. 49:269, 277 & 315.1913
FEH 1:70.1966 & EFPN 2:22.1971; FPK 86.1981; EFPN 3:175.1982; FB
1(1):163.1983; TBRI 50(4):122.1987.

Polygonum chinense L., Sp. Pl. ed 1, 1: 363.1753; FBI 5:44.1886; var. *brachiata*
(Lam.) Hara in FEH 1:71.1966 & 2: 22.1971; EFPN 3: 175.1982.

Polygonum brachiatum Lam. 3:t: 315,f.4.1797; *P. partens* D. Don., Prodr. Fl. Nep.
73.1825.

Nep.; Kakur, Ratnowlo, Thotne

Medium rambling shrubs. stem terete, with woody base, slender, glabrous or minutely
pubescent. Ocre 1.2-2.0cm long, lanceolate truncate divided near to base, sheathing,
membranous; petioles 0.6-1.5cm long, with rounded auricles upto 18cm; lamina
4.5-12x1.5-7.5cm ovate-lanceolate, entire, acuminate, base rounded to subcordate,
upper ones cordate-amplexicauled, lateral nerves 6-12 pairs. Heads in corymbose
panicles 0.35-2.0cm across. peduncles upto 1.5cm long, shortly setose c 0.6 cm;
perianth pinkish; lobes 5, subequal; stamens 8, anther black, style 3, connate at
base. Achenes c 0.5 cm trigonous, completely enclosed by reddish perianth.

Fl.: Jun. - Oct.; Fr. rip.: Jul. - Dec.

Spn. Cited. : DARJEELING : Sevoke, 400m, 26.3.1994, *Das et*
Samanta 0099; Tindharia, 940m, 20.6.1994, *Das et*
Samanta 0279; Jorebungalow, 04.10.1994, *Das et*
Samanta 0394; Bamanpokhri, 210m, 14.1.1995, *Das et*
Samanta 0495; Reshete, Neora Valley National Park,
2240m, 06.5.1995, *Das et Samanta* 0697; SIKKIM : Deorali,
Gangtok, 1450m, 19.11.1995, *Das et Samanta* 0978;
Nandugaon, Jorethang, 820m, 21.5.1995, *Das et Samanta*
1090.

Loc. Distrib. : DARJEELING & SIKKIM : Abundant throughout (upto
2500m).

Gen. Distrib. : India; Myanmar, China, Japan, Thailand, Malaysia.

Note : (i) Leaves used as fooder for yak and cows.

Persicaria perfoliata (L.) H. Gross. in Eng1., Bot. Jahrb., 49:275 & 281.1913; FEH 1:72.1966; FPK 87.1981; EFPN 3:177.1982; FB1 (1):160.1983; TBRI 50(4):122.1987.

Polygonum perfoliatum L., Sp. Pl. ed. 2, 521.1763; FBI 5:46.1886; Steward in Contr. Grey Herb.88:81.1930.

Annual herbaceous scrambler. Stem, petioles and leaves covered with recurved prickles (c 0.15cm). Stem flexuous; ocre 1.0-1.25cm long, ovate-rounded, perfoliate, amplexicaules, foliaceous, petioles 3.0-6.7cm long; lamina 1.7-4.5x1.5-2.5cm, deltoid-peltate, entire with minute spinules, acute, base acute or truncate, nearly glabrous. Racemes solitary, terminal 1.5-2.5cm long, branches; bracts upto 0.5 cm long, rounded; perianth greenish tinged purple, lobes 5, ovate-rounded c 0.6cm long; stamens 8, style 3, free, short. Achenes c 0.4cm, globose or obscurely 3-angled, black, covered with perianth.

Fl.: Jul. - Oct.; Fr.rip.: Oct. - Jan.

Spn. Cited. : DARJEELING : Deepchak, Kalimpong, 1260m, 04.9.1996, *Das et Samanta 1282*; SIKKIM : Burtuk, Gangtok, 1600m, 28.6.1995, *Das et Samanta 0783*; Deorali, Gangtok, 1460m, 19.11.1995, *Das et Samanta 0990*; Rhenek, 810m, 26.10.1996, *Das et Samanta 1236*.

Loc. Distrib. : DARJEELING : Common; Kalimpong, Lebong - Ging (1600 - 2150m); SIKKIM : Common; Rishi - Pedong, Gangtok (1400 -1800m).

Gen. Distrib. : Himalayas; Nepal, Bhutan, Malaysia, E. China, Japan, Korea, and Common Wealth of Independent States (CIS).

Persicaria strigosa (R. Br.) Nakai in Rigakkai 24:299.1926; EFPN 3: 178. 1982; FB 1(1): 160.1983.

Polygonum strigosum R. Br. Prodr. Fl. Nov. Holl. 420.1870; FBI 5:47.1886.

Small, perennial herbaceous scrambler. Stem slightly ribbed, recurved prickles at nodes. Ocere 1.5-2.5cm, ovate-rounded, ciliated at tip; petioles 0.8-1.2cm long with recurved prickles; lamina 4.0-12x0.6-2.2 cm, oblong-lanceolate, entire, acute or acuminate, base rounded, prickles on margins and midribs below. Heads 0.4-0.6 cm, terminal; bracts ovate, ciliate, strigose; perianth pink, 0.29-0.35cm, lobes obtuse; stamens 6-8; style 3, short, connate at base. Achenes c 0.4cm, globose-trigonal, included in perianth.

Fl.: Jul. - Sep.; Fr. rip.: (Aug.)

Spn. Cited. : DARJEELING : N.B.U. Campus, 120m, 08.12.1994, Das et Samanta 0443.

Loc. Distrib. : DARJEELING : Very common in foot-hill regions (upto 350m).

Gen. Distrib. : Himalaya (Kumaun - Bhutan); China, Philippines.

Persicaria thunbergii (Seb. & Zucc.) H. Gross in Engl., Bot. Jahrb. 49: 275. 1913; FEH 1: 74. 1966; EFPN 3: 178. 1982; FB1(1): 160. 1983; TBRI 50 (4): 122. 1987.

Polygonum arifolium Sensus FBI non L.

P. thunbergii Sieb & Zuss. in Abh. Akad. Miss. Muench. 4(3): 208. 1846; Steward in contr. Grey Herb. 88: 83. 1930.

var. *hastata* (Meisn.) EFH 1: 74. 1966.

P. debilis Meisn., *P. hastatum* Meisn. in Miq., Ann. Mus. Lugd. Bat. 2: 63. 1865.

P. thunbergii var. *oreophila* (Makino) Nemoto, Fl. Jap. Suppl. 176. 1936.

P. oreophila (Makino) Hiyaama in J. Jap. Bot. 34: 340. 1959.

P. arefolium sensu FBI 5: 46. 1886, non. L.

Small, much branched herbaceous twiner. Stem slender with one line of recurved spines. Ocre 0.5-0.7cm, herbaceous at tip. hairy; petioles 0.6-4.5cm long, prickles sparse; lamina 3.4-5.0x1.3-1.8cm, hastate, entire, acuminate-caudate, base broadly cordate, lobes acute, membranous, sparsely hairy or with recurved spines on midveins. heads terminal, free, 0.5-0.8cm across; peduncles 1.0-2.0cm long, glandular; bracts c 0.5 cm ovate, rounded, ciliated; flower c 0.5cm in diam. Perianth white, lobes 5, c 0.5 cm; stamens 8. Style 3, cuneate, connate at base; Achenes c 0.4 cm, globose to rounded-trigonous, black, included in perianth.

Fl.: Jul. - Oct.; Fr. rip.: Sep. - Dec.

Spn. Cited. : DARJEELING : Kurseong, 1600m, 30.9.1982, A. P. Das 1190.

Loc. Distrib. : DARJEELING : Dow Hill - Tung, Algarah, Sonada, Lava, Kafer, Dilaram (Upto 1900m).

Gen. Distrib. : E. Himalayas; India : Sikkim, Meghalaya; Nepal, Myanmar, China, Japan.

RANUNCULACEAE Juss.

KEY TO THE GENERA :

1. Petiole and petiolule modified into tendrils; petals absent.....*Clematis*
1. Terminal leaflet modified into 3-nate tendrils; petals present.....*Naravelia*

CLEMATIS L.

KEY TO THE SPECIES :

1. Leaves 3-foliolate or pinnately compound.....2
1. Leaves simple.....*C. napaulensis*
2. Leaves 3-foliolate.....3
2. Leaves bipinnate.....6
3. Flowers in fascicles.....4
3. Flowers in panicle.....5
4. Stem and branches brownish pillose.....*C. buchananiana*
4. Stem and branches glabrous.....*C. montana*
5. Sepals brownish out side, linear-oblong (1.5-2.0cm).....*C. connata*
5. Sepals purple, ovate (1.2-1.8cm).....*C. smilacifolia*
6. Plants densely villous throughout.....7
6. Plants glabrous.....8
7. Flowers almost sessile or pedicels 0.44-0.55 cm long.....*C. wightiana*
7. Flowers with 3.0-4.0 cm long pedicel.....*C. grewiaeflora*
8. Terminal lamina elliptic-lanceolate (3.6-7.7x1.5-2.5cvm); filaments glabrous.....
.....*C. gouriana*
8. Terminal lamina ovate-elliptic (3.7-8.0x1.6-2.8cm); filaments clothed with
spreading hairs.....*C. acuminata*

Clematis acuminata DC., Syst. Nat. 1;148.1817 & Prodr.1:6.1824; FBI 1:5.1872; FEH 2:29.1971; EFPN 2: 14.1979; FB 1(2):189.1984; FI 1:154.1993.

C. acuminata var. *wallichii* in FBI 1:5 & 6 .1872.

var. *sikkimensis* (Hook. f. et Thoms.) Drum. ex Burkill in BF 1:5 & 6.1872; TBRI 50 (4): 109.1987.

Nep.: Kanesi - Lahara.

Woody much branched, slender petiole climber. Stem and branches purplish red on drying, ribbed, glabrous or sparsely hairy. Leaves pinnately 3-foliolate; petioles 5.0-7.0cm long; petiolules 0.5-1.0cm long; lamina 3.7-8.0x1.6-2.8cm, ovate-elliptic, irregularly distantly serrate, acute to acuminate, base rounded to subcordate, glabrous or sparsely pubescent, palmately 5-nerved. Axillary, trichotomously branched panicle, few to many flowered, clustered, glabrous or sparsely pubescent; peduncle 2.5-4.0cm long, puberulous; bracts 0.25-0.50cm long, linear-lanceolate; pedicels 1.5-3.0cm long, puberulous. Flower buds tomentose. Sepals 4, petaloid; linear to oblong-lanceolate, acute, recurved at tip, base rounded, creamy, margins pubescent, puberulous within; petal absent; filaments 0.8-1.0cm, narrow, linear,

densely pubescent, anther 0.2x0.1cm, yellow. Achenes ovate, silky hairy; style upto 2.0cm long at maturity, feathery plumose spreading towards base.

Fl.: Sep. - Dec.; Fr. rip.: Dec. - Apr.

Spn. Cited. : DARJEELING : Mulkhagra Basty, Neora Valley National Park 2340m, 01.5.1995, *Das et Samanta* 0672; SIKKIM : Jorethang, 310m, 28.10.1995, *Das et Samanta* 0831; Pangthang, 1910m, 20.11.1995, *Das et Samanta* 1031.

Loc. Distrib. : DARJEELING : Rare; Nimbong, Takdah, Neora Valley National Park, Dali and Batasia, Lepchajagat, (1200 - 2400m); SIKKIM : Less common; Jorethang - Pangthang and Gyalshing. (300-2000m).

Gen. Distrib. : Himalayas (Garwal - Bhutan); Assam, Nagaland; N. Myanmar, China.

Notes : (i) Roots used medicinally for relief from sinus pain.
(ii) Chr. no. $2n = 16$ (Roy, S. C. & Sharma, A. K. 1971).

Clematis buchananiana DC., Syst. Nat. 1:140.1817 & Prodr. 1: 4.1824 (*buchaniana*); FBI 1:6.1872; TSDD 1.1896; TNB 7.1929; RBSI 19(2): 19.1966; FEH 1:81.1966 & EFPN 2:14.1979; FPK 9.1981; FB 1(2):289.1984; TBRI 50(4):109.1987; FI 1:60.1993 (Fig. 3.13).

Nep.: Pinasay Lahara.

Medium woody petiole climber. Stem and branches brownish pillose with long spreading fibrous hairs. Leaves pinnately 3-7 foliolate; petioles 6.2-7.3cm long, sometimes broadened and thickened at base; petiolule 1.5-5.3cm long, densely brownish pubescent; lamina 3.8-5.1x2.6-3.8cm, broadly ovate-lanceolate, orbicular, 2-3cm, lobed- or coarsely serrated, acute, base rounded, pubescent above densely hairy beneath, 5-7 nerved at base. Cymes axillary, few to many flowered. Leafy panicles, pillose hairy; peduncle upto 10cm long, ribbed, hairy; pedicels 2.0-4.0cm long; bracts and bracteoles leafy 3.0-8.0x2.0-6.0cm, ovate-lanceolate, coarsely toothed; sepals 1.1-1.5x0.4-0.6cm ovate or oblong-lanceolate, yellowish green, densely tomentose inside, brownish pubescent outside; petals absent; filament 0.8-1.0cm long, densely hairy. Achenes 0.3.5-0.50x0.2-0.3cm, ovate - obovate, densely hairy with feathery long silky persistent styles.

Fl.: Jul.-Nov.; Fr. rip. : Oct.-Jan.

Spn. Cited. : DARJEELING : St. Mary's Kurseong, 1550m, 05.4.1994, *Das et Samanta* 0179; Neora Valley National Park, 2500m. 29.4.1994, *Das et Samanta* 0655, Reshete, Lava, 2260m,

06.5.1995, *Das et Samanta* 0716; SIKKIM : Soreng, 1520m, 30.10.1995, *Das et Samanta* 0874; Fifth Mile, Gangtok, 1760m, 18.11.1995, *Das et Samanta* 0949, Pangthang, 1400m, 20.11.1995 *Das et Samanta* 1035; Gyalshing, 1550m, 23.5.1996 *Das et Samanta* 1143.

Loc. Distrib. : DARJEELING : Abundant throughout (350-2600m); SIKKIM: Common; Pelling; Gangtok; Soreng, (1500-2000m).

Gen. Distrib. : India : Throughout temperate Himalaya, Kashmir - Arunachal Pradesh, Assam, Meghalaya; Myanmar, W. China.

Notes : (i) Roots used medicinally for relief from Sinus pain.
(ii) Chr. no. $2n = 16$ (Mehra, P. N. & Kaur, B. 1963).

Clematis connata DC., Ptodr. 1:4.1824; FBI 1:61872; TNB 1.1929; JBNH 127.1955; BBSI 1:138.1959; Bull. Bot. Gard, Lucknow 80:t.25.1963; FEH 1:88.1966 & EFPN 2:14.1979; FB1 (2):290.1984; TBRI 50(4):100.1987; FI 1:61.1993.

C. venosa Royle, 3.B.Him. 51.1834.

C. amplexicaulis Edgew. in Tr. L. S. 20:24.1846.

Nep.: Pinasay Lahara.

Small slender woody glabrous petiole climber. Leaves 3-7 foliate. Petioles 6.5-7.5cm long, base winged; lamina 5.8-7.5x2.7-5.2cm, broadly ovate-cordate or ovate-lanceolate, 2-3 lobed, distantly serrate, acute to acuminate to slightly caudate, broadly rounded or cordate at base, both surfaces glabrous often pubescent at nerves. Flowers axillary cymose panicle. Peduncles 2.5-5.0cm long; bracts 1.0-1.2x0.21-1.5cm hairy on both surfaces; pedicel 2.0-4.0cm long; flowers c 5.0cm in diam, downy; sepals 4, 1.5-2.0x0.5-1.0cm linear-oblong, acute, recurved at tips, many ribbed, brown out side, yellowish pubescent both surfaces; petals absent. Stamens 0.6-0.8cm long, filaments slender, anther 0.25-0.30cm long. Achenes pubescent at maturity; style upto 5.0cm long, plumose.

Fl.: Sep. - Nov.; Fr. rip.: Oct. - Dec.

Spn. Cited. : DARJEELING : Graveyard near Darjeeling Govt. College, 2000m, 29.7.1981, A. P. Das 0577.

Loc. Distrib. : DARJEELING : Less common; Kafer Todey - Tangta, Birch- Hill, Kurseong, Raman, (1600 - 2200m).

Gen. Distrib. : India: Temperate Himalaya, (Kashmir-Bhutan); Meghalaya, Manipur; W. China and Taiwan.

Note : (i) Chr. no. $2n = 16$ (Bir, S. S. & Thakur, H. K. 1980).

***Clematis gouriana* Roxb.**, ex DC., syst. Nat. 1:138.1817 & Prodr.1:3.1824; FBI 1:4.1872; TSDD 1.1896; TNB 77.1929; FEH 1:88.1966; EFPN 2:14.1979; FPK 9.1981; FB 2(1):290.1984; FI 1:64.1993.

Nep.: Kanesi Lahara.

Large shrubby petiole climber. Branches 6-12 furrowed and ribbed, hairy throughout but densely at nodes, internodes 7.0-10.5cm long. Petioles 1.2-5.5 cm long; primary petiolule 1.5-2.0 cm and secondary petiolule 0.3-1.0cm, slender, twined, sparsely hairy throughout; leaflets 3-9, variable, mostly 3, terminal lamina 3.6-7.7x1.5-2.5cm, ovate to elliptic - lanceolate, entire, serrate with a few teeth near apex, acuminate, base cordate, membranous, nervs 3-5, convergent, glabrous but pubescent along nerves. Cymes axillary or terminal, crowded; peduncle upto 15cm; pedicels 1.5-2.0cm long; flowers 0.8-1.5cm, across, scented, greenish-white; sepals 4, oblong-elliptic, margin revolute, apex rounded, pubescent. Stamens 30-36, filaments linear, flat, glabrous; style upto 0.3cm long, hairy, stigma clavate. Achenes 0.3-0.5x0.1-0.2cm ovoid - oblong, compressed, densely hairy with feathery tails.

Fl.: Aug. - Oct.; Fr. rip.: Oct. - Feb.

Spn. Cited. : DARJEELING : Latpanchor, 950m, 17.5.1995, *Das et Samanta* 0772.

Loc. Distrib. : DARJEELING : Less common; Samsing, Peshok, Lopchu, Kalijhora, Neora Valley National Park (Jorepukri), Bijanbari, Takdah., Nimbong. (800 - 2400m).

Gen. Distrb. : India : Darjeeling, Nepal, Bhutan, Sri Lanka, Myanmar, China, Philippines, Indonesia.

Notes : (i) Used medicinally & also poison
(ii) Chr. no. $2n = 16$ (Mehra, P. N. & Kaur, B. 1963).

Clematis grewiiflora, DC.Syst. Nat. 1:140.1818; Prodr.1:4.1824 (as *grewaefolia*); FBI 1:6.1872; TSDD 1.1896; TNB 7.1929; FEH 1:88.1966 & 2:29.1971; EFPN 2:15.1979; FPK 9.1981; FB 1(2):290.1984.

C. loasaefolia DC., Syst. Nat. 1:140.1818; FBI 1:6.1872.

Nep. : Pinasay Lahara.

Very much similar to *C. buchananiana* but this petiole climber densely brown

tomentose althrough. Leave pinnetely 3-5 foliates, 4.5-7.5x1.8-5.8 cm, ovate, sinuete serate; sepal c1.2 broad cm, white, densely wooly out side nearly glabrous inside; filaments c 2.5cm long, filiform.

Fl.: Nov. - Feb.; Fr. rip.: Mar. - May.

Spn. Cited. : DARJEELING : Neora Valley National Park, 2200m, 18.3.1997 *Das et Samanta* 1633.

Loc. Distrib. : DARJEELING : Common; Todey, Kafer, Neora Vally, 14-Farie, Kuresong, Takdah, Sukiapokhari-Manebhanjan (1550-2350m).

Gen. Distrib. : India : Himalaya (Nepal - Arunachal Pradesh), Meghalaya; N. Myanmar.

Clematis montana Ham. ex DC., syst.Nat.1:164.1817 & Prodr. 1:9.1824; FBI 1:2.1872; ARBGC 5:72.1896; TSDD 1.1896; TNB 7.1929; Tamura in Acta. Phyto. Geobot. 15:118.1954; Bull. Bot. Gard. Lucknow 80:t.25.1963; Fl. Sikk. Him. f. 102.1963; RBSI 19(2):19.1966; FEH 1:88.1966; EFPN 2:14.1979; FB 1(2):286.1984; TBRI 50 (4):109.1987; FI 1:69.1993.

C. anemoniflora D.Don., Prodr. Fl. Nep. 192.1825.nom.ill-egit.

C. punduana Wall., cat. 166,n. 4682.1831, nom.nud.

C. montana var. *grandiflora* Hook. in B.Mag. 70:t, 4061.1844.

C. montana var. *incisa* Kuntze in verh. B. ver. Brand., 26:141.1885; ARBGC 5:73.1896; JBNHS 51:410.1953; RBSI 19 (2):19.1966.

C. montana var. *chumbica* ARBGC 5:73.1896; JBNHS 51:410.1953.

Nep.: Kaneshi - Lahara.

Medium woody petiole climber. Stem and branches rigid, more or less glabrous. Leaves ternately 3-foliolate. Petioles 4.0-5.0cm long and petiolule 0.25-0.8cm long, glabrescent; terminal lamina 2.5-6.0x1.0-2.8cm, ovate or ovate-lanceolate, coarsely serrate or lobed, acute, base rounded hairy specially on nerves beneath, 3-5 nerves from base. Flowers in axillary fascicles; peduncles 7.0-10cm long; pedicels 3.0-10cm long, glabrous; sepals 4, 1.5-2.5x0.7-1.1cm, oblong, petaloid, white, obtuse or acute to slightly acuminate, densely or sparsely hairy out side, glabrous inside; stamens many, filaments linear, glabrous, anthers yellow, introse. Achenes 0.4-0.5x0.3-0.4cm ovate-obovate, compressed, glabrous with feathery and milky tails.

Fl.: Jul. - Aug.; Fr. rip.: Sep. - Nov.

- Spn. Cited. : DARJEELING : Meghma, above 3000m, 18.4.1994, *Das et Samanta* 0130; Jorebungalow, 2000m, 04.10.1994, *Das et Samanta* 0400; SIKKIM : In between Pelling-Gyalshing, 1750m, 23.5.1996, *Das et Samanta* 1192.
- Loc. Distrib. : DARJEELING : Common in gardens, sometimes in wild; Victoria Falls, Darjeeling, Lava, Rimbick, Takdah, (1600-2400m).
- Gen. Distrib. : Temperate Himalaya, Garwal; Bhutan, N. Myanmar, South and West China.
- Notes : (i) Used as ornament for its beautiful flowers.
(ii) Chr. no. $2n = 16$ (Mehra, P. N. & Remanandan, P. 1972) ; 16,32 (Schneider, F. 1963).

Clematis napaulensis DC., syst. Nat. 1:164.1817 & Prodr.1:9.1872; Bot. Mag. t.9037.1925; Brottonia 4:55.1941; BBSI 1:139.1959; Bull. Bot. Gard. Lucknow 54:t.14.1961; & 78:40.1962; FEH 1:89.1966; EFPN 2:15.1979; FB 1(2):288.1984; TBRI 50(4):109.1987; FI 1:71.1993.

Slender woody petiole climber. Stems and branches glabrous; petioles 1.0-3.0cm long, and petiolule 0.2-0.5cm long, nearly glabrous. Leaves ternate 1.5-3.0x0.8-1.0 cm, elliptic-lanceolate or ovate-lanceolate, margin 2-3 lobed, acuminate, base rounded, glabrous above, sparsely pubescent below; 3-nerved, laterals oblique. Flowers 1.5x1.2 cm in axillary clusters; pedicels 3.0-6.5cm long, nearly glabrous. Bracts leafy 0.5-1.0cm, at the base of flowers. Sepals 4, suberect 1.4-2.0 x 0.4-0.8cm, oblong - elliptic, yellowish outside, purple inside. Filaments short c 0.3cm long, hairy; anther 0.2x0.1cm, linear, yellow. Achenes 0.5-0.7cm long, ovate or obovate, compressed densely hairy with long feathery tails.

Fl.: Apr.-May; Fr. rip.: Jun-Aug.

- Spn. Cited. : DARJEELING : Hatidanda, Neora Valley National Park, 2550m, 17.10.1994, *Das et al.* 0618.
- Loc. Distrib. : DARJEELING : Rare; only collected from Hatidanda, Neora Valley National Park (1500-2750m).
- Gen. Distrib. : E. Himalaya, (Darjeeling-Bhutan), Meghalaya, Nagaland.
- Note: (i) Chr. no. $2n = 16$ (Roy, S. C. & Sharma, A. K. 1971).

Clematis smilacifolia Wall. in Asiat. Res. 13:402.1820; FBI 1:3.1872; TSDD 1:1896; TNB 7.1929; FPK 9.1981; FB 2(1):288.1984; FI 1:75.1993.

C. munronaina Wt. 3.Ind. B. 1:5,t.1840; FTN 1:1.1983; FB 2(1): 288.1984;.

C. loureiriana auct non DC.: Merr. in Tr. Am. Phil. Soc., n. s. 24(2):154.1935, p.p.

Nep.: Halure Lahara, Pinasi, Lahara.

Large woody petiole climber. Stem and branches glabrous, purplish, puberulous at nodes. Leaves ternately 1-3 foliolate; petioles 1.5-15cm long, flattened, sometimes twining upward, ribbed, more or less glabrous; terminal one larger than laterals; terminal lamina 6.5- x2.0 cm, broadly ovate, entire or remotely and shallowly serrate, acute or subacuminate, base cuneate or rounded or slightly cordate, membranous, glabrous, green, nerves 5 or 7. Cymes in axillary panicle; peduncles 5.5-7.5cm, sulcate, dark brownish hairy; pedicels 2.5-7.5cm, ribbed, puberulous. Flower bearing bracts 2.0-2.2 cm, linear-spathulate. Sepals, 4-8, 1.2-1.8cm, oblong or linear, foliaceous, coriaceous outer side densely and finely brownish pubescent, deep purple inside. Filaments 0.3-1.5cm, linear, glabrous, white, connective forming an acuminate point; anthers c 0.2cm, spatulate, brown. Achenes elliptic - ovate, pubescent; style upto 5.5 cm at maturity.

Fl.: Oct. - Nov.; Fr. rip.: Dec. - Mar.

Spn. Cited. : SIKKIM : Soreng, 1565m, 30.10.1995, *Das et Samanta* 0884.

Loc. Distrib. : SIKKIM : Rare; found at Nayabasty, Soreng - Rupsung Forest, Ravongla, (1500-2150m).

Gen. Distrib. : India : Himalaya and Myanmar, Tibet, China, Indonesia Philippines and Malaysia.

Notes : (i) Roots used as medicine for the relief from sinus pain.
(ii) Chr. no. $2n = 16$ (Sobha, V. & Ramachandran, K.1980).

Clematis wightiana Wall. cat.4674.1828, nom. nud. ex wt. & Arn., Prodr.w.1834. ; FBI 1:5.1872, FI 1:80.1993.

A stout shrubby petiole climber. Stem and branches many ribbed covered with brownish hairs. Leaves ternately 5-foliolate; petioles 6.0-8.0cm long; terminal petiolule c1.4cm long, laterals 0.5-0.7cm; terminal lamina 3.5-8.0x2.5 cm, oblong-ovate or orbicular, 3-lobed, distinct, dentato-serrate or irregularly dentate, acute to acuminate, base cordate, tomentose above and densely brown villous below. Flower in axillary panicles. Peduncles 0.8-1.2cm long; bracts and bracteoles leafy, 0.7x0.5cm, broadly

ovate-linear, trilobed, densely brown-hairy above, white below; pedicels 0.4-0.55cm or almost sessile; sepals 4 ovate, brown villous outside; stamens many, filaments c 0.08cm long, silky hairy, anther 0.15cm. Achenes ovate, compressed, densely silky-hairy with feathery 3.0-5.0cm long tails.

- Spn. Cited. : SIKKIM : Soreng, 1520m, 30.10.1995, *Das et Samanta* 0874.
- Loc. Distrib. : SIKKIM : Found only Soreng (1500-2100m).
- Gen. Distrib. : India : Hills of Orissa, Deccan and Nilgiris.
- Note : (i)Chr. no. $2n = 48$ (Sobha, V. & Ramachandran, K. 1979).

NARAVELIA DC.

Naravelia zeylanica(L.) DC., syst. 1:167.1817; FA 1:6.1934; FBI 1:7.1872; TSDD 1.1896; FEH 89.1966; TNB 7.1929; FB 1(2):291.1984; TBRI 50(4):120.1987; FI 1:106.1993 (Photo-8, Fig. 3.6).

Atragene zeylanica L., Sp.Pl 1:542.1753; Roxb. Pl. corom. 2:t.188.1805; FI 2:670.1832.

Nep.: Rashgagri, Rashgeri.

Extensive shrubby petiole climber. Young stem sparsely pubescent but becomes dense at maturity, internodes 8.5-10.5cm long. Leaves ternately 2-3 foliolate, terminal leaflet modified into 3-net hooked tendril; petioles 3.3-3.5cm long and petiolule 1.0-1.5cm long both densely pubescent; terminal lamina 4.5-7.0x2.8-4.7cm, broadly ovate, entire or sparsely dentate, acute, base rounded, shiny-glabrous above, pubescent beneath. Flowers in divaricately branched panicles; peduncles 3.5-4.0cm long, densely hairy at base, sepals 5, 5.0x2.5cm, elliptic, entire, acute, base rounded, pubescent outside; petals 0.9x0.1cm, spatulate, greyish yellow, glabrous; stamens many, filaments ligulate almost glabrous, connective produced; staminode petaloid. Achenes 0.65x0.1cm, hairy; style sparsely hairy with feathery 3.0-5.0cm long tails.

Fl.: Jun. - Jul; Fr. rip.: Oct. - Feb.

- Spn. Cited. : DARJEELING : Jaldhaka, 400m, 06.2.1994, *Das et Samanta* 0062; Panighata, 350m, 13.3.1994, *Das et Samanta* 0090; Sevoke, 450m, 13.5.1994, *Das et Samanta* 0107; Baikunthapur Forest, Tenth Mile, 220m. 28.1.1995, *Das et Samanta* 0504.

- Loc. Distrib. : DARJEELING : Common, Dolka - Purbikhola, Ging, Jholung, Rangpo, Rung Dung, River Lesh, Kumai (upto 2450m).
- Gen. Distrib. : India : Tropical Himalayas, W. Bengal, Assam, Meghalaya; Nepal - Bhutan, Myanmar, Sri Lanka, Indonesia.
- Note : (i) Chr. no. $2n = 16$ (Raghavan , R. S & Arora, C. M. 1958).

RHAMNACEAE Juss.

GOUANIA L.

KEY TO THE GENERA AND SPECIES :

1. Tendril climber, calyx lobe ovate; flowers not pungent; capsules 3-winged.....
.....*Gouania leptostachya*
1. Twiner, calyx lobe deltoid; flowers pungent; samaras with oblong wing (modified style).....*Ventilago denticulata*

Gouania leptostachya DC., Prodr. 2:40.1825; FBI 1:643.1875; TSDD 19.1896; TNB 37.1929; FA 1:286.1934; FEH 1:197.1966 & : 2:76.1971; EFPN 2:91.1979; TBRI 50(4):100.1987; FFI 20:38.1990; FB 2(1):146.1991.

Nep.: Bainshi Khanra, Batwasi, Pat Patay.

Unarmed large shrubby tendril climbers. Stem distinctly many ribbed, green, glabrous. Tendrils unbranched, extraxillary. Stipules 0.5-0.7cm long, lanceolate, nearly glabrous; petioles 1.5-3.5cm long, glandular at apex; lamina 6.5-13.5x3.0-6.5cm, ovate, serrate or coarsely crenate, acuminate, base subcordate, sparsely pubescent on veins beneath, pinnately veined, divergent. Racemes slender often forming terminal panicles; peduncles up to 45cm long, pubescent; flowers white c 0.6cm in diam; calyx lobes 0.15-0.18cm, ovate, sparsely hairy outside; petals 0.15-0.2cm, spatulate, disc lobes triangular; stamens 5 and 5 staminode like lobes; ovary 3-celled; style 3-fid. Capsules 1.3-2.0cm long, 3-winged, dehiscing into 1-seeded. meri-carps.

Fl.: Jun. - Jul.; Fr. rip.: Sep. - Nov.

Spn. Cited. : DARJEELING : Below Birch Hill, 1950m, 04.10.1994, *Das et Samanta* 0392; Pubikhola, 450m, 18.11.1994, *Das et Samanta* 0407; Panighata, 350m, 09.12.1994, *Das et Samanta* 0453; Latpunchor, 950m, 17.5.1995, *Das et Samanta* 0740; SIKKIM : Karfet Forest, Jorethang, 320m, 29.10.1995, *Das et Samanta* 0852; Pokluk, 840m, 29.5.1996, *Das et Samanta* 1113; Mangan, 1350m, 26.9.1996, *Das et Samanta* 1509.

- Loc. Distrib. : DARJEELING : Very common; Rung Dung, Tindharia - Kurseong, Samsing, River Teesta Valley (300-2350m); SIKKIM : Common; Jorethang-Soreng, Singhik, Singtam (300-2000m).
- Gen. Distrib. : Temperate Himalaya, Assam, Meghalaya; N. Myanmar, Malaysia, Philippines and Indonesia.
- Note : (i) Young leaves edible.

VENTILAGO Gaertner

Ventilago denticulata Willd. in Ges. Naturf. Fr. Neue. Schr. 3:417.1801; EFPN 2:92.1979; FFI 20:82.1990; FB 2(1): 142.1991.

V. calyculata Tulasne in Ann. Sci. Nat. Ser. 8,4:124.1857; FBI 1:631.1875.

Liana. Stem finely pubescent; often twining. Stipules 0.15-0.2 cm long, ovate, caducous; petioles 0.3-0.8cm long; lamina 3.5-13x2.2-6.0cm, ovate-elliptic, crenate-serrate, acute to subacute, base oblique or cuneate, both surfaces hairy when young, veins alternate. Flowers in axillary and terminal; peduncles upto 15cm long; calyx lobes 0.1-0.15cm, triangular or deltoid; petals 0.1-0.13cm long, spathulate, emarginate; stamens 5, attached to the base of petals; filaments c0.15cm long; disc 5-lobed; ovary 2-celled, style short, bifid, pubescent. Nut 0.5-0.6 cm in diam subglobose with persistent calyx tube around base, forming oblong wings, 1-seeded.

Fl.: Sep. - Dec.; Fr.rip.: May - Jun.

Spn. Cited. : DARJEELING : Tindharia, 940m, 14.3.1995, *Das et Samanta* 0556.

Loc. Distrib. : DARJEELING : Less common; Sukna - Dolka Forest, Garubathan, Latpunchor, Rongtong, Dudhay (up to 1000m).

Gen. Distrib. : Himalayas (Kashmir - Bhutan); Myanmar, China.

ROSACEAE Juss.

KEY TO THE GENERA :

1. Thalamus cup like enclosing carpels; fruits hip.....*Rosa*
1. Thalamus conical / globose with exposed carpels; fruits aggregate of drupes....
.....*Rubus*.

ROSA L.**KEY TO THE SPECIES:**

1. Leaves 3-5 foliolate.....2
 1. Leaves 7-11 foliolate.....*R. sericea*
 2. Stem with no prickly, stipules very small, deciduous.....*R. banksiae*
 2. Stem with stout scattered recurved prickles; stipules upto 1.4cm long, persistent..
*R. brunonii*

Rosa banksiae Aiton., H. Kew.ed. 3;258.1811;Herklots in J.R.H.S. 89:295.1964;EFPN 2:144.179;TBRI 50 (4):125.1987.

Large shrubby climber. stem unarmed. Stipule small, deciduous. Leaflets 3 or 5, shining. Flowers in dense corymbose panicles, minute, white or yellow.

Fl.: Apr. - May.

Spn. Cited. : DARJEELING : St. Mary's, Kurseong, 1550m, 20.11.1993,
A. P. Das 1276.

Loc. Distrib. : DARJEELING : Cultivated, often escapes (upto 2100m).

Gen. Distrib. : Native of China, Japan.

Note : (i) Chr. no. $2n = 14$ (Hurst, C.C. 1928,1929,1931).

Rosa brunonii Lindl., Ros. Monog.120,t.14.1820; Hook. in Bot. Mag. t. 4030.1843; Rehd. ed. Willson in Pl. Wilson, 2:306.1915; Byhouwer in Arr. Arb. 10:87.1929; Rehder. Man. ed. 2, 446.1940; Bibl. 312.1949; Kitamira, F. & Fl. Nep. Him.156,f.30.1955; FEH 1:127.1966; EFPN 2:143.1979; TBRI 50(4):125.1987; FB1(3):586.1987.

R. moscata auct. non. Mill.: Hook. f., FBI2:367.1879 p.p.

R. m. var. nepalensis Lindl. in Bot. Reg. 10:t. 829.1824; Willm., Gen. Ros. 37, t. 10.1914.

Medium scrambling shrubs. Stem with stout scattered recurved prickles. Stipules 0.9-1.4cm long, subulate adnate to the petiole. Leaves 7.5-15cm, leaflets 5-9; Petioles upto 2.5cm long; petiolule short; lamina of terminal leaflet 2.0-8.0x1.0-2.5cm, ovate-elliptic, closely serrated, acute to acutminate, base rounded, glabrous above, pubescent and sparsely glandular beneath. Flowers in terminal corymbs, fragrant. Calyx tube 1.5-2.1cm long, obovoid, lobes 1.2-2.0cm long, lanceolate, acuminate, covered with finely pubescent and densely short stalked glands; Petals 1.4-2.9x1.0-2.4cm, obovate, yellowish-white, rarely pink. Style 0.79-1.0cm, cupshaped. Hips 1.3x1.0cm, obovoid, teeth deciduous.

Fl.: May. - Jun.

- Spn. Cited. : DARJEELING : Behind Observatory Hill, 2100m,
30.5.1981, A. P. Das 0443.
- Loc. Distrib. : DARJELEING : Less common; Birch Hill - North Point
(1900 -2200m).
- Gen. Distrib. : India : E. & W. Himalayas, Assam; Myanmar, R. W. China.
- Note : (i) Flowers used as ornament by the local people.

Rosa sericea Lindl., Monog. Ros. 105, t. 12. 1820; FBI 2:367.1878; TSDD 36.1896;
FEH 1:127.1966; FB 1(3):587.1987(Photo-9).

Nep.: Sisi, Chung Chung.

Scandent shrub. Stem terete, solid with erect prickles 0.5-0.7cm long, persistent. Stipules 1.2-1.5cm long, subulate, glabrous. Leaves 2.5-9.0cm; petioles 1.5-2.5cm long, leaflets 7-11; shallowly ribbed without prickles, upper leaflet largest than lower; lamina of terminal leaflet 1.0-2.5x0.7-1.0cm, obovate or oblong, serrate, acute, base cuneate, membranous, glabrous on both surfaces. Flowers axillary and solitary racemes; bracts 0.8-1.0x0.2cm, foliaceous thin glabrous; pedicels 1.8-2.8cm long; sepals 4, free, green, 1.3-1.5x5-0.6cm, ovate-lanceolate, entire, caudate-acuminate, rounded, densely hairy; petals 4, 1.8-2.0cm, obovate, slightly lobed, creamy white, glabrous, many nerved; stamens numerous, filaments 0.35-0.5cm long, wiry glabrous, anther 0.15-0.2cm long, bithecous; many carpelled; style 0.3-0.5cm, linear, hairy, stigma blunt. Drupelets many, orange red 0.65-1.0cm, subglobose, fleshy.

Fl.: Apr. - May.

- Spn.Cited. : DARJEELING : Alubari Neora Valley National Park. 2280m,
20.10.1996, *Das et Samanta* 1622.
- Loc. Distrib. : DARJEELING : Abundant; Neora Valley National Park,
Manebhanjan to Tonglu (1900 - 3000m.)
- Gen. Distrib. : India : Himalayas, Assam; Manipur Tibet, Bhutan, N.
Myanmar & W. China.

RUBUS L.

KEY TO THE SPECIES :

1. Leaves simple.....2
1. Leaves foliolate.....4
2. Liana; stipules subulate; lamina not lobed.....*R. acuminatus*
2. Shrubby climber; stipules ovate or oblong-lanceolate; lamina 2-5 lobed.....3

3. Lamina ovate-cordate; white tomentose beneath.....*R. paniculatus*
 3. Lamina broadly ovate; greyish-yellow beneath.....*R. rugosus*
 4. Lamina always 3-foliolate.....5
 4. Lamina 3-9 foliolate.....8
 5. Stipules foliaceous.....*R. wardii*
 5. Stipules not foliaceous.....6
 6. Stem with glandular bristles.....*R. ellipticus*
 6. Stem eglandular.....*R. senchalensis*
 7. Leaves pedately compound; racemes in axillary head and terminal few flowered
*R. lineatus*
 7. Leaves palmately compound; either panicle or corymbs.....8
 8. Calyx with straight gland tipped bristles.....*R. indotibetinus*
 8. Calyx eglandular (simple hairs).....*R. niveus*

Rubus acuminatus Smith in Rees., Cyclop. 30: 32.1819; FBI 2:327.1876; TSDD 35.1896; Focke in Birbl. Bot. 17(72):68.1910; TNB 60.1929; FEH 1: 128.1966; EFPN 2:144.1979; TBRI 50(4):125.1987; FB 1(3):550.1987.

R. betulinus D.Don, Prodr. Fl. Nep. 233.1825.

Nep.; Biraley Kara, Komatsang, Sane- Aselu.

Scrambling liana. Stem ribbed, solid with few recurved prickles, generally glabrous, internodes 2.5-6.0cm long. Stipules 0.45-0.5cm long, subulate, deciduous; leaves simple petioles 0.5-1.5 cm long, slender, slightly and shallowly channeled, glabrous but sparsely recurved prickled; lamina 8.5-13.5x2.8-6.5cm, ovate - lanceolate, doubly serrated upto apex acuminate to caudate - acuminate, base rounded or cuneate. Panicles terminal; peduncle 1.5-3.0cm long; bracts 0.2-0.25cm long, lanceolate, entire, hairy; pedicels 0.5-0.8cm; Calyx 5 lobed, 0.3-0.6x0.3cm, triangular-ovate, entire, glabrous but pubescent on margins. Petals as long as sepals, white. Stamens numerous; filaments c 0.2-0.25cm long, anthers 0.04-0.05cm, orbicular; carpels on globulose torus, globulose. Drupes red, globose, ensheathed by calyx; Seeds 2, 0.3x0.2cm, subglobose, greyish brown.

Fl.: Jul.-Sep.; Fr. rip.:Aug.-Dec.

Spn. Cited. : DARJEELING : North Point, 1950m, 04.10.1994, *Das et Samanta* 0383.

Loc. Distrib. : DARJEELING : Abundant; Hill Cart Road, above Dale, Sonada, Birch Hill, Lava, Kafer (1800-300m).

Gen. Distrib. : India : Himalayas, (Darjeeling-Sikkim) Assam, Meghalaya, Manipur; W. China.

Notes : (i) Ripe fruits edible.
(ii) Chr. no. 2n = 28 (Gustafsson, A.O. 1933).

Rubus ellipticus Smith in Rees, Cyclop. 30:16.1815; FBI 2:336.1878; TSDD 36.1896; Fl. Sikkim Hlm. f. 153.1963 & FEH 1:121.1966; EFPN 2:144.1979; FPK 32.1981; TBRI 50(4);125.1987; FB 1(3):557.1987.

R. ellipticus var. *denudatus* Hook. f.in FBI 2:337.1878.

R. flavus D. Don, Prodr. Fl. Nep.234.1825.

var. *hirta* Hook.f., FBI 2:336.1878.

Nep.: Ainselu, Gempe Aselu.

Spreading scrambling shrubs. Stem terete, ridged covered with recurved prickles and dense spreading tough eglandular bristles (10.3-0.55cm), reddish brown. Stipules caducous, 0.5x0.2cm, subulate entire, hairy at margins, acuminate, deep brown. Leaves 6.5-11x5.0-9.5cm, 3-foliolate. Petioles 3.0-6.5cm long, terete with bristles and prickles; terminal petiolule 3.0-3.5cm long, laterals 0.2-0.4cm; lamina of terminal leaflet 3.0-8.5x1.8-7.0cm, ovate-elliptic, shallowly serrate, subacute, base rounded, leathery, prickles especially on below, midveins nearly glabrous above, lateral two leaflets smaller than terminal. Cymes branched, axillary and terminal; bracts 0.25-0.3cm, lamceolate, pubescent; pedicels 0.5-1.2cm, terete; Calyx of 5 sepals, free, 0.4-0.5x0.3-0.4cm, broadly ovate, entire, acute, both surfaces wooly; petals white, 0.3-0.4x0.25-0.3cm, obovate, entire, subacute, softly pubescent above, wooly beneath. Stamens numerous; filaments 0.15-0.18 cm, slender, anther 0.03-0.05cm, bithecous. Style 0.01-0.15cm, stigma blunt. Druplets globular, yellow, clustered.

Fl. Apr. - Jun.

Spn. Cited. : DARJEELING : Near Mulkhagrabasty, Neora Valley National Park, 2070m, 29.4.1995, *Das et Samanta* 0654; Kurseong, 1500m, 104.1995, *Das et Samanta* 1229; SIKKIM : Soreng, 1520m, 30.10.1995, *Das et Samanta* 0869; Pangthang, 1900m, 20.11.1995, *Das et Samanta* 1021; Mangan, 1350m, 26.9.1996, *Das et Samanta* 1561.

Loc. Distrib. : DARJEELING : Abundant throughout the altitudinal range of distribution (1900-2400m); SIKKIM : Very common; Singhik, Pelling- Gyalshing, Gangtok, Nanchi, Okhrey (1400 - 2500m).

Gen. Distrib. : Himalayas; Myanmar, Sri Lanka, China.

Notes : (i) Ripe fruits edible
(ii) Chr. no. $2n = 14$ (Subramanium, D. 1979b).

Rubus indotibetinus Koidzumi, Fl. Symb. Or. As. 65.1930; Razi, RBSI 18(1):46.1959; FEH 2:57.1971; EFPN 2:145.1979; FB 3(1):562.1987.

R. asper D. Don, Prodr. 234.1825; FEH 128.1966, no. J&C. Presl. 1822.

R. rosefolius auct. non Smith. Hook. f., FBI 2:34.1878.p.p.

Nep.: Gempe Aselu.

Large scrambling shrubs. Stem obscurely ridged, covered with curved prickles 0.5-0.7cm, straight gland tipped bristles 0.05-0.1cm long. Stipules 0.8-1.0cm, long lanceolate, leafy, gland tipped margin, acuminate, cuneate. Leaves 5-foliolate; Petioles 2.5-4.0cm long, slightly ridged, spines with gland tipped bristles; petiolule short; terminal leaflets larger than laterals; terminal lamina 6.0-10x2.0-4.5cm, ovate-elliptic, doubly serrated, acute to acuminate, base cuneate; lateral leaflets almost sessile. orbicular, rigidly coriaceous, brown when dry, almost glabrous but sparsely pubescent especially on midveins. Panicle terminal, 1-2 flowered; sepals 5, 1.3-1.6x0.4-0.5cm, entire, acuminate to caudate, filiform, pubescent althrough; petals 5, white, 1.3-1.3-1.5x0.3-0.5cm ovate, entire, acute, glabrous. Stamens numerous; filaments 0.3-0.4cm long; anther 0.04-0.05cm, yellow, bithecous; carpels numerous; drupelets many, red purple, 1.5-2.0 cm in diam, oblong-globose.

Fl.: Apr. - Jun.; Fr. rip.: Jul. - Aug.

Spn. Cited. : DARJEELING : Reshete, Neora Valley National Park, 2250m, 06.5.1995, *Das et Samanta* 0708; SIKKIM : Pelling, 1900m, 23.5.1996, *Das et Samanta* 1186.

Loc. Distrib. : DARJEELING : Rare; Lava, Rimbick, Neora Valley National Park (2000 - 2450m); SIKKIM : Rare; found only Gyalshing-Pelling areas (upto 2100m).

Gen. Distrib. : India : Himalayas, Assam; Bhutan, Nepal, Tibet, Myanmar and W. China.

Note : (i) Ripe fruits edible.

Rubus lineatus Reinw. in Bijdr. 1108.1826; FBI 2:333.1878; TNB 60.1929; FEH 1:130.1966 & 2:56, 58 60.1971; EFPN 2:145.1979; FB 1(3):555.1987; TBRI 50(4):125.1987.

R. lineatus var. *angustifolius* Hook. f., in FBI 1(3):556.1987.

R. lineatus var. *angustifolia* Hook.f., var. *glabrior*, Griff. Hook. f., in FBI 2:333.1878.

Nep.: Gempe Aselu.

Medium shrubby scrambler. Stem terete, smooth, internodes 3.5-5.0cm long. Stipules 1.0-1.4cm long, ovate - oblong, entire, almost glabrous. Leaves pedately 3-5 foliate; petioles 1.5-2.5cm long, ribbed, glabrous; petiolule 0.1-0.15cm long; terminal two leaflets longer than lateral; lamina of terminal leaflets 4.0-10x2.0-3.0cm elliptic to oblanceolate, finely serrated, acuminate to caudate, base cuneate, membranous above silvery, wooly beneath; lateral lamina 3.5-7.0x1.5-2.0cm. Racemes axillary head and terminal 3-5 flowered, silvery, 1.5-2.0cm diam; calyx lobes upto 0.8-1.5cm, ovate, entire, acuminate, glabrate; petals white, 0.75-0.8cm, obovate, shorter than sepals, entire, acuminate, sparsely pubescent above, matted white wooly below; stamens numerous; filaments 0.1-0.15cm, long, glabrous, anthers 0.04-0.05cm, bitheous. Drupes 1.1-1.5cm, long, many, red rugose.

Fl.: Mar. - Jun. ; Fr.rip.: Jun. - Sep.

Spn. Cited. : DARJEELING : Lebong Road, North Point, 1900m, 07.5.1994, *Das et Samanta* 0194; Kalimpong, 1500m, 26.10.1995, *Das et Samanta* 1233.

Loc. Distrib. : DARJEELING : Common; Neora Valley National Park, Senchal -Tiger Hill, Sukiapokhari, Rimbick, Tonglu (1900 - 2400m); SIKKIM : Less common; Gangtok - Pelling (upto 2350m).

Gen. Distrib. : E. Himalaya (Nepal - Bhutan). India: Assam; N. Myanmar, Malaysia, China, Indonesia.

Rubus niveus Thunb., Diss. Rubo. 9, f. 3.1813; TSDD 35.1896; TNB 61.1929; FEH 1:130.1966 & 2:58.1979; Launer in NRBGE 30:276.1970 pp; EFPN 58.1971; EFPN 2:146.1979 var. *niveus*; FPK 32.1981; TBRI 50(4):125. 1987; FB 3(1):560.1987.

R. laciocarpus Smith in Rees, Cyclop. 30,n.6.1815; FBI 2:339.1978.

R. l. var. membranceus Hook. f., FBI 2:339.1878;

R.l. var. pauciflorus (Wall.) Hook. f., FBI 2;339.1878.

R. l. var. pauciflorus (Wall.) Deb, FT 1:10.1981.

R. distans D. Don, Prodr. Fl. Nep.256.1825.

Nep.: Kalo Aselu.

Large stout, shrubby scrambler. Stem terete, solid, glaucous, covered with stony received prickles; branches with many spinules, obscurely ridged. Stipules 0.35 - 0.8 cm long, linear to lanceolate, nearly glabrous. Leaves 4.5 - 12x2.5 - 7.0 cm; leaflets 5-7, imparipinnate; petioles 1.2 - 2.4 cm long; petiolule 0.3-0.8 cm, ribed, hairy; lámina of terminal leaflet 4.0-5.0x1.0-2.0cm, slightly ovate-elliptic or lanceolate, doubly serrate, caudate to acuminate, base rounded to cuneate, subglabrous above except midveins, wooly below; lateral leaflets smaller than terminal one; lateral lamina 1.2 - 3.5l x0.6 - 1.5 cm, ovate-lanceolate; serrate, acuminate, base rounded. Racemes short, corymbose, axillary and terminal; calyx white, lobes 3.5 - 5.5 cm, ovate, shortly acuminate, hairy; petals pink, 0.4-0.6 cm long. Drupes red, black on ripening, drupelets many, hairy.

Fl.: May. - Jul.; Fr. rip.: Jul. - Sep.

Spn. Cited. : DARJEELING : Reshete, 2260m, 06.5.1995, *Das et Samanta* 0711; SIKKIM : Fifth Mile, Gangtok, 1740m, 18.11.1995, *Das et Samanta* 0944; Mangan, 1350m, 26.9.1996, *Das et Samanta* 1522.

Loc. Distrib. : DARJEELING : Common; Lava - Neora Valley National Park, Rimbick, Tonglu (1900-300m); SIKKIM : Less common; Deorali, Tadong, Singhik - Phodong, Chungthang (1300-2000m).

Gen. Distrib. : Temperate Himalays; Bhutan, Nepal, Myanmar, Malaysia, China, Thailand.

Notes : (i) Ripe fruits edible (ii) Chr. no. $2n = 14, 28$ (Mehra, P. N. & Dhawan, H. 1966a); 28 (P.N. Sareen, T. S & Hans, A. S 1973); 14 (Subhranian, D.1979b).

Rubus paniculatus Smith in Rees, Cyclop. 30,n. 41.1815; FBI 2:329.1878,p.p.; TSDD 35.1896; TNB 60.1929; FEH 1:131.1966 & 2:56.1971 & 3:52.1975; EFPN 2:1465.1979; FPK 32.1981; TBRI 50(4):552.1987.

R. paniculatus sensu FBI p.p.

R. paliophyllus Kuntze;, *R. moiuccanus* L.& var. *paniculatus* (Smith) Kuntze in FB 1(3):552.1987.

Large climbing shrubs. Stems armed with recurved prickles, internodes 6.0 - 9.0 cm long, branches slender, creamy-white, tomentose. Stipules upto 1.3 cm long, oblong-lanceolate, eglandular. Leaves simple; petioles 1.5 - 4.5cm, slender, with recurved prickles and tomentose; lamina 8.4 - 12 x 4.0 - 9.0cm, ovate - cordate, shallowly 2 -

4 lobed on each side, serrate, acuminate, base cordate, pubescent above, densely white tomentose below. Bracts 0.68 - 0.91cm, linear - oblong, serrate, teeth lanceolate. Panicles terminal and axillary upto 16 cm long, white tomentose; peduncle 7.0 - 14 cm long, terete, wooly; pedicle short; sepals 4, 0.6 - 0.8cm long, triangular, entire - serrate, cuneate, glabrous; petals 4, 0.25 - 0.40cm, linear - oblong, white; Stamens numerous; filaments 0.2 - 0.25cm, wirey, glabrous; anthers 0.4 - 0.5cm, hastate, bithecous; ovary 0.4 - 0.7cm, obovate, style 0.3 - 0.35cm, stigma many fid. Drupes exposed, large, black, succulent.

Fl.: Jul. - Aug.; Fr. rip.: Aug.-Dec.

Spn. Cited. : DARJEELING : Meghma, 300m, 17.4.1994, *Das et Samanta* 0118; Joributi, Neora Valley National Park, 2160m, 23.4.1995, *Das et Samanta* 0613; Lebong Cart Road, 1900m, 10.7.1995, *Das et Samanta* 1221; SIKKIM : Fifth Mile, Gangtok; 1750m, 18.11.1995, *Das et Samanta* 0939; Pangthang, 1910m, 20.11.1995, *Das et Samanta* 1037; Pelling, 1900m, 23.5.1996, *Das et Samanta* 1169.

Loc. Distrib. : DARJEELING : Abundant; Raman, Kafer. Senchal, Thusum, Neora Valley National Park (1900 - 3100m); SIKKIM : Common; Gyalshing - Pelling (1500 - 2450m).

Gen. Distrib. : Temperate Himalayas, (Rajaori - Sikkim), Meghalaya.

Notes : (i) Ripe fruits edible (ii) Chr. no. $2n = 14$ (Mehra, P. N. & Dhawan , H 1966a).

Rubus rugosus Smith in Rees Cyclop. 30: Rubus n. 34.1819; EFPN 2:146.1979; TNB 60.1929; TBRI 50(4):125.1987; FB 1(3):554.1987.

R. hamiltonii Seringe in DC. Prodr.2:566.1825 p.p.

R. moluccanus auct. non.L. FBI 2:330.1887 p.p.; TSDD 35.1896; FA 2:194.1938; FB 1(3):554.1987.

Nep.: Asele.

Scrambling shrubs. Stem robust, branches eglandular, pubescent, prickles few, scattered, shortly curved. Stipules 1.0-1.4cm long, ovate, caducous; petiole 2.0-5.0cm, terete, villous with few scattered spines, and slightly curved prickles; lamina 8.0-12x6.0-9.0cm, broadly ovate, doubly serrated, acuminate, base cordate, rugose above, greyish-yellow beneath. Flowers and fruits not seen.

Fl.: Jun. - Aug.; Fr. rip.: Aug. - Dec.

- Spn. Cited. : DARJEELING : Meghma, 3000m, 17.4.1994, *Das et Samanta* 0118; Dow Hill, 2000m, 10.5.1994, *Das et Samanta* 0368; Mangpo, 1300m, 13.12.1994, *Das et Samanta* 0472; Reshete 2240m, 06.5.1995, *Das et Samanta* 0715; Deepchak, Kalimpong, 1250m, 04.8.1996, *Das et Samanta* 1289; SIKKIM : Burtuk, Gangtok, 1700m, 28.6.1995, *Das et Samanta* 0789; Singling Basti, Soreng 1520m. 30.10.1995, *Das et Samanta* 0866; Nandugaon, Jorethang, 840m, 21.5.1996, *Das et Samanta* 1122. Gyalshing, 1530m, 23.5.1996, *Das et Samanta* 1150; Rhenek, 960m, 06.9.1996 *Das et Samanta* 1365; Mangan, 1350m, 26.9.1996 *Das et Samanta* 1525.
- Loc. Distrib. : DARJEELING : Very common; Throughout (1300-300m); SIKKIM : Abundant ; Rhenek, Soreng, Gyalshing - Pelling (800-1900m).
- Gen. Distrib. : India: Central to E. Himalayas, Assam, Meghalaya, Western Ghat, Nilgiris; Sri Lanka, Myanmar, Malaysia.
- Note : (i) Chr. no. $2n = 14$ (Malla, S. B. et al. 1975).

Rubus senchalensis Hara in FEH 2:60.1971; TBRI 50(4):125.1987; FB 1(3):556.1987.

Medium scrambling shrubs upto 1.5m long. Stem terete, armed with scattered short incurved prickles and sparsely short hairs, internodes 3.0-5.5cm long. Stipules 0.7-1.4x0.12-0.19cm, lanceolate, serrate, acuminate hairy. Leaves 7.0-10 x5.0-8.0cm, 3-foliolate; terminal leaflets largest than laterals, pubescent, lamina 8.0-12x2-.04.0cm, oblong-lanceolate, doubly or shallowly serrate, acuminate, base cuneate, membranous, pubescent above, glabrous below; lateral veins 14-22 pairs, above midribs pubescent, glabrescent and spiny below. Few flowers in axillary clustered or cymes; stipules 1.2-1.5cm long, ovate, entire; pedicels 0.3-0.4cm long, hairy; calyx lobes 5, 0.5-0.8cm long, with matted persistent young green hairs, grey in mature; petals 5, alternate with calyx lobes, 0.25-0.4cm, obovate, white, membranous, entire, acute, almost glabrous. Stamens numerous; filaments erect, anther bithecous, dense hairy at base. Druplets many; red on ripening.

Fl.: Jul. - Aug.; Fr. rip.: Aug. - Sep.

- Spn. Cited. : DARJEELING : Tiger Hill, 2350m, 22.11.1980, A. P. Das 0324.
- Loc. Distrib. : DARJEELING : Rare; Senchal- Tiger Hill (2350 -2650m).
- Gen. Distrib. : Endemic to Darjeeling Hills.

Rubus wardii Meer. in Brittonia 4:84.1941; JJB 47: 142.1972; FEH 3:53.1975; FB 1(3):559.1987.

R. hookeri Focke in Abh. Nat.ver. Bremen. 4:198.1874, non K. Koch 1853; FBI 2:334.1878; TSDD 35.1896; TNB 60.1929.

R. gigantiflorus Hara in Journ. Jap. Bot. 40:327.1965; FEH 1:129.1966 & 2:129.1971.

R. macrocarpus King ex Cl. in JJS 15:141.1876, non Benth. 1844.

Profuse scrambling shrubs. Stem terete, slender branched, internodes 3.0-5.0cm long, covered with scattered, recurved prickles with finely whitish-brown hairs. Stipules 0.6-0.8cm long, oblong, foliaceous, winged, densely villous. Leaves pinnately 3-foliolate; petioles 3.0-7.0cm long, terete, covered with matted hairs and scattered recurved prickles; petiolule of terminal leaflets 0.6-0.7cm; lateral 0.1-0.2cm; lamina of terminal leaflets 7.0-11x6.0-8.0cm, rhombic - obovate, serrate and shallowly lobed, caudate to acuminate, base rounded, membranous, pubescent throughout, dense at veins. Flower white in axillary panicles; bracts stipule like; pedicels 1.0-2.0cm long, much hairy. Calyx cup 1.0-2.0cm in diam, lobes 0.15-0.2cm, lacinate, tip cirrhose and glandular pubescent around; petals 0.45-0.5cm in diam, orbicular, entire, acute, glabrous much smaller than calyx. Stamens numerous; filaments 0.35-0.4cm, erect, anther 0.1-0.15cm. Carpels numerous. Fruits 1.0-3.0cm, globose red on ripening; drupelets many.

Fl.: May. - Jun.; Fr. rip.: Jul. Oct.

Spn. Cited. : DARJEELING : Senchal, 2350m, 07.5.1994, *Das et Samanta* 0204; Joributi, Neora Valley National Park, 2160m, 23.4.1995, *Das et Samanta* 0605; Reshete, 2250m, 06.5.1995, *Das et Samanta* 0709.

Loc. Distrib. : DARJEELING : Common; Senchal - Tiger Hill, Neora Valley National Park, Lava, Rimbick (2000 - 3000m); SIKKIM : Less common; Found only at Zongu - Phadamchen areas (upto 2300m).

Gen. Distrib. : India : Darjeeling and Sikkim; S. E. Tibet, Myanmar, W. China.

RUBIACEAE Juss.

KEY TO THE GENERA :

1. Twiner; with or without foetid smell.....2
1. Scrambler; not foetid.....3
2. Leaves much foetid, thin-herbaceous.....*Paederia*
2. Leaves not foetid, thick..... *Hedyotis*

3. Stipules in whorls, like normal leaf.....4
 3. Stipules normal, never foliaceous; climbing with the help of hook (modified peduncle on lateral branches).....*Uncaria*
 4. Fruits drupaceous, glabrous.....*Rubia*
 4. Fruits dry, covered hooked hairs.....*Galium*

GALIUM L.

KEY TO THE SPECIES :

1. Leaves always 4, nearly rounded to very broadly lanceolate, nerves 3 quite prominent.....*G. elegans*
 1. Leaves 3-7 in a whorls; either hirsute or glabrous, obovate-lanceolate to lanceolate2
 2. Lamina margin flat.....*G. asperifolium*
 2. Lamina margin contorted.....*G. hirtifolium*

Galium asperifolium Wall. ex Roxb., Fl. Ind. ed. Carey 1:381.1820; C. utodontis in Oester. Bot. Zeits. 89:239.1940; EFH 308.1966; EFPN 3:201.1979; FPK 43.1981; TBRI 50(4):114.1987.

G. mollugo auct. non L., sensu FBI 3:207.1881.

G. mollugo ssp. *asperifolium* (Wall.) Kitamura in F. & Fl. Nep. Him. 230.1955.

G. sikkimense Gardoger in Bull. Soc. Bot. France 66:307.1920.

Perennial herbaceous much branched scrambler. Stem shallowly ridged, minutely hairy on ridges, dense at nodes, internodes 2.0-5.0cm long. Stipules 2, interpetiolar, normal leaflike, 1.2-3.0x0.6-0.7cm, Leaves 2, opposite almost sessile, become 4 after modification of stipules; lamina 0.8-1.8-0.2-0.5 cm. obovate, entire, acute, mucronate, base rounded, scabrid on both surfaces. Cymes paniced, axillary and terminal. Peduncle short, slender, branches divaricate. Calyx 0.06-0.08cm, truncate; petals white, 0.20-0.21cm, ovate. Fruit 0.22-0.3cm, globose, black.

Fl.: Jul. - Sep.; Fr. rip.: Oct. - Dec.

Spn. Cited. : DARJEELING : Birch Hill, 2100m, 03.4.1994, *Das et Samanta* 1217; SIKKIM : Burtuk, Gangtok, 1700m, 28.6.1995, *Das et Samanta* 0791; Pelling 1900m, 23.5.1994, *Das et Samanta* 1163; Mangan, 1350m, 26.9.1996, *Das et Samanta* 1527.

Loc. Distrib. : DARJEELING : Abundant in all over vegetation (1500-2300m); SIKKIM : Common in middle altitude (1400-1800m).

Gen. Distrib. : Himalaya (Kashmir - Sikkim); W & C. China, Myanmar, Sri Lanka, Thailand.

Note : (i) Chr. no. $2n = 22$ (Mazumdar, L. 1971).

Galium elegans Wall. ex Roxb., Fl. Ind. 1:382.1820; Cutodontis in Oester. Bot. Zeits 89:228.1940; EFH 1:308.1966; Kitamura in Act. Phytotax. Geobot. 16:195.1956; EFPN 3:201.1979; FPK 43.1981; TBRI 50(4):114.1987.

G. rotundifolium auct non L., sensu FBI 3:204.1881, var. *elegans*.

Perennial scabrid, scrambling herbs, branches few. Stem terete, ridged, dense hairy at ridges, internodes 1.5-5.0cm long. Stipule 2, interpetiolar; normal leaflike 1.2-3.0x0.6-0.7 cm, ovate, entire, acute, cuneate, glabrous, 3-nerved. Leaves 3-4 in whorl, round the node; petiole almost sessile; lamina 0.9-3.5x0.5-2.0cm, ovate to ovate-elliptic or obovate, entire, shortly apiculate, base rounded to cuneate, membranous, hirsute at margins; basal nerves 3. Cymes axillary or terminal exceeding the leaves, branches, divaricate; peduncles 1.5-6.0cm long, many flowered, leafy; pedicels 0.1-0.2 cm long, both slender. Calyx tube ovoid, limb nil; corolla rotate, white, 4-lobed, 0.05-0.06x0.02-0.03cm ovate, acute. Stamens 4, alternate with corolla lobes; filaments 0.02-0.025 cm long, erect, anther c 0.01cm, bithecous. Ovary globose; style 0.02-0.23cm, erect, nearly glabrous; stigma 2, one smaller than other. Fruit globose c 0.08 diam, clothed with hooked 0.03-0.05 cm long eglandular hairs. Seed 1, hairy.

Fl.: Jun. - Sep.; Fr. rip.: Jul. - Dec.

Spn. Cited. : DARJEELING : Mirik, 1600m, 05.9.1994, *Das et Samanta*, 0300; Alubari, Neora Valley National Park, 2280m, 18.6.1995, *Das et Samanta* 0307; Sukiapokhari, 1950m, 27.6.1996, *Das et Samanta* 1218; SIKKIM : Gyalshing, 1530m, 23.5.1996, *Das et Samanta* 1164.

Loc. Distrib. : DARJEELING : Abundant; every where in open and semiopen vegetation; SIKKIM : Very common throughout the range (1500 -2100m).

Gen. Distrib. : India: Himalayas, Manipur, Kashmir, Meghalaya, Assam; Bhutan, Myanmar, China, Thailand.

Note : (i) Leaves used as fodder for goat and cows.

Galium hirtifolium Req. ex DC., Prodr 4:600.1830; FBI 3:206.1881; FEH 1:309.1966; EFPN 3:201.1979; TBRI 50(4):114.1987.

Perennial herbaceous much branched scrambler. Stem 4-ridged, soft hairy, internodes 3.7-4.2cm long. Stipule interpetiolar, normal leaflike. Leaves 4-nate, almost sessile 0.9-2.0x0.15-0.2cm, linear to narrowly lanceolate, entire, subacute, base cuneate, scabrous, midvein indistinct. Cymes axillary and terminal with slender divaricate branches. Flowers minute; calyx tube ovoid, limbs indistinct; corolla rotate, 4-lobed, 0.1-0.15x0.06-0.08 cm, obovate, entire, shortly apiculate, median nerve

distinct; Stamens 4, filaments 0.01-0.02cm, anther 0.01-0.015 cm, bithecous; ovary globose; style erect 0.01-0.2cm, branched, stigma 2, equal. Fruit small, hooked bristly.

Fl.: Sep. - Dec.

Spn. Cited. : DARJEELING : North Point, Darjeeling, 1950m, 04.10.1994, *Das et Samanta* 0405; Tiger Hill, 2450m, 04.3.1996 *Das et Samanta* 1217.

Loc. Distrib. : DARJEELING : Less common; Lebong - Ging, Singtam, Rungi-Rung, Tung, Takdah (1600 - 2400m).

Gen. Distrib. : Temperate Himalayas, Garwal to Sikkim.

HEDYOTIS L.

Hedyotis scandens Roxb. [Hort. Beng. 10.1814, nom. nud] ex D. Don, Fl. Ind.1:369.1820; D. Don Prodr.Fl. Nep. 134.1825; FA3:37.1939; FBI 3:57.1880; TSDD 47.1896; TNB 77.1929; FEH 1:310.1966; EFPN 2:123.1971; FPK 44.1981; TBRI 50(4):116.1987 (Photo-16).

Oldenlandia scandens (Roxb.) Kuntze. Rev. Gen. p. 293.1891; TNB 77.1929.

Lep. : Kanchit; Nep. : Bakre - Lahara.

Annual herbaceous dextrorse twiner. Stem terete, much branched sparsely hairy, internodes 4.1-5.3cm long. Stipules interpetiolar, connate into a 2 cuspidate cup c0.05 cm, ovate, membranous, nearly glabrous. Petioles 0.15-0.69cm long, ciliate to glabrous; lamina 5.5-10.2x2.0-3.0 cm, elliptic- lanceolate, entire, acuminate to caudate, base rounded, leathery, glabrous. Cymes terminal, spreading. Pedicels 0.3-0.4 cm long, pubescent. Sepals orbicular, acute glabrous. Corolla pinkish white to white, tube 0.3-0.4 cm long, lobes broadly ovate- lanceolate, glabrous. Stamens c 0.3 cm, filament flat, hairy. Female flowers not seen. Capsules c 0.3cm, broadly ovate - obovoid; many seeded.

Fl.:Sep. - Nov.; Fr. rip.: Oct. - May.

Spn. Cited. : DARJEELING : Tindharia, 940m, 20.1.1994, *Das et Samanta* 0254; Mangpo, 1300m, *Das et Samanta* 0479; Latpunchor, 1050m, 17. 5. 1995, *Das et Samanta* 0745; Deepchak, Kalimpong, 04.9.1996, *Das et Samanta* 1299; SIKKIM : Burtuk, Gangtok, 1700m, 28.6.1995, *Das et Samanta*. 0784; Singling Basty, Soreng, 1560m,

30.10.1995, *Das et Samanta* 0891; Deorali, Gangtok, 1460m, 19.11.1995, *Das et Samanta* 1005; Namchi, 1400m, 21.5.1996, *Das et Samanta* 1216; Mangan, 1350m, 26.9.1996, *Das et Samanta* 1531.

Loc. Distrib. : DARJEELING & SIKKIM : Very common in open and or low bushes (110 - 2100m).

Gen. Distrib. : India : E. Himalayas (Darjeeling - Sikkim), Meghalaya, Myanmar & China.

Note : (i) Leaves used as fodder for goat and cows.

PAEDERIA L

KEY TO THE SPECIES :

1. Pyrenes not winged; petiole upto 1.2 cm long; branches of terminal panicle scorpioid.....*P. scandens*
1. Pyrenes broadly winged; petiole more than 1.2 cmlong; branches of terminal panicle opposite.....*P. foetida*.

Paederia foetida L., Mant. PI 1:52.1767; Fl. Ind. 2:517.1824; FBI 3:195.1881; BP 1: 578.1903. Bot. Bih. & ori., pt. 4:442.1922; EFPN 2:199.1979.

Nep. : Biri Lahara

Selender shrubby dextrorsre twiner, foetid, nearly glabrous; long petioled upto 3.8 cm long, nearly glabrous; lamina 6.0-12x2.5-7.0cm, elliptic ovate or ovate - lanceolate, entire, acute to slightly acuminate, nearly glabrous on both surfaces. Flowers in axillary and terminal paniculate cymes; corolla greyish - purple outside; deep purple inside. Fruits compressed, pyrene - wings c 0.2cm width.

Fl.: Aug.-Sep.; Fr. rip.: (Jan.).

Spn. Cited. : DARJEELING : Mangpo, 1450m, 16.10.1982, A. P. Das 1242; Padmaja Park, NBU Campus, 120m, 03.09.1997, *Das et Samanta* 1638.

Loc. Distrib. : DARJEELING : Less common; Siliguri-Mangpo, Takdah.

Gen. Distrib. : C & E India; Nepal, China, Malaysia.

Note : (i) Leaves and stem used medicinally for caries of tooth ache.

Paederia scandens (Lour.) Merr. in Contr. Arn.Arb.8:163.1934; Hara, En. Sperm. Jap. 2:24.1952. EFH 314.1966; EFPN 2:206.1979; RBRI 50(4):121.1987.

Gentiana scandens Lour., Fl. Cochinch.1:171.1790.

Paederia tomentosa Bl., Bijdr. 968.1826; FBI 3:197.1881; TNB 79.1929.

Nep.: Biri Lahara.

Shrubby slender dextrorse twiner, foetid. Stem ridged, internodes 7.1-8.3 cm long, nearly glabrous. Stipules interpetiolar. Petioles 1.1-1.2cm long, nearly glabrous; lamina 5.1-8.0x2.0-5.0cm ovate-lanceolate, entire, acuminate - caudate, base rounded, membranous, both surfaces glabrous. Flowers reddish brown in axillary and terminal branched cymes. Peduncles 2.6-3.0cm long; pedicels 0.1-0.2cm long, glabrous; calyx c 0.2cm long, teeth triangular; corolla 0.8-1.3cm long, lanceolate, pinkish, tomentose at throat, anther c 0.2cm. Fruits shing, broadly elliptic with compressed pyrenes, elliptic attached with filiform carpophore.

Fl.: Sep. - Oct.; Fr. rip.: Dec. - Feb.

Spn. Cited. : DARJEELING : Sevoke, 450m, 26.3.1994, *Das et Samanta* 0106; Tindharia, 940m, 20.6.1995, *Das et Samanta* 0253; Mirik, 1600m, 05.9.1994, *Das et Samanta* 0311; Mangpo, 1300m, 13.12.1994, *Das et Samanta* 0464; Kalimpong, 1500m, 25.9.1995, *Das et Samanta* 1219; SIKKIM : Burtuk, Gangtok, 1650m, 28.1.1995, *Das et Samanta* 0780; Singling Basty, Soreng, 1520m, 30.10.1995, *Das et Samanta* 0875; Deorali, Gangtok, 1500m, 19.11.1995, *Das et Samanta* 0979; Nandugaon, Jorethang, 840m, 21.5.1996, *Das et Samanta* 1086; Gyalshing, 1530m, 23.5.1996, *Das et Samanta* 1153.

Loc. Distrib. : DARJEELING : Common; Kurseong, Panighata, Samsing, Mirik, Ging, Peshok, Kalimpong (135-2000m); SIKKIM : Less common; Namchi, Gangtok, Soreng, Tadong, Yaksum (upto 2000m).

Gen. Distrib. : E. Himalaya, Meghalaya; Myanmar, Malaysia, China; Japan and Philippines.

Note : (i) Used medicinally as remedy for caries of tooth ache.

RUBIA L.

KEY TO THE SPECIES :

1. Corolla rusty brown; berries purplish; plants release a red-dye when treated with alcohol.....*R. manjith*
1. Corolla and berries greenish white; do not yield a dye.....2

2. Leaves petiolate.....*R. wallichiana*
 2. Leaves sessile.....*R. charaefolia*

Rubia charaefolia Wall. ex G. Don. Gen. Hist. 3:643.1834; KB 1931:451.1931; FEH 1:315.1966; EFPN 3:207.1979; TBRI 50(4):101.1987.

R. angustissima Wall. sensu FBI 3;203.1881, p.p.

Root stock perennial but annual stem scandent. Stem with ridges and furrows, minutely scabrid. Leaves in whorl 4-8, sessile; lamina 2.5-3.4x0.3-0.5cm, linear to lanceolate, keeled, dentate-serrate, acute, coriaceous, midvein prominent. Flowers and fruits not seen.

Fl.: Sep. - Oct.; Fr. rip.: Oct. - Apr.

Spn. Cited. : DARJEELING : Mokaibari, below Kurseong, 800m, 02.10.1994, *Das et Samanta* 0339.

Loc. Distrib. : DARJEELING : Common; few plants found only Mokaibari and Ging areas, (up to 1500m).

Gen. Distrib. : Endemic to E. Himalayas (Darjeeling - Nepal, Bhutan).

Rubia manjith Roxb. ex Flem. in *Asiat. Res.* 11:177.1810; Hara et Kurosawa in *Sci. Rep. Tokyo Univ.* 29:259.1963; FEH 1:315t.5d.1966 ; EFPN 3:207.1979; FPK 47.1981; TSDD 50(4):125.1987 (Photo-10, Fig. 3.21).

R. munjith Roxb. ex Deavaux, *Journ. de Bot.* 1814(2):207.1814.

R. munjista Roxb., *Fl. Ind.* ed Carey, 1;383.1820; ed. 2, 1:374.1832; *Wt., Icon.* 1;t.187.1840.

R. cordifolia L. B- *munjista* (Roxb.) Miq. in *Ann. Mus. Bot. Lugd. Bat.* 3:111.1867; FBI 3:202.1881; TSDD 49.1896; TNB 79.1929; FPK 49.1981.

R. cordifoilia var. *Munjista* f. *rubra* Kitamura, *Faun. & Fl. Nep. Him.* 232.1955, nom in *Observ.*

Nep. : Magito, Manjito.

Pendent annual herbaceous scrambler. Root-stock perennial. Stem 4-ridged, slender, internodes 7.0-8.0cm long, shorter (c 4.3 cm) upward, scabrid. Stipules interpetiolar. Leaves four in a whorl, two with axillary bud; petioles 2.5-7.0cm long, scabrid; lamina 3.0-7.0x1.8-3.5cm, ovate-lanceolate, entire, caudate - acuminate, base rounded or subcuspidate, nerves 3-5 or 7 parallel, convergent, scabrid, greenish-brown. Bracts sessile, leafy, caudate, panicles terminal; peduncle 7.0-12cm long, much branched, scabrid; pedicel 0.1-0.2 cm long, ridged, nearly glabrous,

brownish, flowers minute, 4 or 5 merous. Sepals 4, 0.1-0.2cm, ovate-lanceolate, entire, acute, almost glabrous. Corolla rotate, lobes spreading, rust coloured, tips incurved; filaments 0.02-0.03cm, anther bithecous. Berries 0.3-0.4cm across, globose, black on ripening.

Fl.: May - Aug.; Fr. rip.: Sep. - Mar.

Spn. Cited. : DARJEELING : Kurseong, 1560m, 14.3.1994, *Das et Samanta* 0313; SIKKIM : Burtuk, Gangtok, 1700m, 24.4.1995, *Das et Samanta* 0787; Soreng, 1560m, 30.10.1995, *Das et Samanta* 0897; Gyalshing, 1530m, 23.5.1996, *Das et Samanta* 1140; Mangan, 1300m, 26.9.1996, *Das et Samanta* 1563.

Loc. Distrib. : DARJEELING & SIKKIM : Abundant throughout the altitudinal range (1400-2500m).

Gen. Distrib. : Endemic to Himalayas, Khasia Hills; Bhutan.

Notes : (i) Dye is extracted from this species & (ii) paste of roots & fruits applied as ointment in skin diseases & boils.
(iii) Chr. no. $2n = 66$ (Mazumdar, L. 1971).

Rubia wallichiana Deca. Recher. Gerance 61.1837; FEH 1:315.1966; EFPN 3:207.1979; TBRI 50(4):125.1987.

R. cordifolia L. Sensu Hook.f., FBI 3:202.1881 p.p.

R. cordifolia var. *munjista* Miq., Sensu Kitamura., Faun in Fl. Pl. Nep. Him. 231.1955.

Nep. : Majito, Manjito.

Annual herbaceous scandent. Stem profusely branched. green, with small ridges and furrows, scabrid, internodes 6.5-8.0cm long. Leaflets 4, in a whorl. Petioles 0.9-8.5cm long; lamina 2.5-4.5x1.5-3.0cm, broadly ovate, entire, acuminate, base rounded, leathery, green. Panicles terminal, flowers minute; sepals 4; corolla greenish - white, lobes lanceolate with incurved tips. Female flowers not seen. Berries c 0.4cm in diam globose black on ripening, 1-seeded.

Fl.: Jul. - Nov.; Fr. rip.: Aug. - Oct.

Spn. Cited. : DARJEELING : Alubari, Neora Valley National Park, 2480m, 28.4. 1995, *Das et Samanta* 0645; Reshete, 2250M, 06.05.1994, *Das et Samanta* 0701 SIKKIM : Nandugaon, Jorethang, 840m, 21.5.1996, *Das et Samanta* 1096.

- Loc. Distrib. : DARJEELING : Very common; Gairibas, Senchal-Tiger Hill, Neora Valley National Park, below Kurseong (800 - 3500m); SIKKIM : Rare; Nandugaon and North Ringu (upto 2050m).
- Gen. Distrib. : Himalayas (Panjab - Bhutan), Meghalaya.
- Notes : (i) Dye is extracted from this species.
(ii) Chr.no. $2n = 44$ (Mazumdar, L.1971).

Uncaria sessilifructus Roxb., Fl. ind. ed. 2(l) : 520.1832; FBI 3:30.1880; FEH 1:316.1966; EFPN 2: 208.1979 (Photo-57).

Nep. : Bankadam

Shrubby hook climber, hooks 1 pair at each node, modified extraxillary thorns curved, stout, 0.3-0.4cm broad at base, c 0.2cm at middle . Stem 4-angled, solid, reddish pubescent, internode 6.0-8.0cm long. Stipules interpetiolar, 0.15-0.2cm long, 2-partile, entire. Pulvinous petioles 1.2-1.5cm long, slightly ribbed, nearly glabrous; lamina 10-13x6.5-7.5cm, broadly ovate- elliptic, entire, shortly acuminate to caudate, base rounded - cuneate, shiny above, glaucous beneath, midvein distinct with 5 pairs of lateral nerves. Flowers and fruits not seen.

Spn. Cited. : DARJEELING : Latpunchor, 850m, 17.5.1995, *Das et Samanta* 0764.

Loc. Distrib. : DARJEELING : Less common; Latpunchor, Mangpo, Kalijhora (upto 1300m).

Gen. Distrib. : India : Darjeeling - Sikkim - Meghalaya; Bangladesh, Myanmar.

RUTACEAE Juss.

KEY TO THE GENERA AND SPECIES :

1. Leaves unifoliate; armed with recurved spines; flowers axillary, solitary.....
.....*Paramigyra monophylla*
1. Leaves 3-foliate; armed with recurved prickles; flowers axillary or terminal.....2
2. Leaves palmately 3-foliolate; berries globose, indehiscent.....*Toddalia asiatica*
2. Leaves oddly pinnate; follicles subglobose; dehiscent.....*Zanthoxylum oxyphyllum*.

PARAMIGYNA Wt.

Paramigyra monophylla Wt., 111, Ind. Bot.1:109, t. 42.1838.1840; J.Lin.Soc. 5, suppl.2:41.1861; FBI 1:510.1875; TSDD 2:15.1896; TNB 29.1929; EFPN 2:82.1979;

TBRI 50(4):121.1987; FB 2(10):19.1991.

Micrometum monophyllum Wt., 111. Ind. Bot. 1:t.42.1838-1840; pro. syn.

Nep.: Natkanta.

Scrambling shrubs. Stem terete, woody, armed with recurved spines (0.5-1.0cm), glabrous, shiny. Leaves unifoliate; petioles 0.5-1.8cm long, slightly ribbed, puberulous; lamina 4.5-10x1.6-4.3cm, oblong elliptic, entire, acute to shortly cuspidate, base cuneate, gland dotted, both surfaces glabrous, midveins prominent, lateral alternate, obscure. Flowers axillary, solitary 1.4-1.8x0.4-0.5cm; calyx 0.4x0.3cm, cup shaped, lobes oblong, puberulous; petals 4-5, free, 1.5-2.0x0.5-0.7cm, linear-oblong, intricate, glabrous; stamens 8, filaments 0.7-0.8cm, linear, flattened pubescent; anthers 0.3-0.4cm long, bithecous. Ovary 0.4-0.5cm long, globose, hairy; style erect, slender, hairy; stigma 0.1-0.15cm in diam, bifid, lobes globular, Berries obovoid.

Fl.: Apr. Jun. ; Fr. rip.: May - Aug.

Spn. Cited. : DARJEELING : RungDung Valley, 1800m, 10.5.1983, A. P. Das 1408.

Loc. Distrib. : DARJEELING : Less common; Suruk, Kalimpong, Latpunchor, RungDung Valley, Jaldhaka, Relli - Kamsi (300 - 1850m).

Gen. Distrib. : India : E. Himalayas, Meghalay and W. Ghats; Nepal - Bhutan, Sri Lanka.

Note : (ii) Chr. no. $2n = 36$ (Mehra, P. N. & Khosla, P. K.1973).

TODDALIA Juss.

Toddalia asiatica (L.) Lam., Tab. Encycl. 2:116.1797; TNB 29.1929; FEH 1:171.1966; EFPN 2:83.1979; FPK 21.1981; TBRI 50(4):129.1987; FB 2(1):11.1991(Fig. 3.10).

Paulinia asiatica L. Sp.Pl.1:365.1753.

Toddalia aculeata Pers., Syn. Ph. 1:249.1805; FBI 1:197.1875.

Nep. : Mein Konra, Shinghanoy kansa.

Scrambling shrubs. Stem terete, with short recurved prickles 0.15-0.20cm, glabrous. Leaves exstipulate, 3-foliate; petioles 2.1-4.5cm long, lamina of middle one largest 5.5-9.0x2.0-3.2cm, ovate-lanceolate, serrulate to dentate, caudate, base cuneate, glabrous. Cymes in panicle axillary and terminal. Flowers small, slightly scented;

calyx 5-lobed, lobes c 0.1cm, broadly ovate, acute nearly glabrous. Petals 0.2-0.21cm, lanceolate, acute greenish-white, nearly glabrous. Stamens 5, filaments short (c 0.1cm.); anthers 0.6-0.8cm. Ovary 0.1-0.15x0.6-0.8cm, ovoid, style short, stigma 5-lobed. Berries globose c 0.6cm in diam, distinctly 7-rimmed.

Fl.: Feb. - May; Fr. rip.: Aug. - Dec.

Spn. Cited. : DARJEELING : Tindharia, 940m, 20.6.1994, *Das et Samanta* 0268; Samsing, 420m, 29.1.1995, *Das et Samanta* 0508; Latpunchor, 1200m, 17.5.1995, *Das et Samanta* 0749; SIKKIM: Deorali, Gangtok, 1460m, 19.11.1995, *Das et Samanta* 0992; Gyalshing, 1530m, 23.5.1996, *Das et Samanta* 1152.

Loc. Distrib. : DARJEELING : Less common; Bhuttabari, below Kurseong, Kalijhora - Rambhi, Goke, Nimbong, Guling (200-2000m); SIKKIM : Less common; Gangtok, Pelling, Nandugaon, below Namchi, Rongle (300- 1950m).

Gen. Distrib. : India; Myanmar, Sri Lanka, Malaysia, China, Thailand.

Notes : (i) Ripe fruits edible. (ii) Chr. no. $2n = 72$ (Raghavan, R. S. 1957) ; 36 (Mehra, P. N. & Khosla, P. K. 1969,1973).

Zanthoxylum oxyphyllum Edgew. in Tr. L. Soc. 20:42.1846; FBI 1:494.1875; TSDD 14.1896; TNB 29.1929; BBSI 16:64.1974; EFPN 2:83.1979; FPK 20.1981; TBRI 50(4):130.1987; FB2(1):14.1991(Photo-13).

Z. violaceum Wall. cat. 33,n.1213.1829, nom. nud.,p.p.

Fagaria oxyphylla (Edgew.) Engl. pfl. fam. 3,4:118.1896;FEH 170.1966;FPK 20.1981.

Nep. : Bhainsi-Timbur, Lahar, Timbur.

Large scrambling shrubs or liana. Stem terete, armed with hooked prickles, nearly glabrous. Leaves exstipulate, 8.0-2.0cm long, imparipinnate; leaflets 3-10 pairs; petiolule 0.15-0.20cm; lamina of middle leaflet 4.0-13.5x1.2-5.0cm, ovate-lanceolate-oblong, glandular, crenulate, acute to acuminate, base cuneate; midveins prominent, laterals only obscure above, both distinct below, glabrous. Ebracteate; cymes terminal much branched; peduncle 2.5-4.0cm long; pedicles 0.3-0.4cm long, many flowered; calyx 4-lobed, 0.1-0.2cm elliptic; corolla 4-lobed, 0.4x0.2cm, ovate-elliptic; stamens 4, filaments 0.15-0.20cm, anther 0.2x0.1 cm, subbasifixed. Follicles 0.5-0.6cm, subglobose, with persistant aborted carpels at base; seed 1, 0.5-0.6cm, ovoid, black.

Fl.: Apr-May; Fr. rip.: May - Dec.

- Spn. Cited. DARJEELING : Joributi, Neora Valley National Park, 2360m. 23.4.1995 Das et Samanta 0605; 14-Farie 2240m, 05.5.1995, Das et Samanta 0689; SIKKIM : Pangthang, 1900m, 20.11.1995, *Das et Samanta* 1020.
- Loc. Distrib. : DARJEELING : Very common; Tiger-Hill, Jalapahar, Batasia loop, Raman, Neora Valley National Park (2000-3000m); SIKKIM: Less common; Found only Gyalshing and Pelling areas (1900-2450m).
- Gen. Distrib. : Temperate Himalayas, Meghalaya; Bhutan, N. Myanmar.
- Notes : (i) Fruits used in medicine preparation for the remedy of heart diseases. (ii) Chr. no. $2n = 72$ (Mehra , P. N. & Sareen, T. S. 1969).

SABIACEAE BI.

SABIA Coleb.

KEY TO THE SPECIES :

1. Flowers axillary, solitary; petioles 0.5-1.5cm long.....2
1. Flowers axillary, cymose fascicles; petioles 1.3-1.5cm long.....*S. parviflora*
2. Lamina oblong-ovate; stem not ribbed.....*S. campanulata*
2. Lamina elliptic-oblong; stem obscurely many-ribbed.....*S. leptandra*

Sabia campanulata Wall. ex Roxb., Fl. Ind. 2: 311. 1824; Wall. cat. 28, n. 1002. 1829; Fl. Ind. 1: 209. 1966 & 2: 194. 1971; FBI 2: 1. 1876; EFPN 2: 100. 1979; TBRI 50(4): 126. 1987; FB 2(1): 79. 1991.

Nep. : Kali Lahara.

Shrubby twining. Stem terete, woody, glabrous. Petioles 0.5-1.2 cm long, terete, glabrous; lamina 3.5-10.5x1.8-5.0cm, oblong-ovate, entire, caudate to acuminate, base acute, both surfaces glabrous, veins 4-6 pairs; Flower axillary, solitary; sepals 0.25-0.3cm long, elliptic, nearly glabrous; corolla campanulate; petals green to purple 0.8-1.2x0.5-0.7cm, obovate; Stamens 5, subequal, filaments flattened; anthers 0.35-0.4cm; ovary 2-3 celled; style upto 0.4cm, stigma punctiform; ovules 1-2 in each cell; Drupes 0.6-1.0cm in diam suborbicular, compressed, 1-2 lobed.

Fl.: Apr. - Jun.; Fr. rip.: May - Aug.

- Spn. Cited. : DARJEELING : 14-Farie, Neora Valley National park, 2240m, 07.5.1995, *Das et Samanta* 0717.
- Loc. Distrib. : DARJEELING : Less common; Neora Valley National Park, Rung Dung Valley, Rambhi Forest, Lava, Kafer (1500-2350m).

Gen. Distrib. : India : Himalaya (Kashmir - NEFA); E. Tibet, Myanmar and China.

Sabia leptandra Hook.f.Thoms., Fl. Ind. 1; 209. 1855; FBI 2; 2. 1876; TSDD 23; 1896; TNB 43. 1929; FEH 1; 194. 1966 & 2; 74. 1971; FPK 24. 1981 (Fig. 3.3).

Large woody twining climber. Stem terete, solid, minutely many ribbed, glabrous; branches slender, tip puberulous; petioles 0.7-1.5cm long; lamina 4.0-9.5x2.0-2.7cm elliptic-oblong, entire, caudate to slightly acuminate, base cuneate or rounded, both surfaces nearly glabrous; major veins prominent, lateral veins 5-6 pairs; cymes axillary, solitary; one flower c 0.4cm long; perianth deciduous, greenish, anthers c 0.2cm, bicelled.

Fl.: Apr.-Jun.

Spn. Cited. : DARJEELING : 14 Farie, Neora Valley National Park, 2230m, 07.5.1995, *Das et Samanta* 0690.

Loc. Distrib. : DARJEELING : Less common; Found only around 14-Farie areas (upto 2300m).

Gen. Distrib. : India : Temperate Himalayas, Assam, Meghalaya.

Sabia parviflora Roxb. Fl. Ind. ed. Carey, 2:310. 1824; FBI 2:2. 1876; FEH 2:74. 1972; EFPN 2:100. 1979; FFI 20: 132. 1990; FB 2(I) : 80. 1991.

Nep. : Simali Lahara

Large shrubby twining climber. Stem terete, solid, nearly glabrous. Petioles 1.3-1.5cm long; lamina 5.0-9.5x1.5-5.2cm, ovate-elliptic, repand, acuminate, base cuneate-rounded, nearly glabrous; veins 6-9 pairs. Cymes axillary, solitary, 1.5-8.0 cm long, many flowered; sepals upto 0.3cm, ovate-lanceolate, ciliolate; petals greenish - yellow, often white, upto 0.5cm, lanceolate. Stamens c 0.2 cm; style 0.1-0.15cm. Drupes 0.8cm, subglobose, compressed.

Fl.: Mar.-May ; Fr. rip.: May-Aug.

Spn. Cited. : DARJEELING : Jorebungalow, 2000m. 04.10.1994, *Das et Samanta* 0402.

Loc. Distrib. : DARJEELING : Common; Mangpo, Kalimpong, Garubathan (200-1850m).

Gen. Distrib. : Himalaya (Garwal-Arunachal Pradesh), Assam; Myanmar, Indonesia, Thailand.

SAPINDACEAE Juss.

CARDIOSPERMUM Juss.

Cardiospermum halicacabum L., Sp. Pl.ed. 1, 366.1753; Wt.& Arn., Prodr.1:109.1834; FBI 1:670.1875; BP 1:342. 1903; Fl. Pres. Madr. 22:44.1918; Bot. Bih. Ori. Pt. 2:211.1921; FA 1:313.1934; FEH 1:193.1966 & 2:96.1979; Fl. Samb. Dist. Ori. 1:144.1990; FB 2(1):69.1991.

Beng. : Nayapukti, Sibjhul.

Perennial much branched herbaceous, nearly glabrous climber. Branches slender, ribbed. Leaves exstipulate, 6.0-10cm long, biternate; petioles 2.5-5.0cm long, ribbed; lateral petiolules 1.0-1.5cm; terminal petiolules larger than lateral, winged, glabrescent; leaflets deeply 3-lobed near base, terminal lobe 2.5-6.5 x 1.5-2.8cm, ovate, coarsely dentate to deeply lobed, acuminate to shortly caudate, base cuneate, membranous, lateral lobes 3.0-4.0cm, ovate elliptic, distantly serrate, acute, lateral veins opposite towards base, alternate towards tip, sparsely hairy on veins. Flowers minute, monoecious. Cymes few flowered, umbellate, 2 basal branches modified into hook like loose tendrils; peduncles 3.5-10cm long, axillary, ribbed, sparsely hairy; pedicels 3.1-5.0cm, long, wirey; sepals 4, inner 2, c.0.25cm long, outer c 0.15 cm long; petals 4, orbicular, white; Stamens 7, almost sessile, anther c 0.1cm. Ovary 3 locular; style 3-fid, very short; stigma lobed. Capsules inflated 1.2x1.8cm, triangulate-pyreform, loculicidal, 3-valved, densely pubescent, locule margin cartilagenous, 1-seeded. Seeds 0.4x0.2cm, subglobose, aril short, milky white.

Fl. (Apr.); Fr.rip.: (Dec.).

Spn. Cited. : SIKKIM : Karfet Forest, Jorethang, 320m, 29.10.1995,
Das et Samanta 0847.

Loc. Distrib. : SIKKIM : Less common; Found only Jorethang -
Nandugaon areas (upto 840m).

Gen. Distrib. : Tropical and Subtropical countries.

Note : (i) Chr. no 2n = 22 (Guervin, C. 1961a).

SCHISANDRACEAE BI.

KEY TO THE GENERA :

1. Lamina entire; fruitlets clustered on a globose head.....*Kadsura*
1. Lamina distantly denticulate; fruitlate; fruitlets scattered on a elongated fleshy axis.....*Schisandra*.

KADSURA Juss.

Kadsura heteroclita (Roxb.) Craib, Fl. Siam. Enum. 1:28.1925; Smith in Sarjentina 7:187.1947; FB1(2):248.1984; FI 1:189.1993.

Uvaria heteroclita Roxb.; FI 2:663.1832.

Kadsura roxburghii Arnot. Mag. Zool. Bot. 2:546.1838; FI83.1855; FBI1:45.1872; TSDD 3.1896; TNB 11.1929; FPK10.1981; FA1:29.1982.

K. wightiana Arnot. in Mag. Zool. & Bot. 2:546.1838.

K. japonica Wall. Tent. Fl. Nep. t. 12.1824.

Nep: Pattiamlo.

Stout shrubby dextrorse twiner with rough bark. Petioles 0.5-2.5cm long; lamina 7.5-15x3.0-7.0cm, ovate-elliptic, entire, acute to acuminate, base rounded or cuneate, slightly fleshy, pale and glandular beneath. Flowers axillary, dioecious 1.0-2.0cm diam; pedicels 1.5-3.0cm long; bracteolate; perianth yellowish, 4-5 whorls, outer 0.4-0.5cm rounded, inner 0.8-1.2cm elliptic; staminal column 0.5-0.6cm, outer filament short free above, inner whorls connate in column; carpels numerous, 0.2-0.3cm, base cuneate, tip rounded; ovules 2. Fruits 0.25-0.50cm diam in a globose head.

Fl.: May. - Jul.; Fr. rip.: Aug. - Sep.

Spn. Cited. : DARJEELING : Meghma, 3000m, 16.4.1994, *Das et Samanta* 0221.

Loc. Distrib. : DARJEELING : Less common; Tonglu, Senchal (2300 - 3100m); SIKKIM : Below temperate forests (upto 3000m).

Gen. Distrib. : India : W. Bengal, Assam, Manipur, Meghalaya and W. Ghats of Tamil Nadu, Kerala; Bangladesh, Bhutan, China, Myanmar, Sri Lanka.

Note : (i) Fruits edible.

SCHISANDRA Mich.**KEY TO THE SPECIES :**

1. Flowers axillary, solitary.....*S. grandiflora*
1. Flowers fascicled or solitary.....2
2. Lamina ovate-lanceolate, distantly denticulate; perianth yellowish orange.....
.....*S. propinqua*
2. Lamina oblanceolate, serrate-denticulate; perianth yellowish.....*S. neglecta*.

Schisandra grandiflora (Wall.) Hook. f. & Thoms. in FBI 1:44.1872; King in Ann. B. G. Calc. 3:219, t.69A.1891; TSDD 3.1896; TNB10.1929; Smith in Sargentia 7:100.1947; JBNHS 51:417.1953; BBSI 3:354.1962; EFPN 2:26.1979; FB 1(2):248.1984; TBRI 50(4):126.1987; FI 1:191.1993 (Photo-2).

Kadsura grandiflora Wall., Tent. Fl. Nap. 10,t.14.1824.

Nep. : Singhatta Lahara.

Semiwoody shrubby sinistrorse twiner. Stem terete, solid, bark lenticellate, blackish grey. Petioles 1.5-3.5cm long; lamina 4.5-10.5x2.3-5.2cm, ovate-oblanceolate, distantly toothed, acuminate, base attenuate, slightly fleshy, veins conspicuous, blackish brown upper and yellowish beneath. Bracts scaly, crowded at base of petiole in the leaf axil. Flowers axillary, solitary, unisexual; male pedicels 1.2-1.5cm long, brownish, nearly glabrous; Perianth white to pinkish, fragrant; tepal 1.0x0.6cm, broadly obovate, entire, acute, nerves 5-7, parallel convergent; stamens many, spiral; anthers 0.7-1.45x0.7-1.45cm ovoid, filaments 0.1-0.2cm, flat, villous; female pedicel 0.1-0.5cm; tepals light pink 0.3-0.8cm in 2-3 series 0.5x0.5cm. Eterio 15-22cm, long, cylindric, 0.3-0.6cm in diam, fruitlets globose, indehiscent fleshy.

Fl.: Apr. - Jun.; Fr. rip.: Sep. - Oct.

Spn. Cited. : DARJEELING : Meghma 3000m, 07.6.1994, *Das et Samanta* 0241; Alubari, Neora Valley National Park, 2420m, 23.4.1995, *Das et Samanta* 0591.

Loc. Distrib. : DARJEELING : Tiger Hill, Gairibas, Lava, Ghoom, Jorepukri, Thusum (2200-3050m); SIKKIM : Very common in temperate regions (2350 - 3200m).

Gen. Distrib. : Himalayas (Himachal Pradesh), Uttar Pradesh, W. Bengal & Sikkim; Nepal, Bhutan.

Notes : (i) Ripe fruits edible. (ii) Chr. no. $2n = 14$ (Malla, S. B. Bhattarai, S, *et al.* 1977a); 28 (Singhal, V. K. *et al.* 1980a).

Schisandra neglecta A. C. Smith in Sargentia 7:127,f.17,g.1947; FEH 96.1966; EFPN 2:26.1979; FB 1(2):249.1984; TBRI 50(4):126.1987; FI 1:193.1993.

S. elongata Sensus Hook. f. et Thoms. in FBI 1:44.1872 ex syn., King in Ann. B. G. Calc. 3:219, t.69A.1891; TSDD 3.1896; TNB10.1929; JBNHS 51:417.1953; Kitamura in F. & Fl. Nep. Him. 133.1955; FA 1:27.1982.

Nep: Singhatta Lahara.

Shrubby sinistrorse twiner. Stem terete, solid, slender with sparsely white warted lenticels, internodes 3.5-10cm. Petioles 1.0-2.5cm long; lamina 9.5-11x3.4-5cm,

oblanceolate, distantly serrate to denticulate, acute to shortly acuminate, base rounded or cuneate. Flowers axillary fascicle or solitary. Male pedicel 1.0-1.5cm, diam 0.3cm; perianth 0.5-0.84x0.5-0.8cm, yellowish. Filaments c0.05 cm, anther 0-1-0.2cm; carpels 0.1-0.2x0.1cm, ellipsoid. Eterio 7.0-11cm, on slender axis, reddish, succulent.

Fl.: Apr. - Jul.; Fr. rip.: Aug. - Oct.

Spn. Cited. : DARJEELING : Meghma, 3000m, 16.4.1994, *Das et Samanta* 0113.

Loc. Cited. : DARJEELING : Less common; Senchal, Darjeeling, Takdah, Sonada, (2400-3200m); SIKKIM : Common in temperate forest (2000-2300m).

Gen. Distrib. : E. Himalaya (Nepal - Bhutan); India : Sikkim, Assam, Meghalaya; Myanmar and W. China.

Notes : (i) Ripe fruits edible (ii) Flowers used ornamentally.

Schisandra propinqua (Wall.) Baill. Hist. Pl. 1:148.1968-69; FBI 1:45.1872; King in Ann. B. G. Calc. 3:220, t.41A.1891; Smith in *Sargentia* 7:149.1947; JBNHS 51:417.1953; BBSI 3:355.1962; FEH 1:97.1966; EFPN 2:26.1979; FA 1: 28.1982; TBRI 50 (4): 126.1987; FI 1:194.1993.

Kadsura propinqua Wall., Tent. Fl. Nep. 11,t.15.1824.

Nep: Singhatta Lahara.

Woody sinistrorse twiner. Stem terete, solid with white lenticels, blackish grey. Petioles 0.8-1.1cm long, lamina 7.3-8.5x3.0-3.5cm, ovate-lanceolate, distantly dentate, acuminate, base rounded, nearly glabrous, greyish brown above, greyish-yellow below. Flowers dioecious, solitary or fascicle; perianth yellowish-orange, few; pedicels 1.0-1.3cm long. Eterio on a fleshy axil.

Fl.: Jun. - Jul.; Fr. rip.: Aug. - Nov.

Spn. Cited. : DARJEELING : Jalapahar, 2250m, 07.5.1994, *Das et Samanta* 0193; North Point, Darjeeling, 04.10.1994, *Das et Samanta* 0371.

Loc. Distrib. : DARJEELING : Less common; Kalimpong, Birch Hill, Katapahar, Mangpo (1300-3000m).

Gen. Distrib. : India : Himalaya (Garwal - Sikkim), Meghalaya, Myanmar and China.

SOLANACEAE Juss.

SOLANUM L.

Solanum jasminoides Paxt., Mag.Bot. 8:t. 5.1841; FEH 2:118.1971; FPK 70.1981; EFPN 3:108.1982; TBRI 50(4):127.1987.

Shrubby unarmed petiole climber. Stem terete, much branched, internodes 2.5-3.5cm long, finely gland dotted, nearly glabrous. Leaves 3.4-4.5cm, imparipinnate; petioles 1.5-1.8cm long, terete, sparsely hairy; terminal lamina 4.0-5.5 x 1.8-2.5cm, ovate, entire, acute to oblong, base rounded, membranous, yellowish-grey; lateral nerves alternate, glabrous. Racemes terminal and axillary, many flowered; peduncles 2.0-4.0cm long; pedicels 0.6-1.2cm long, sparsely hairy; calyx lobes 5, c 0.3 cm long, acute, persistent; corolla rotate, white, lobes 5, 0.8x0.5cm, ovate-oblong, sparsely pubescent. Stamens 5, anther yellow, oblong 0.5-0 cm long. Ovary globose, 3-4 celled; style 0.8-1.0cm, erect, densely pubescent; stigmas bifid, small flattened. Berry 1.6-2.5cm in diam, globose, glabrous, white on ripening. Seeds c 0.2cm.

Fl.: Apr. - Oct.

Spn. Cited. : DARJEELING : Jorebungalow, 2000m, 05.4.1994, *Das et Samanta* 0194; Jalapahar, 2250m, 07.5.1994, *Das et Samanta* 0213; Kalimpong, 1550m, 09.7.1996, *Das et Samanta* 1251.

Loc. Distrib. : DARJEELING : Common; Generally cultivated in garden but sometimes escape.

Gen. Distrib. : A native of Brazil.

Note : (i) Chr. no. $2n = 24$ (Madhavadian, P. 1968).

VERBENACEAE Joume St. Hilaire

HOLMSKIOLDEA Retz.

Holmskioldea sanguinea Retz. Obs. Bot. 6:31.1791; FBI 4:496. 1885; FEH 1:269.1966; EFPN 3:147.1982; TBRI 50(4) : 116.1987.

Nep: Aputo, Harhay Lahara.

Large rambling shrub. Branches upto 10m long radiate or drooping, brownish pubescent; petioles 1.5-3.0cm long, nearly glabrous; lamina 6.8-11.5x2.2-8.5cm, ovate, entire or obscurely toothed, acuminate, base cuneate to subcordate. Cymes axillary and terminal, ebracteolate; peduncles 2.5-6.0cm long, pubescent; bracts

0.31-0.5cm long, lanceolate; calyx 1.8-2.2 cm long widely obconic, subtruncate, undulate, scarlet or yellow, membranous, mouth 2.2.-2.5cm across; corolla 2.0-2.4cm long, cylindric, orange, tube curved, monuh oblique, 2-lipped, lobes rounded, lowest longer. Stamens 4, didynamous, anthers ovate, exerted; ovary obscurely depressed, 4-celled, glandular, 4-ovuled; style terminal, short bifid, glabrous. Drupes 0.52-0.8cm, obovoid, included within acresent calyx.

Fl.:Oct.-Jan.; Fr.rip. : Feb. -Apr.

Spn. Cited. : DARJELEING : Padmaja Park. N.B.U. Campus, 120m, 08.10.1996, *Das et Samanta* 1642.

Loc. Distrib. : DARJEESING : Common in Siliguri, Sukna, Mangpo, Kurseong (upto 1500).

Gen. Distrib. : Himalaya (Darjeeling, Kumaon-Bhutan). India.

VITACEAE Juss.

KEY TO THE GENERA :

1. Leaves simple.....2
1. Leaves compound.....3
2. Lamina shallowly lobed.....*Ampelocissus*
2. Lamina unlobed.....*Cissus*
3. Lamina 3-foliolate.....*Parthenocissus*
3. Leaves 5 or more foliolate.....4
4. Lamina villous beneath; style elongated.....*Cayratia*
4. Lamina glabrous; stigma sessile.....*Tetrastigma*

AMPELOCISSUS Planch.

KEY TO THE SPECIES :

1. Tendrils simple.....*A. barbata*
1. Tendrils forked.....2
2. Petioles upto 4.0 cm long, shallowly ridged; lamina with soft brown tomentum beneath, rugae above.....*A. rugosa*
2. Petioles upto 11 cm long, without any ridged; lamina glabrous, smooth above.....*A. sikkimensis*

Ampelocissus barbata (Wall.) Planch. in DC., Monog. Phan. 5:375.1887; TNB 38.1929; FEH 2:78.1971; FT 1:410.1981; FB 2(1):151.1991.

Vitis barbata Wall. in Roxb., Fl. Ind. ed. Carey, 2:479.1824; FBI 1:652.1875; TSDD 20.1896; TNB 38.1929.

Nep.: Jarila-Lahara.

Large shrubby climber. Stem stout, hollow, covered with numerous glandular capitate hairs. Tendrils simple with appressed glandular bristle. Stipule subulate, hairy. Leaves

simple; petioles 4.5-15cm long, with thickly glandular bristle; lamina 15-21x10-20cm, unlobed or 3-5 lobed, ovate-cordate, irregularly dentate, acuminate, base deeply cordate, glabrous above, thinly tomentose beneath on veins. Flowers paniculate corymbose cymes; peduncle up to 15cm long with glandular bristle. Calyx cup-shaped, shortly lobed; petals 0.11-0.19cm, red. Stamens 4-5, inserted at the base of disc, filaments short, subulate, anther free, 2-celled. Berries shortly stalked, 0.3-0.5cm long, globose 1.0-1.5cm diam, black when ripe. Seeds 4, elliptic, yellowish-brown, flat with shallow groove at middle on back, sharply ridged within.

Fl.: May - Jun. ;Fr. rip.: Jun. - Jul.

Spn. Cited. : DARJEELING : Latpunchor, 950m, 17.5.1995, *Das et Samanta* 0777; Dolka Forest, Bengdubi, 110m, 08.9.1996, *Das et Samanta* 1379; SIKKIM : Kafet Forest, Jorethang, 310m, 20.5.1996, *Das et samanta* 1072; Rhenek, 950m, 06.9.1996, *Das et Samanta* 1346.

Loc. Distrib. : DARJEELING : Bengdubi - Kalijhora (upto 1000m); SIKKIM: Less common; Jorethang - Nandugaon (upto 1000m).

Gen. Distrib. : India : Darjeeling, Sikkim and Khasia Hills, Assam; Bangladesh, Myanmar, Thailand.

Ampelocissus rugosa (Wall.) Planch.in DC., Monog. Phan. 5:376.1887; FEH 3:80.1975; EFPN 2:93.1979; FB 2 (1):151.1991

A. nervosa (Laws.) Planch. in DC., onog. Phan. 5:372.1887; EFPN 2:93.1979.

Vitis nervosa Laws. in FBI 1:650.1875.

V. rugosa Wall. in Fl. Ind. 2:480.1824.

Large shrubby climber. Stem longitudinally ridged, solid, glabrous except at nodes, turning black when dry. Tendrils bifid, ribbed, sparsely hairy but reddish tomentose, glandular bristles completely absent. Leaves simple; petioles 2.5-4.0 cm long, shallowly ridged, sparsely hairy, brown dotted tubercled; lamina 8.5-15x8.5-14 cm, broadly cordate, dentato-serrate, acuminate to slightly caudate, palmately 5-nerved, rugose above, rusty tomentose beneath. Flowers and fruits not seen.

Spn. Cited. : SIKKIM : Gyalshing, 1530m, 23.5.1996, *Das et Samanta* 1146; DARJEELING : Dolka Forest, Bengdubi, 110m, 08.9.1996, *Das et Samanta* 1377.

Loc. Distrib. : DARJEELING : Less common; Bengdubi - Panighata River Teesta Valley area (upto 1500m). SIKKIM : Less common; Gyalshing - Pelling, Yaksum (1500 -2000m).

Gen. Distrib. : E. Himalayas (Darjeeling & Sikkim), Assam; Bhutan, Myanmar.

Ampelocissus sikkimensis (Laws.) Planch. in DC., Monog. Phan. 5:371.1887; TNB 38.1929; EFH 1:198.1966 & 3: 80.1979; EFPN 2:93.1979; FPK 22.1981; FA 1:294.1982; TBRI 50 (4):105.1987; FB 2(1):109.1991(Photo-20).

Vitis sikkimensis Laws. in FBI 1:650.1875.

Large shrubby climber. Tendrils forked, climbs mainly by roots. Stem weak, glabrous. Petioles 2.2-11cm long; lamina 5.5-17x4.0-19cm, unlobed, broadly cordate, shallowly denticulate, shortly acuminate, base cordate, membranous, reddish. Flowers dense in subumbellate cymes 3.1-4.9cm diam. Calyx cup-shaped, shallowly lobed; petals 0.1-0.15cm, ovate, tip thick, incurved. Stamens 4, filament erect, 0.08-0.1cm; anther c0.07cm long, bithecous. Berries 0.5-0.6cm long, obovoid.

Fl.: Apr. - Jul.; Fr. rip.: Nov. - Dec.

Spn. Cited. : DARJEELING : Mirik, 1550m, 05.10.1994, *Das et Samanta* 0307; Dolka Forest, Bengdubi, 110m, 08.9.1996, *Das et Samanta* 1397; SIKKIM : Jorethang 310 m 28.10.1995, *Das et Samanta* 0809.

Loc. Distrib. : DARJEELING : Common; St. Mary's, Kurseong, Bamanpokhri, Ryang, Samsing, Sevoke (125 - 1850m).

Gen. Distrib. : E. Himalaya (Darjeeling-Nepal-Sikkim) and Meghalaya.

Note : (i) Leaves used as fodder for cow, buffalo and goats.

CAYRATIA Juss.

Cayratia japonica (Thunb.) Gagnep. in Lecomete, Notul. Syst.(Paris) 1:349.1911; Raman in FTN 1:79.1983; FB 2(1): 161.1991.

Vitis japonica Thunb., Fl. Jap. 104.1784.

V. teunifolia auctt. non W. & A., FBI 1:660.1875 p.p.; TSDD 20.1896.

Suffrutescent slender climber. Tendril twice bifid, nearly glabrous. Stem slightly ridged with shortly soft pubescence throughout. Stipule 2, membranous. Leaves pedately 5-foliate; petioles 2.0-5.0cm long; petiolule 0.5-2.0cm, middle leaflet much longer than laterals, 2.0-7.0x1.0-4.0cm, elliptic to ovate to lanceolate, or obovate, distantly dentate or dentato serrate, acute, base cuneate, white woolly above, brown woolly beneath. Cymose-corymbose panicle 2.5-4.0cm in flowers in diam; calyx

0.04-0.05cm, cupshaped, subentire, hairy; petals 0.16-0.18cm, constricted above, inflated base; style elongated, disc conspicuous. Berries 0.5-0.8cm, obovoid.

Fl.: Mar. - May ; Fr. rip.: Jul. - Oct.

Spn. Cited. : DARJEELING : Panighata, 350m, 13.3.1994, *Das et Samanta* 004 SIKKIM : Deorali, Gangtok, 1450m, 19.11.1995, *Das et Samanta* 0973.

Loc. Distrib. : DARJEELING : Less common; Dolka Forest, Ryang. Rambi, (125-1800m); SIKKIM : Common; Tadong - Ranipool (upto 1650m).

Gen. Distrib. : India : Himalaya, Assam, Sikkim, W. Bengal; Bhutan - Malaysia.

Note : (i) Chr. no. $2n = 60$ (Mitsukuri, Y. & Hayashi, M. 1953. (Shetty, B. V. 1959).

CISSUS L.

KEY TO THE SPECIES :

1. Tendrils forked.....*C. repens*
1. Tendrils simple.....2
2. Lamina not variegated, distantly serrate; stipules 0.4-0.5 cm long, ovate to oblong; berries greyish.....*C. assamica*
2. Lamina variegated with green and purple, closely serrate; stipules 0.21-0.44 cm long, broadly ovate; berries reddish purple.....*C. javana*.

Cissus assamica (Laws.) Craib in KB 1911:31.1911; EFPN 2:94.1979; FB 2(1) : 159.1991.

Vitis assamica Laws. in FBI 1:648-1875.

Shrubby climber stem and branches obscurely angulate, solid, glabrous except young parts, rigid and black when dry. Tendril simple, terete, shallowly ribbed, glabrous. Stipules 0.4-0.5cm, ovate to oblong, brittle when dry. Leaves simple. Petioles 2.0-4.5 cm long, erect, shallowly ribbed, sparsely brownly pubescent; lamina 5.5-14x5.0-10cm, broadly ovate - cordate, bristly serrated, cuspidate to shortly acuminate, base rounded cordate, membranous, nerves 5, divergent, sparsely pillose on midribs and veins. Flowers not seen. Fruiting peduncle 2.5-5.0cm long, branched, nearly glabrous; stalk 0.5-0.7cm, erect, tuberculate, nearly glabrous. Capsules 0.7x0.6cm, subglobose or pyriform, greyish yellow, glabrous; seed 1, 0.2-0.3cm in diam.

Fl.:Jun. - Aug. ; Fr. rip.: Sep. - Jan.

- Spn. Cited. : DARJEELING : Purbikhola, 350m, 18.11.1994, *Das et Samanta* 0407; N.B.U. Campus, 120m, 08.12.1994, *Das et Samanta* 0442.
- Loc. Distrib. : DARJEELING : Less common; Dolka Forest, Ryang, Bengdubi, Siliguri (110-800m).
- Gen. Distrib. : Himalaya (Darjeeling - Assam); Nepal - Bhutan.

CISSUS L.

Cissus javana DC., Prodr, 1:628.1824; EFH 1:199.1966; EFPN 128.1979; FPK 22.1981; TBRI 50(4): 109.1987; FB 2(1);158.1991(Photo-18).

Vitis discolor (Bl.) Dalz. in Hook., Kew. J. Bot. 2:39.1830; FBI 1:647.1875; TSDD 19.1896.

Cissus discolor Bl., Bijdr. 181.1825; FPM 235.1915; TNB 38.1929; FA 1:290.1982.

Nep.: Sono Pureni.

Suffrutescent climber with slender and herbaceous branches. Tendril simple, greyish, glabrous. Stem shallowly ridged, nearly glabrous but dense hairy at nodes. Stipules 0.21-0.42cm, broadly ovate, glabrous. Leaves simple. Petioles 0.2-0.5cm long, terete, glabrous; lamina 2.4-6.6x0.6-3.8cm, ovate to lanceolate, serrate to sharply serrulate, acuminate, base truncate, variegated with green and purple, glabrous, white pubescent on veins. Flowers in flat extraxillary corymbose umbels; peduncle red; calyx minute 0.1-0.11in diam not lobed, truncate; petals 0.14-0.18cm, obovate, margin curved inward, thickly obtuse; stamens 4, filament 0.8-1.0cm, basifixed, 2-elled. Berries red- purple ,0.4-0.6cm in diam, ovoid to globose.

Fl.: Jun. - Jul.;Fr. rip.: Sep. - Nov.

- Spn. Cited. : DARJEELING : Tindharia, 940m, 20.6.1994, *Das et Samanta* 0250; Kodaibari, below Kurseong, 840m, 03.10.1994, *Das et Samanta* 0365; Panighata, 350m, 09.12.1994, *Das et Samanta* 0449; Kalimpong, below Military Hospital 980m. 04.9.1996, *Das et Samanta* 1274.
- Loc. Distrib. : DARJEELING : Common; Samsing, Pankhabari, Mokaibari, Kalimpong, Lebong, Nimbong, Suruk (350-1000m).
- Gen. Distrib. : Foot - hills of Himalayas; Nepal, Myanmar, Malaysia, China, Thailand.

Notes : (i) Beautiful flower used as ornament (ii) Chr. no. $2n = 24$
(Krishnaswamy *et al.* 1954 ; Hazra, R. & Sharma, A. 1970).

Cissus repens Lamk., Ency. 1:31.1789; EFPN 2:94.1979; TNB 38.1929; FB 2(1):159.1991(Photo-19).

C. cordata Roxb., Fl. Ind. ed. 2. 1:407.1832;

Vitis repens (Lamk.) W. & A, Prodr. 125.1834; FBI 1:646.1875.

A medium glabrous succulent climber with glaucous white stem. Tendrils branched, glabrous. Stipules large, amplexicauled, broadly ovate to oblong, brittle when dry. Leaves simple. Petioles 2.0-7.0cm long, weak; lamina 5.0-12x3.5-9.5cm, broadly ovate, distantly and sharply dentate, acuminate, base deeply cordate, membranous, glabrous above, puberulous beneath, nerves 5, first 2 from base again become forked. Cymes form umbel upto 3.5cm. Peduncles 2.0-4.0cm long, glabrous, single umbel contains 6-8 flowers; pedicel 0.5-1.0cm; calyx campanulate, sepals 0.2cm, obovate, entire, glabrous; petals lanceolate, acute, glabrous; stamens 4, filament 0.05-0.1cm, anther c 0.05cm, bicelled; style slender, distinct, unlobed. Berries c 0.5 cm in diam, obovoid, apex pointed, glabrous.

Fl.: Jul. - Aug.; Fr. rip.: Sep. - Jan.

Spn. Cited. : DARJEELING : Tenth Mile, Salugara, 125m, 11.11.1995, *Das et Samanta* 0925; Dolka Forest, Bengdubi, 110m, 08.9.1996, *Das et Samanta* 1372.

Loc. Distrib. : DARJEELING : Less common; Dolka - Tenth Mile, River Teesta Valley, Latpunchor, Kalimpong, Munsong (110-1200m).

Gen. Distrib. : India : Himalaya (Nepal - Bhutan). India: Assam, Bengal; Malaysia.

Note : (i) Chr. no. $2n = 96$ (Vatsala , P. 1960).

PARTHENOCISSUS Planch.

Parthenocissus semicordata (Wall.) Planch. in DC., Monog. Phan. 5:451.1887; TNB 38.1929; FEH 200.1966; EFPN 2:94.1979; FB 2(1):152. 1991.

Vitis semicordata Wall. in Roxb., Fl. Ind. ed. Carey 2:481.1824.

V. himalayana Brandis var. *semicordata* (Wall.) Laws. in FBI 1:656.1875; TSDD 20.1896.

Nep.: Charchare Lahara.

Large shrubby climber. Tendril many forked, tip slightly curved, blunt, glabrous. Stem stout, 4-angled and branches slender, nearly glabrous, young stem with pubescens. Leaves pedately or ternately 3-foliolate; petioles 0.4-0.15cm long; lateral petiolule 0.15-0.30cm long; median lamina 3.9-24x1.5-18cm, broadly ovate to elliptic coarsely dentate or crenate, caudate, base cuneate, membranous, glabrous on both surfaces, lateral lamina 2.5-7.5x1.0-3.7cm. Flowers in terminal or axillary corymbose cymes; calyx 0.04-0.05cm, cup-shaped; petals c 0.22 cm, yellowish-green, hooded at tip. Berries 1.0-1.5cm in diam, globose.

Fl.: May - Jul.; Fr. rip.: Sep. - Dec.

Spn. Cited. : DARJEELING : Reshete, Neora Valley National Park, 2240m, 06.5.1995, *Das et Samanta* 0694.

Loc. Distrib. : DARJEELING : Less common; Sukipokhari, 14-Farie-Rechilachak, Kafer, Senchal (1800 - 2400m).

Gen. Distrib. : Endemic to Himalaya (Nepal - Bhutan), Meghalaya.

Note : (i) Leaves used as fodder for cow and goats.

TETRASTIGMA (Mid.) Planch.

KEY TO THE SPECIES :

1. Tendrils simple.....2
1. Tendrils 2-10 forked.....5
2. Leaves digitately always 3-foliolate..... *Thomsonianum*
2. Leaves pedately 3-5 foliolate.....3
3. Plants with short blunt point; seeds 1-4.....*T. leucostaphyllum*
3. Plants with subulate point; seeds 1-2.....4
4. Lamina of terminal leaflet 2.6-10x1.5-4 cm, lanceolate; cymes densely clustered, glabrous.....*T. dubium*
4. Lamina of terminal leaflet 6.5-12x2.0-6.0cm, ovate-elliptic; cymes lax, puberulous.....*T. bracteolatum*
5. Tendrils 2-forked.....6
5. Tendrils 7-10 forked ending in a swollen pad.....*T. obtectum*
6. Terminal leaflet 1.5-3.5x0.8-1.2 cm; flowers in lax branched umbellate cymes; corolla reddish yellow.....*T. serrulatum*
6. Terminal leaflets 4.0-7.5x2.5-4.0cm; flowers in lax compound corymbose cyme; corolla greenish white.....*T. rumicispermum*.

Tetragium bracteolatum (Wall.) Planch. in DC., Monog. Phan. 5:428.1887; TNB 39.1929; FEH 1:220.1966; EFPN 2:94.1979; FA 1:296.1982; FB 2(1): 154.1991.

Vitis bracteolata Wall. in Roxb., FI 2:483.1824; FBI 1:654.1875.

Nep.: Lahara - Bilaunay.

Large shrubby climber. Stem and branches slender glabrous. Tendrils simple. Leaves pedately 3-5 foliolate; petioles 4.0-7.0 cm long; lateral petiolule 0.1-0.2cm, terminal 1.0-1.5cm; lamina of terminal leaflet 6.5-12x3.1-6.0cm, ovate to lanceolate, distantly and shallowly serrate; acuminate to caudate, base rounded, membranous. Flowers in lax puberulous corymbose cymes, 2.5-6.5 cm in diam.; peduncle 3.2-4.5cm long, slender, puberulous; sepals 0.2-0.3cm, ovate; petals 0.1-0.15cm, with blunt tip; filament c 0.1cm; anther c 0.05cm, bithecous, yellow; disc united to the base of ovary; style 0, stigma 4-lobed, 0.5-1.0cm diam. Berry 0.7-1.0cm in diam, subglobose, black, 1-2 seeded.

Fl.: Aug. - Oct. ; Fr. rip.: Dec. - Feb.

Spn. Cited. : DARJEELING : Sukna, 132m, 24.4.1994, *Das et Samanta* 0154; Mangpo, 1300m, 13.12.1994, *Das et Samanta* 0473; Bhuttabari, 250m, 25.2.1995, *Das et Samanta* 0540; Latpunchor, 1000m, 17.5.1995, *Das et Samanta* 1046; SIKKIM : Jorethang, 310m, 28.10.1995, *Das et Samanta* 0804.

Loc. Distrib. : DARJEELING : Common; Kalijhora, Latpunchor, Goke, Tenth Mile, Rongtong, Dudhay (132-1500m); SIKKIM : Less common; Found around Jorethang areas (300-1000m).

Gen. Distrib. : E. Himalayas (Nepal - Bhutan), Assam North Bengal.

Note : (i) Ripe fruits edible.

Tetrastigma dubium (Laws.) Planch. in DC., Monog. Phan. 5:427.1887; TNB 39.1929; FA 1:299.1936; EFH 1:200.1966; EFPN 2:94.1979; TBRI 50(4):128.1987; FB 2(1): 154.1991.

Vitis dubia Laws. Hook. f.in FBI 1:661.1875.

Large shrubby climber. Branches cylindrical glabrous, old stem woody. Tendril simple, dextrorse glabrous. Leaves pedately 3-5 foliate; petioles 2.0-3.0cm long, terminal lamina 2.6-10x1.5-4.5cm ovate-lanceolate, incisely serrate, acuminate, base cuneate, nerves alternate, divergent. Cymes 2.0-2.3cm. diam compact, sparsely pubescent. Calyx 0.04 cm, cupshaped; petals 0.1cm, ovate with blunt end; ovary 2-celled; style short; stigma with 4-lobes. Berry subglobose; seeds 1-2.

Fl.: Mar. - Apr. ; Fr. rip.: Apr. - Jun.

- Spn. Cited. : DARJEELING : RungDung Khola, 1750m, 28.3.1983 A.
P. Das 1337.
- Loc. Distrib. : DARJEELING : Less common; Guling. Munsong,
Ryang, RungDung Valley, Bhuttabari (upto 1900m).
- Gen. Distrib. : India : Assam, Sikkim; Nepal, Bhutan, W. China.

Tetrastigma leucostaphylum (Dennst.) A. Alston in Mabberl. in Taxon, 26 (50):539.1977; FB 2(1); 154.1991.

Cissus leucostaphylla Dennst, Sch. 17,19,33,1818.

T. lanceolarium (Roxb.)Planch. in DC., Monog. Phan. 5:423.1887; TNB 39.1929 ; FPK 23.1981.

Cissus lanceolaria Roxb., Fl 1:412.1820.

Vitis lanceolaria (Roxb.) Laws. in FBI 1:660.1875 p.p.

Nep.: Bherseri, Char - Charay Lahara.

Large stout climbing shrubs. Stem stout, terete glabrous but become flattened when older. Tendrils simple. Stipule 0.20-0.25cm, lanceolate, membranous, cadulcous; leaves pedately 5-foliolate, coriaceous; petioles 6.0-8.2cm long; lamina of median leaflet 7.5-16x3.5-6.0cm, ovate-elliptic, distantly serrate, acuminate, base cuneate, glabrous on both surfaces. Cymes axillary short, compact corymbose, flowers 2.1-5.1cm diam; peduncle 1.0-3.5cm long; calyx short; petals 0.11-0.20cm, creamy white, flask-shaped in bud, puberous with blunt thickened tip. Berries 1.0-1.5cm in diam, globose. Seeds 1-4, 0.4x0.1cm.

Fl.: Mar. - May; Fr. rip.: Aug. - Nov.

Spn. Cited. : DARJEELING : Tenth Mile, Salugara, 130m, 14.3.1995,
Das et Samanta 0550.

Loc. Distrib. : DARJEELING : Less common; River Lesh, Geil Forest,
Jaldhaka, Rambhi- Latpunchor, Mangpo, Rangit Valley,
Garubathan (upto 1500m).

Gen. Distrib. : India : Assam; Himalayas (Nepal - Bhutan); Java

Note : (i) Chr. no. $2n = 44$ (Elena, P. 1967).

Tetrastigma obtectum (Wall. ex Laws.) Planch. ex Franch in Bull. Soc. Bot. Fr.33:458.1886; TBRI 50(4):128.1987; FB 2(1): 157.1991.

Vitis obtecta Wall.[cat.206, no. 6026.1831-1832, nom. nud.] ex Laws. in FBI 1:657.1875.

Tetrastigma burmanicum Momiyama in FEH 2:79.1971;, p.p. excl. basionym.

Shrubby root- climber. Stem woody terete, villous, branches mostly pendent. Tendril shortly branched (7-10) terete. Stipule ovate. Leaves pedately 3-5 foliate; petioles 1.2-1.5cm long, terete, pubescent; lamina of terminal leaflet 5.3-9.5x2.2-3.7 cm, obovate, serrate, terminal leaflet larger than laterals, acute, base cuneate, membranous, glabrous above, pubescent beneath especially at veins. Compound umbellate pubescent cymes 2.0-0.3 cm diam. Peduncle c1.5cm; pedicels 0.2-0.3cm long; calyx minute; petals 0.25-0.30cm, pinkish - white, tip blunt. Style very short, almost 0; stigma 4-lobed, flat. Berries diam 0.4-0.5cm, globose; 2 seeded, 0.2x0.15cm, ovoid, rough.

Fl.: Apr. - May; Fr. rip.: Aug. - Oct.

Spn. Cited. : DARJEELING : Behind observatony Hill, 2100m, 02.8.1982,
A. P. Das 1116.

Loc. Distrib. : Very common in Darjeeling and its adjoining areas (upto 2100m).

Gen. Distrib. : Temperate Himalaya (Kumaon - Darjeeling); China.

Tetrastigma rumicispermum (Laws.) Planch. in DC., Monog. Phan. 5:429.1887; TNB 39.1929; EFPN 2:95.1979; TBRI 50(4):128.1987; FB 2(1): 155.1991.

Vitis rumicispermua Laws. in FBI 1:661.1875; TSDD 16.1896; FA 1:301.1982.

Shrubby climber. Stem solid, glabrous; older coarsely warted, internodes 3.0-10cm long. Stipule angulate, scarious. Leaves pedately 5-7 foliolate; Petioles 3.5-10cm long; lamina of terminal leaflets 4.0-7.5x2.5-4.0cm, oblanceolate to obovate, serrate with single soft bristle in the notch acuminate, base attenuate, membranous, glabrous both surfaces, midveins with alternate veins. Flowers in lax compound corymbose; peduncle 1.5-5-8cm; pedicel short. calyx minute; corolla greenish-white, 0.1-0.5cm with thick blunt tip. Berries 0.7-1.0cm in diam, obovoid, 1-4 seeded.

Fl.: Apr. - Jun.; Fr. rip.: Sep. - Nov.

Spn. Cited. : DARJEELING : Birch Hill, 2100m, 31.5.1982, A. P. Das 0993; SIKKIM : Singling Basty, Soreng, 1520m, 30.10.1995, Das et Samanta 0890; Deorali, Gangtok 1450m, 19.11.1995, Das et Samanta 0977; Pangthang, 1910m, 20.11.1995, Das et Samanta 1030.

- Loc. Distrib. : DARJEELING : Less common; Sonada, Rungi Rung, Rimbick, Damsong, Kurseong (1500-2250m); SIKKIM : Common; Rongpo Gyalshing, Yaksum (upto 2100m).
- Gen. Distrib. : Endemic to Himalaya (Nepal - Bhutan); Khasia Hills.
- Notes : (i) Ripe fruits edible
(ii) Chr. no. $2n = 52$ (Eichhorn, 1938); $n = 11, 13$

Tetrastigma serrulatum (Roxb.) Planch. in DC., Monog. Phan. 5:432.1887; TNB 39.1929; BNHS 55:253.1958; EFH 1:201.1966 & 2:80.1971 & 3: 82.1975; FPK 23.1981; FAI: 299.1982 EFPN 2:95.1979; TBRI 50(4):128.1987; FB 2(1): 155.1991.

Cissus cerulata Roxb., Fl. Ind. ed. Carey 1;432.1820.

Vitis capriolata (D. Don) Royle, 3. bot. Him. 149t.26, f. 2. 1839; FBI 1:659.1875.

V. affinis Gagnep. ex Osmaston, For. Fl. Kumaon 119.1927; Razi, RBSI 18(1): 55.1959.

Tetrastigma affine (Osmaston) Raiz. & Saxena in IF 92:325.1966.

T. indicum Maulick in RBSI 13:352.1971; BBSI 15:23.1976.

Nep.: Charcharay.

Large shrubby climber. Stem terete, slender, glabrous, red; rooting at nodes, internodes 4.0-6.0cm long. Tendril 2-fid, terete, glabrous. Stipule 0.31-0.40cm, triangular, subpersistent. Leaves pedately 5-foliolate; petioles 2.3-3.0cm long and petiolule 0.5-0.7cm long; lamina of lateral leaflets 1.5-3.5x0.8-1.2cm broadly lanceolate or elliptic to obovate, bristly serrate or shallowly crenate, producing short sharp teeth between the crenations, subacute to acuminate, base cuneate, membranous, both surfaces glabrous; lamina of lateral leaflet 3.5-7.5-1.5-2.0cm. Lax axillary branched umbellate cymes 3.0-5.0cm diam; peduncle 3.0-6.0cm long, red; pedicel 0.5-1.0cm; calyx 0.01cm, base wide, apex pointed; corolla yellow-reddish 0.15-0.30x0.8cm, obovate lanceolate, with a short blunt point. Filaments c 0.01cm, erect; anther c 0.05cm, yellow; ovary cylindrical, 2-celled; style short; stigma divided into 4-lobes. Berries c 0.8cm in diam, globose, red on young, black on ripening.

Fl.: Jun. - Oct.; Fr. rip.: Oct. - Mar.

Spn. Cited. : DARJEELING : Kurseong, 1500m, 05.5.1994, *Das et Samanta* 0818; Jalapahar, 2250m, 07.5.1994, *Das et Samanta* 0214; Mirik, 1600m, 05.9.1994, *Das et Samanta* 0314; Mulkhagra Basti, Neora Valley National Park, 2220m, 30.4.1995, *Das et Samanta* 0659; SIKKIM : Fifth

Mile, Gangtok, 1720m, 18.11.1995, *Das et Samanta*, 0950;
Pelling 1910m, 23.5.1996, *Das et Samanta* 1180.

- Loc. Distrib. : DARJEELING : Abundant; RungDung, Tangta, Kurseong, Jalapahar, Mirik, Raman, 14-Faric, Lava, Kafer (1500-2500m); SIKKIM : Common; Gangtok, Pelling, Ravongla, Jorethang, Hilley (1500-2950m).
- Gen. Distrib. : India : Himalaya (Garwal - Bhutan); India, Myanmar, China, Thailand.
- Note : (i) Ripe fruits edible.

Tetrastigma thomsonianum Planch in DC. Monag. phan. 5:438. 1887; FJ1:137.1981.

Vitis angustifolia (Roxb.) W; lc: 9;t:176.1939; FBI 1:654.1875.

Tetrastigma angustifolia (Roxb.) Planch. in FT 1:416.1981 non, l. *angustifolium* Planch 1887.

Medium shrubby climber. Stem and branches, shallowly ribbed, nearly glabrous. Tendrils simple not forked, shallowly ribbed greyish yellow, glabrous. Stipules 0.4-0.5cm, subulate, amplexicauled, subpersistent. Leaves digitately 3-foliolate; petioles 3.0-7.5cm, ribbed stout, puberulous; petiolule 0.4-1.0cm, shallowly ribbed, middle lamina 7.0-10x2.5-3.5cm, lanceolate, distantly dentate- serrate, acute to shortly acuminate, base cuneate, leathery, midveins prominent, glabrous above, sparsely pubescent on veins, lateral lamina slightly smaller than midian. Flowers not seen. Fruiting peduncle 1.5-3.0cm long, shallowly ribbed, much branched, brownish pubescent throughout, stalk 0.2-0.6cm. Capsule 0.4-0.7x0.3-0.4cm, subglobose, dull brown on ripening, 2-4 seeded.

Fr. rip.: (Nov.)

- Spn. Cited. : DARJEELING : Baikanthapur Forest, Kathanbari, 200m, 11.11.1995, *Das et Samanta* 0926.
- Loc. Distrib. : DARJEELING : Less common; Found only around Kathanbari Forest areas (upto 350m).
- Gen. Distrib. : India : Darjeeling, Assam, Meghalaya; Bangladesh, Sumatra.

MONOCOTYLEDONOUS :

ARACEAE Juss.

KEY TO THE GENERA :

1. Lamina entire; petioles broadly winged.....*Pothos*
 1. Lamina entire or palmately divided; petioles not winged.....*Rhaphidophora*

POTHOS L.

KEY TO THE SPECIES :

1. Spadix much smaller (0.04-0.05 cm long); lamina obovate.....*P. roxburghii*
 1. Spadix 0.7-1.0cm long; lamina ovate-oblong..... *P. cathcartii*

Pothos cathcartii Schott, Aroid.1:22,t.44,45.1853; Prodr.Aroid.565.1860; FBI 6:552.1894; Engler in pfl.-reich 4-238, Ht.21:27.1905; TNB 138.1929; FEH 1:397.1966; CIT.2:155.1971; EFPN 1:91.1978; FPK 121.1981; Fl. Nong. Meg. 335.1982 ; TBRI 50 (4):123.1987; FNB 3(1):125.1994.

Nep. : Sanukan-Chirna, Chepari lahara; Bhu.; Shutey Lahara, Kanchirna

Shrubby branched perennial root-climbers. Stem terete diam 0.3-0.4 cm, glabrous. Leaves distichous; petioles 1.5-4.0cm long, broadly winged, 0.5-1.3cm diam, truncate to emarginate; lamina 5.5-10.5x2.5-3cm, ovate-oblong or lanceolate, entire, acute to finely acuminate, coriaceous; secondary veins parallel, lateral veins much branched, divergent, reticulate. Peduncles 1.0-1.5cm long, erect, stiff. Bracts on lower part of peduncles, green, elliptic, mucronate, coriaceous. Spathe 0.65-1.5cm, suborbicular, mucronate, concave, smaller than spadix; spadix 1.0-7.0 cm, globose, stipitate (0.5-0.7cm). Tepals 6, 0.12-0.15cm, square apex 3-angled, keeled, rigid. Stamens 6, filaments c 0.13 cm long, flattened; anthers 0.06-0.07cm; ovary 0.13-0.15cm.

Fl.: Nov. - Apr.

Spn. Cited. : DARJEELING : Rung Dung Valley, 1700m, 09.5.1983, A. P. Das 1407.

Loc. Distrib. : DARJEELING : Common; Mangpo, Kalijhora, River Teesta Valley, Pankhabari - Mokaibari (400 - 1800m).

Gen. Distrib. : Tropical & Subtropical Himalayas, Assam, Manipur, Myanmar & China.

Pothos roxburghii de vriese in Miq., pl. Jung. 1:103.1851 Roxb., Fl. Ind. 1:430.1832 now L., 1753; FBI 6:552.1893 p.p; FB.

Similar of *P. cathcartii* but stem weak, profusely, rooting from nodes. Petiole short; lamina obovate, entire, acute to apiculate, base cuneate; and inflorescence much smaller, spadix 0.04-0.05x0.16-0.2cm; acute.

Fl.: May - Jun.

Spn. Cited. : SIKKIM : Pelling, 1900m, 23.5.1996, *Das et Samanta* 1128.

Loc. Distrib. : SIKKIM : Abundant, on trunks or trees; Rangpo, Melli, Rhenek, Gyalshing, Legship. (500 - 2000m).

Gen. Distrib. : West Bengal (Darjeeling), Sikkim; Myanmar, Malaysia, China.

RHAPHIDOPHORA Hassk.

KEY TO THE SPECIES :

1. Stem slender below 1.0 cm in diam., terete; nerves in lamina 2-5 pairs.....2
1. Stem over 1.2 cm in diam, many ribbed; nerves in lamina 5-6 pairs....*R. hookerii*
2. Petioles less than 20 cm long; lamina 15-22x7.5-14.5 cm, ovate but asymmetric; base rounded to cuneate.....*R. calophylla*
2. Petioles over 20 cm long; lamina 11-25x7.2-16cm, broadly ovate-elliptic, equal-sided; base narrowed towards the petiole.....*R. glauca*

Rhaphidophora calophylla Schott. in Bonplandia 5:45.1857.

R. lanceifolia Schott in Bonplandia 5:45.1857; FBI 6:545.1893.

R. peepla (Roxb.) Schott in Bonplandia 5:45.1857 p.p.

Very large stout root climbers. Stem terete, diam 0.8-1.0cm, solid, nearly glabrous. Petioles upto 20cm long, obscurely many ribbed, glabrous, sheath reaching at the base of lamina; lamina 15-22x5.5-14.5cm, unequally ovate, entire, abruptly shortly acuminate, base rounded-cuneate, coriaceous many nerved, raised. Spadix narrower, held with an angle of curved peduncle apex.

Fl.: Juy. - Aug.; Fr. rip.; Dec. - Jan.

Spn. Cited. : DARJEELING : St. Mary's, Kurseong, 1550m, 20.3.1983, *A.P.Das* 1274; SIKKIM : Soreng, 1560m, 30.10.1995, *Das et Samanta* 0862; Fifth Mile, Gangtok, 1700m, 18.11.1995 *Das et Samanta* 0941.

Loc. Distrib. : DARJEELING : Less common; Below Kurseong College, Tung, Kodaibari - Mokaibari, River Balasan Valley (300-2050m); SIKKIM : Less common; Gangtok, Malbasey (350 - 2000m).

Gen. Distrib. : E. Himalaya (Darjeeling - Sikkim), Kasia Hills; Myanmar.

Rhaphidophora glauca (Wall.) Schott. in Bonpl. 5:45.1857; FBI 6:547.1893; Engler & Krause in Engler. Pflreich IV 23B. Htr.37: 47.1908; TNB 138.1929; FEH 1:398.1966; op. cit.2:155.1971; EFPN 1:92.1978; FPK 121.1981; Fl. TBRI 50 (4):125.1987; FB 3(1):126.1994.

Pothos glauca Wall., Asia, Rar. 2:45,t. 156.1831.

Nep.: Kanchirna, chuna champa.

Large stout root-climbers, climbs upto the tip of tall trees. Stem much thick 0.4-1.0cm diam. Petioles 8.5-25cm long, trete, flattened, glabrous; lamina 11-25x7.2-16cm broadly ovate-elliptic, pinnatisect, segments 2-5 pairs, oblong, narrowed towards base, caudate to acuminate, bluish-glaucous beneath, main veins 2-5 parallel, convergent. Peduncles axillary upto 25 cm long, spreading, curved at apex, nearly glabrous. Spathe 8.0-13.5x2.7-9.0cm golden yellow. oblong-ovate, acuminate; spadix 4.2-7.8x0.8-1.3cm. Stamens 4, filaments 2.7-3.0cm long, flat, diam, c.0.15cm, anthers 1.0x0.14cm, 2 locular. Ovary 0.55-0.56cm, apex c0.4cm, truncate, stigma flat 0.06-0.1cm, ellipsoid.

Fl.: Sep. - May.

Spn. Cited. : DARJEELING : Birch Hill, 2000m, 25.9.1981, A. P. Das 0733; SIKKIM : Deorali Forest, Gangtok, 1470m, 19.11.1995, *Das et Samanta* 0993.

Loc. Distrib. : DARJEELING : Common; Ging to Lebong, St. Mary's, Kurseong, Latpunchor, River Balasan Valley (1550-2150m); SIKKIM : Less common; Yaksum, Rumtek, Singtam, Tadong, Pungthung (1400-2200m).

Gen. Distrib. : E. Himalayas (Darjeeling - Sikkim), Khasia & Naga Hills, Manipur; Nepal.

Note : (i) Flowers used as ornament by the local people.

Rhaphidophora hookerii Schott. in Bonpl 5:45.1857; FBI 6:546.1893; Engl. & Krause in Engler Pflreich IV, 23B: Ht.37: 32.1908; FEH 1:398.1966; TBRI 50(4): 101.1987; FB 3(1): 126-1270.1944.

A large stout root-climbers. Stem thick, thumb like diam 1.2-1.5 cm, solid, many ribbed. Petioles upto 22cm long, shiny, shightly channeled; lamina 17-39x7.5-22cm, oblong - elliptic, entire, unequal sided, caudate-acuminate, (c 1.5 cm long), base cuneate rounded often cordate, lateral veins 5-6 pairs, both surfaces glabrous. Flowers and fruits not seen here.

Spn. Cited. : DARJEELING : Singtam, 1800m, 15.8.1982.A. P.
Das 1144.

Loc. Distrib. : DARJEELING : Rare; Singtam and lying.

Gen. Distrib. : Darjeeling, Sikkim, Nepal, Khasia & Naga Hills, Manipur, etc.

ARECACEAE C.H. Schultz. (*Palmae nom. cons.*)

KEY TO THE GENERA AND SPECIES :

1. Leaf sheath never flagelliferous or prickly, tomentose...*Plectocomia himalayana*
1. Leaf sheath flagellate and prickly.....*Calamus flagellum*

CALAMUS L.

Calamus flagellum Griff. in Mart. Hist. Nat. Palm. III 333, t. 176.f.IX.

Nep. : Putli or Rabi Bet.

Scandent. Stem diam. c0.35m slender with sparsely recurved short spines. Leaves 24-30cm in diam; leaf sheathes-scruffy, leaflets subopposite 25-40x1.5-1.8cm, linear-lanceolate, entire, less flagellate, margin, more at tip; rachis distinct; very short spinous; lateral veins slightly distinct. Flowers not seen. Fruits 2.6-3.5x2.2-2.5cm, ellipsoid, cuspidately beaked (0.2-0.3cm long). 3-ridged, flat groved at middle; scales 0.4-0.6cm wide, orange brown intermingled with dark brown intre marginal line, 1-seeded.

Fr. : May-Jun.

Spn. Cited. : DARJEELING : Latpunchor, 900m, 17.05.1995, Das
et Samanta 0739.

Loc. Distrib. : DARJEELING : Less common; Latpunchor, Mangpo, Valley
of Great Rangeet (upto 1350m).

Gen. Distrib. : Darjeeling, Sikkim, Assam, Khasia Hills; Bhutan
Bangladesh.

PLECTOCOMIA Mart.

Plectocomia himalayana Griff., J. Nat. Hist. 5:100. 1844; FBI 6:478.1893; TSDD
87.1896; TNB 136.1929; TBRI 50(4):123.1987.

Bhu; gowri bet; Nep.: Tokribet, tara bet; Lep: Rimul.

Large scrambling shrub. Stem upto 15 m long, flattened, solid, shiny, spinous. Petioles very short with no knee; lamina 15-21x1.8-2.2cm linear-lanceolate, entire, cirrhose or filiform; sheath tubular, scurfy; spathe conduplicate; peduncles over 65cm long, dropping; bracts 4.5-6.0x1.7-2.1cm oblong, acuminate, coriaceous; spikelets 3-7 flowered; calyx lobes 0.2-2.1x0.3cm, rhombic, apiculate and ribbed. petals 3, 0.5-0.7x0.25-0.3cm, ovate-lanceolate, entire, dirty yellow. Stamens 3, filament short; anthers 0.25-0.3cm slightly larger than filament, bicelled. Female flowers not seen.

Fl.: Jul. - Sep.; Fr. rip.: Apr. - May.

Spn. Cited. : DARJEELING : Birch Hill, 2000m, 26.9.1983, A. P. Das 1536.

Loc. Distrib. : DARJEELING : Rare; North Point - Lebong, Birch Hill-Jorebungalow, Senchal, Takdah, Latpunchor (1200 - 2200m).

Gen. Distrib. : Subtropical & temperate Himalaya (Sikkim - Darjeeling).

Note : (i) Used in furniture making purposes.

ASPARAGACEAE Juss.

ASPARAGUS L.

Asparagus racemosus Willd. var. *racemosus* Sp. Pl. 2: 152.1799; J. Lin. Soc. Lond. 14:623.1874; FBI 6:316.1892; BP 2:1903; Bot. Bih. & Ori. Pl. 6:1088.1924; Fl. Press. Madr. 3(8): 1517.1928; TNB 136.1929; Rai. Durg. & Raj. 383.1985; FB 3(1); 60.1994.

Beng. : Satamuli, Satawar; Nep. : Satamuli, Satavali.

A slender suffruticose much branched twiner. Roots a fascicle of elongated narrow tubers upto 30cm long. Branches woody, prickles reflexed, upto 1.5cm long. Leaves reduced to minute scales; cladodes in whorls of 5-8 or more upto 1.0cm long, linear slightly curved. Racemes upto 10cm long, often paniced, bracteoles minute, membranous; upper pedicels 0.22-0.3cm and lower 0.15-0.25cm long; flowers scented 0.4-0.45 cm in diam; perianth white, campanulate, 6-partite, lobes 0.3-0.4 cm long, narrowly oblanceolate; stamens attached to the bases of segments; filaments 2.0-2.6 cm long; anthers 0.45-0.5 cm, oblong, rounded; ovary 0.16-0.23x0.11-0.16cm, obovoid, trilobed, 3-locular; style c 0.05cm; stigma 3-lobed, recurved. Berries c 0.8 cm in diam, globose, scarlet on ripening, 1-2 seeded.

Fl.: Sep.; Fr. rip.: Sep. - Nov.

- Spn. Cited. : SIKKIM : Karfet Forest, Jorethang, 310m, 20.10.1995, *Das et Samanta* 0857.
- Loc. Distrib. : DARJEELING : Less common; around Dolka Forest & Panighata areas (up to 350m); SIKKIM : Less common; Jorethung, Nayabazar, (up to 350m).
- Gen. Distrib. : Tropical & Subtropical Himalaya (Darjeeling - Sikkim), India; Sri Lanka, Java Africa, Australia.
- Note : (i) Roots used as medicine in stomach trouble and for the preparation of pickles.

COMMELINACEAE R. Br.

STREPTOLIRION Edgew.

Streptolirion volubile Edgew. in Proc. Lin. Soc. 1:254.1845; Trans. Lin. Soc. 20:t. 1846; Comm. & Cypt. Beng. t. 41.1874; FBI 6:834.1892; KB 16:212.1962; FEH 1:402.1966. EFPN 1:83.1979; FPK 119.1981; TBRI 50(4);128.1987; FB 3(1): 219. 1994.

Tradescantia cordifolia (non Swartz 1788) Griff., Priv. Journ. 208.1847.

Streptolirion cordifolium (Grigg.) O. Kuntze, Rev. Gen. Pl. 2:722.1891.

Herbaceous climbers with rigid root-stock. Stem much branched, shiny glabrous. Petioles upto 10cm long, glabrous; lamina 6.5-1.2x3.5-7.5cm. rounded-ovate, entire densely and softly ciliated, caudate-acuminate, base deeply cordate; both surfaces glabrous often with scattered bristle above, nerves many, parallel, convergent; cymes scorpiroid, axillary and terminal; few flowered; bracts tubular, pinkish, membranous; sepals greenish-white 0.6-0.7x0.14-0.23cm, lanceolate, acute; petals 0.04-0.07cm, linear; filaments 0.6-0.7cm long with yellow hairs; anther locules c 0.09cm. Ovary 0.5x0.2cm, ellipsoid.

Fl.: Aug. - Oct.; Fr. rip.: Oct. - Dec.

- Spn Cited. : DARJEELING : North Point, 1950m, 04.10.1994, *Das et Samanta* 0371; Reshete, Neora Valley National Park, 2100m, 06.5.1995, *Das et Samanta* 0710; SIKKIM : Gyalshing, 1530m, 23.5.1995, *Das et Samanta* 1177.
- Loc. Distrib. : DARJEELING : Very common; Queen's Hill, Senchal-Tiger Hill, Sukiapokhari, Sonada, Mirik, Kalimpong, Neora Valley National Park (1500 - 2700m); SIKKIM : Common; Pelling, Gangtok, Pangthang, Yaksum, Lachung (1400 - 2800m).

Gen. Distrib. : Subtropical & temperate Himalayas, Assam, Khasia Hills, Manipur, Myanmar, China & Japan.

DIOSCOREACEAE R. Br.

DIOSCOREA L.

KEY TO THE SPECIES :

1. Plants dextrorse (right handed) twiner.....2
1. Plants sinistrorse (left handed) twiner.....7
2. Plants glabrous.....3
2. Plants hairy (at least stem) hairy6
3. Lamina deeply cordate at base.....4
3. Lamina nearly truncate to slightly rounded at base.....5
4. Lamina nearly sagittate, slightly lobed little above the base, veins 7-9, stem distinctly ridged.....*D. alata*
4. Lamina ovate-oblong to ovate-lanceolate with no tendency to form a lobe; stem never ridged but with furrow.....*D. hamiltonii*
5. Base of lamina almost truncate, 5-nerve prominent.....*D. glabra*
5. Base of lamina rounded-cuneate, 3-nerve prominent.....*D. trinervia*
6. Only stem minutely hairy, veins 7; lamina glabrous; leaves sometimes opposite..
.....*D. belophylla*
6. Entire plant hairy; veins 5; leaves always alternate.....*D. pubera*
7. Leaves simple; plants glabrous, never prickly.....8
7. Leaves compound; plants pubescent or shortly prickly.....10
8. Lamina subdeltoidly cordate.....*D. deltoidea*
8. Lamina ovate-cordate to triangular ovate.....9
9. Nerves always 9; capsules oblong, wings evenly broad, never depressed at tip
.....*D. bulbifera*
9. Nerves 7-9; capsules obovate, depressed at tip, wings broader.....*D. prazeri*
10. Stem never prickly.....*D. kamoensis*
10. Stem with prickles.....11
11. Leaves densely tomentose on both surfaces.....*D. tomentosa*
11. Leaves hairy on veins below and sparsely and minutely above.....12
12. Male spikes compact, c 1.0 cm long, leaflets very large (8.5-20x5.0-15 cm),
always.....*D. hispida*
12. Male spike not so compact, 3-5 cm long, leaflets 3-5., 8.5-12x2.5-4.3cm..
.....*D. pentaphylla*

Dioscorea alata L. Sp. Pl. 1033; ARBGC 14:302, Pl.123. 1938; FBI 6:296.1892; FM 4:330.1951; FB 3(1): 14.1994.

D. atropurpurea Roxb., Fl 3:296.1832; FBI 6:296.1892.

D. globosa Roxb. Fl 3:797.1832; FBI 6:296.1892.

D. purpurea Roxb. Fl 3:799.1832; FBI 6:297.1892.

D. rubella Roxb., Fl 3:798.1832; FBI 6:297.1892.

Beng.: Chupri.- alu; Lep.:bok,pem bok; Nep.:tarul.

Root stock not collected. Medium shrubby dextrorse twiner. Stem armed, slender, wavy to 4-winged, internodes 10-12.5cm long, bulbils often produced. Leaves simple. Petioles 3.5-8.0cm long, terete, narrowly winged, glabrous; lamina 8.5-16x5.5-13cm, sub-hastately ovate or triangular ovate, entire, acuminate, base rounded, glaucescent above, glabrous below, nerves 7-9 from base, convergent. Male spike not seen. Female peduncles upto 34cm long, branched, spikes borne singly or in pairs on lateral branches, sepals and petals 1.8-2.0-0.15cm, ovate, rounded, brown margin hyaline; stigma 0.06 - 0.07 cm long, Capsules 1.5-2.5cm long, obovate, apex 2.0-2.4cm, retuse, wing 1.5-1.8cm wide; seeds many, semicircular.

Fl. : Aug.-Sep.

Spn. Cited. : DARJEELING : Sukna, 132m, 13.5.1994, *Das et Samanta* 0225; Bamanpokri, 200m, 14.1.1995, *Das et Samanta*, 0494; Latpunchor, 1000m, 08.12.1996, *Das Samanta* 1626; SIKKIM : Pokluk, 840m, 21.5.1996, *Das et Samanta* 1111; Gyalshing, 1530m, 23.5.1996, *Das et Samanta* 1147.

Loc. Distrib. : DARJEELING : Common; Samsing, Sevoke, Kalijhora, Rambh, Mangpo, Mahananda Wild Life Sanchtury, Fifth Mile, Garubathan, Peshok (132 - 1000m); SIKKIM : Less common; Jorethang, Legship, Rangpo, Singtam (300 - 800m).

Gen. Distrib. : Generally cultivated in moist tropics also found in wild.

Note : (i) Used medicinally

Dioscorea belophylla (Prain) Voigt ex Haines, For. Fl. Choto Nagpur 530.1910; RBSI 4:134.1910;Burkill et Prain in ARBGC 14:348,127.1938;FWP 53:3.1973;EFPN 1:67. 1978; TBRI 50(4):122.1987; FB 3(1): 16. 1994.

D. sagittata Royle,III.Bot. Him. 378,379.1839,nom.nud.

D. belophylla J.O. Voigt, Hort. Suburb. Calcut. 653.1845. nom.nud.

D. glabra auct. non Roxb: FBI 6:294. 1892 p.p.

D. lecharum Prain & Burkill (at least p.p.) ; FB 3(1)188. 1994.

Beng.: Chupri alu, Korondi-alu, Mulara; Lep.: SingalbokKacheobok; Nep.: Panutorul, ghita torul.

Glabrous dextrorse twiner with elongated root-stocks 50 x 4.0 cm. Stem unarmed. Bulbils globose, numerous. Leaves simple. Petioles upto 12 cm long; lamina 12 - 16

x 7.0 - 11 cm, ovate-oblong or deeply cordate, entire, caudate-acuminate, base cordate, sub-glaucous beneath, nerves 7-9 from base, convergent. Male spikes in fascicles 9.0 - 31 cm long; bracts minute; male sepals 0.12 - 0.15 x 0.11-0.12 cm, triangular - ovate, brown, margin scarious; petals 0.13-0.15 x 0.06 - 0.07 cm; anthers c 0.03 cm; female spikes single, often paired; sepals and petals like that of males. Ovary globose; style c 0.02 cm; capsules c 1.5 cm. obovate, pendulous, 3-winged; seeds winged throughout.

Fl.: Aug. - Sep.; Fr.rip.: Dec. - Mar.

Spn. Cited. : DARJEELING : Rambh, 450m, 12.12.1994, *Das et Samanta* 0483.

Loc. Distrib. : DARJEELING : Less common; Kurseong, Birch Hill, Lebong-Ging, Kalijhora, Teesta Valley, Mangpo; Ryang, River Little Rangeet (130 - 2150m).

Gen. Distrib. : India; Pakistan, Nepal, Bhutan, Sri Lanka, Myanmar, Malaysia etc.

Note : (i) Used in medicine preparation.

Dioscorea bulbifera L., Sp. Pl. ed. 1, 1033.1753; FBI 6:296.1892; R. Kunth in Pfl.-reich IV - 43, Ht. 87:88.1924 p.p.; Prain et burkill ARBGC 14:3, Pl. 49-51. 1936 et 420.1938; FM 4:311.1951; EFH 1:419.1966; Op. Cit. 2:1975; EFPN 67.1978; FPK 114.1981; TBRI 50(4):112.1987; FB 3(1):9.1994 (Fig. 3.12).

D. sativa Thunb. Fl. Jap. 151.1784; non L. 1753; FBI 6:295.1892.

Beng.: Pita-alu, Rataalu, Banlu, Lep.: Kachem, Kuching, Nep. : Gita, Githa, lahara - Kumchong.

A slender herbaceous glabrous sinsitrorse twiner. Root-stocks large, tuberous. Stem unarmed, terete, slightly ribbed. Bulbils many. Leaves simple. Petioles 6.0-16cm long, narrowly margined, auricled at base; lamina 10 - 20 x 7.0 - 18cm, broadly ovate - cordate, entire, caudate - acuminate, base cordate, membranous, glabrous, nervs 9, lateral 2, branched. Male spikes pendulous, 50 - 70cm. long, axillary solitary or fascicled 4 - 6; bracts 0.2 - 0.3 cm ovate, acuminate; sepals and petals alike 0.21 - 0.49 x 0.06 - 0.09cm. linear - lanceolate, subacute, green or purple. Female spikes pendulous, axillary in 1 - 3 together. Sepals and petals like that of males; staminodes 6. Capsules 1.5 - 2.5 x 1.0 - 1.2 cm, quadrately oblong, wings 0.7 - 0.9 cm in broad, semielliptic, base rounded; seeds many, c1.6 cm long, winged at base.

Fl. Jul. - Oct. Fr. rip.; Sep. - Feb.

Spn. Cited. : DARJEELING : Lebong, 1900m, 08.5.1994, *Das et Samanta* 0207; Sukna, 132m, 13.5.1994, *Das et Samanta*

0224; Tindharia, 940m, 20.6.1994, *Das et Samanta* 0260; Latpunchor, 1200m, 17.5.1995, *Das et Samanta* 0752; NBU campus 120n; 13.9.1995m *Das et Samanta* 1047;; Kalimpong, 1260m, 04.9.1996, *Das et Samanta* 1355; Dolka Forest, Bengdubi, 110m, 08.9.1996, *Das et Samanta* 1385; SIKKIM : Burtuk, Gangtok, above 1750m, 28.6.1995, *Das et Samanta* 0785; Jorethang, 320m, 28.10.1995, *Das et Samanta* 0839; Rhenek, 900m, 06.9.1996, *Das et Samanta* 1354.

- Loc. Distrib. : DARJEELING : Abundant; Samsing, RungDung Valley, Rambi, Purbikhola, Pankhabari, Kalijhora, Teesta Valley, Happy Valley; Pomong (110-1800m); SIKKIM : Common; Nandugaon, Lekship, Yaksum, Singtam, Gangtok, Pakhyong (300-2150m).
- Gen. Distrib. : Throughout India; Sri Lanka, Nepal & tropics of the old world.
- Notes : (i) Tuberous roots edible.
(ii) Chr. no. $2n = 80$ (Nakajima 1936)

Dioscorea deltoidea Wall. (cat.no.5100, 1831-32, nom. nud.) ex Kunth, En. Fl. 5:40.1850; FBI 6:291.1892; R. Kunth in Pfl.-reich IV - 43, Ht. 87:174.1924 ; Prain et burkill ARBGC 14:111, Pl. 49-51. 1936; FM 4:311.1951; EFH 1:419.1966; EFPN 1: 67.1978; FPK 114.1981; TBRI 50(4):112.1987; FB 3(1):8.1994 (Photo-46).

Slender sinistrorse twiner with tuberous root-stocks. Stem unarmed, terete, internodes 6.0-8.0cm long, almost glabrous. Leaves simple. Petiole 3.5-10cm long, glabrous; lamina 5.5-15x3.5-10cm, subdeltoidly cordate, entire, acuminate, base rounded, nerves 7-9 from base, convergent. Male and female flowers not seen here. Capsulas c 1.6cm, seeds c 0.9cm in diam.

Fr.: (Nov.)

- Spn. Cited. : DARJEELING : Below Ging, 1500m, 28.7.1982, *A. P. Das* 1115; Mangpo, 1300m, 13.12.1995, *Das et Samanta* 1056.
- Loc. Distrib. : DARJEELING : Rare; generally cultivated but sometimes escaped; Kalijhora, Ging (800-1500m).
- Gen. Distrib. : Tropical & subtropical Himalayas; Afganistan to China.
- Note : (i) Tuberous roots for birth control medicine.

Dioscorea glabra Roxb. Hort. Beng. 72.1818, nom. nud.] Fl. Ind. ed.2,3 :804.1832; FBI 6:294.1892; RBSI 4:134.1910; ARBGC 14:354,t.131.1938; FM 4:331.1951;FEH 419.1966; FEH 1:67.1978.

D. crepitans Buch.-Ham. ex Wall., Numer list. 178,n.5105F.1832. pro syn.

Lep.: Thamring book; chimeo bok.

Glabrous herbaceous dextrorse twiner with elongated tubrous root-stocks. Bulbils globose. Stem terete nearly glabrous. Leaves opposite, simple. Petioles 2.5-8.0cm long, slightly ribbed on drying; lamina 6.5-11x3.5-6.5cm, ovate-oblong-hastate or oblong-lanceolate, entire, cuspidate-shortly acuminate or mucronate, base cordate, nearly glabrous beneath, strongly 7 nerved. Males spikes two from each axil, pendulous, unbranchd, spike short upto 2.5cm long, 4-7 flowerd in each clustered; Sepals 0.12-0.16x0.11-0.13cm ovate-oblong, erect, narrowly searious margined, brown; petals 0.12-0.15x0.06-0.07cm, obovate-oblanceolate, herbaceous. Filaments 0.02-0.03cm long, anther equaling filaments. Female flowers not seen. Capsules c 3.5x4.5cm, spreading erect, shallowly retuse at base and apex 1.6-2.0cm; wings 1.6-.8cm broad. Seeds irregularly orbicular, c 1.7 cm long, transversely elongated wings.

Fl.: Aug. - Nov.; Fr. rip.: Oct.-Dec.

Spn. Cited. : DARJEELING : Kurseong, above Tea Research Centre, 1400m, 02.10.1994, *Das et Samanta* 0330; Rambi, 450m, 12.12.1994, *Das et Samanta* 0460; Dolka Forest, Bengdubi, 110m, 08.9.1996, *Das et Samanta* 1384.

Loc. Distirb. : DARJEELING : Less common; BamanPokhri, Garubathan, Tenth Mile, Teesta Valley, Lebong, Kalimpong (110-1500m).

Gen. Distrib. : Subtropical Himalayas, (Darjeeling - Sikkim); Myanmar, Thailand, Malaysia.

Note : (i) Tuberous roots edible.

Dioscorea hamiltonii Hook. f. in FBI 6:295.1892; JASB 2(10): 39.1814, R.Kunth in pflan. 443 (Heft87): 266.1924; Bt.Bih.&ori1-2 : 121.

Lep.: pa-sok-book; Nep.: jat torul.

Herbaceous glabrous dextrorse twiner with long stalked narrowly cylindric c 2.0 cm in diam, tuberous root-stocks. Stem 6-angled, reddish brown. Leaves simple, opposite. Petioles 2.2-4.0 cm long, ribbed; lamina of mature leaves 21x12.5cm

broadly ovate, entire, cuspidate to acuminate, deeply cordate, basal lobes angled; lamina of young leaves 5.5-10.5x3.0-5.5cm, deltoid, entire, acuminate, slightly cordate, 7-9 nerved from base. Flowers and fruits not seen here.

Spn. Cited. : DARJEELING : Purbikhola, 550m, 08.11.1994, *Das et Samanta* 0430; Bamanpokrhi, 200m, 14.1.1995, *Das et Samanta* 0497; Tenth Mile, 130m, 14.3.1995, *Das et Samanta* 0559.

Loc. Distrib. : DARJEELING : Rare; Garubathan, Rambi, Teesta Valley, Ryang, (130-1600m).

Gen. Distrib. : E. Himalayas, Assam, N.E. India; Myanmar, Indo- China.

Note : (i) Tuberous roots used in religious festival.

Dioscorea hispida Dennst., *Schluss. Hort. Malab.* 15.1818; ARBGC 14(1):188.1936; FM 4:318.1951; EFH 1:420.1966; EFPN 1:68.1978.

D. daemona Roxb., *Fl. Ind.* 3:805.1832; FBI 6:289.1892; RBSI 4:134.1910.

D. viscosa Wall. *Numer. List:*178.n5099.1832nom.nud.

D. hispida var. *daemona* (Roxb.) Prain & Burkill in ARBGC 14:192.1936.

D. nepalensis Sweet. *Hout. Brit. ed. 1*, 413.1827; *ed. 2*. 522.1830 nom.nud.

Lep.: Rukloo, roklu.

Shrubby stout sinistrorse twiner with large globose root-stocks. Bulbils completely absent. Stem terete with sparsely curved pinckles, slightly pubescent when young. Leaves 3-foliolate; petioles 10-22cm long, slightly ribbed on drying, puberulous; petiolule 0.5-2.0cm long puberulous; lateral lamina 8.5-20x5.0-15cm obliquely broadly ovate, entire, cuspidate, base cuneate, nerves 3-5 from base converging, strongly reticulate; terminal lamina 10-22x6.0-16cm, broadly ovate-rhomboid, entire, cuspidate, base cuneate, nerves 3, from base, converging lateral veins form strong reticulation, nearly glabrous above hairy on major veins. Bracts brown, minute, lanceolate, hairy. Male panicles 9.0-27cm long, pubescent; pedicels 0.4-0.5cm long, flowers dense; sepals 0.06-0.08x0.05-0.07cm orbicular-ovate, membranous; petals 0.5-1.0x0.1-0.12cm, incurved, glabrous, green. Stamens 6, anthers longer than filaments c 0.02cm. Female spike axillary, solitary lax distinct; sepals c 0.13cm long, subacute, hairy; petals much hairy. ovary oblong densely pubescent. Capsules reflexed, oblong in outside, apex 3.6-4.7cm long, sub-truncate, glabrous. Seeds with oblong wings upto 3.0 cm long.

Fl.: Aug. - Sep.; Fr. rip.: Sep-Feb.

- Spn. Cited. : SIKKIM : Rhenek, 900m, 06.9.1996, *Das et Samanta* 1347; Singtam, 700m, 25.9.1996, *Das et Samanta*. 1476.
- Loc. Distrib. : SIKKIM : Less common; Pedong - Rishi, Rhenek, Singtam - Makha, Pakyong (600-2000m).
- Gen. Distrib. : Himalayas (Nepal-Sikkim); India, Myanmar, Philippines, Malaya Island, New Guinea.

Dioscorea kamoensis Kunth, En. Pl. 5:395.1850; JASB n.s. 10:21.1914; ARBGC 14:146, Pl. 64.1936; FEH 420.1966; EFPN 1: 68.1978; TBRI 50(4): 112.1987; FB 3(1):12.1994.

Lep. : Tukjhok.

Large sinistrorse twiner with tuberous root-stocks. Stem unarmed, wiry, dark brownish, white hairy when young; bulbils 0.5-1.0cm, globose. Leaves 3-foliate; petioles 4.0-6.0cm long; terminal lamina membranous, 6.0-11x3.5-5.5cm, obovate, entire, acuminate, base rounded, sparsely tomentose, nerves 3-5 from base. Plants dioecious. Male spikes axillary, solitary, pendulous; peduncles 2.0-6.0cm long; bracts ovate, cuspidate, brown, hairy. sepals and petals green; female spikes pendulous on c 25cm long axis; ovary oblong, triangular. Capsules 1.5-2.0cm long, hairy; wings 0.59-0.8cm broad. Seeds oblong, winged.

Fl.: Aug. - Sep.; Fr. rip.: (Oct.)

- Spn. Cited. : DARJEELING : Jalapahar, 2200m, 22.9.1982, *A. P. Das* 1171.
- Loc. Distrib. : DARJEELING : Very common; Katapahar, Jorebungalow, Sukiapokhari, Peshok. (upto 2300m).
- Gen. Distrib. : Tropical & Subtropical Himalayas; Myanmar, China, Thailand.
- Note : (i) Used medicinally.

Dioscorea pentaphylla L. Sp. pl. 1032.1753; wt., t.814.1844; FBI 6:289.1892; BP 2:1066.1903; Bot. Bih. & Ori. pt. 6:1123.1924; FPM 1511.1928; JBNHS 49:634.1950; FM 4:315.1961; FEH 1:420.1966; BBSI 15 : 193.1973; FPK 115.1981; FB 3(1): 10.1994.

D. Jacquemontii Hook. f. FBI 6:290.1892.

Beng. : Karba - alu; Nep.: bhegur, behagur; Lep. : Sili Kussok, Kussok.

Large shrubby sinistrorse twiner with bulbiferous root-stocks. Stem terete, slender, dense pickly and hairy. Leaves palmately 3-5 foliolate, lateral leaflets gibbously

oblique; petioles 5.0-6.0cm long, prickly; lamina of middle leaflets 8.5-12x2.5-4.3 cm, obovate, entire acuminate to shortly cuspidate, base cuneate, densely white bristly above and tomentose below. Male panicles upto 49 cm long, pendulous; bracts ovate, cuspidate, hairy; spikes borne singly or in pairs 1.2-3.0x0.19-0.2cm, dense flowered; sepals 0.1-0.13x0.05-0.08cm, lanceolate, acute; petals 0.09-0.13x0.07-0.09cm, greyish-white, narrowly oblanceolate, entire, rounded, glabrous; female peduncles slender, flowers borne towards the tip; sepals 0.19-0.2x0.08-0.09cm lanceolate, acute with finely scattered bristles; petals glabrous; ovary with dense appressed hairs. Capsules 2.3-3.0cm long, oblong, wings 0.6-0.7cm, glabrous. Seeds 0.25-0.3cm x 0.3-0.4cm, oblong, winged 1.3x0.6 cm.

Fl.: Jul. - Sep.; Fr.: Nov. - Dec.

Spn. Cited. : DARJEELING : Sukna, 132m, 24.4.1995, *Das et Samanta* 0147; Latpunchor, 100m, 17.5.1995, *Das et Samanta* 0722; Kalimpong, 1250m, 04.9.1996, *Das et Samanta* 1265; Dolka Forest, Bengdubi, 110m 08.9.1996, *Das et Samanta* 1391; SIKKIM : Jorethang, 310m, 28.10.1995, *Das et Samanta* 0843; Gyalshing, 1530m, 23.5.1996, *Das et Samanta* 1159.

Loc. Distrib. : DARJEELING : Very common; Samsing, Panighata, Siliguri, Garubathan, Sevoke, Kurseong, Kodaibari, Jalapahar, Lebong, Mangpo, Kalijhora, Rambhi, Teesta Valley, (110-2250m); SIKKIM : Common; Nayabazar, Nandugaon, Legship, Dentam, Rangpo, Singtam, Pelling (300-2000m).

Gen. Distrib. : N & W. Himalayas; N. Myanmar, Indochina, Myanmar, Bangladesh & Tropical. Africa.

Note : (i) Chr. no. $2n = 144$ (B. W. Smith 1937).

Dioscorea prazeri Prain et Burkill in JASB 73 (Suppl.) :2.1904; ARBGC 14:29.202,t.5.1936; FM 4:315.1961; EFPN 1: 67.1978; FPK 115.1981; TBRI 50(4):112.1987; FB 3(1):7.1994 (Photo-46).

D. sikkimensis Prain et Burkill in JASB 73 (2- Suppl.) :3.1904; RBSI 4:77, 84,134.1910; JABS n.s.10:12.1914;

Lep. : Kuchyong, Kunching; Nep. : Kukur toral.

Rootstocks not collected. Shrubby sinistrorse twiner. Stem terete, slender, internodes 6.0-8.0cm long, glabrous. Leaves simple. Petioles 3.5-4.7 cm long; lamina 7.0-18x4.5-15.5 cm ovate or triangular-ovate, entire, acuminate, base cordate, membranous, glabrous, reticulate, nerves 7-9 from base, convergent. Male and female peduncles

pendulous. Male peduncles 7.0-13cm long; flowers 2-4, minute, clustered or spreading on the entire axis; pedicels 0.08-0.1 cm long; sepals and petal nearly similar 1.2-1.5x0.08-0.1 cm, oblanceolate, brown with hyaline margin; apex rounded; stamens 6, filaments 0.05-0.07 cm slightly curved; anthers 0.01x0.02 cm bicelled; female racemes axillary, solitary upto 25cm long, 15-20 flowered; sepals and petals like that of males but longer in sizes; style 0.07-0.1cm long. Capsules 1.8-3.0cm long, elliptic to oblong - obovate, wings 1.0-1.3cm wide. Seeds many, 0.4-0.6x0.3-0.4cm, nearly oblong, winged, wide unequal.

Fl.: Jul. - Sep.; Fr. rip.: Aug. - Feb.

Spn. Cited. : DARJEELING : Purbikhola 550m, 18.11.1994, *Das et Samanta* 0413; Baikunthapur Forest, 200m, 11.11.1995, *Das et Samanta* 0924; Kalimpong, 1260m, 04. 9.1996, *Das et Samanta* 1356; Dolka Forest, Bengdubi, 110m, 08.9.1996, *Das et Samanta* 1375.

Loc. Distrib. : DARJEELING : Abundant; Below Ging, Singtam, Ryang, Siliguri, Panighata, Lebong, Mangpo, River Teesta Valley, Ribong, River Little- Rangeet, Rangpo (110 -1500m).

Gen. Distrib. : Tropical & Subtropical E. Himalayas (Nepal - Bhutan), Assam; Myanmar, Malaya, Indo China.

Note : (i) Rhizome extract takes orally for multipurpose uses.

Dioscorea pubera Bl. Enum. pl. Jav.1:21.1827; ARBGC 14:402.1938; FM 4: 333.1951; FEH 1:68.1978.

D. anguinea Roxb. [Hort. Beng. 72.1814.nom. nud.]; Fl. Ind. ed.2,3:803.1832; FBI 6:293.1892; RBSI 4:134.1910.

D. spinosa Roxb. ex Wall. no. 178,n.510.1831.nom.nud.

Lep. : Tusung buk, suong buk; Nep. : Panglang, Pangla torul.

Medium shrubby shortly pubescent sinistrorse twiner with 1 or 2 narrowly cylindrical rootlets. Stem terete, shortly brown pubescent. Leaves single alternate or subopposite; petioles 2.5-5.0 cm long terete or slightly ribbed; lamina 5.0-14x2.8-13cm, ovate-suborbicular, entire, cartilagenous, shortly caudate, base shallowly cordate, membranous, pubescent on beneath often greyish-white glandotted above; nerves 7, central prominent than lateral 2, parallel convergent. Flowers and fruits not seen here.

- Spn. Cited. : DARJEELING : Dolka Forest, 110m, 08.9.1996, *Das et Samanta* 1388.
- Loc. Distrib. : DARJEELING : Rare; Dolka Forest Peshok, Darjeeling, Great Rangeet, Mangpo, Ryang, etc (110 - 2000m).
- Gen. Distrib. : Tropical Himalayas, Nepal - Bhutan, Assam, Myanmar, Sumatra, Java.

Dioscorea tomentosa Koem. ex spr., pl. Pugi II. 92.1815; Mov. Plant Spec.371.1821; FBI 6:289.1892 (Photo-47).

Shrubby sinistrose twiner with tuberous root-stocks. Stem terect, slender sparsely prickled towards base, puberulous. Leaves 5-foliolate; petiole 4.5-7.0cm long, slightly ribbed, white hairy, petiolules 0.5-0.7cm long, lamina of terminal leaflets 5.5-8.5x2.0-3.2cm, elliptic-oblong, entire, cuspidate, base acute-cuneate, densely snow white below or greyish-white above; lateral lamina like as terminal but narrow. Flowers and fruits not seen here.

- Spn. Cited. : SIKKIM : Karfet Forest, Jorethang, 310m, 20.5.1996, *Das et Samanta* 1069.
- Loc. Distrib. : SIKKIM : Rare; only found at Jorethang - Nandugaon area. (upto 350m).
- Gen. Distrib. : E. Himalayas, Deccan Peninsula; Sri Lanka.

Dioscorea trinervia Roxb. ex Prain & Burkill in JASB (N.S) 10:32.1914 sensu Hook.f., in FBI 6: 292.1892 pp non L., 1793(Photo-31).

D. oppositifolia sensu Hook.f., in FBI 6:292.1892 p.p. non L., 1753.

Much branched perennial herbaceous prostrate twiner. Stem terete, slightly ribbed, sparsely hairy at base; Leaves simple, opposite; petioles 1.5-2.5cm long, terete; lamina 3.0-7.0x1.0-2.3cm, ovate - lanceolate to elliptic, entire, cuspidate to slightly acuminate, base cuneate, glabrous both surfaces; nerves 7 from base, convergent. Flowers and fruits not seen here.

- Spn. Cited : DARJEELING: N.B.U. Campus, 120m. 08.10.1997. *Das et Samanta* 1630.
- Loc. Distrib. : DARJEELING : Less common; only few plants collected from N.B.U Campus (upto 350m).
- Gen. Distrib. : Afro-Asiatic.

SMILACACEAE Vent.

KEY TO THE GENERA:

1. Tepal 6, free.....*Smilax*
 1. Tepals united, tubular with 3 apical lobes.....*Heterosmilax*

HETEROSMILAX Kunth.

Heterosmilax japonica Kunth. Enum. Pl. 5.270.1850.

H. indica A. DC., Monog. Phan. 1:43.1878; FBI 6:314.1892; Fl. Nong. 319.1982; TBRI 50(4): 116.1987; FB 3(1);36.1994.

Medium shrubby tendril climber. Stem terete, greenish- yellow, internodes 9.0-12 cm long, glabrous. Stipules modified into tendrils. Petioles 1.2-2.3cm long terete, glabrous; lamina 12-16x8.5-12.5cm, oblong-lanceolate, entire, acuminate to caudate, cuspidate, base cuneate to cordate, membranous, both surfaces shiny, glabrous, 5-nerved, parallel, convergent, middle 3 prominent than others, yellowish-green. Umbel borne singly axillary; peduncle 2.5-6.0cm long, slender, flattened, smooth. Bracts minute, ovate, acuminate; pedicels 0.5-0.6cm long, flat, nearly glabrous. Male umbel obovoid, deep brown, flowers 0.35-0.45x0.17-0.2cm; stamens 3, anther 0.2x0.1cm, white, base attenuate, apical lobes 3, oblong; filament 0.4-0.6cm long, connate; female flowers not collected. Berries 0.08-0.1cm in diam nearly blackish; Seeds 0.55-0.55cm in diam, pale orange - brown.

Fl.: Apr. - Jun.; Fr. rip.: (May).

Spn. Cited. : DARJEELING : Jalapahar, 2150m, 24.6.1982, A. P. Das 1007.

Loc. Distrib. : DARJEELING : Less common; Found Jalapahar - RungDung (1450 - 2650m).

Gen. Distrib. : Tropical & subtropical Himalaya, Assam & Meghalaya.

SMILAX L.

KEY TO THE SPECIES :

1. Lamina 15-18.4x10.2-12.6 cm, costae or nerves 7.....*S. ovalifolia*
 1. Lamina 1.9-13.5x1.2-8.5 cm; costae 3-5.....2
 2. Petioles 1.2-2.4 cm long.....4
 3. Male umbels 25 flowered; pedicels almost missing*S. aspericaulis*
 3. Male umbels 30-40 flowered; pedicels 0.6-0.8 cm long.....*S. lanceifolia*
 4. Tendrils coils dextrorsely; stem strongly prickled.....*S. ferox*
 4. Tendrils coils sinistrorsely; stem glabrous and with no prickle.....*S. glaucophylla*

Smilax aspericaulis Wall. ex DC., Monog. Phan. 1:195.1878; FBI 6:306.1892; TNB 135.1929; FB 3(1) :29.1994.

Nep.: Dathun, Kukurdaini.

Large shrubby tendril climbers. Tendrils simple, terete, nearly glabrous. Branches terete, scabrid with 0.05-0.06cm long, bristles, often with recurved prickles. Petioles 1.2-2.5cm long, sheathing below the mid-internodes; lamina 10-16x4.0-8.5cm, ovate to oblong or linear - oblong, entire, acute, base rounded to cuneate, 3-costae from base. Bracteate; umbels solitary or 2-3 on peduncles; peduncles 0.9-1.5 long, Male umbels 30-40 flowerd; pedicels almost sessile; calyx brown; petals narrow, reflexed at old. stamens as long as sepals; female floweres not seen here. Berries 0.8-1.0cm across, globose.

Fl.: Sep. - Nov.

Spn. Cited. : DARJEELING : St. Mary's, Kurseong, 1550m, 04.5.1994, *Das et Samanta* 0169; Latpunchor, 1000m, 17.5.1995, *Das et Samanta* 0746; SIKKIM : Soreng, 1560m, 30.10.1995, *Das et Samanta* 0898.

Loc. Distrib. : DARJEELING :Common; Mangpo, Birch Hill, Rungbee, Kalimpong, Mumsong, Takdah (300-2100m); SIKKIM : Less common; Singling Basty, Yaksum, Deorali, (upto 2200m).

Gen. Distrib. : E. Himalayas (Sikkim - Khasia Hills), Darjeeling, Andaman Island; Myanmar.

Note : (i) Ripe fruits edible.

Smilax ferox Wall. [cat. no.5119.1830 nom. nud.] ex Kunth, En. Pl. 5:251.1850; Monogr. Phan. 1:103.1878; FBI 6:307.1892; Adv. front. pl. sci. 63, f. 4.1961; FEH 415.1966; op. cit. 2:152.1971;EFPN 1:89.1978; FPK 116.1981;TBRI 50(4):127.1987; FB 3(1):33.1994(̄Photo 21̄).

Large stout, shrubby tendril climbers. Tendrils simple, coil dextrorsely nearly glabrous. Stem solid, much branched, armed with strong prickles. nearly glabrous internodes 1.8-8.0 cm longs, petioles 0.3-0.4cm long, tendrilar, coriaceous, sheathing half of its length; lamina 1.9-8.0x1.5-2.8cm, elliptic - ovate-oblong, entire, acute, base cuneate or rounded, yellowish green, membraneous, glabrous, 3-5 costate from base, convergent. Umbels solitary or 18-20 flowered in fascicles, dioecious. Peduncles 1.2-1.4cm long; bracteoles conspicuous, ovate, acuminate; pedicels 0.2-0.3 cm long. Male umbels, globose, diam 1.2-1.3cm; perianth members 6, 0.3x0.2cm, lanceolate, light brown; filaments 0.14-0.21 cm long, anther 0.05-0.1x0.03-0.04cm

oblong; female umbels conical, diam c 1.0cm green. Ovary swollen at base, style short, stigma papillose. Berries green-purple, 0.8-1.0 cm across. Seeds 0.55-0.57cm diam reddish-brown.

Fl.: Apr. - May; Fr.rip.: May - Dec.

Spn. Cited. : DARJEELING : Meghma, 3000m, 16.4.1994, *Das et Samanta* 0114, Katapahar, 2250m, 07.5.1994, *Das et Samanta* 0199; Reshete, Neora Valley National Park, 2280m, 06.5.1995, *Das et Samanta* 0692.

Loc. Distrib. : DARJEELING : Very common; Mane bhanjan, Tonglu Jorepukri (Neora Valley National Park) Thusum, Hatidanda, (1850 - 3200m).

Gen. Distrib. : E. Himalaya, Manipur.

Smilax glaucophylla Klotz. in Reise Prinz. Wald. Bot. 45, t,91.1862; Adv. front. pl. sc. 4:67, f. 6, 1961; FEH 415.1966; EFPN 1:89.1978; TBRI 50(4):127.1987; FB 3(1):35.1994 (Fig 3.14).

S. elegans Wall.(cat. no. 5117 B.1830.nom. nud.) ex A. DC. Monogr. Phan. 107.1878; TNB 135.1929.

S. parviflora Wall. ex Hook. f., FBI 6:304.1892.

S. longibracteolata Hook. f., FBI : 305.1892.

Shrubby tendril climbers. Stem terete, nearly glabrous, shiny, internodes 9.5-2.2cm long; Tendrils simple, coil sinistrorsely, terete, solid, nearly glabrous. Petioles 1.0-1.2 cm long with sheath; lamina 2.5-11x1.2-7.0cm, ovate - cordate, entire, acute, base cordate, membranous, 3-5 costae from base. Racemes umbel, many flowered; bracteoles minute; pedicels 0.1-0.2 cm long, glabrous; sepals linear-oblong; petals 0.2x0.1 cm long, ovate-oblong, acute, glabrous; stamens 4, filament short, connate; anthers c 0.1cm, white, didynamous. Ovary ovoid, staminodes 1-3. Berries, globose.

Fl.: Apr. - May.

Spn. Cited. : DARJEELING : Way to Jorepukri, 2550m Neora Valley National Park, 23.4.1995, *Das et Samanta* 0305.

Loc. Distrib. : DARJEELING : Less common; Neora Valley National Park, Tonglu (upto 3050m).

Gen. Distrib. : E. Himalaya.

Smilax lanceifolia Roxb., Fl. Ind. ed. 2, 3:792.1832; Monog. Phan. 1:57.1878; FBI 6:308.1892; TNB 135.1929; FEH 415.1966; op. cit. 2:152.1971; FPK 116.1981; TBRI 50(4):127.1987; FB 3(1):32.1994.

Shrubby tendril climbers. Branches slender, terete, glabrous. Tendrils simple, formed by the modification of stipules, sheathing upto middle of petiole; stipules foliar. Petioles 2.0-2.5cm long; lamina 11-13.5x4.9-8.0 cm, oblong-lanceolate, entire, subcordate-acuminate, base rounded, membranous, coriaceous, costae 5, from base, distinct. Male flowers umbellate, upto 25 flowers, sessile, peduncles upto 1.5 cm long; bracteoles ovate, acute; pedicels 0.6-0.8cm; sepals and petals linear, subequal; filament filiform, much longer than anthers 0.11x0.05cm, oblong; Female umbels subsimilar to males, peduncle 1.0-1.2cm long, stout, flattened; bracteoles subulate; staminodes 3, ovary trigonous. Stigma obtusely recurved. Berries 0.62-0.65cm long across.

Fl.: May - Jun.; Fr. rip.: May - Dec.

Spn. Cited. : DARJEELING : St. Mary's, Kurseong, 1550m, 04.5.1994, *Das et Samanta* 0159; Tindharia, 940m, 28.1.1995, *Das et Samanta* 0506; SIKKIM : Pangthang, 1900m, 20.11.1995, *Das et Samanta* 1016.

Loc. Distrib. : DARJEELING : Less common; Kurseong, Neora Valley National Park; Rungbee, Mangpo, Takdah (900-1200m); SIKKIM : Less common; Yaksum, Rishi, Rhenek (upto 2200m).

Gen. Distrib. : Subtropical Himalayas, Khasia Hills, Manipur; Myanmar to China.

Smilax ovalifolia Roxb., Fl. Ind. 3:794.1832; FEH 417.1966; FB 3(1):30.1994.

S. macrophylla Roxb., Fl. Ind. 3:793.1832; FBI 6:310.1892, non Willd.1805.

Smilax zeylanica L., Sp. Pl. 1029.1753; FBI 6:309.1892. Adv. Front. Pl. Sci. 4:50.1963; C.R. Rao in Ind. Forest. 93:57.1967; FEH 3:135.1975; EFPN 1:79.1978.

Beng.: Kumarika Mitri, Rajdan-tini, Muter; Nep. : Kukur dyani.

Shrubby tendril climber. Stem terete, stout, hollow, glabrous with light striations, often with sparsely prickles, internodes 8.0-9.0 cm long. Tendrils simple, coiled destror-sinistrorsely, stalked flat, hard, glabrous. Petioles 2.1-2.5cm long; lamina 15-18.4x10.2-12.6cm, broadly ovate, entire, acute, base cuneate, nearly glabrous, greyish, nerves 7, reticulate. Umbel paniculate; peduncles 1.0-1.5cm long, branched, many flowered; bracteoles 0.12-0.14cm; pedicels 0.8-1.3cm long; sepals short,

petals like that of sepals; filament 0.52-0.54cm; anther 0.12-0.15x0.04-0.06cm, linear. Berries red, 0.06-0.78cm in diam.

Fl. Apr.-Jun.; Fr. rip.: Aug.-Nov.

Spn. Cited. : DARJEELING : Bamanpokri, below 200m, 14.1.1995, *Das et Samanta* 0486; SIKKIM : Karfet Forest, Jorethang, 310m, 28.10.1995, *Das et Samanta* 0827.

Loc. Distrib. : DARJEELING : Common; Garubathan, Dolka Forest, Sukna, Tenth Mile, Badamtan Samsing, Peshok - River Teesta Valley (110-800m); SIKKIM : Common; Jorethang - Nayabazar, Melli, Ravongla, (upto 1000m).

Gen. Distrib. : Tropical Himalaya; India; Bangladesh, Myanmar, Central provinces & Concan.

ADDENDUM

CUCURBITACEAE Juss.

CUCURBITA L.

Cucurbita maxima Duch. ex Lam. Encycl. 2:151.1786; FBI 2:622.1879; BP 1:524.1903 (rep.1963); Bot Bir. Ori. 3: 379.1922(rep. 1961); FFI 11:40-41.1982.

Beng: Mitha Kumra

Annual herbaceous prostrate tendril climber. Stem ribbed, hairy. Tendrils 2-6 fid, hairy. Petioles 4.5-17cm long, hairy; lamina 6.0-15x5.8-27 cm, reniform, 5-rounded lobes, dentate margin, coarsely hairy. Flowers not seen. Fruits large and in variable forms. Seeds 2.1-2.4x1.2-1.3cm, ovate, creamy or yellowish-white.

Fr. May-Aug.

Spn. Cited. : DARJEELING : NBU Campus. 120m, 08.5.1997, *Das et Samanta* 1643.

Loc. Distrib. : DARJEELING : Less common; Siliguri, Dolka, (upto 150m).

Gen. Distrib. : Cultivated all over India and all tropical and temperate regions of the world.

Note : (i) Leaves, stems and fruits edible.

PAPILIONACEAE R.Br. *nom.cons.* (Fabaceae *nom.alt.*)

CLITOREA L.

Clitorea ternatea L., Sp. pl. 753.1753; Wt. et. Arun; Prodr. 205.1834; FBI 2:208.1876.BP 1:402.1903; Bot.Bih. & ori.pt. III:293.1922; FEH 1: 16.1966; EFPN 2:112.1979. FB1(3): 696.1987.

Ternatea vulgaris Humb. Bonpl. & Kunth. Nov. Gen. 6:415.1824.

Beng. : Aparajita.

Herbaceous perennial twiner. Stem terete, slender, sparsely hairy. Leaves oddly pinnate; 5-9 foliolate (sometimes 3-9 foliolate); petiole 2.0-5.0 cm long; petiolule 0.3-0.35cm long, sparsely hairy; terminal lamina 2.5-6.0x1.5-4.0cm, elliptic-oblong, entire, obtuse, base acute or rounded, sparsely hairy. Stipules 0.18-0.2cm, subulate; stipels c0.4cm, lanceolate, striate, persistent. Flowers axillary solitary or in racemose fascicles; bracts 0.56-0.6x0.18-0.2cm, ovate; calyx tube c1.2cm long, teeth ovate (c0.8cm); corolla deep blue or creamy or white, standard 4.2-4.8x1.8-2.0cm, broadly ovate, wings falcate oblong, keel shorter than wings, incurved. Stamens (9) +1 10.5x0.8-1.3cm, linear-oblong, coriaceous flat, beaked, hairy. Seeds 6-10, black sub-globose.

Fl. : Jan-Feb.; Fr.: (Jul.).

Spn. Cited. : DARJEELING : NBU campus 08.1.1998 *Das et Samanta*
1941.

Loc. Distrib. :DARJEELING : Common; Siliguri, Dolka forest, Panighata (upto 350m).

Gen. Distrib. : Darjeeling Himalaya, Bhutan, & Cosmopolitan in tropics.

PISUM L.

Pisum sativum L. Sp. pl. 727.1753;FBI 2:181;FB 1(3): 727.1987.

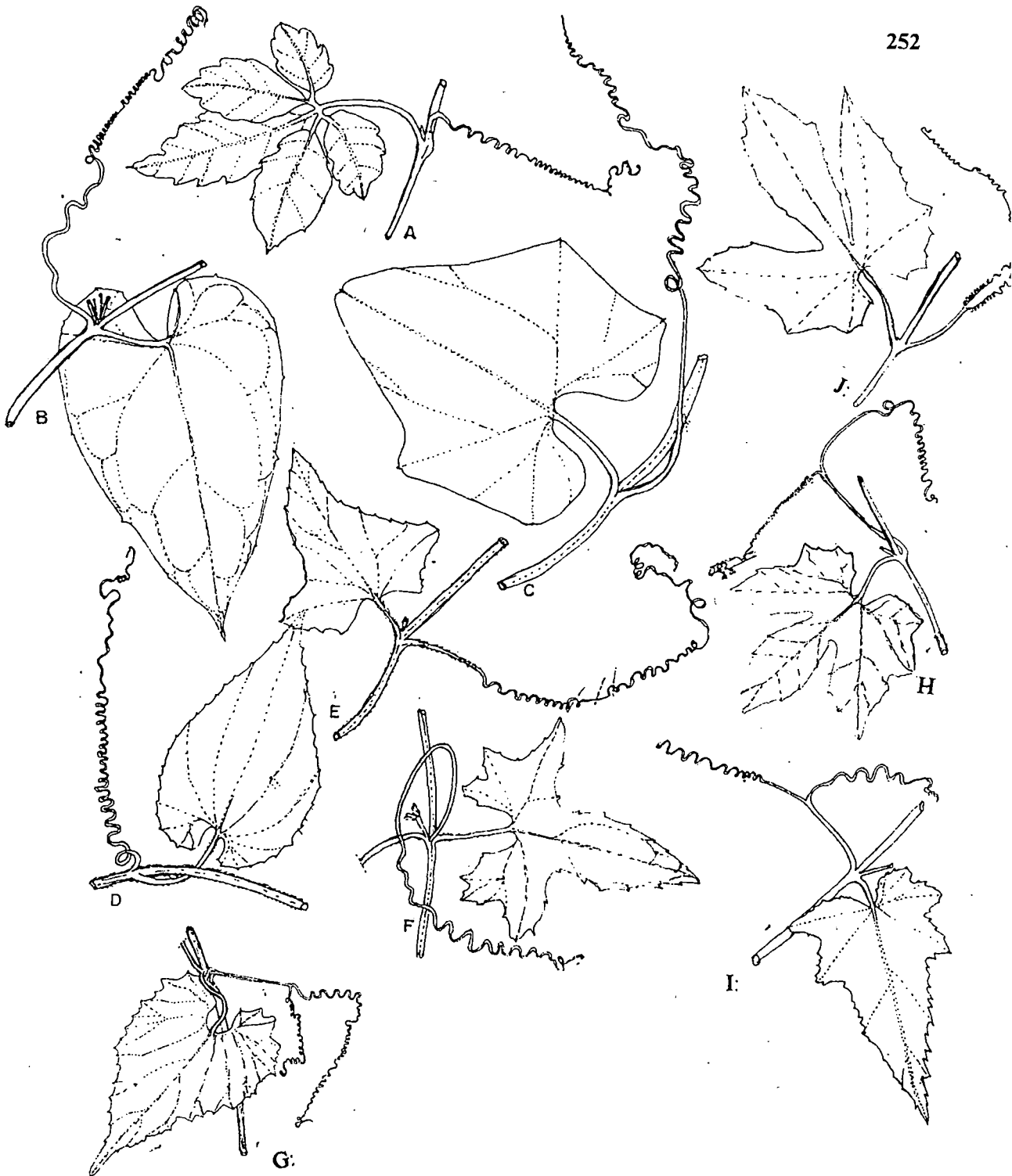
Beng.:Matar; Eng.: Garden Pea

Annual herbaceous tendril climber. Stipules 2.8-4.5x1.2-2.3cm, elliptic; stipels absent; leaves even pinnate, leaflets 2-4 pairs, lamina 1.8-4.2x0.7-2.3cm, ovate-elliptic, dentate, acute, base cuneate, Flowers not collected, pods c4.5x1.2cm, seeds with dark streaks.

Spn. Cited. : N.B.U. Campus, 120m. 16.7.1998, *Das et Samanta*
1644.

Loc. Distrib. : DARJEELING : only collected from Siliguri & its ^{adjacent} areas
(below 300m).

Gen. Distrib. : Cultivated;Northern provinces, Bengal, Bihar.



3.1. LEAVES AND TENDRILS OF CUCURBITACEAE:

Tendrils unbranched: A: *Gynostemma pentaphylla* (Thun.) Makino; B: *Melothria heterophylla* (Lour.) Cogn.; C: *Coccinia grandis* (L.); D: *Thladiantha cordifolia* (Bl.) Cogn.; E: *Mukia maderaspatana* (L.) Cogn.; F: *Melothria angulata* Chakravarty; **Tendrils branched:** G: *Edgaria darjeelingensis* Cl.; H: *Diplocyclos palmata* (L.) Jeff.; I: *Herpetospermum pedunculatum* (Ser.) Cl.; J: *Trichosanthes lepiniana* (Naud.) Cogn.

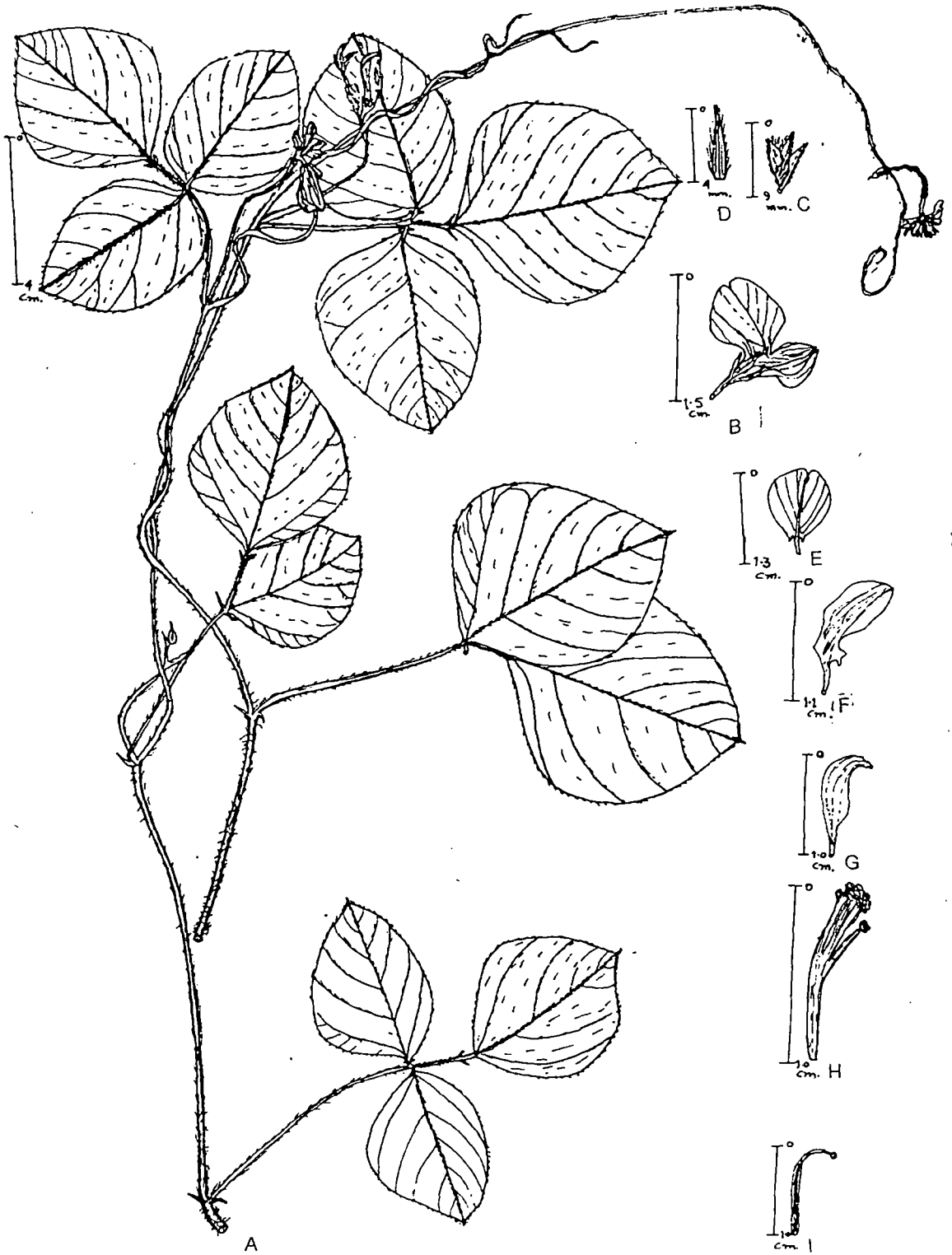


Fig.3.2: *Pueraria phaseoloides* (Roxb.) Benth. var. *phaseoloides* A: habit ; B: flower ; C: calyx ; D: sepal; E: standard ; F: wing ; G: keel ; H: androecium ; I: gynoeceium.

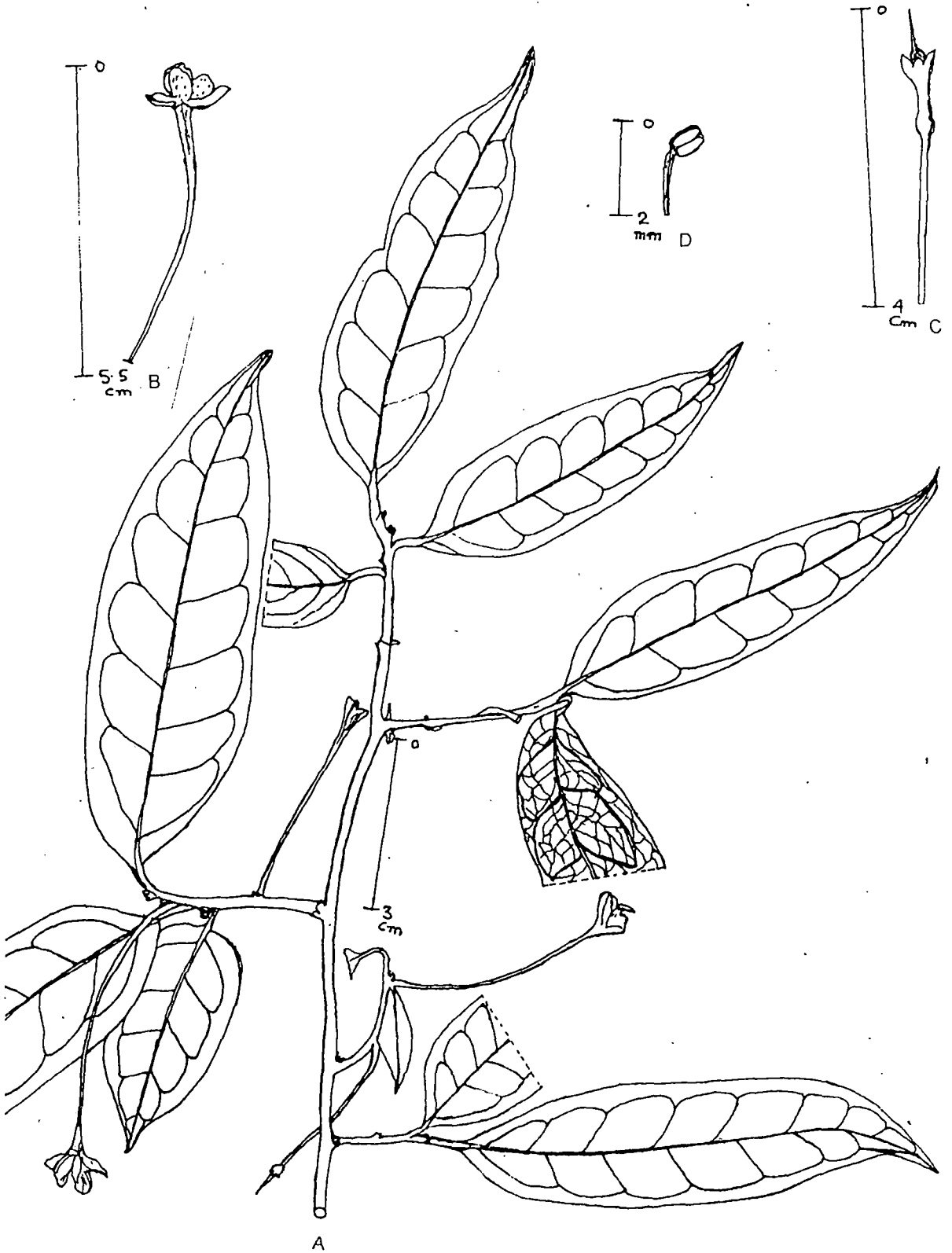


Fig.3. 3: *Sabia leptandra* Hook.f.&Thoms. A: habit ; B: flower bud ; C: gynoecium ;
D: androecium.

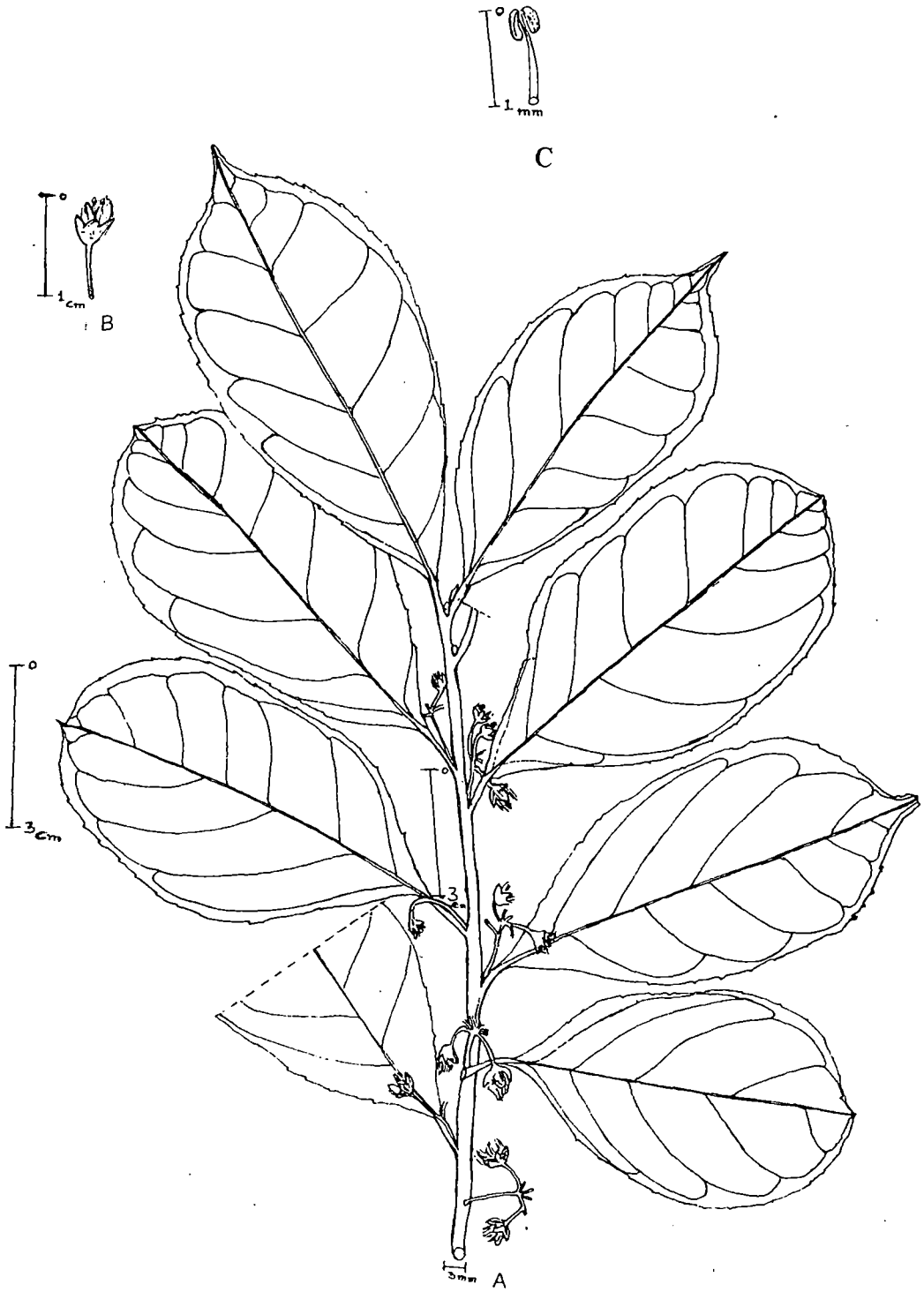


Fig.3. 4: *Celastrus stylosus* Wall. A: habit ; B: flower ; C: androecium.



Fig. 3.5: *Bauhinia scandens* L. A: a portion of a shoot.

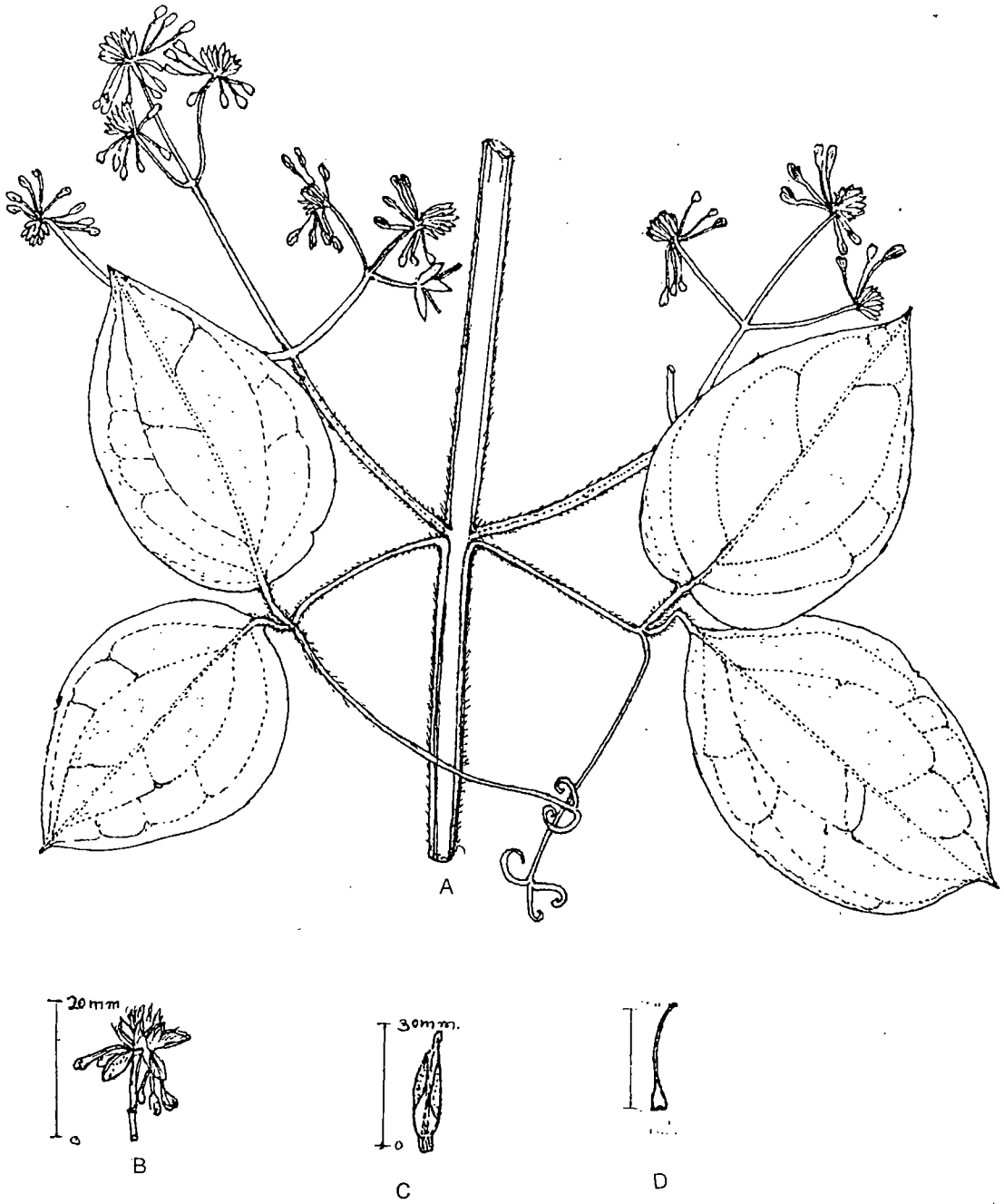


Fig 3. 6: *Naravelia zeylanica* DC. A: habit ; B: flower ; C: : androecium ; D: gynoecium.

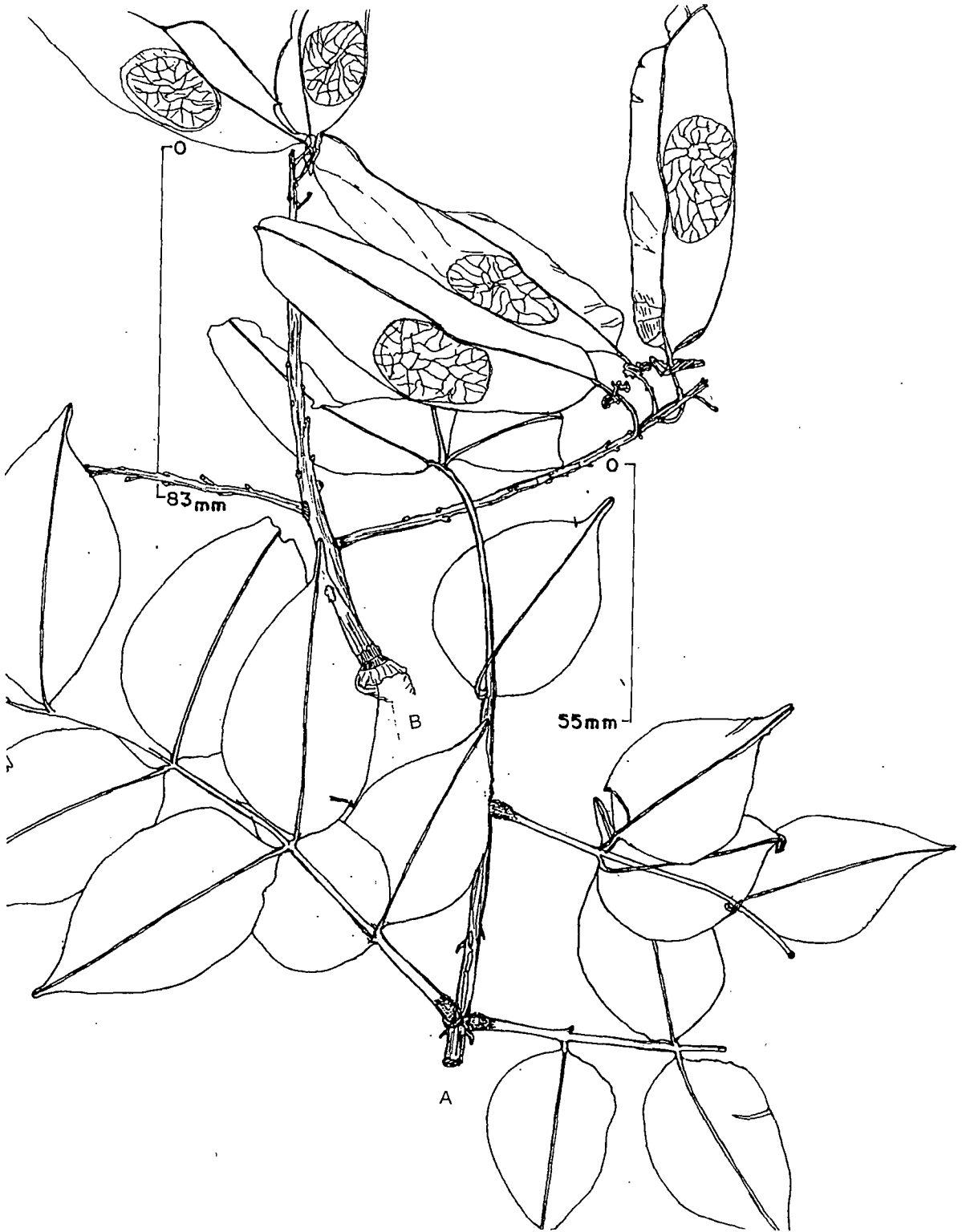


Fig. 3.7: *Caesalpinia cucullata* Roxb. A: a portion of twig ; B: a portion of twig bearing fruits

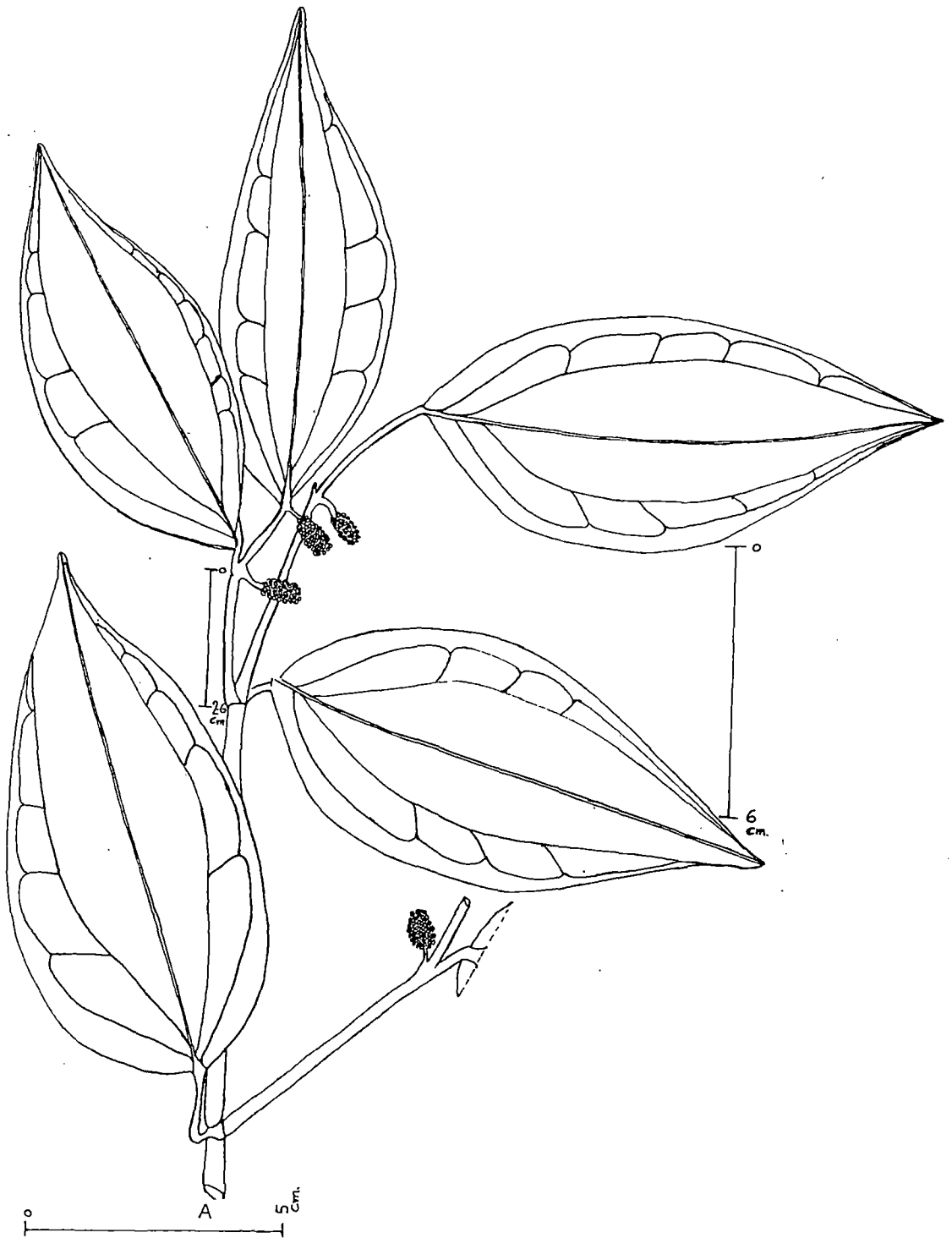


Fig.3. 8: *Piper mullesua* D. Don. A: a portion of a flowering shoot.

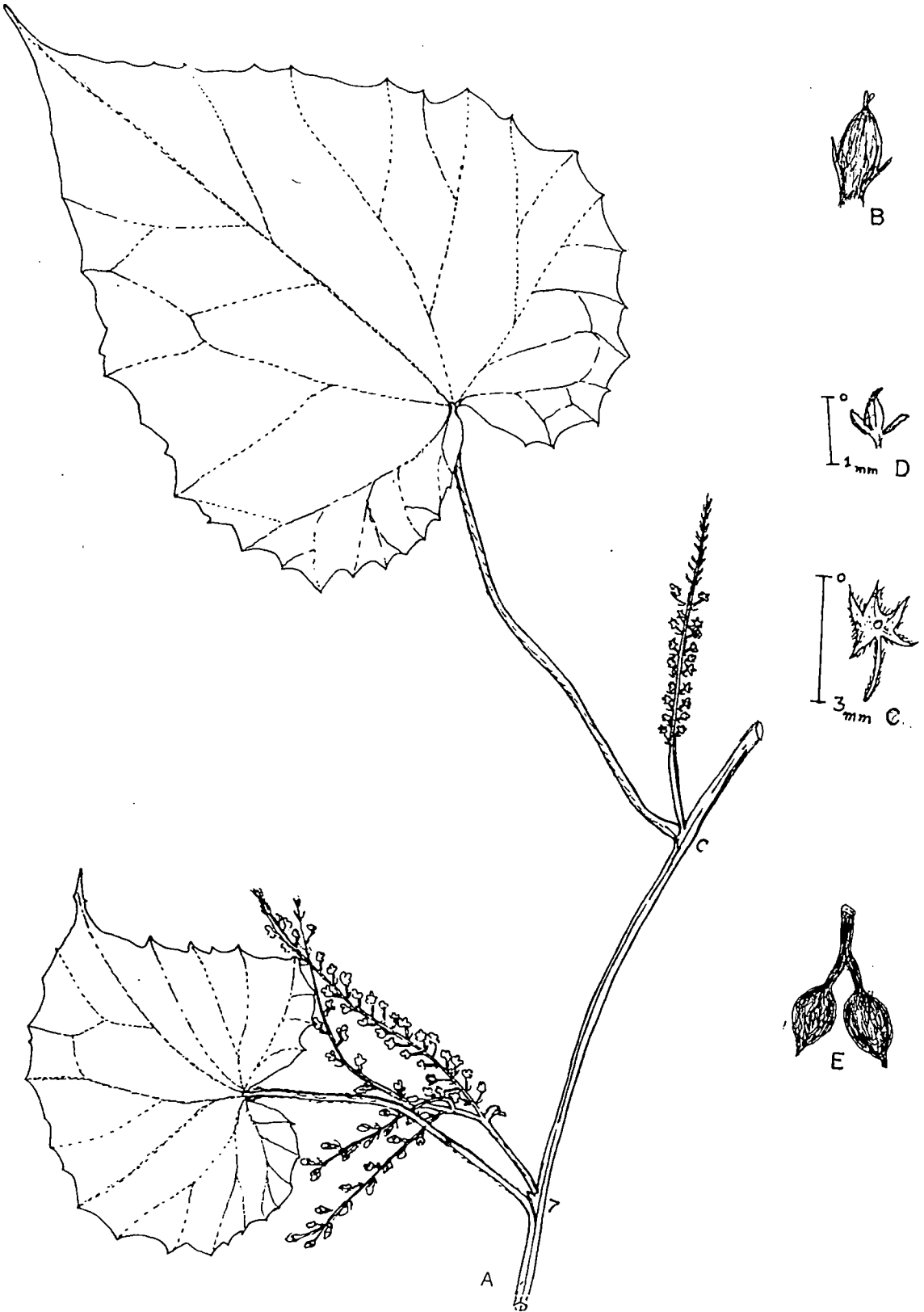


Fig.3.9: *Natsiatum herpeticum* Buch.- Ham. A: habit ; B: female flower ; C: calyx;
D: male flower ; E. fruit.

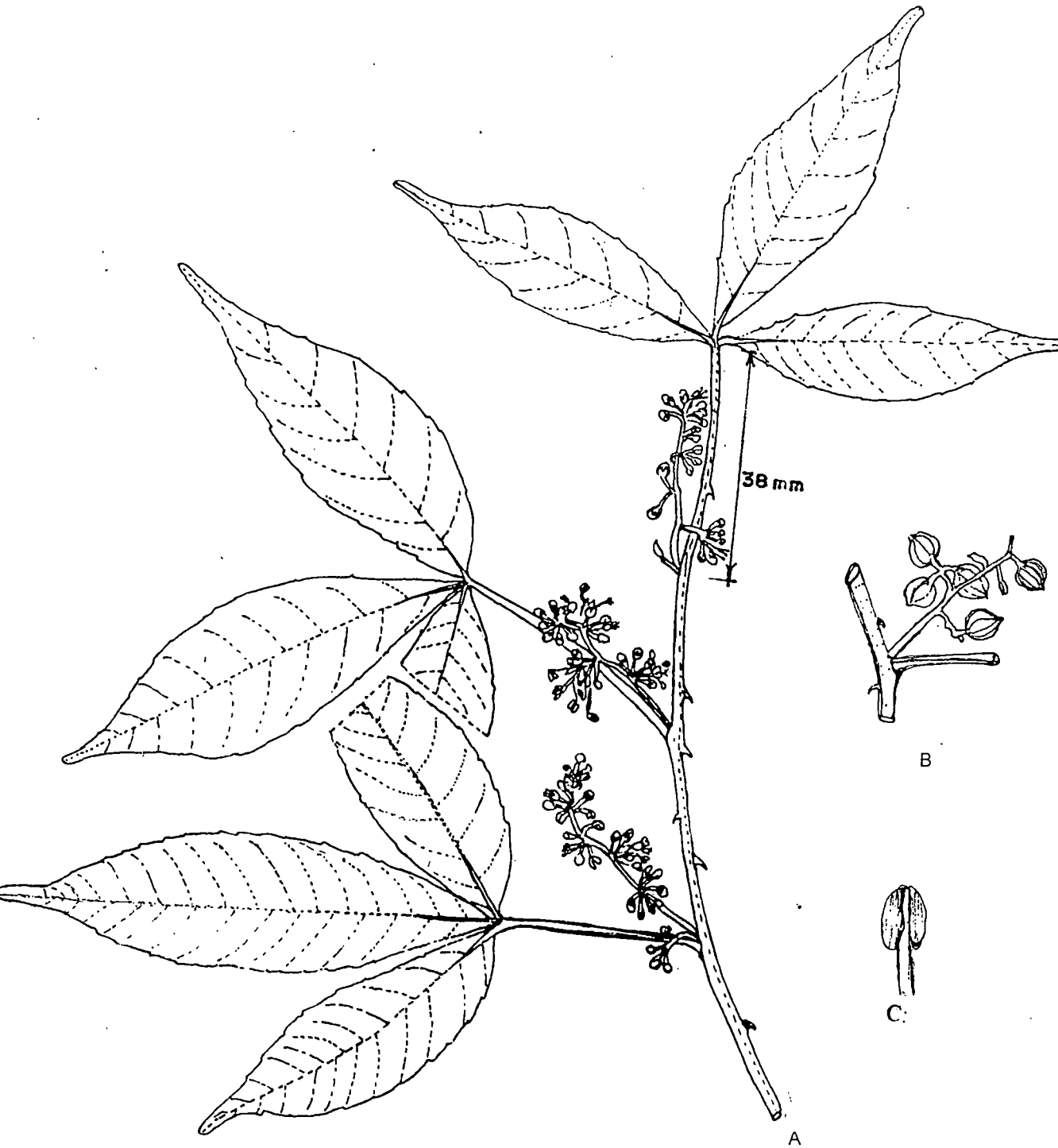


Fig.3.10: *Toddalia asiatica* (L.) Lam. A portion of a flowering shoot; B: female flower; C: androecium

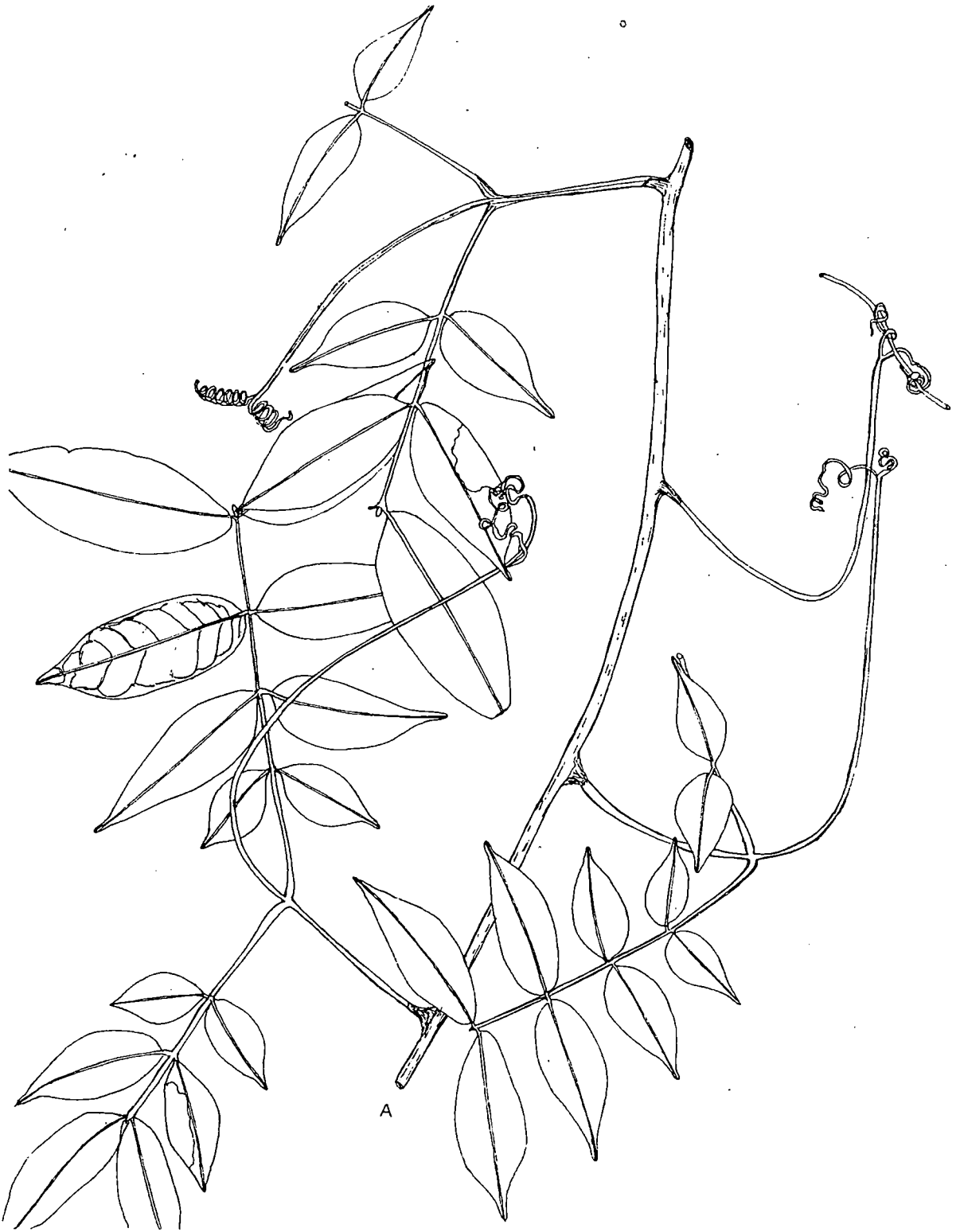


Fig. 3.11: *Entada rheedii* Spreng. A: a portion of a shoot.

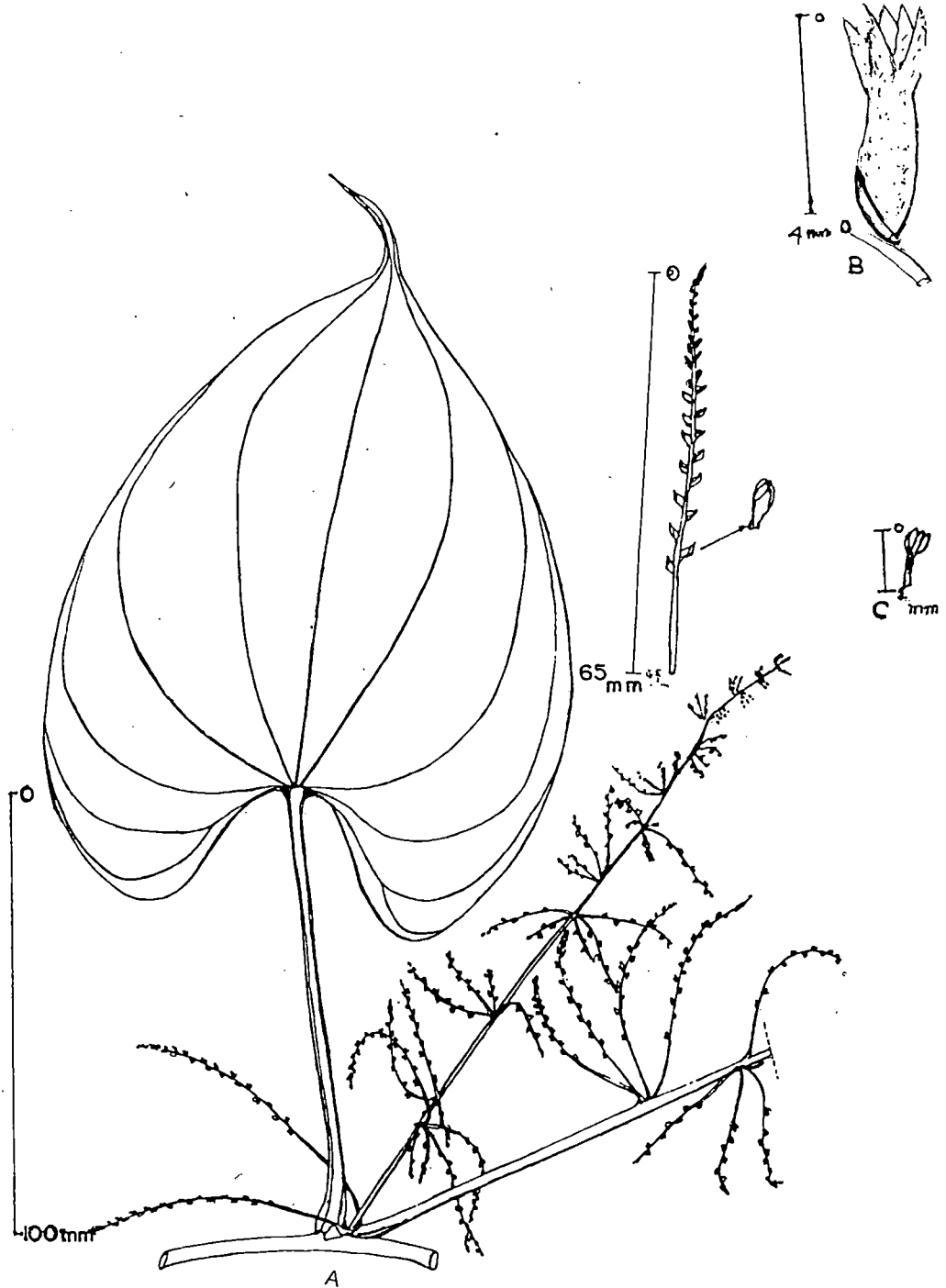


Fig.3.12 : *Dioscorea bulbifera* L. A: A portion of a flowering shoot; B.Female shoot; C.androecium,



Fig. 3.13: *Clematis buchananiana* DC. A: A portion of a young shoot showing simple leaves

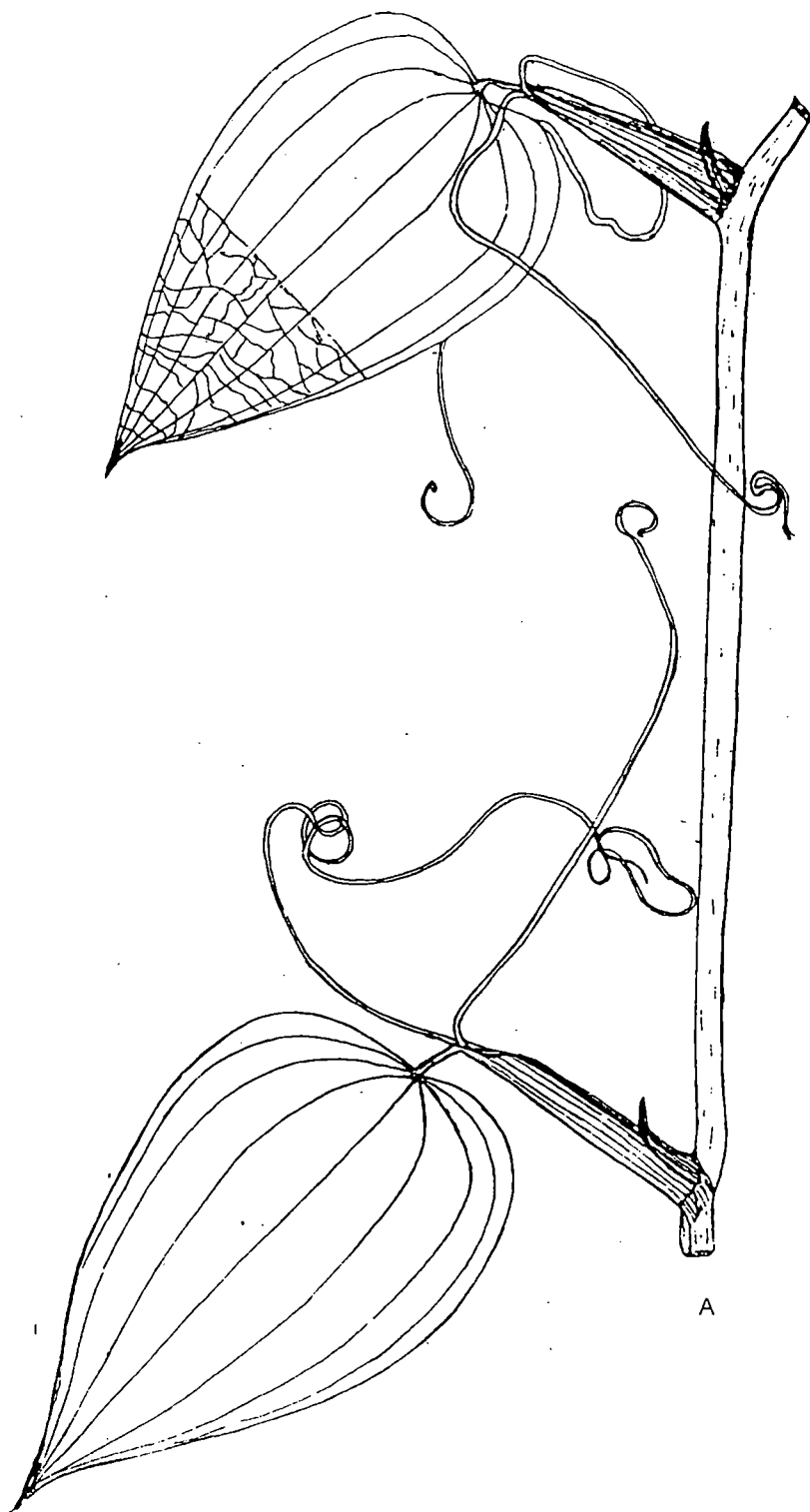


Fig. 3.14: *Smilax glaucophylla* Kolt. A: a portion of a shoot.



Fig.3. 15: *Combretum flagocarpum* Cl. A: habit ; B: flower; C: petal ; D: androecium ;
E: gynoecium ; F: fruit.

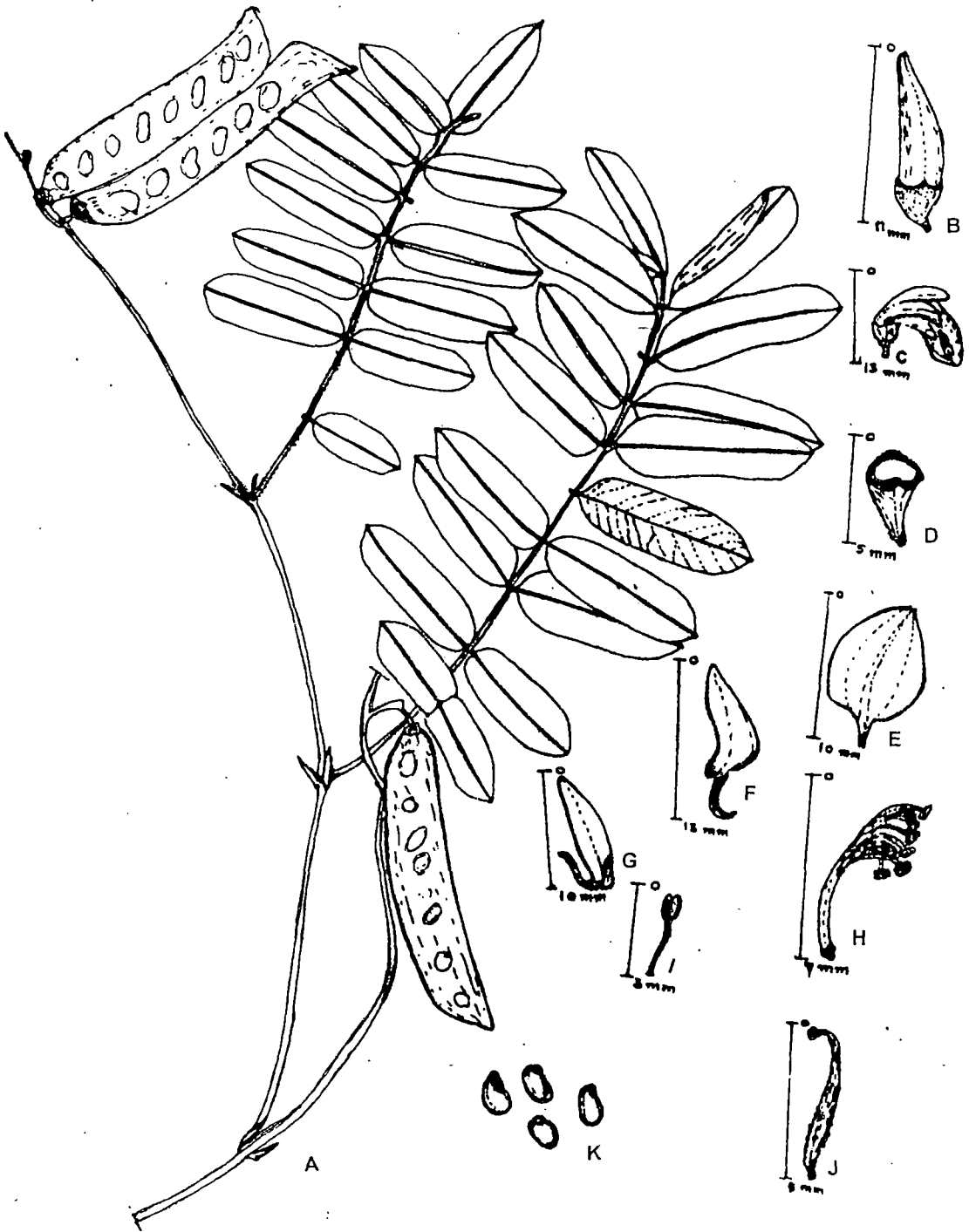


Fig. 3.16: *Abrus pulchellus* Wall. A: habit ; B: flower bud ; C: flower ; D: calyx

E: standard; F: wing ; G: keel ; H: stamens; I: a single stamen ; J: gynoeceium ;

K: seeds.

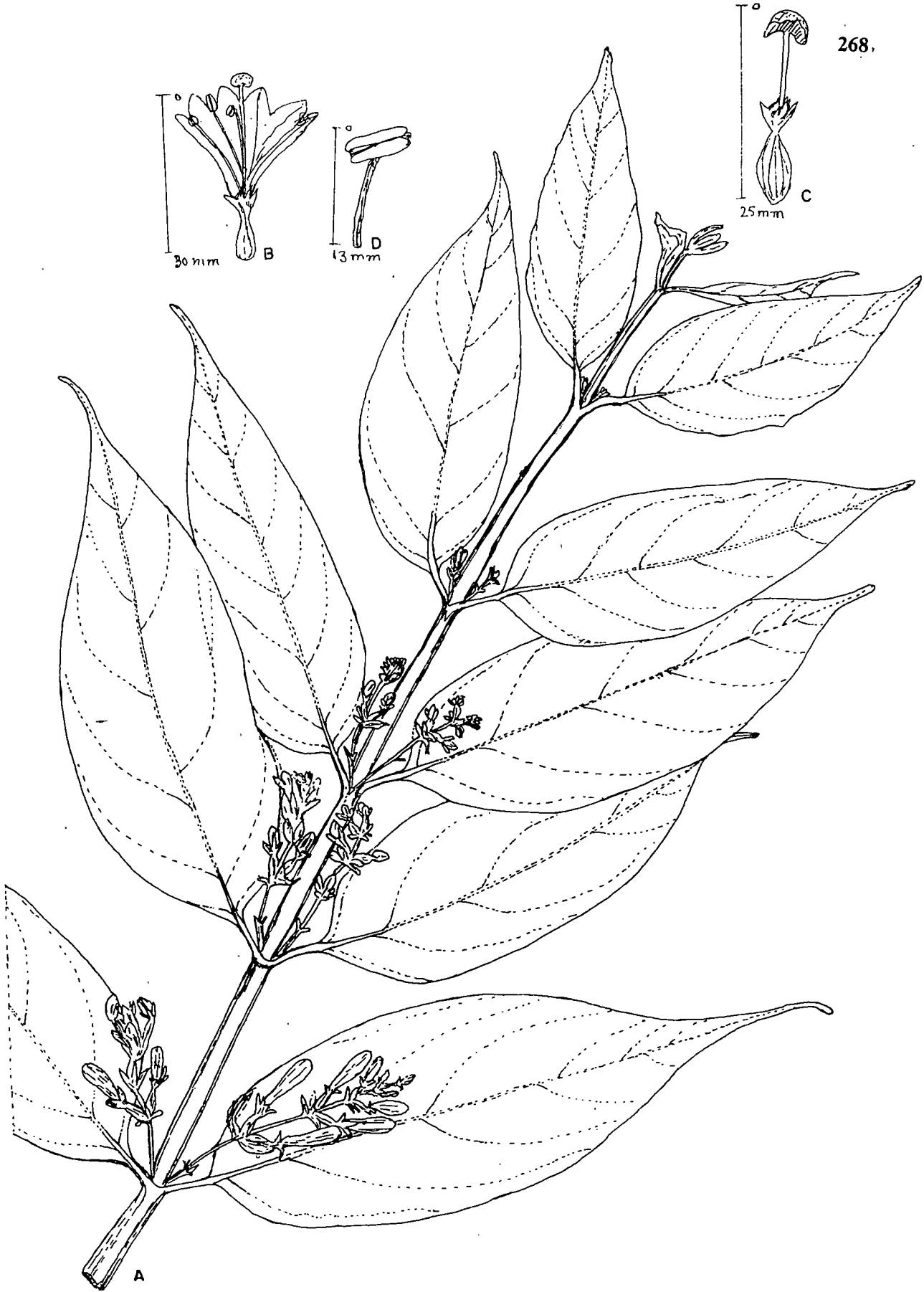


Fig. 3.17: *Leycesteria gracilis* (Kuntz) Airy-Shaw A: habit ; B: l.s. of flower ;

C: gynoecium ; D: androecium

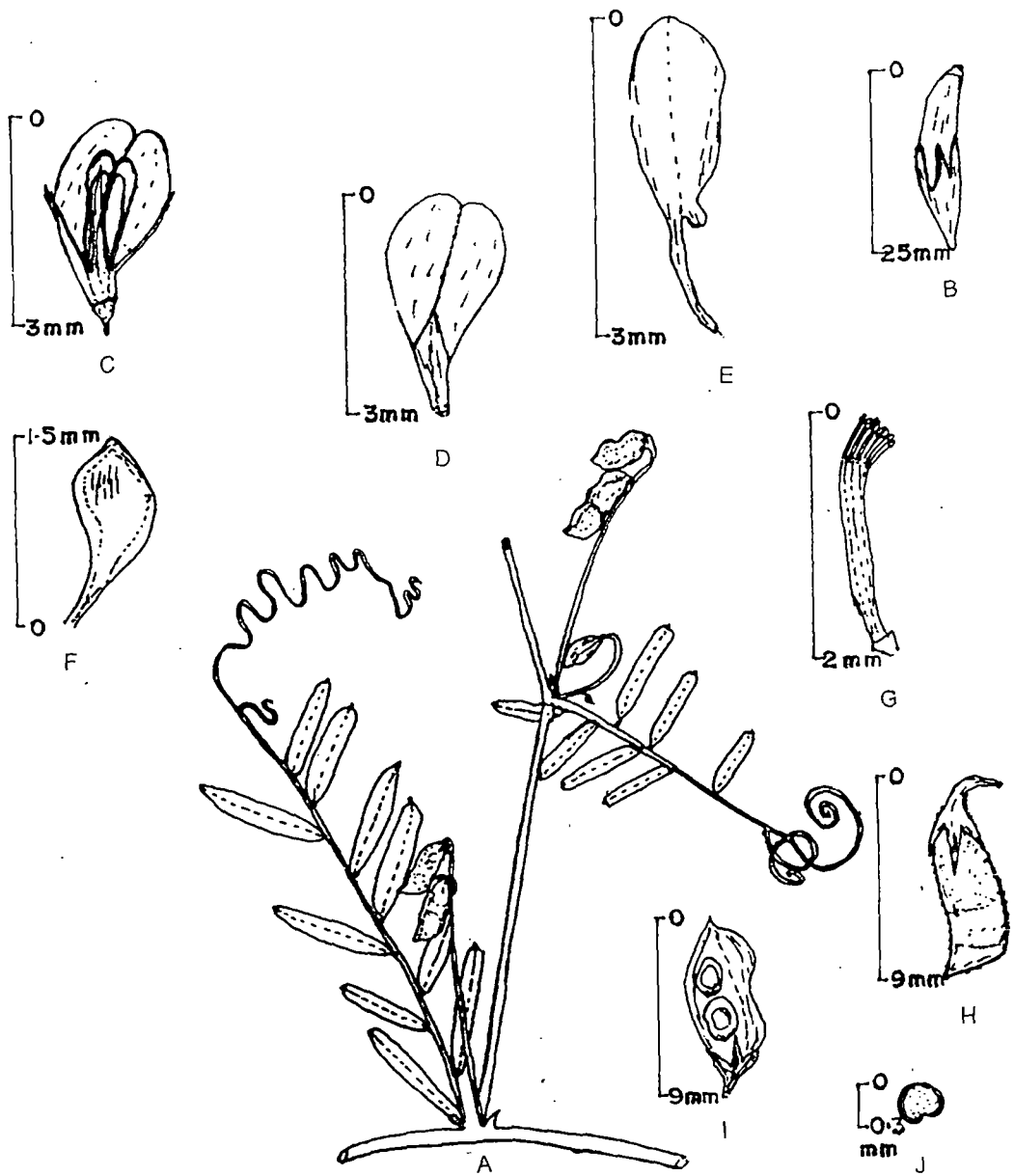


Fig. 3.18: *Vicia hirsuta* (L.) Gray A: habit ; B: flower bud ; C: flower ; D: standard

E: wing ; F: keel ; G: stamens ; H: single stamen ; I: fruit ; J. l.s. of fruits showing seeds ; K. seeds.

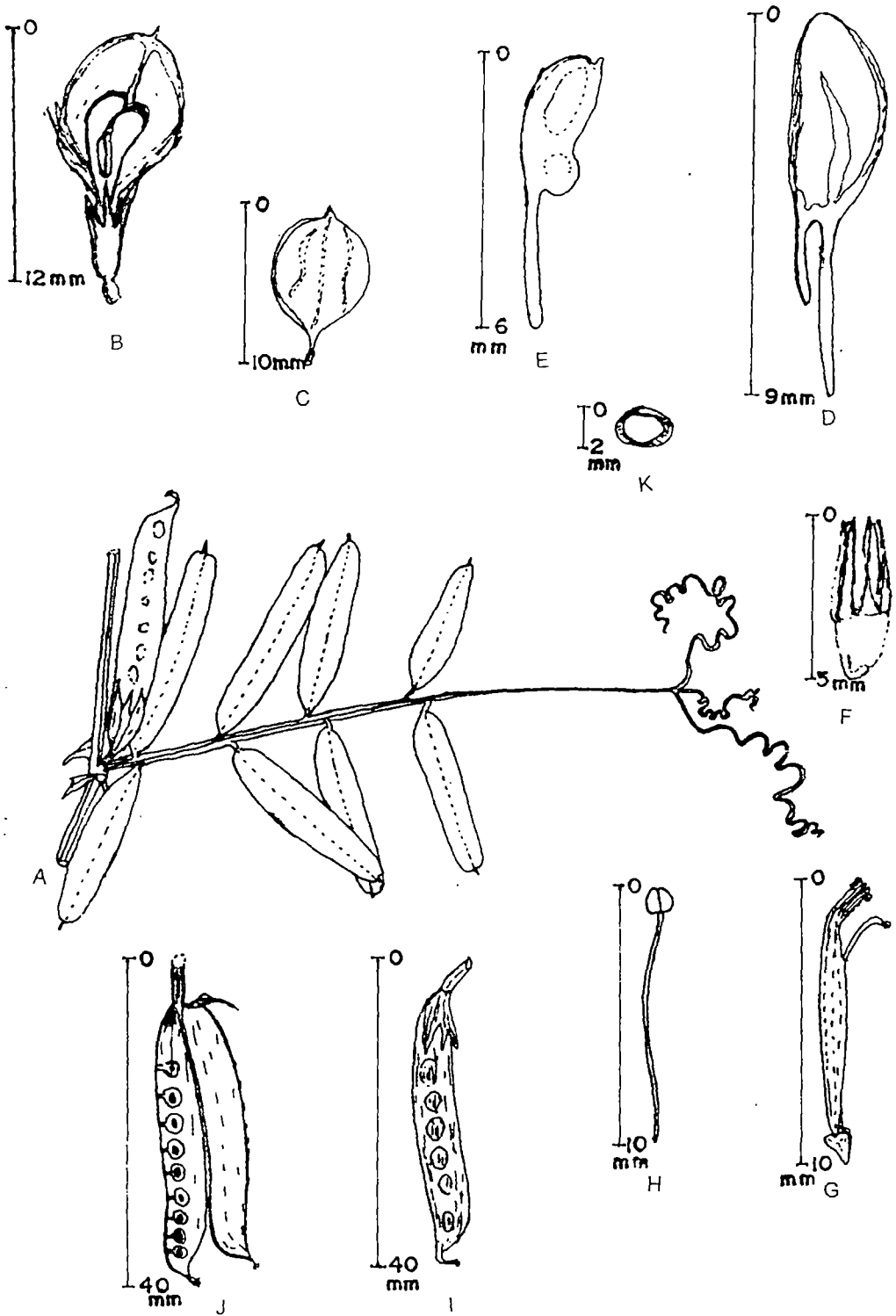


Fig.3. 19 : *Vicia sativa* L. A: habit ; B: flower ; C: standard ; D: wing ; E: keel
 F: calyx ; G: stamens ; H: a single stamen ; I: fruit ; J: marginal arrangement
 of plaentra on ovary wall, K: seeds.



Fig 3. 20: *Ipomoea purpurea* (L.) Roth. A: habit B & C androecium ; D: gynoecium.

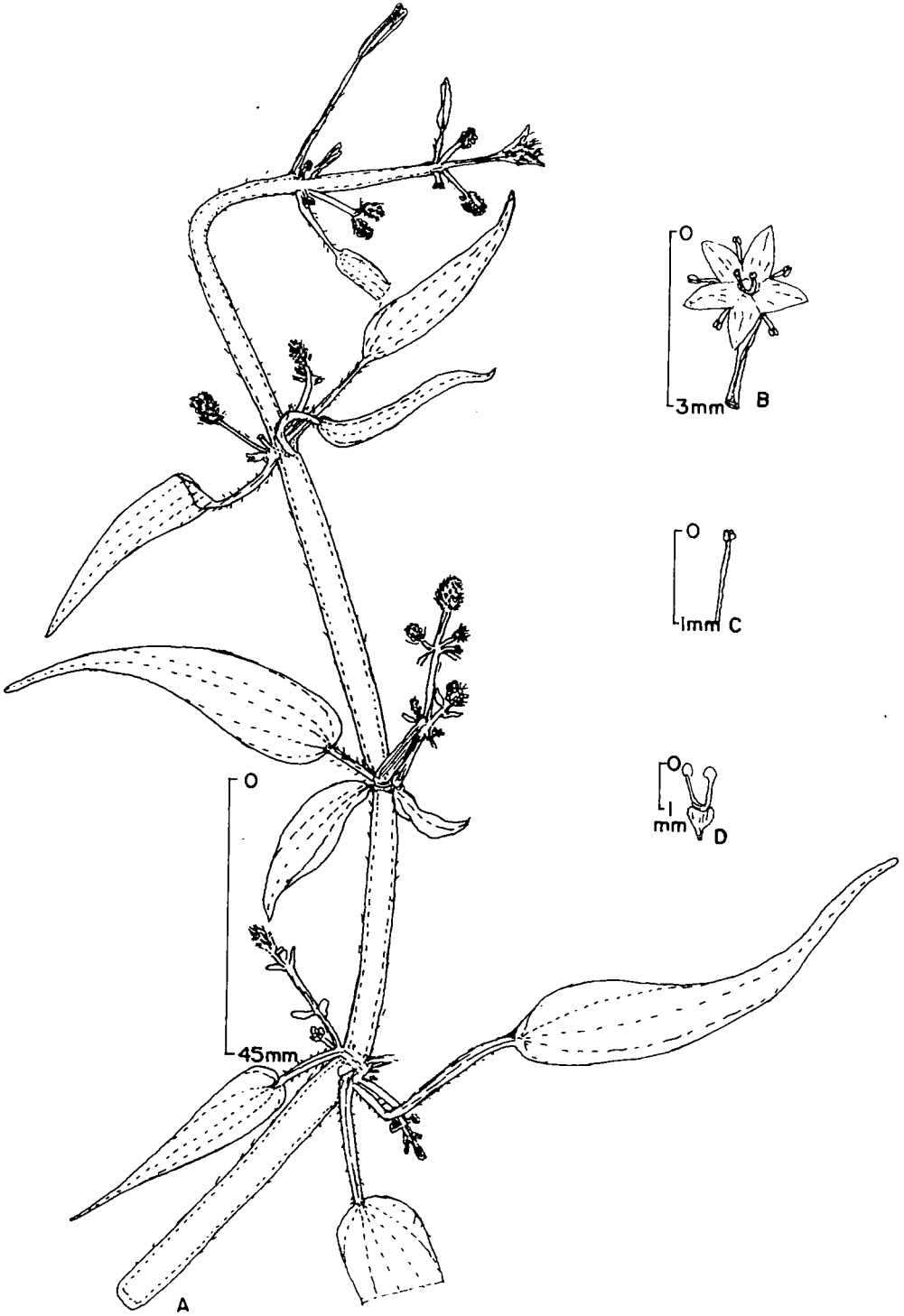


Fig. 3.21: *Rubia manjith* Roxb. ex Flem. A: habit ; B: flower ; C: stamen ; D: gynoecium

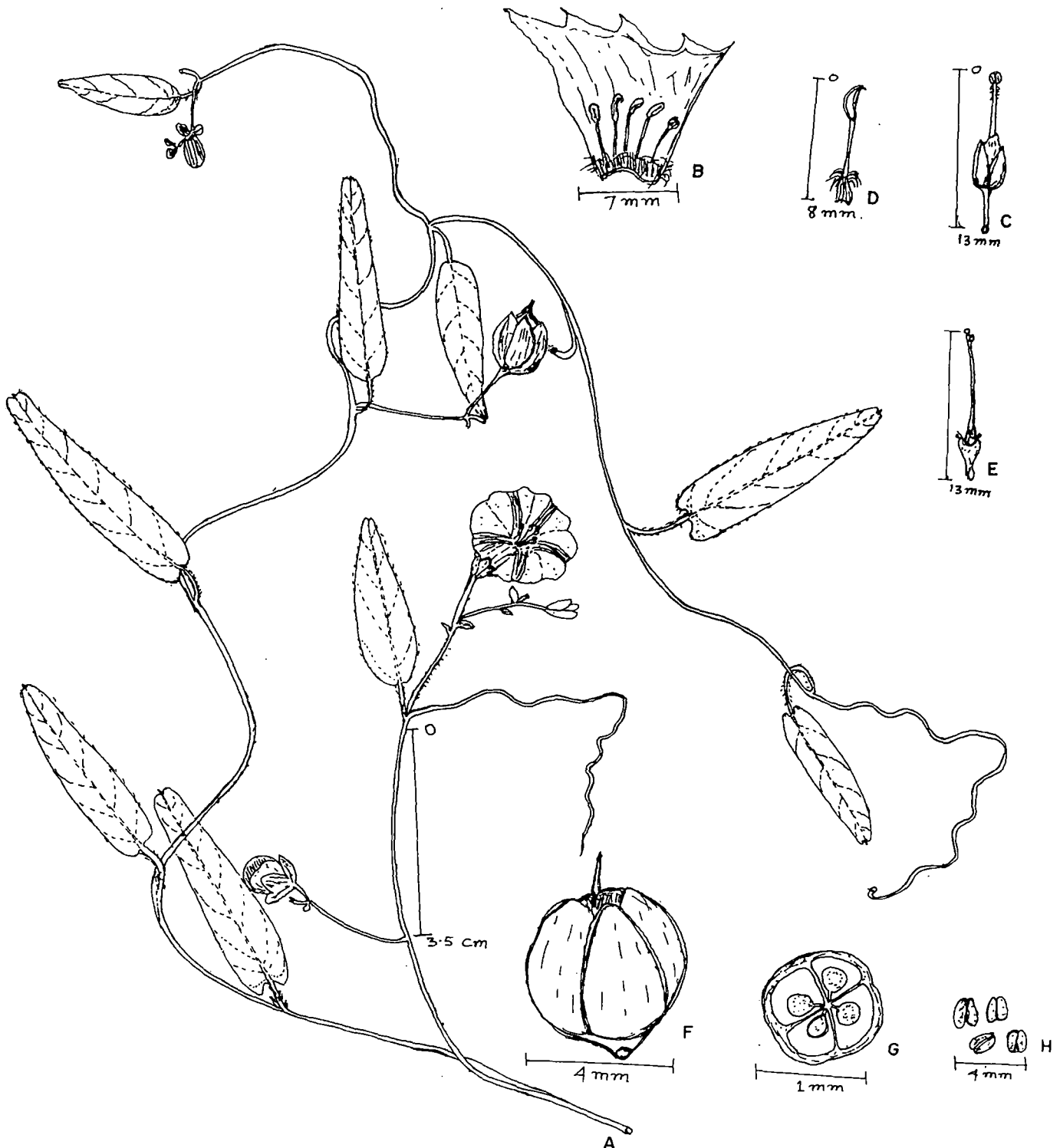


Fig.3.22 *Merremia hirta* Philip A: habit : B: flower after splitting ; C: flower with stigma ; D: androecium ; E: gynoecium ; F: fruit ; G. t.s. fruit ; H: seeds

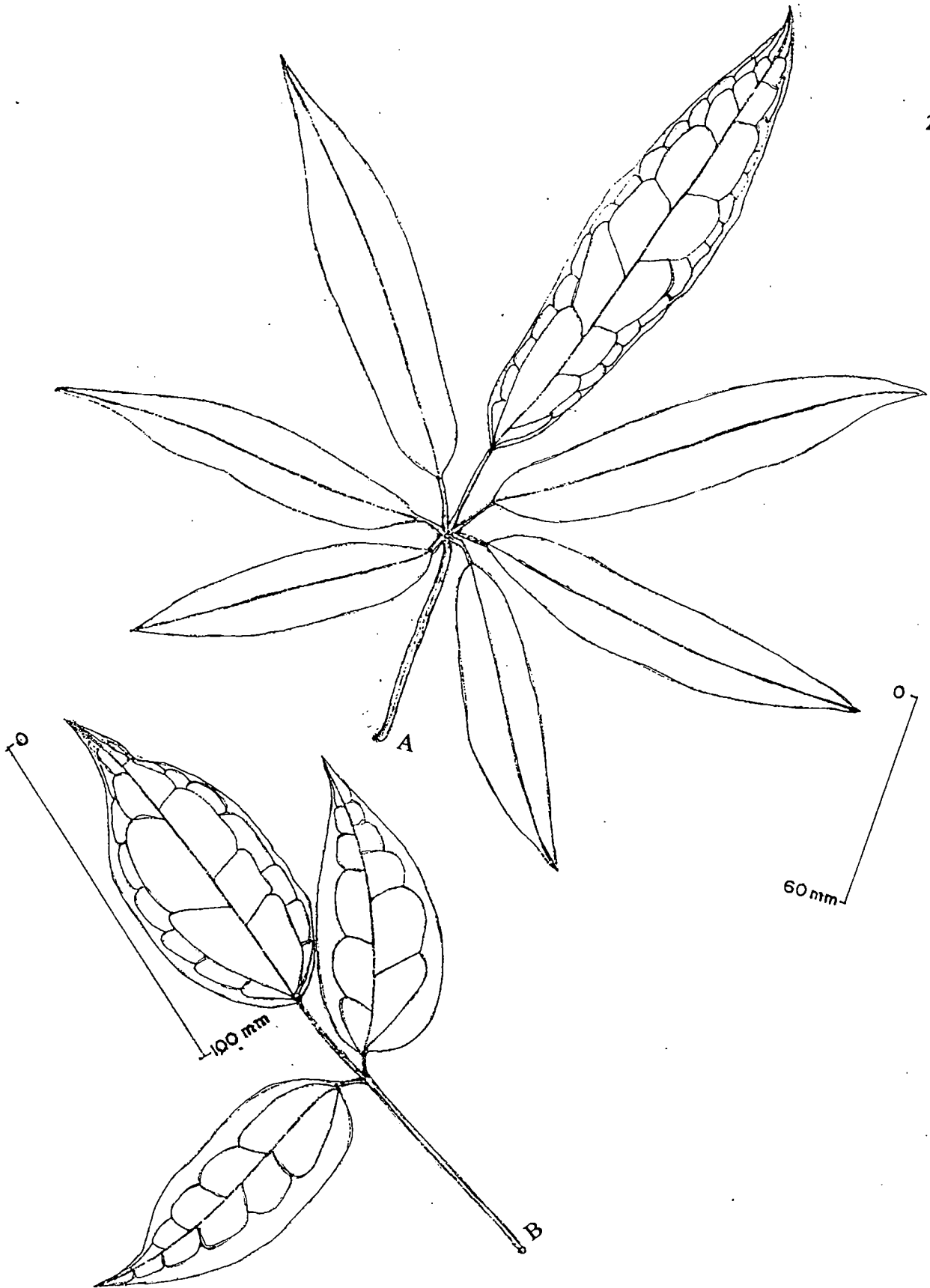


Fig.3.23: *Holboellia latifolia* Wall.; A : A leaf of var. *angustifolia* (Wall.) Hook f. et Thoms.;
B: A leaf of var. *latifolia*.

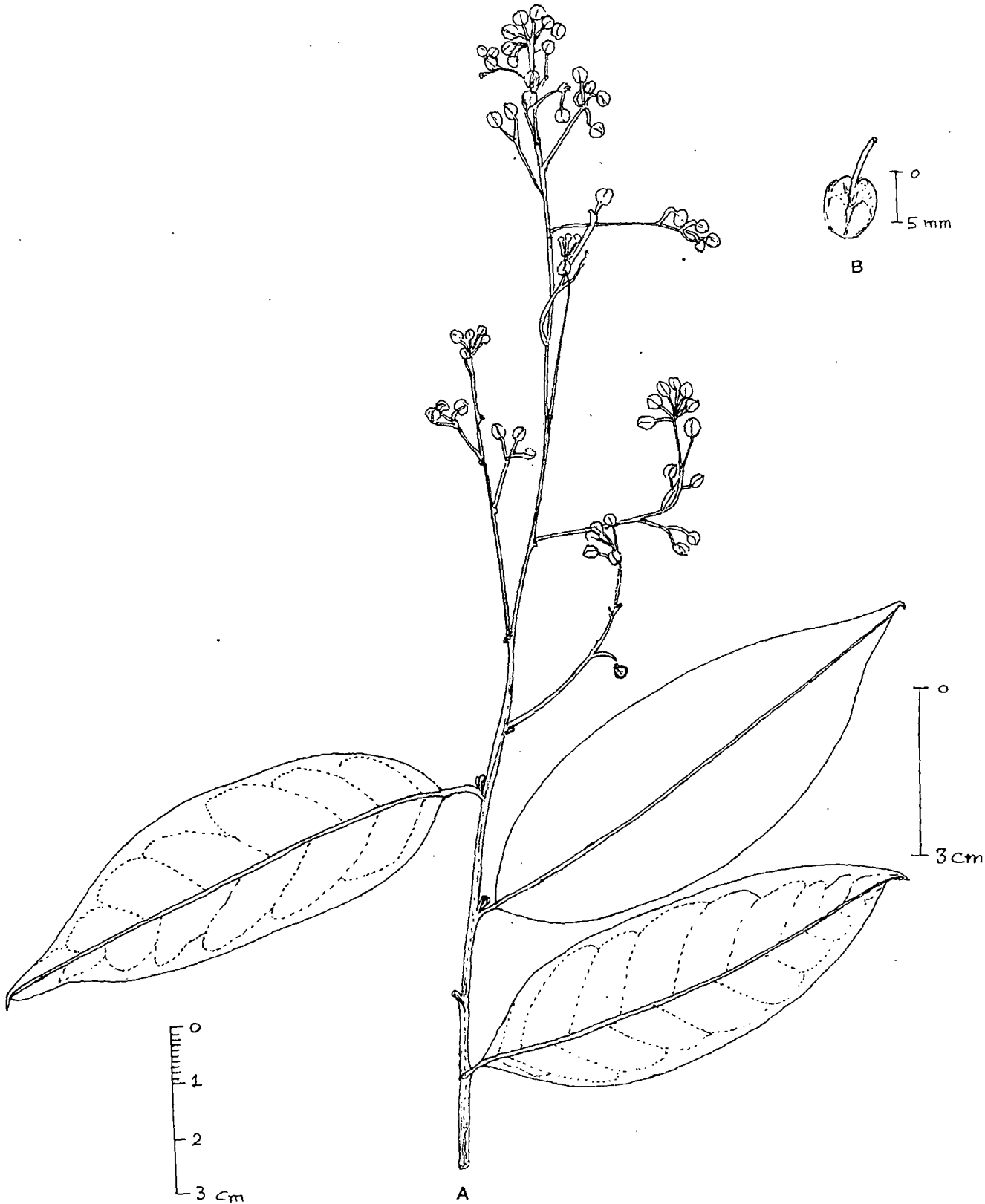


Fig.3.24 *Embelia ribes* Burm. A: a portion of flowering shoot; B: a flower bud.

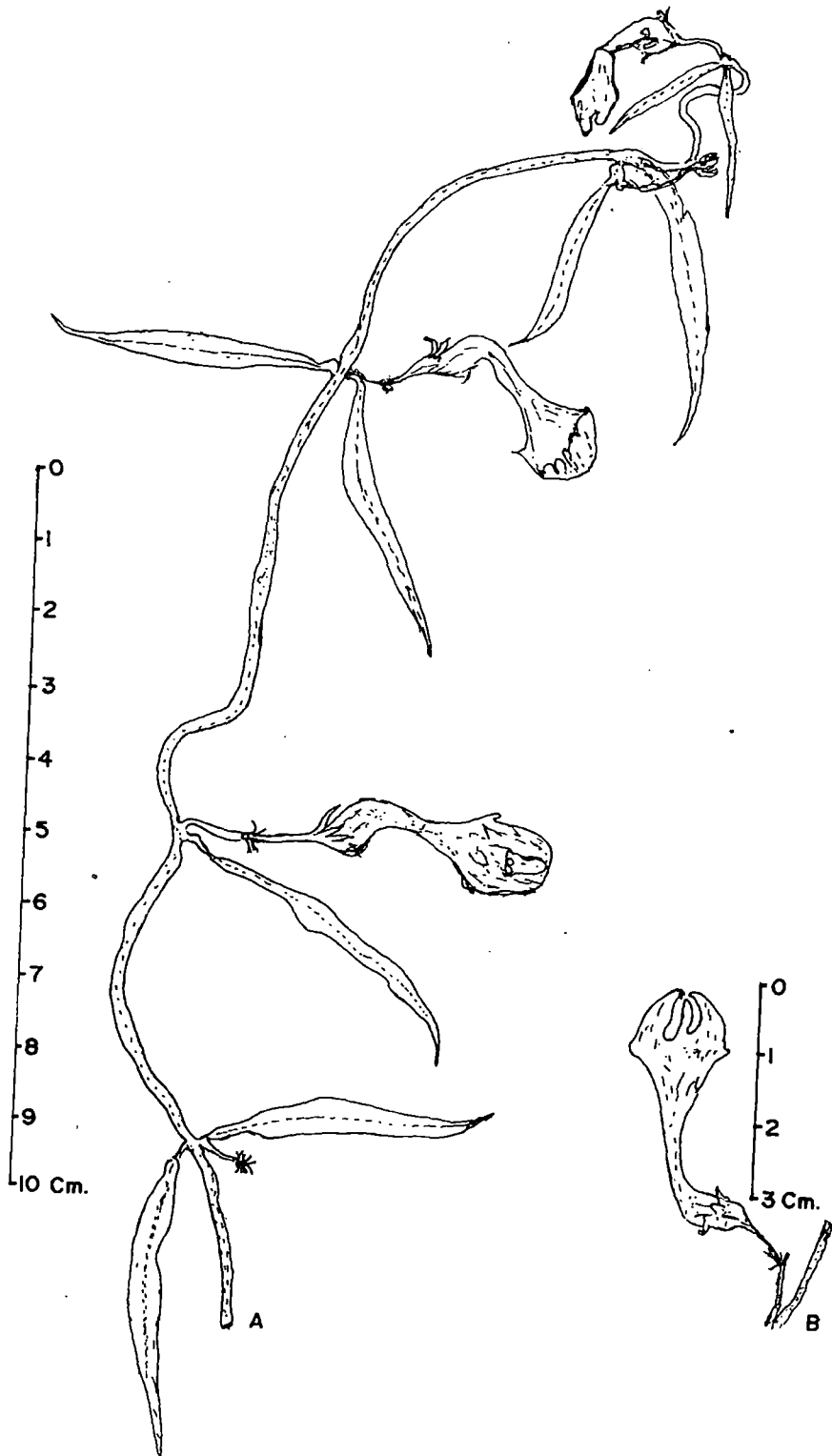


Fig. 3.25 *Ceropegia longifolia* Wall. var. *darjeelingensis* AP Das A: a portion of a flowering shoot; B: Flower.

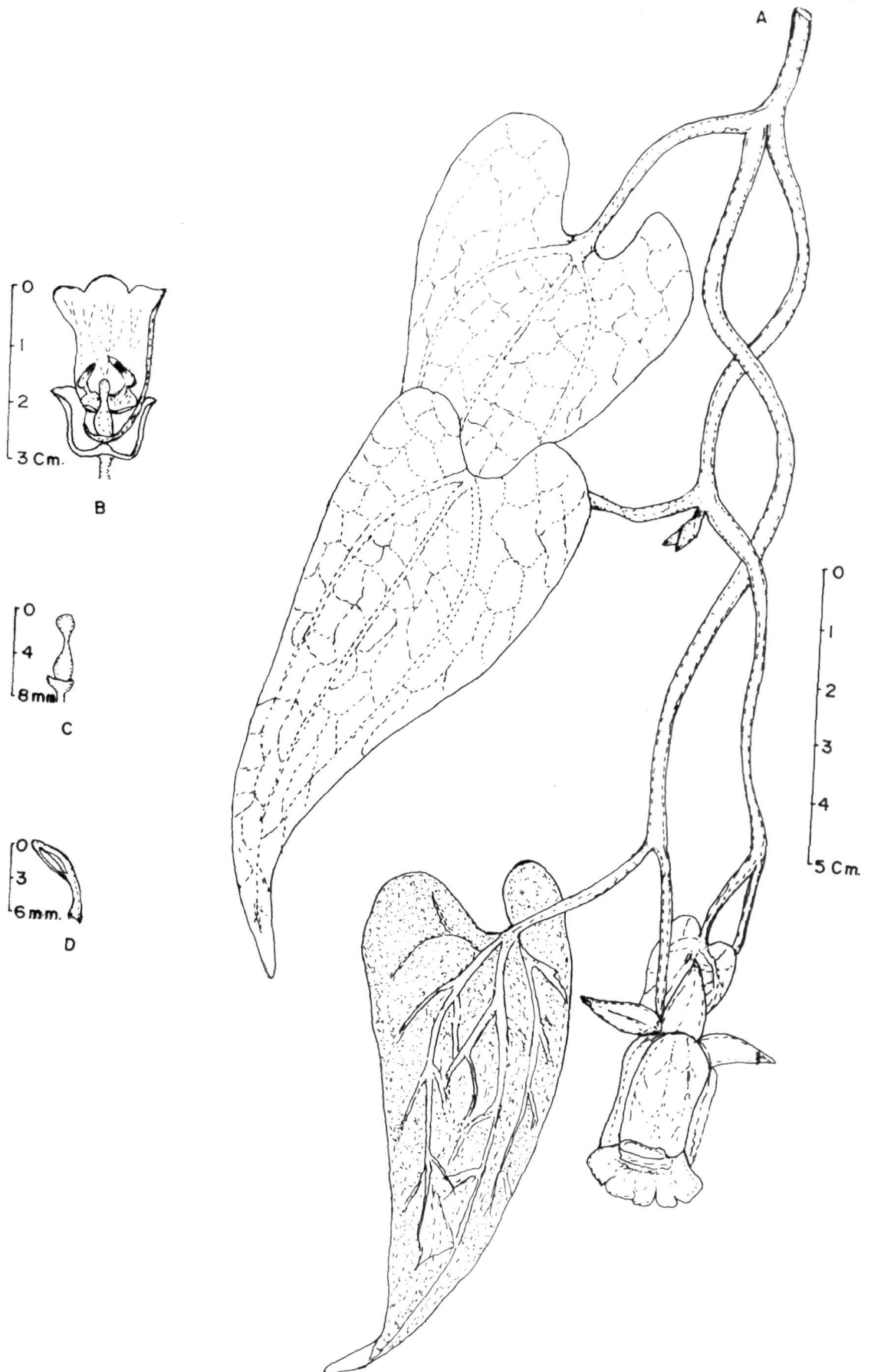


Fig 3 26 *Codonopsis inflata* Hook. f & Thoms. A, a portion of a twig, B, vertical section (v.s) of flower, C, gynoecium, D, androecium

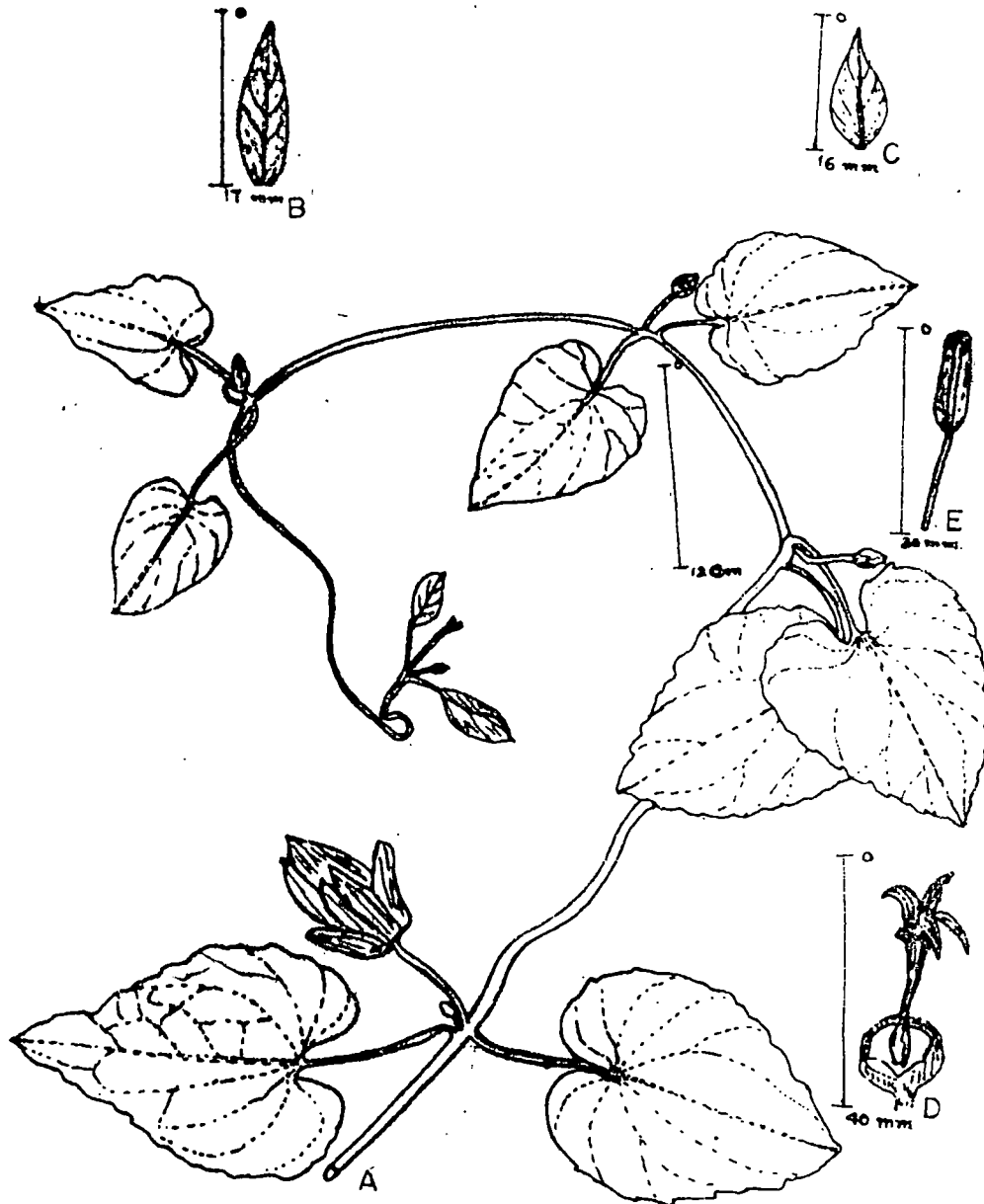


Fig.3.27 *Codonopsis javanica* (Bl.) Hook. f. A: habit ; B & C: petals; D: gynoecium ;
E: androecium.

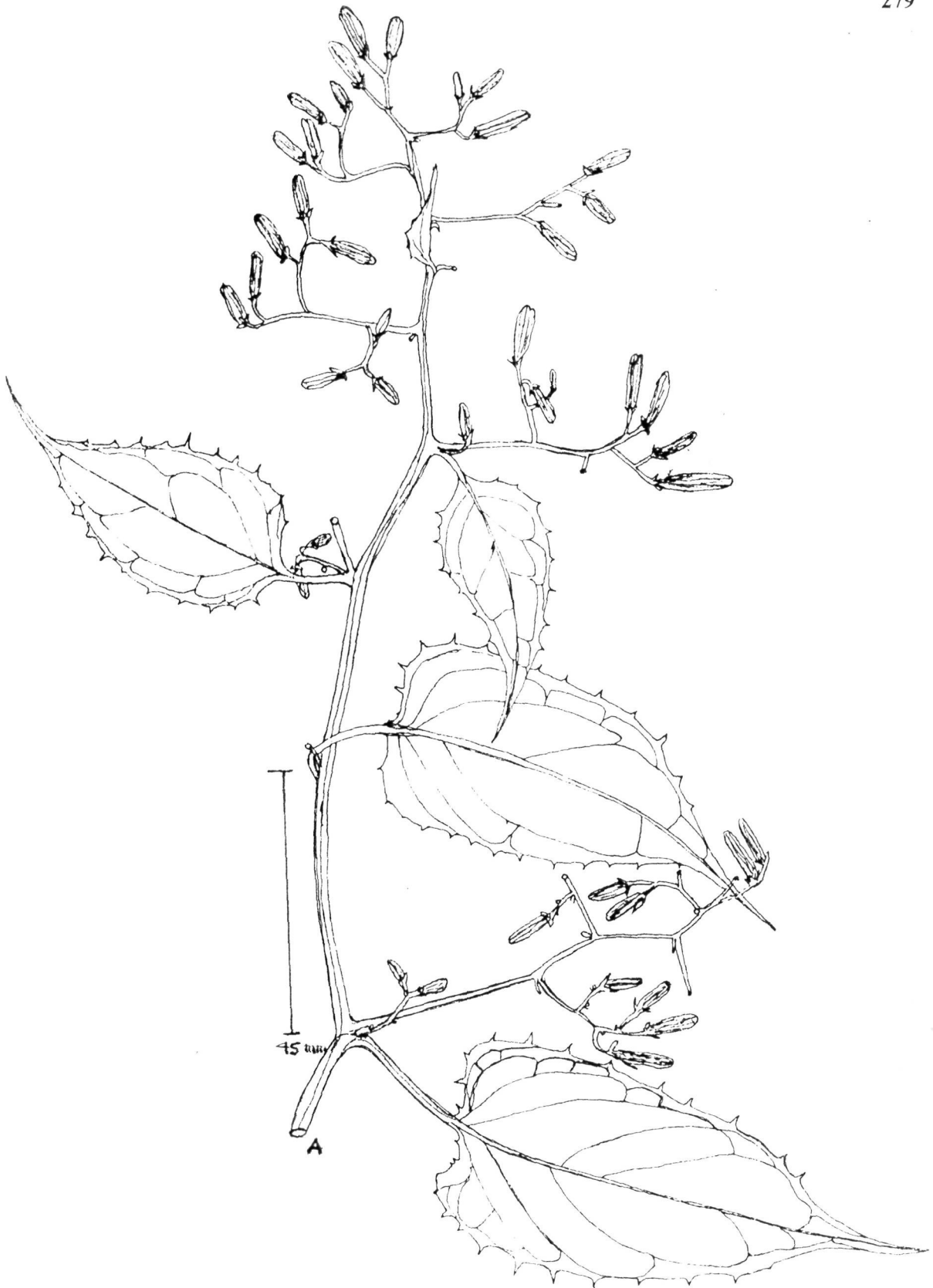


Fig. 3.28: *Synotis sikkimensis* A P. Das & A K. Samanta A: a portion of a flowering shoot,

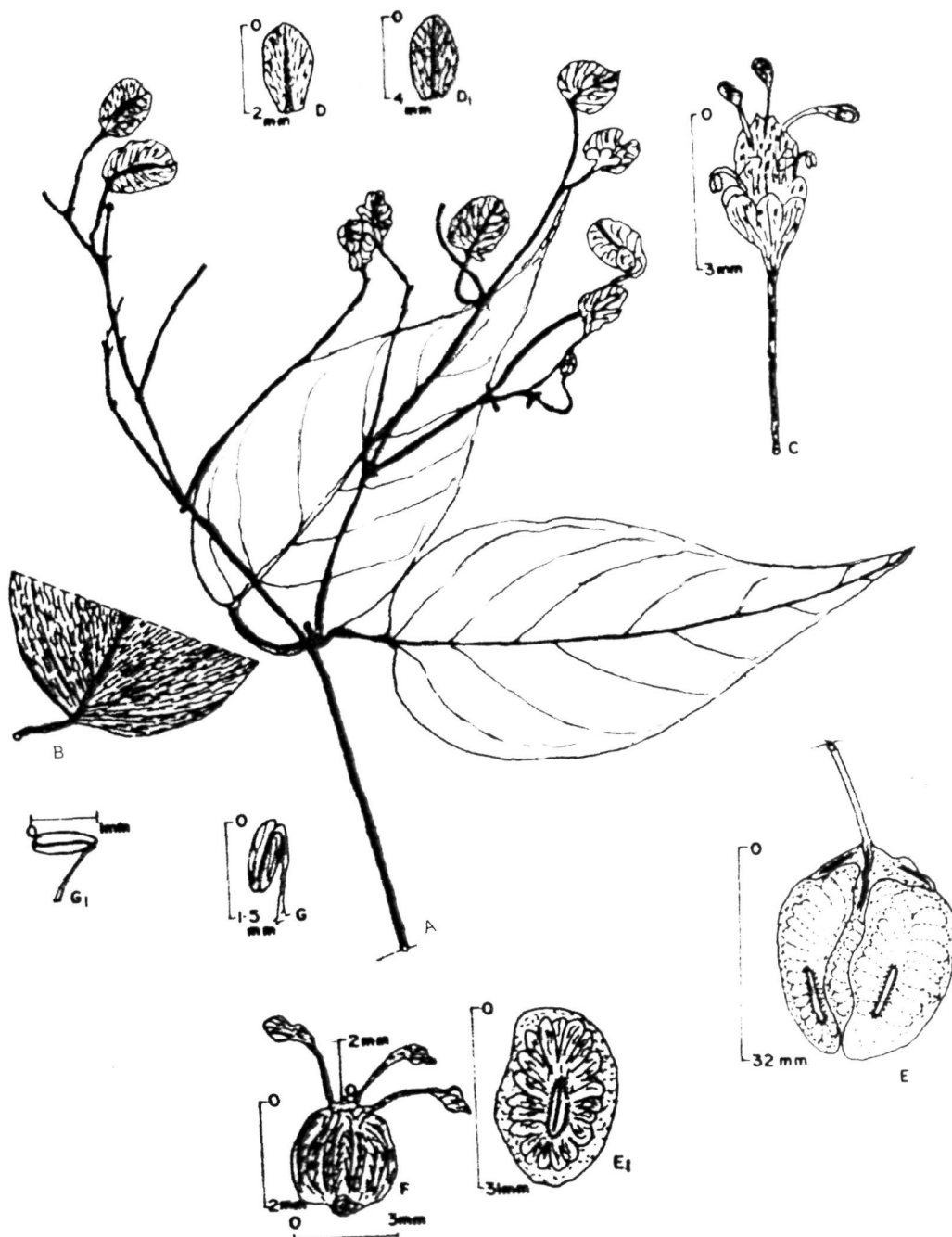


Fig 3.29: *Aspidopterys wallichii* Hook.f. A: habit, B: lower portion of lamina; C: flower; D&D₁: sepals; E: fruit; E₁: samara showing seed; F: gynoecium; G&G₁: androecium

PLATE-I



PLATE-II





LEGENDS FOR THE PHOTOGRAPHS

PLATE - I

- Photo-1. *Thunbergia fragrans* Roxb.
Photo-2. *Schisandra grandiflora*(Wall.)
Hook. f. & Thoms.
Photo-3. *Croton caudatus* Greiseler
Photo-4. *Jasminum dispernum* Wall.
Photo-5. *Entada rheedii* Spreng.
Photo-6. *Piper nigrum* L.
Photo-7. *Dysolobium grande* Prain
Photo-8. *Naravelia zeylanica* (L.) DC.
Photo-9. *Rosa sericea* Lindl.
Photo-10. *Rubia manjith* Roxb. ex Flem.
Photo-11. *Argyreia roxburghii* Choisy
Photo-12. *Caesalpinia cucullata* Roxb.

PLATE - II

- Photo-13. *Zanthoxylum oxyphyllum* Edgew.
Photo-14. *Aristolochia griffithii* Hook. f. & Thoms.
Photo-15. *Milletia cineria* Benth.
Photo-16. *Hedyotis scandens* Roxb.
Photo-17. *Holboellia latifolia* Wall.
Photo-18. *Cissus javana* DC.
Photo-19. *C. repens* Lam.
Photo-20. *Ampelocissus sikkimensis* (Laws.) Planch.
Photo-21. ***Smilax ferox* Wall. ex Kunth**
Photo-22. *Mukia maderaspatana* (L.)Roem
Photo-23. *Passiflora geminiflora* D. Don.
Photo-24. *Aristolochia tagala* Cham.
Photo-25. *A. indica* L.

PLATE - III

- Photo-26. *Melothria heterophylla* (Lour.) Cogn.
Photo-27. *Dalbergia volubilis* Roxb.
Photo-28. *Elaeagnus conferta* Roxb.
Photo-29. *Bauhinia vahlii* Wt. & Arn.

PLATE-IV

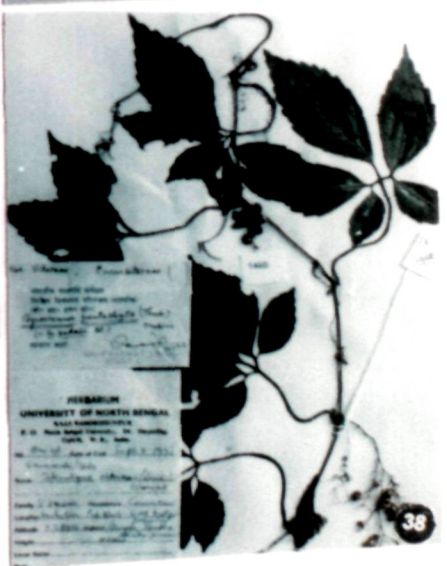
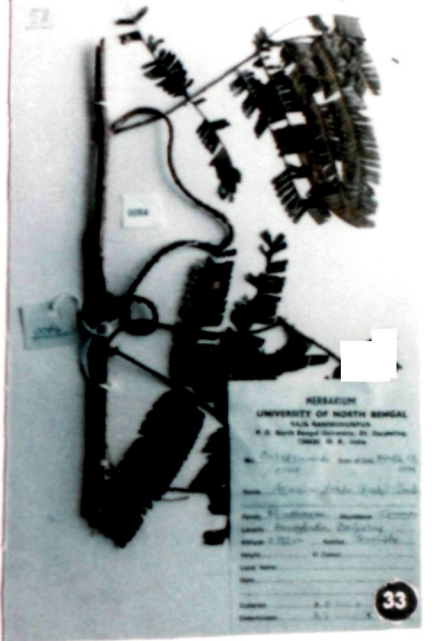
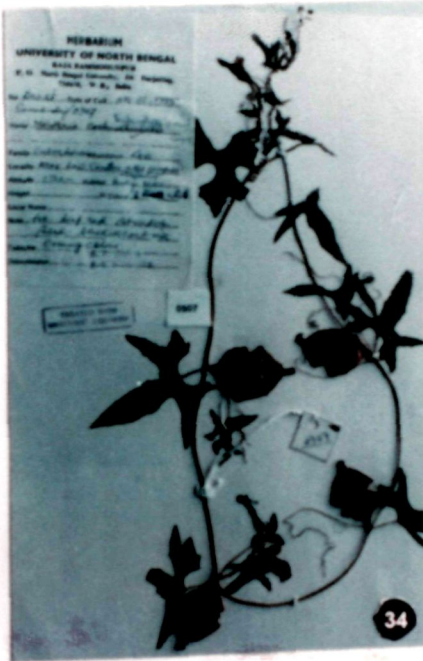
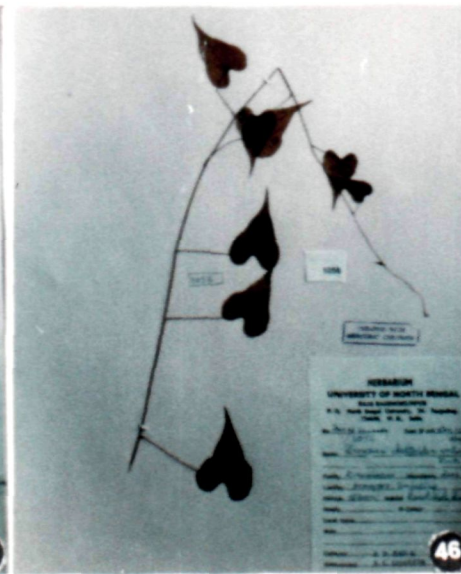
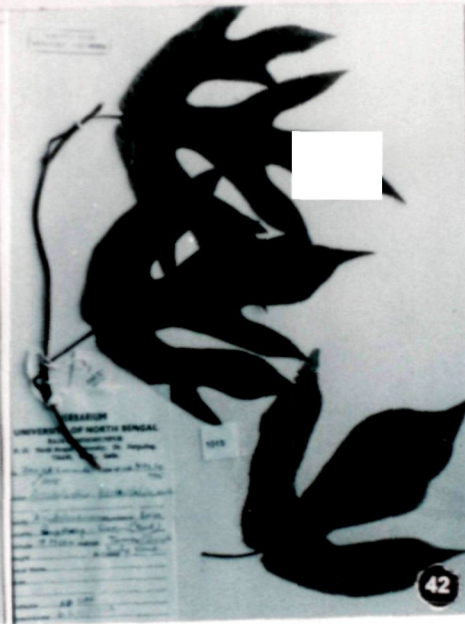
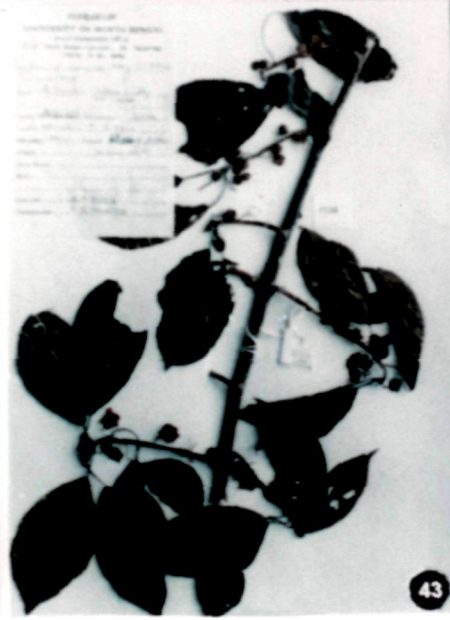
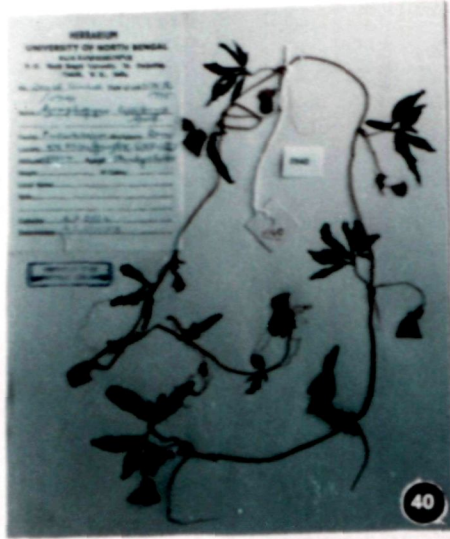
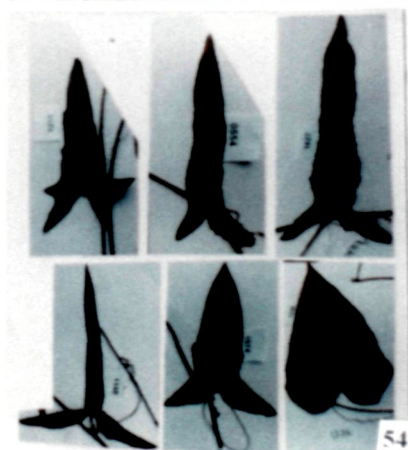
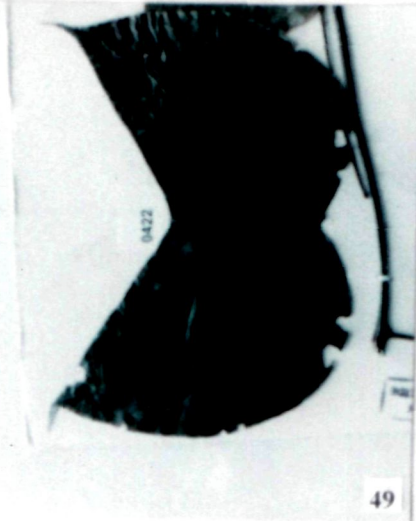
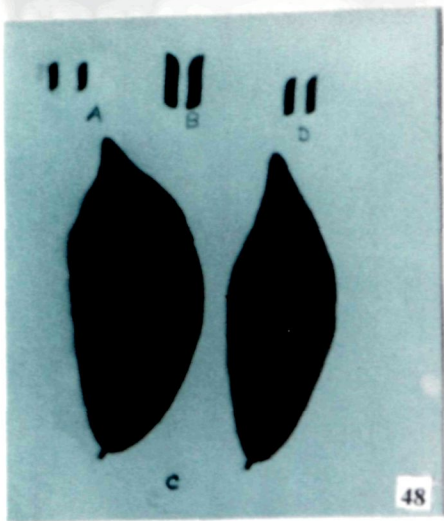


PLATE-V





LEGENDS FOR THE PHOTOGRAPHS

PLATE - IV

- Photo-30. *Actindia strigosa* Hook. & Thoms.
Photo-31. *Dioscorea trinervia* Roxb. ex Prain & Burkill
Photo-32. *Holboellia latifolia* (Wall.) Hook.f. Homs.
Photo-33. *Acacia torta* (Roxb.) Craib
Photo-34. *Melothria angulata* Chakravarty
Photo-35. *Adenia cardiophylla* (Mast.) Engl.
Photo-36. *Aspidopterys wallichii* Hook.
Photo-37. *Trichosanthes lepiniana* (Naud.) Cogn.
Photo-38. *Gynostemma pentaphylla* (Thunb.) Makino

PLATE - V

- Photo-39. *Aganosma gracilis* Hook. f.
Photo-40. *Gomphogyne cissiformis* Griff.
Photo-41. *Momordica cochinchinensis* (Lour.) Cogn.
Photo-42. *Aristolochia platanifolia* (Klotz.) Duch.
Photo-43. *Actinidia callosa* Lindl.
Photo-44. *Cynanchum corymbosum* Wt.
Photo-45. *Senecio araneosus* Wall.
Photo-46. *Dioscorea deltoidea* Wall.
Photo-47. *Dioscorea tomentosa* Koem ex Spreng.

PLATE - VI

- Photo-48. Pinnae of: (A) *Acacia intsia* (L.) Willd. (B) *A. torta* (Roxb.) Craib.
(C) *Entada rheedii* Spreng.; (D) *Mimosa himalayana* Gamble.
Photo-49 & 50. Leaves of *Bauhinia scandens* L.
Photo-51. Fruit & seeds of *Entada rheedii* Spreng.
Photo-52 Old stem of *Bauhinia scandens* L.
Photo-53. Old stem of *Tetrastigma* spp.
Photo-54. Leaves of *Melothria heterophylla* (Lour.) Cogn.
Photo-55. Fruits of *Mucuna nigricans* (Lour.) Steud.
Photo-56. Fruits of *Mucuna prurita* (L.) DC.
Photo-57. Hooks of *Uncaria sessilifructus* Roxb.