CHAPTER V

SYSTEMATIC ENUMERATION
CAESALPINIACEAE

Key: I

1. Leaves 1-pinnate
   2. Petals absent
      3. Stamens 10, flowers pale yellow, ... Hardwickia
      3. Stamens 3, flowers brilliant orange yellow ... Saraca
   2. Petals present
      4. Petals 3 ... Tamarindus
      4. Petals 5
         5. Leaflets 2 ... Bauhinia
         5. Leaflets 4-numerous ... Cassia
1. Leaves 2-pinnate
   6. Leaflets reduced to scales ... Parkinsonia
   6. Leaflets not reduced
      7. Flowers yellow
         8. Petals hairy at base ... Peltophorium
         8. Petals glabrous ... Caesalpinia
    7. Flowers other than yellow
       9. Leaflets more than 10 pairs ... Delonix
       9. Leaflets less than 10 pairs ... Pterolobium

Key: II

1. Stragglers or lianas
   2. Pod not winged ... Caesalpinia
   2. Pod winged ... Pterolobium
1. Trees, shrubs or herbs
   3. Pod 1 or 2-seeded ... Hardwickia
   3. Pods more than 2-seeded
      4. Leaflets 2 ... Bauhinia
      4. Leaflets more than 2
         5. Leaves 1-pinnate
            6. Pods with pulpy mesocarp ... Tamarindus
6. Pods without pulpy mesocarp
7. Pods orange red colour, short, 4-8-seeded
7. Pods other than orange red colour, long, more number of seeds
5. Leaves 2-pinnate
8. Pods torulose
8. Pods not torulose
9. Pods long, 8-40 cm
9. Pods short, 4-10 cm

BAUHINIA Linnaeus

Key - I
1. Fertile stamens 10:
   2. Flowers white in colour, leaflets connate for two-thirds of their length
   2. Flowers other than white in colour:
      3. Flowers yellow in colour, leaflets connate for about half their length
      3. Flowers pale yellow in colour, leaflets connate for three-fourths of length or even more

1. Fertile stamens 3, 4 or 5:
   4. Flowers other than yellow:
      5. Flowers rose in colour, leaflets connate about half-way up and sometimes overlapping
      5. Flowers pink in colour, leaflets connate for about two-thirds up

4. Flowers yellow in colour:
   6. Flowers yellow or pale yellow in colour, leaflets connate for two-thirds up or higher
   6. Flowers yellow with purple patches, leaflets connate almost at the apex

Key - II
1. Lianas; pods woody
1. Trees or shrubs; pods not woody:
   2. Wood hard

... Saraca
... Cassia
... Parkinsonia
... Delonix
... Peltophorum
... B. racemosa
... B. tomentosa
... B. malabarica
... B. purpurea
... B. variegata
... B. vahlii
... B. semla

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2. Wood moderately hard:

3. Wood without patches and streaks
   4. Wood black in colour, tough
   4. Wood dark brown in colour, not tough

3. Wood with patches and streaks
   5. Wood with regular darker patches; seeds Ca. 20
   5. Wood with irregular darker patches; seed 5-8
   6. Wood greyish brown in colour; bark grey colour; pods straight
   6. Wood reddish brown in colour; bark white colour; pods slightly curved


**Piliostigma malabaricum** (Roxb.) Benth. in Miq. PI. Jungh. 261. 1852.

Deciduous trees, about 20 m tall; bark brown, rough; wood reddish brown, with darker patches, moderately hard; branchlets pubescent or tomentose. Leaves broader than long, about 10-16 cm; leaflets 11 X 13 cm, adnate to three-fourths the length, oblong, cordate at base, obtuse, margin entire, glabrous and glaucous beneath. nerves 7-9 from base, reticulations prominent. Flowers pale yellow, in axillary racemes, pedicel long, slender, buds narrow ovoid, apex obtuse; calyx spathaceous, with 5 equal triangular teeth, 8-9 X 2-3 mm. Petals spathulate, equal and similar, light yellow, prominently nerved, obovate, 1.6 X 3 mm. Stamens 10, 5 long fertile alternative to 5 small sterile, long filament to 3 mm; short filament 2 mm, anthers oblong, long anther to 1.5 mm, small anther 1.25 mm. Ovary compressed, to 3.25 mm, slightly pubescent. Pods nearly straight, 25 X 2 cm, rugulose, puberulous; seeds Ca 20, ovoid, flattened.

Occasional in valley forests of North-eastern ghats. Fl. & Fr.: August-December. Ver N: Ori. Koteli Gumbati; Tel. Pulishinta, Pedda-ari, Tam. Vellatthi, Mantharai. Anantagiri - Galikonda (VSKP), TP & EC 7400 (SKU); Kammarapadu - Polavaram (WG), DCSR 187 (CAL); Maredumili to Kakur (EG), GVS 67587 (MH); Pipalaquaka (GJM), JSG 13856 (CAL); Chelama (KNL). JLE 22037 (MH); Satwa-Near Araku (VSKP), NPBK 10853 (MH).

Trees, 10-15 m tall; bark grey to brown, wood dark brown, moderately hard; branchlets warty. Leaves 5.5-11.5 X 6-12 cm, sub orbicular, coriaceous; leaflets oblong, obtuse or sub-acute at apex, connate about half-way up and sometimes overlapping, coriaceous, 9-11-nerved, plaited below, base sub cordate, margin entire, petiole to 3 cm. Stipules triangular. Flowers rose to pink, large, in terminal or axillary racemes or panicles. Peduncle stout, to 5 cm, bract ovate, to 4 cm. Pedicel to 2.5 cm; buds narrow-obovoid, apex obtuse. Calyx spatheaceous, 2.5 X 1 cm, tube turbinate, petals 5, rose to pink, equal and similar, obovate, 1.9 X 0.5 cm, narrow at base, obtuse. Stamens 3; filaments to 6 mm, anthers oblong, to 6 mm. Ovary compressed, grooved, 2.5 cm. Pods oblong, bright brown colour, 2.5-3.0 X 1.5 - 2.5 cm, woody, compressed, narrow at base, apex horned, puberulous; seeds Ca 10, ovoid, bright brown colour, glabrous. (Fig. 10)


**Piliostigma racemosa** (Lam.) Benth. in Miq. Pl. Jungh. 262. 1852.

Trees, about 10-12 m tall; bark white, rough; wood reddish-brown with darker patches, moderately hard, branchlets densely tomentose. Leaves ovate-orbicular, about 1.5-3.5 X 3-3.5 cm, thin-coriaceous; leaflets connate to two-thirds of their length, 7-8-nerved, shortly pubescent below, glabrous above, base cordate, margin entire, apex deeply emarginate, petiole to 1 cm. Flowers creamy yellow, racemes axillary, to 2 mm; bracteole subulate, to 1 mm; pedicel to 2 mm; buds narrow obovoid, apex obtuse. Calyx spatheaceous, 5 X 2 mm, glabrescent apex cleft. Petals 5, light yellow colour, equal and similar, 5 X 1 mm, narrow at base, obtuse. Stamens 10, filaments to 1.5 mm, anther oblong, 3 mm. Ovary compressed, grooved, to 4 mm. Pods linear oblong, 12-16 X 1.5-2 cm; woody, slightly curved, apex acute, entire, dark-brown or brownish black, indehiscent; seeds ca 8, flattened, ovoid, brown, smooth polished. (Fig. 11).

Common in dry deciduous forests of Eastern Ghats. Fl. & Fr.: Mar-November. Ver. N. : Ori. Ambalota, Ambanasia, Tel. Are, Tam. Althi, Malai-athi. Kakavada R.F (EG), PRSR & SSR 15403 (SKU); Madhavaram R.F. (KNL), RVR 1318 (SKU); Jeypore Ghat Road (KP), RSR 18624 (CAL);
Fig. 10  Bauhinia purpurea L. A. Twig; B. Sepals; C. Petals; D. Pistil with stamens.
Fig. 11 Bauhinia racemosa Lam. A. Twig; B. Sepals; C. Petals; D. Stamens; E. Pistil; F. Pod.
Kotlihills, near Puliancholai (TRCNP), CMNH 19593 (CAL); Inner Javadi R.F. (NA), KMS 6045 (MH); Sheveroy hills (SLM), VAA 13738 (CAL); Pachidya (GJM), KNS 5848 (MH); Danda Karanya near Manyeinkonda (KP), RSR 18490 (MH); Rayada (GJM), JSG 14094 (MH); Kambakkam (GJP), CAB 16476 (MH); Hogainakkal (SLM), EVV 20559 (MH); Javadi hills (NA), MBVN 1152 (MH); Gollarayi Konda Mekalametta (EG), GVS (MH); way to upper Ahobilum (Nallamalais) (KNL), JLE 32568 (MH); Balapalli (CDP), JLE 14289 (MH); Maredumilli (EG), GVS 24252 (MH).


Moderate sized deciduous tree; bark dark brown, wood red with dark patches and streaks, hard; branchlets long; slender. Leaves broader than long, 9-11 X 10-15 cm, rigidly coriaceous, glabrous, sub-cordate at base, margin entire, apex deeply emarginate, 7-11- nerved. Flowers with purple colour, numerous in pedunculate corymbose racemes, forming large terminal panicles; calyx limb splitting into 2 or 3 segments, prominently nerved, minutely appressed pubescent; petals clawed, 6 X 2 mm, hairy outside, blade orbicular, pale yellow, marked with dark-purple veins, stamens 5, fertile 3, filament 1.5 mm, Anther 0.75 mm, oblong, ovary 2 mm, style terminal, 1 mm. Pods 10-15 cm, broad, flattened, gradually widening to an obtuse tip, late dehiscing; seeds 6-8.

Common in mixed forests of the Eastern Ghats, especially in the hills. Fl. & Fr.: September-February. Ver. N.: Ori. Amthi, Choari; Tel. Nirpa; Goddari. Anantagri-Galikonda (VSKP), TP & EC 7390 (SKU); Anantagiri (VSKP), GVS 21688 (MH); Ghatkuda Forest (KP), GVS 30081 (CAL); Anantagiri (VSKP), NPBK 825 (MH).


Large shrubs or small trees, about 5-8 m tall; wood tough, nearly black; branchlets densely downy-pubescent. Leaves orbicular, 3.5-5.5 X 3.5 - 6.5 cm; leaflets connate for about half their length, chartaceous, 7-nerved, glabrous above, densely pubescent below, base truncate or subcordate, margin entire, apex obtuse, subacute; petiole to 2.5 cm, linear to 1 cm; pedicel to 2.5 cm; buds oblong. Flowers yellow in axillary and terminal 2-3-flowered racemes; calyx spathaceous, lobes 5, oblong 8 X 3 mm; petals 5, yellow, obovate, all are not equal in size, in average 7 X 2.75 mm; stamens 10, pubescent at base, 5 stout are fertile, short thin 5 sterile, long filaments to 2 X 0.75 mm, short filament to 2 X 0.65 mm, long anther to 2 X 0.85 mm, short anther to 1 X 0.65 mm;
Fig. 12  Bauhinia tomentosa L.
A. Twig; B. Sepals; C. Petals;
D. Stamens; E. Pistil.

Bauhinia tomentosa L. A. Twig; B. Sepals; C. Petals;
D. Stamens; E. Pistil.
ovary pubescent, substipitate, stipe to 1 mm, style to 6 mm. Pods oblong, to 10 X 1.5 cm compressed, downy puberulous, base subacute-cuneate, apex obtuse and horned, brown colour, dehiscent; seeds ca 10, ovoid, to 8 X 8 mm. (Fig. 12)

Common in most part of the Eastern Ghats. Often planted for ornament. Fl. & Fr.: July-December. Ver. N.: Tel. Kanchini; Tam. Athil; Kanchini. Gundlabrahmeswaram (KNL), PRSR 17272 (SKU); Upper Ahobilam (KNL), JLE 16865 (MH); Maredumilli (EG), GVS 24252 (MH); Srisailam (KNL), JLE 16865 (MH); Pakamalai R.F. (SA), KRM 5353 (MH); Anchetty Forest (DMP). EVV 57991 (MH); Rambha (GJM), DHP 39653 (MH); Akkamma Kannera - Srisailam, Nallamalais (KNL), JLE 32716 (MH).


Phanera vahlii (Wight & Arn.) Benth. in Miq. Pl. Jungh. 263. 1853.

Gigantic lianas; bark cream-coloured, thick stems (woody), girth upto 55-60 cm in diameter; Tendrils alternate, circinate. Leaves broader than long, 15-20 X 20-23 cm, deeply cordate at base, connate one third of the way, margin entire, obtuse, glabrous or sparsely puberulous above, tomentose beneath, nerves 13-15 from base, tendrils axillary, petioles stout, bracteoles 2, to 2 X 1 mm, under side of inflorescence clothed with dense ferruginous, rarely grey tomentum. Flower creamy white on long slender pedicels, in terminal corymbose racemes, buds tomentose; calyx densely tomentose, limb into 2 broadly ovate lobes, 8 X 3 mm; petals densely villous on the back, to 2.2 X 1.3 cm; equal and similar, creamy white. Stamens 3, filaments at base hairy, to 2.5 X 2 mm, anther compressed, to 5 X 1 mm; ovary hairy, to 7 X 4 mm; style long, 1.5 cm; stigma villous, staminodes 2, to 7 X 1 mm. Pods 23 X 6 cm, flattened, oblong, brackish colour, entire, apex acute, rust tomentose, woody, indehiscent; seeds 7-9, flat, ovate, 2.5-3 X 2-2.5 cm, brickish colour. (Fig. 13).

Fairly common in mixed and sal Forests of North Eastern Ghats, rare in Southern-Eastern Ghats. Fl. April-June. Fr. December- March. Ver. N.: Ori. Siali, Sialpatra; Tel. Parutakulutiga, Addateega; Tam. Kallumandalai, Adda. Kakavad R.F. (EG), PRSR & SSR 15404 (SKU); Katravada (EG), GVS 27276 (MH); Towards Sunki from Salur (SKLM), GVS 62505 (MH); Upper Ahobilum (KNL), PRSR & SSR 15438 (SKU); Gundlabrahmeswaram (KNL), JLE 16954 (MH); Chittar Konda -Damsite (KP), DCSR 808 (CAL); Salur-Korput Ghat road (KP), RSR 18406 (CAL); Papikonda R.F.
Fig. 13. Bauhinia vahlii Wight & Arn. A. Twig; B. Petals; C. Sepals; D. Staminodes; E. Bracts; F. Stamens; G. Pistil; H. Inflorescence
PLATE 5:

A. *Bauhinia purpurea* L.

B. *Bauhinia vahlii* Wight & Arn.

Moderate-sized deciduous trees, about 15 m tall; bark grey, with vertical cracks, wood greyish-brown with irregular darker patches, moderately hard; branchlets glabrescent, brown tomentose when young. Leaves ovate, 5-10 X 6-10 cm, leaflets connate for about two-thirds, 10.5-11.5 X 8.5-9.5, thin-coriaceous, 10-12-nerved, glabrous above, puberulous along nerves below, base deeply cordate, margin entire, apex obtuse, mucronate at the cleft; petiole 3-4 cm; stipules triangular, 1-2 mm; Bract ovate, to 4 mm; Flowers white or pink in terminal panicles, 7-9 cm, pedicel to 2.5 cm; buds ovoid, apex beaked; calyx-tube cylindric as long as the ovate spathaceous 5-toothed limb, 4 X 2.5 cm, petals 5, 5th petal to 5.3 X 1.8 cm, 4 petals to 4.7 X 1.4 cm, 4 petals light purple variegated, obovate. Perfect stamens 5, 2 are larger, to 2.3-2.4 cm; 3 are smaller to 2 cm; ovary to 1.5 cm, pubescent, style to 8 mm. Pods flattened, to 18-20 X 1.5-2 cm; distinctly reticulate, base and apex narrow, horned, brown in colour; seeds 5-7, slightly flattened. (Fig.14).

Common in mixed forests of the Eastern Ghats, especially in the hills. Often planted in gardens for its beautiful appearance in flower. Fl. & Fr.: August-February Ver. N.: Ori. Borara thero, Kanchano; Tel. Mandari; Tam. Segapu-Manchori. UpperAhobilam (KNL), PRSR 15439, 15441 (SKU); Talakona (CTR), SSR 15436; Anantagiri (VSKP), NPBK 836 (CAL); Shevaroy hills (SLM), JSG 243; 273 (CAL); Udayagiri (GTM), CAB 1139 (MH); Yercaud road (SLM), SKT 26898 (MH).

CAESALPINIA Linnaeus

Key - I

1. Unarmed shrubs or trees
   2. Flowers in short dense panicles, flowers cream
      3. Pinnae 2-8 pairs
         4. Leaflets Ca. 3 pairs
            5. C. coriaria
         4. Leaflets 7-9 pairs
            6. C. pulcherrima
   2. Flowers in long racemes, flowers yellow crimson
      3. Pinnae 10-20 or more pairs
         4. Leaflets Ca. 3 pairs
            5. C. cucullata
         4. Leaflets 7-9 pairs
            6. C. bonduc
Fig. 14. Bauhinia variegata L. A. Twig; B. Sepals; C. Petals;
D. Stamens; E. Pistil; F. Pod.
5. Pinnae more than 18 pairs  
5. Pinnae less than 12 pairs  
6. Branchlets matty tomentose, flowers yellow  
6. Branchlets glabrous, flowers pale yellow with red streaks  

Key - II

1. Pods prickly  
1. Pods not prickly  
2. Seeds 1 or 2  
3. Pods winged  
3. Pods not winged  
4. Pods coiled  
4. Pods not coiled  
2. Seeds more than 2  
5. Pods thick, with recurved beak  
5. Pods thin, with straight beak  
6. Seeds obovoid, flattened compressed  
6. Seeds oblong-globose, turgid  


Large straggling very thorny perennial shrubs, 7-8 m tall; branchlets downy pubescent; prickles recurved, Leaves bipinnate, 15-22 cm long; pinnae 4-6 pairs, prickled; leaflets 7-9 pairs, ovate-elliptic, 1.5 - 3.5 X 1.2 cm, glabrous above, pubescent below, base truncate, rotund, margin entire, apex obtuse, mucronate, petiolule Ca. 1 mm; stipules foliaceous, peduncle long, to 4 cm, prickled, bracts long, linear-lanceolate, deciduous, to 1.5-2 cm; pedicel 0.5-1.5 cm; very short in bud; flowers 1.2 cm across, pale yellow in terminal and supra axillary spicate racemes. Calyx tube campanulate, to 5 mm, gibbous at base, sepals 5, unequal, oblong-ovate, 4.5-5 X 1 mm; tomentose; petals 5, oblanceolate, upper one smaller, to 5 X 2 mm; laterals 5-6 X 1.5-2.5 mm, apex obtuse, marked with yellow colour; stamens 10, deccinate, alternate, 5 long, to 5 mm, 5 short, to 4
Fig. 15. *Caesalpinia bonduc* (L.) Roxb. A. Twig; B. Inflorescence; C. Sepals; D. Petals; E. Stamens; F. Pistil; G. Pod.
mm, filaments attenuate, base glandular-villous, to 3 mm, ovary stipitate, globose, to 3 mm; style short to 2 mm, pubescent. Pods oblong-obovoid, in some what flattened 5-7 X 2.5-4.5 cm, brick colour, densely clothed with sharp prickles, apex beaked; to 1 cm, dehiscent; seeds 1 or 2, subglobose, to 3 X 6 mm, oblong, smooth, polished lead coloured. (Fig.15).

Common in thickets, scrub forests of the Eastern Ghats. Fl. August-October. Fr. December-April. Ver. N.: Ori. Kotakoleja, Giligila; Tel. Gatchakai; Tam. Kalichikai. Gazulapalli (KNL), PRSR 15456 (SKU); Rampachodavaram (EG), GVS 27237 (MH); Bahakuad (KP), GPG 20917 (CAL); Thoppuri-Javadi R.F. (NA), EVV 51950 (CAL); Sankagiri hill (SLM), KMM 19894 (CAL); Peddaupparipalle R.F. (CTR), DRC 1953 (MH)


Unarmed trees, 10-15 m tall; branchlets warty. Leaves 7-10 cm; pinnae 3-9 pairs, subopposite; leaflets ca 20 pairs, oblong, to 0.4 - 0.7 X 0.1 - 0.3 cm, punctate, glabrous, base oblique, cordate, margin entire, apex emarginate; petiole to 2 cm; petiolule o. Peduncle to 1 cm; pedicel to 1.5 mm. Flowers greenish-yellow in terminal panicles, to 8 mm across; calyx-tube campanulate, short. Sepals 5, oblong, lower one to 3mm, subequal to others; petals 5, cream, ovate-orbicular, to 4 mm, clawed; upper one smaller, to 3.5 mm. Stamens 10, declinate; filaments subequal, to 3.5 - 4 mm, basally villous, ovary stipitate, 3 mm, glabrous, style suberect, to 4 mm. Pod twisted, to 3-4 X 1-2 cm; glabrous, seed flattened, oblong, to 6 X 4.5 mm,

Introduced; common in the Forest, planted by Forest department. Fl. May-June. Fr. August-November. Ver.N.: Tel. Divi-divi. Tam. Kona- pulli in kimaram. Ghumesar (GJM), NRS 60 (CAL); Marthamalai (CBT), KMS 1201 (CAL); Anantagiri (VSKP), NPBK 816 (CAL), GVS 19487 (MH); Forest Near Anantagiri (VSKP), NPBK 10992 (MH); Madgole (VSKP), GVS 28125 (MH).


Mezoneuron cucullatum (Roxb.) Wight & Arn. Prod. 283. 1834.

Large woody shrubs; branchlets glabrescent, prickles black, short, sharp, recurved prickles on branches and leaves. Leaves bipinnate to 30 cm long, pinnae 2-5 pairs, to 15 X 10 cm, leaflets 3-5 pairs, sub opposite, ovate-elliptic, 5-10 X 3.5 cm, thin-coriaceous, glabrous, glossy above, base obtuse-subacute, margin entire or undulate, apex acuminate, petiole to 9.5 cm, prickly; petiolule to
4 mm; stipules short. Panicles terminal or axillary, peduncle short, stout, to 3 cm; bract narrow, oblong; pedicel to 1 cm; jointed above middle. Flowers bright yellow or orange colour, to 1.5 cm across. Calyx tube oblique, yellow, short, to 6 mm, deeply lobed, lobes 5, unequal, obovate-oblancoolate, glabrous, apex rounded, lower one hooded, cucullate, to 1.5 X 0.5 cm; laterals 7.5 X 8.5 mm; upper ones to 6 X 5 mm. Petal 5, greenish yellow, shortly clawed, upper petal 2-lobed, 1 X 3 cm, lateral obovate, to 8 X 7 mm, lower pair to 1 X 0.8 cm; stamens 10; much exserted, 1.5 X 2.5 cm, pubescent at the base, Anthers uniform, ovary stipitate, oblong to 6 mm, style to 1.5 cm. Pod oblong, flat, 12 X 4 cm, papery, broadly winged along the upper margin, indehiscent; seed(s) 1 or 2, orbicular or broadly oblong, 8 X 6.5 mm, Flattened.


Large armed, straggling thorny shrubs, upto 5 m tall; branchlets mattly-tomentose, prickles recurved on the stem and leaf rachis. Leaves bipinnate, 20-22 cm long, rusty pubescent or sub-tomentose. Pinnae 10-12 pairs, 2.5-5 cm long; leaflets 6-12 pairs, elliptic or oblong-ovate, 1 - 1.5 X 0.3 - 0.5 cm, chartaceous, puberulous above, pubescent below, base subacute, cuneate, margin entire, apex obtuse, rotund. Petiole to 3.5 cm; rachis and petiole prickly; petiolule to 1 mm; stipules foliaceous, racemes axillary or terminal, peduncle to 5 cm, prickled; bract lanceolate, to 4 mm; pedicel to 3 cm, jointed, prickled. Flowers yellow, to 1.2 cm across, calyx-tube campanulate, to 3 mm. Sepals 5, oblong; lower one 7 X 3.5 mm; laterals, to 8 X 3.5-4.5 mm; petals 5, golden yellow, upper one spatulate, reflexed, to 7 X 7 mm, lateral equal to lower, orbicular, 6.5 X 2-5 mm, clawed. Stamens 10, filaments sub equal, 7 mm, base pubescent. Ovary sessile, to 5 mm, style attenuate, to 2 mm. Pods 8.5 X 2.5 cm, flat, slightly turgid, straight or slightly curved, linear-oblong, tomentose, obtuse, apex mucronate, horned; seeds Ca. 8, oblong-globose, 8 X 6.5 mm, smooth.

Cultivated occasional in gardens, hedges and open bushy places. FI. December-May. Fr. December onwards. Ver. N.: Ori. Gilo; Tel. Goodda-Korinda; Tam. Putthadukki. way to Mahendragiri

Much branched prickly climbing shrubs; Branches glabrous or slightly downy; prickles scattered, lower prickles straight, to 12 mm long, sharp, upper prickles recurved, 2.5 - 5 mm. Leaves bipinnate, small, pinnae 8-10 pairs, leaf rachises with geminate prickles at each pair of pinnae, leaflets 8-10 pairs, 0.6-1.2 X 0.3-0.35 cm, close, sometime overlapping, oblong, obtuse, entire, sessile, dark green and glabrous above, grey and glabrescent or obscurely downy beneath. Peduncle 1-2 mm, pedicels 1 mm long, Flowers pale-yellow with red streaks in supra-axillary racemes. Calyx 5, glabrous, calyx tube very oblique, lobe lanceolate, 5 mm, anterior 10 mm. Petals 5, orbicular, posterior smaller, reflexed. Stamens 10, little, filaments far exserted, base woolly. Ovary sessile, small, style filiform. Pod torulose, thick, 2-4 cm long, oblong, fleshy with a short recurved beak, 1.5 - 2 mm long, gelatinous stalked glandular stiff hairs, flattened, black, entire, indehiscent, septate; seeds 2-4, flat, ovate, dark brown, 1-1.5 X 0.5 - 0.25 mm, shining.

Occasional in the forests of North Eastern Ghats. Fl. August-October. Fr. January-March. Ver. N.: Ori, Gilo, Tari; Tel. Nunegacca; Bhimulapadu Forest (EG), PRSR 15411 (SKU); Jaddangi (EG), GVS 68669 (MH); Kadagandi R.F. (SKLM), KCJB 17267 (MH); Rampa (EG), VNS 236 (CAL); Sirsumul (GJM), SX 2928 (RRL-B); Jerango-koinpur (GJM), SX & BH 1868 (RRL-B).


Prickly climbing shrubs; branchlets or young parts reddish glandular bristly; prickles erect and recurved. Leaves bipinnate, leaf rachis to 40 cm long; pinnae 18-20 pairs, 4-6 cm long, prickled, opposite, to 7 cm; leaflets 10-16 pairs, oblong or elliptic, close, inequilateral, 1 X 0.4 cm, chartaceous, glabrous above, glaucous below, base and apex rounded, margin entire; petiole to 3 cm; petiolule 0; stipules scarious, subulate, 6 mm. Racemes axillary, to 45 cm long, rachis and peduncle stiff-prickled and glandular bristly throughout; bract to 6 mm; pedicel to 2.5 cm, prickled. Flowers 2.5 cm across, bright yellow colour; calyx tube campanulate, to 2 mm; sepals 5; upper sepals oblong, to 1 X 0.4 cm; laterals obovate, to 1.2 X 0.5 cm; equal to lower, gland-dotted; petals
5. yellow clawed; upper petal obovate, spatulate, 1.3 X 0.5 cm; laterals orbicular, to 1.5 X 1.2 cm. Stamens 10; filaments to 1.5 cm, subequal, villous at base. Ovary stipitate, oblong, to 6 mm. Style to 1.5 cm. Pod oblong - obovoid, falcate, 4.5 X 2.5 cm, stiff-bristly, beak 4 mm, recurved; seeds Ca. 2, narrowly oblong, 8 X 4 mm.


Much branched shrubs or small trees; bark greyish brown; prickles few and scattered on the branches. Leaves bipinnate, alternate, 11-14 cm; pinnae 4-8 pairs, 3-6 cm; leaflets 6-12 pairs, 1 - 1.5 X 0.5 - 0.7 cm, sessile, close, oblong, rarely obovate, margin entire, apex obtuse, base attenuate, subacute, nerves prominent above and below, glabrous above; glabrescent beneath, pedicel more than twice the length of flower; Flowers orange-yellow or bright yellow in terminal racemes, filaments bright red, 3-4 times the length of the corolla, glabrous, sepals 5, unequal, oblong-obovate, 0.6-0.8 X 3.5-4 mm, lower one 1 cm long, glabrous; petals 5, yellow, oblanceolate, upper one smaller, 9 X 5 mm; laterals 1.1-1.2 X 0.8 - 0.9 cm; apex obtuse, stamens 10, declinate, subequal; filaments attenuate, base glandular villous, 3.5-4 mm; ovary stipitate, globose, style short, glabrescent, to 4 mm. Pods nearly straight, 6-11 X 1-2 cm, broadly linear, flat, glabrescent; slightly yellow or brown colour, apex beaked; seeds 7-10, obovate, oblong, smooth, glabrous, brown colour, small in size 1-2 X 0.75 - 0.85 mm. (Fig.16).

Common in gardens, running wild in the Eastern Ghats. Ornamental. Fl. & Fr.: Most part of the year. Ver. N.: Tel. Ratnagandhi; Kapuramaddi; Tam. Mayilkonnay (Peacock cassia). Simhachalam hills (VSKP), PRSR 15459 (SKU); DCSR 1872 (CAL); Jeypore (KP), GVS 30261 (CAL); Guranikonda (CTR), JSG 209994 (DD).
Fig. 16. Caesalpinia pulcherrima (L.) Sw. A. Twig; B. Sepals; C. Petals;
D. Stamens; E. Pistil.
PLATE 6:

A. *Caesalpinia bonduc* (L.) Roxb.

B. *Caesalpinia pulcherrima* (L.) Sw.
CASSIA Linnaeus

Key - 1

1. Sepals broad, obtuse

2. Leaves without gland on rachis or petiole

3. Antheriferous stamens 10

4. Flowers yellow, leaflets 4-8 pairs

4. Flowers reddish to flame coloured, leaflets 10-15 pairs

C. fistula

C. roxburghii

3. Antheriferous stamens 6-7

5. Stipules minute, caducous

6. Large shrubs, leaflets 10-12 pairs

6. Moderately sized trees, leaflets 7-10 pairs

C. montana

C. siamea

5. Stipules broad, persistent

7. Herbs

... C. italica

7. Shrubs or trees

8. Leaflets 10-20 pairs

8. Leaflets 5-13 pairs

C. timoriensis

C. alata

C. didymobotrya

2. Leaves with gland(s) on rachis or petiole

10. Herb

10. Trees or (sub) shrubs

11. All parts are pubescent

11. All parts not pubescent

12. Leaflets less than 6 pairs

13. Foliar glands present on petiole only. Leaves glabrous

13. Foliar gland present on leaf rachis only Leaves slightly pubescent

C. occidentalis

C. floribunda

12. Leaflets more than 6 pairs

14. Ovary glabrescent

14. Ovary pubescent

C. sophera

C. auriculata

1. Sepals narrow, usually acute.

15. Leaflets 2 pairs

15. Leaflets more than 2 pairs to many

... C. absus

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<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Species</th>
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</thead>
<tbody>
<tr>
<td>16.</td>
<td>Foliar gland stipitate</td>
<td>C. pumila</td>
</tr>
<tr>
<td>17.</td>
<td>Leaflets 16-25 pairs</td>
<td>C. kleinii</td>
</tr>
<tr>
<td>17.</td>
<td>Leaflets 8-15 pairs</td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>Foliar gland sessile</td>
<td></td>
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<tr>
<td>18.</td>
<td>Herbs or under shrubs</td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>Less number of leaflets (3-4 pairs)</td>
<td>C. obtusifolia</td>
</tr>
<tr>
<td>19.</td>
<td>More number leaflets (16-40 pairs)</td>
<td>C. leschenaultiana</td>
</tr>
<tr>
<td>20.</td>
<td>Stamens 7 antheriferous</td>
<td>C. mimosoides</td>
</tr>
<tr>
<td>20.</td>
<td>Stamens 10 antheriferous</td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>Large shrubs or small trees</td>
<td>C. surattensis</td>
</tr>
<tr>
<td>21.</td>
<td>Brachlets sparsely pubescent</td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>Brachlets sub-glabrous or glabrous</td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>Leaflets 4-7 pairs, stamens 7 antheriferous</td>
<td>C. senna</td>
</tr>
<tr>
<td>22.</td>
<td>Leaflets 8-12 pairs, stamens 10 antheriferous</td>
<td>C. suffruticosa</td>
</tr>
</tbody>
</table>

**Key - II**

1. Herbs or small shrubs

2. Pods sub-terete, seeds transverse

2. Pods flat, compressed, seeds longitudinal

3. Stamens 5, staminodes absent

4. Pods with glandular hairs

4. Pods without glandular hairs

3. Stamens 10, staminodes present

5. Seeds not more than 12

6. Pods crested on the valves

6. Pods not crested on the valves

5. Seeds more than 15

7. Pod glabrous

7. Pod downy tomentose or hairy

8. Pod with oblique base, indehiscent

8. Pod without oblique base, dehiscent

1. Large shrubs or moderate sized trees

9. Foliar gland absent on the rachis or petiole
10. Pods indehiscent

11. Pods not more than 10 cm long

12. Seeds about 8

12. Seeds 15-20

11. Pods more than 20 cm long

13. Seeds 16-20

13. Seed about 50

10. Pods dehiscent

14. Seeds less than 20

15. Pod with thin sutures

15. Pod with thick sutures

14. Seeds more than 20

16. Pods thin, not woody nature

16. Pods thick, woody nature

9. Foliar gland present on the rachis or petiole

17. Pod sessile

18. Pod densely hirsute

18. Pod glabrous

17. Pod stipitate

19. Seeds not more than 12

20. Pods puberulous

20. Pods glabrous

19. Seeds more than 20

21. Seeds other than dark brown colour

21. Seeds dark brown colour

22. Pods glabrous

22. Pods with few scattered hairs

... C. senna

... C. didymobotrya

... C. roxburghii

... C. fistula

... C. montana

... C. timoriensis

... C. alata

... C. siamea

... C. hirsuta

... C. suffruticosa

... C. auriculata

... C. floribunda

... C. occidentalis

... C. sophera

... C. surattensis


Erect annual herbs, up to 60 cm tall, branchlets viscid pubescent. Leaves long, petiole 4 cm, eglandular, leaflets 2 pairs, digitate, broadly ovate-obovate, inequilateral, 2.5-3.5 X 1-2 cm, chartaceous, slightly glabrous above, pubescent below, base cuneate, margin entire, apex
obtuse-rotund; petiolule to 2 mm; rachis with subsessile glands between leaflets, stipules linear, subulate, to 6 mm. Racemes terminal or leaf-opposed, to 7 cm, peduncle to 2 cm, bract ovate-subcordate, 2.5 mm, bracteole linear, to 1.5 mm on mid pedicel, pedicel 0.6 - 1 cm. Flowers 1.5 cm across, pure yellow or tinged red. Calyx-lobes 5, narrow, oblong, subequal, to 4 X 1-12 mm, apex acute, viscid. Petals 5, reddish to flame-coloured, broadly obovate, subequal to 5.75 X 2.50 mm, claw 5 X 1.75 mm. Stamens 5, 2.5 mm; antheriferous, unequal; filaments erect, 1.25 - 1.5 mm, anthers of 3 kinds, large 2.75 mm, 1 medium 2.5 mm, 2 short 0.75 - 1.5 mm, ovary subsessile, terete, to 4 mm, densely long-stigose, style slightly curved, glabrous, to 1.25 mm. Pods short-stipitate, ligulate, falcate, glabrous, 3 - 4.5 X 0.5 - 0.6 cm, flat, oblique, covered with stiff glandular hairs, seeds Ca 6, ovoid, 4.5 X 3 mm, longitudinal, black, shining. (Fig.17).

Common in dry forests of the Eastern Ghats. Fl. & Fr.: August-February. Ver. N : Tel. Chanupala vittulu; Tam. Karunkkollu. Kalasamudram R.F. (ATP), EC 2922 (SKU); Guilemallebad R.F (KNL), RVR 1679 (SKU); Balapalli (CDP), JLE 14919 (MH); Damma . Konda R.F. (EG), GVS 68586 (MH); Shevaroys Ghat Road (SLM), NVGP & TSJS 18796 (CAL); Kolli hills (TRCNP), CMNH 19585 (CAL); Nallamalai hills (PKM), RKM 0481 (CAL); Dummakonda R.F. Jajigeddaka, near AddafTgal (EG), GVS 68586 (CAL); Salur-Jeypore road side (SKLM), NPBK 1098 (CAL); Gingee R.F. (SA), KMS 12384 (MH); Chelama (KNL), JLE 18035 (MH); Raikia to Digi (GJM), CAB 1288 (MH).


Shrubs, up to 2 m tall; branchlets glabrescent; Leaves 35-45 cm long; leaflets 8-12 (14) pairs; Lower leaflets oblong-elliptic, upper ones broadly obovate, 5-12 X 2.5 - 8 cm, in equilateral, thin coriaceous, glabrous, oblique at the base, broadly rounded, margin entire, truncate, apex obtuse, apiculate, rachis narrowly winged on each side of the face. Petiole 1.5 - 2.5 cm; rachis and petiole eglandular; petiolule to 3 mm; stipules lunate, 6-9 mm; persistent, auriculate. Flowers terminal dense racemes, to 30 cm; peduncle upto 12 cm long; bract spatheaceous; enclosing bud, 1.5 X 0.7 cm, caducous; pedicel to 5 mm. Flowers yellow, to 2.5 cm across; calyx-lobes 5, oblong, 1.5 X 0.6 cm, obtuse. Corolla very distinctly veined, petals 5, orange, ovate, to 2 X 1.5 cm; claw to 5 mm. Stamens 10; vary unequal, upper 3 staminodes; with filaments to 3 mm and empty anthers to 2 mm; lower 2 large, with filaments 4 mm and curved anthers 1 cm; next medium, with filament 7 mm and anthers 4 mm; others short, with filaments 3 mm and subequal anthers 3-4 mm; ovary stipitate, angular, grooved, to 1.5 cm, style to 1 cm. Pod stipitate, oblong, thin, to 1-5 X 1-5 cm,
Fig. 17. *Cassia absus* L. A. Twig. B. Sepals; C. Petals; D. Stamens; E. Pistil.
subterete, base and apex obtuse, margin with 2 longitudinal crenulate wings; seeds 50 or more, transverse.


Erect bushy shrubs, 2-4 m tall; bark greyish colour; branchlets finely pubescent. Leaves pinnately compound, 5-9 cm long, stipules large, 0.8-1 cm, foliaceous, reniform, persistent, cordate at base with one end produced into a tail, leaflets 6-12 pairs, oblong-ovate, 1-2 X 0.5 - 1 cm, thin coriaceous, glabrous above, sparingly puberulous below, base cuneate-truncate, margin entire, apex obtuse-retuse, mucronate, petiole to 1.5 cm, eglandular, rachis with linear, erect, stipitate glands opposite to all leaflets; stipules lunate, foliaceous, 0.7 - 1 cm, persistent; petiolule to 4 mm; racemes corymbose or subterminal, to 10 cm, peduncle equal to pedicel, to 2 cm; bract stipular, bracteole linear, 1 mm. Flowers yellow with orange veins, 3.5 cm across, calyx lobes 5, ovate, outer ones smaller than the inner, outer sepals 0.7 - 0.8 X 0.4 - 0.6 cm, inner 1.1 - 1.8 X 0.9 - 1.1 cm, obtuse. Petals 5, golden yellow, 2 larger 1.5 X 1 cm, 3 smaller 1.3 X 6 mm; ovate orbicular, stamens 10; upper 3 staminodes with filaments 3 mm and empty anther 1.2 cm, antheriferous ones 7, lower 2 small, with filaments 1-2 mm and curved anthers 3 mm, one medium with filament to 2 mm and anther 4 mm, 4 long with filaments 1-2 mm and anthers 1.2 cm. Ovary stipitate, falcate; to 1.7 cm, pubescent, style to 1 cm. Pods long 7-12 X 2 cm, flattened, linear, torulose, apex obtuse, mucronate, nerves strong, puberulous, seeds 6-12, ovoid, laterally compressed. (Fig.18).

Common in most part of the Eastern Ghats. Found on dry stony hills and abundant in plains. Fl. & Fr. Almost throughout the year. Ver.N.: Tel. Tangedu; Tam. Avaram. Pinjara hills (EG), PRSR & SSR 15416 (SKU); Korada R.F. (SKLM), GVS 62383 (CAL); near Dongalacheruvu (CDP), KSM 6311 (MH); Kundurkottai R.F. 7 km to Anchettu (DMP), KMM & NVGP 20378 (CAL); Chelama (KNL), JLE 22076 (MH); Way to Thamavaram, Medera mitta (PKM), RKM 0184 (MH); Parsurampur (GJM), SX 1134 (RRL-B), SX & BH 3840 (RRL-B).

Fig. 18. Cassia auriculata L. A. Twig; B. Sepals; C. Petals; D. Stamens; E. Pistil; F. Pod.
Shrubs, to 2 m tall; branchlets glabrescent. Leaves 15-25 cm long, leaflets 10-13 pairs; lower leaflets oblong-elliptic, upper ones obovate, 2-2.5 X 1-1.5 cm, inequilateral, thin coriaceous, glabrous, base oblique, truncate, margin entire, apex horned or apiculate; petiole 3.5 cm; rachis and petiole eglandular; petiole 1 mm; stipules lunate, 7-9 mm; foliaceous. Racemes terminal, dense, to 25 cm. Peduncle 1.5 cm; pedicel to 1 mm; bract stipular, bracteole linear, 1 mm. Flowers bright yellow, to 2.5 cm across. Calyx lobes 5, oblong, 1.5 X 0.6 - 0.7 cm, obtuse, petals 5, yellow, ovate, 1.3 - 1.5 X 0.9 - 1 cm, claw to 5 mm, distinctly nerv ed, stamens 10; upper 3 staminodes with filaments to 4 mm and empty anthers to 5 mm; lower 3 small with filaments 1 mm and curved anthers 2 mm; medium 4 with filaments 2 mm and anther 4 mm. Ovary to 1 cm, stipitate, glabrous or slightly pubescent, style to 0.5 cm. Pod stipitate, oblong, flat, 8-10 X 1.5 - 2 cm, apex horned, base obtuse, margin with 2 longitudinal crenulate, indehiscent, seeds 15-20, ovoid, brown colour. (Fig. 19).

Rare on the hills of South Eastern Ghats. Planted in gardens. Fl. October-March. Fr. November onwards. Shevaroys way of Syngamal (SLM), **PRSR 17227 (SKU)**; Shevaroys, Mangalam, near Cauvery peak (SLM), **KMM 23462 (MH)**.


Moderate sized trees, about 10-12 m tall; bark pale smooth when young, darker and rough when old, the wood is very hard, reddish-brown, strong and durable; branchlets glabrous. Leaves 15-30 cm long; leaflets 4-8 pairs, sub-opposite, oblong-broadly ovate, inequilateral, 4-13 X 2 - 7 cm, thick-coriaceous, nerves plaited, arching, glabrous above, pubescent below, base subacute-cuneate, margin entire, apex gradually tapering, emarginate, petiole 3-5 cm, rachis and petiole eglandular, petiolule 0.5 - 1 cm, stipules caducous. Racemes terminal, 15-40 cm, drooping, peduncle 2.5 cm, bract ovate, to 7 cm, pedicel elongate, 3-7 cm. Flowers yellow with orange veins, to 4 cm across. Calyx-lobes 5, reflexed, ovate, 1 X 0.5 cm, apex obtuse; petals yellow, obovate, 6 - 9.5 X 3.5-5.5 mm. Stamens 10, antheriferous; upper 3 short, with erect filaments to 5 mm and basifix ed anthers to 1 mm, lower 3 large with curved filaments, to 9 mm and dorsifixed anthers to 3 mm; medium 4, with erect filaments to 7 mm and versatile anthers with curved beak to 2.5 mm, ovary appressed pubescent, 8 mm long; style to 2 mm. Pod shortly stipitate, oblong, terete, 40-60 cm long, 2 cm across, black, indehiscent; seeds about 50; transverse, orbicular, flattened. (Fig. 20).
Fig. 19. *Cassia didymobotrya* Fresen. A. Twig; B. Sepals; C. Petals; D. Stamens; E. Pistil; F. Pod.
Fig. 20. *Cassia fistula* L. A. Twig; B. Sepals; C. Petals; D. Stamens; E. Pistil; F. Pod.
Fairly common in Deciduous forests of the Eastern Ghats. Often planted in gardens and avenues. Fl. & Fr.: March-December. Ver.N.: Ori. Sonari, Argavada, Bhaheherga; Tel. Rela; Tam. Konnel. Lankapakal R.F. (EG), PRSR 15407 (SKU); Simhachalam hills (VSKP), PRSR 15462 (SKU); Salur-Koraput Ghat Road (KP), RSR 18411 (CAL); Malkangiri - Goliparvatham (KP), RSR 18444 (CAL); Kolli hills, Kallukushi river (TRCNP), AM 13090 (CAL); Shevaroys; Valavanthi (SLM), KMM, PPM & CMNH 16634 (CAL); Thummalabilur R.F. (PKM), RKM 0419 (CAL); Papikonda R.F. (WG), DCSR 506 (CAL); Srisailam (KNL), JLE 16898 (MH).


Shrubs, above 4 m tall; branchlets glabrescent. Leaves 9-13 cm long, leaflets 3-6 pairs, lanceolate-oblong; acuminate, 2.5-4.5 X 1.5-2 cm, chartaceous, base obtuse, glabrous above, slightly pubescent beneath, margin entire, foliar gland present on leaf rachis only; petiole 3-4 cm; eglandular; petiolule to 0.5 - 1 mm; stipules linear; subulate, caducous; panicles sub-terminal, corymbose, to 4-8 cm; bract linear, to 1 cm; peduncle 2-5 cm; pedicel 2 cm. Flowers bright yellow; to 1 cm across. Calyx lobes 5, ovate 5 X 3.2 mm, apex obtuse. Petals 5, yellow, obovate, 6 - 9 X 3-5 mm, distinctly nervet; stamens 10; all antheriferous, upper 3 short with filament 2 mm and empty anthers 1.5 mm, sometime upper 3 reduced to staminodes, the remaining 7 sub equal, perfect with filaments 2 mm and empty anthers 4-5 mm. Ovary stipitate 0.5 mm; slightly pubescent, style 1 mm; glabrous, incurved. Pods stipitate, linear, glabrous, oblong, dehiscent, slightly curved; seeds 6-8, longitudinal, flat, dark brown.

Occasional in Southern Eastern Ghats. Fl. November-December; Fr. Throughout the year. Way to Yercaud (SLM), PRSR 17224 (SKU); Seemedu (TRCNP), PRSR 15497 (SKU); Near Gumma (RYG), PRSR 17295 (SKU); Shevaroys, near lake (SLM), AM 13613 (CAL); Kolli hills (TRCNP), AM 13265 (CAL); Pichavaram (SA), PPM 18096 (CAL); near chitteri (DMP), TRS 95541 (MH).


Shrubs or diffuse under shrubs, to 2 m tall; branchlets softly tomentose, grooved. Leaves 15-20 cm long, hirsute, with a gland at base of petiole, leaflets 4-6 pairs, lanceolate, ovate-oblong, 3-8.5 X 1.5 - 3 cm, chartaceous, appressed-hirsute, base obtuse, margin entire, apex acuminate, petiole to 3 cm, with a gland at base; rachis eglandular, petiolule to 4 mm; stipules linear, subulate
A. *Cassia fistula* L.

B. *Cassia floribunda* Cav.
Fig. 21. *Cassia hirsuta* L. A. Twig; B. Sepals; C. Petals; D. Stamens; E. Pistil; F. Staminodes.
about 1.5 cm; peduncle 1 cm; panicles axillary, corymbose, to 1.5 cm, bract linear, to 1.5 cm, pedicel to 2 cm. Flowers yellow, 1.5 - 2 cm across, calyx lobes 5, 0.8 - 1 X 0.3 - 6 mm, obtuse, ovate; petals 5, yellow, obovate, 7.5 - 9 X 4 - 6 mm; stamens 10, upper 3 staminodes, to 3 mm; antheriferous ones 7, lower 2 large, with suberect filaments to 6 mm and apically beaked anthers to 7 mm, 5 medium with erect filaments 1- 2.5 mm and anthers 3-4.5 mm. Ovary subsessile, to 3.5 mm, tomentose, style short, 1.5 - 2 mm, glabrous. Pod sessile, 15 X 0.3 cm, subterete, ribbed, densely hirsute, dehiscent, seeds many, transverse. (Fig.21).

Common in the Eastern Ghats hill forests along way sides. Introduced and run wild; now naturalised. Fl. & Fr.: June.- January. Ver. N.: Ori. Badochakunda; Motugudum (KMM), PRSR 15428 (SKU); near Gumma (RYG), PRSR & VNR 17297 (SKU); Seemadu (TRCNP), PRSR 15496 (SKU); Horsely hills (CTR), PRSR & VSL 17257 (SKU); Anantagiri (VSKP), GVS 21541 (MH); Horsely hills (CTR), CECF 4421 (CAL); Shevaroys Keerakkadu (SLM), KMM, PPM & CMNH 16603 (CAL); Horsely hills (CTR), DRC 1110 (MH); Javadi hills (NA), MBVN 858 (MH); Parsurampur to Guma (GJM), SX & BH 3831 (RRL-B); Gupteswar (KP), SX & BH 6716 (RRL-B).


Diffuse perennial herbs, 50-60 cm tall; branchlets glabrescent. Leaves 4-6 cm long; distinctly petioled, leaflets 4-8 pairs, obovate-oblong, 1.5 - 2.5 X 0.8 - 1 cm, membranous, very glaucous, base obtuse, margin entire, mucronate at apex, nerves rugose. Petiole to 1 cm, eglandular, rachis with linear, erect petiolule to 2 mm, stipules linear, to 5 mm, foliaceous, persistent. Axillary racemes, to 15 cm, peduncle to 2 cm; pedicel, to 2mm; bract stipular, bracteole linear, 1 mm. Flowers pale yellow, to 1.5 cm across, calyx-lobes 5, oblong-obovate, 6.5 - 9 X 1-4 mm, obtuse; petals 5, yellow, ovate, subequal, 5-5.5 X 1.25-3 mm, claw to 1.5 mm, distinctly nerved. Stamens 10, very unequal, upper 2 staminodes, 0.5 mm long; antheriferous ones 8; lower 2 large, with filaments 1 mm and empty anthers 1 mm; 3 medium, with filament 1.25 mm and anthers 1.5 mm; 3 short; with filaments 0.25 mm and empty anther 1 mm; ovary sub-sessile appressed-pubescent, to 5 mm, style to 1.5 mm. Pod short stipitate, 2.5 - 4 X 1.5 cm, flat, falcate, papery, crested longitudinally above the seeds, narrowed suddenly at both ends, seeds 6-12, ovoid, flat. (Fig.22).
Fig. 22. *Cassia italica* (Mill.) Lam. A. Twig; B. Sepals; C. Petals; D. Stamens; E. Staminodes; F. Pistil; G. Pods.
Occasional in dry deciduous forest, some times found in open lands. Fl. & Fr.: April-December. Ver. N.: Tam. Nilavaalai. Rangapuram R.F. (KNL), TP & RVR 1485 (SKU); Salem Camp Ghat Road hill (SLM), KMM & TSJS 19654 (RHT & CAL); Balapalli (CDP), JSG 17103 (CAL); Kaduvanur R.F. (SA), KRM 50629 (MH); Santhanur Forest (NA), EVV 52071 (MH); Tippukadu R.F. (NA), EVV 16599 (MH).


Prostrate perennials, 30 cm to 1 m tall; much branched, branches woody; branchlets pubescent. Leaves abruptly-pinnate, 1-2 cm long, rachis more or less pilose, furnished with a small peltate, stalked gland just below the lowest pair of leaflets, leaflets 8-15 pairs, (reduced 4-6 pairs on the lower leaves), linear, oblong-elliptic, 0.8 - 1.6 X 0.2 - 0.3 cm, inequilateral, chartaceous, nerves rugose, base and apex obtuse, apiculate, margin entire, petiole to 3 mm, gland solitary, stipitate, peltate, at the base of petiole, petiolule reduced, stipules scarious, auriculate; appressed to stem. Racemes axillary, 2- flowered, bracts stipular, bracteoles near the top of the pedicel, lanceolate-subulate, scarious, 1.5 mm, pedicel shorter than leaves, to 1.5 cm, slender, downy. Flowers 1 cm across. Yellow; calyx-lobes 5, unequal, ovate, to 6 mm, apex acute; petals 5, yellow, ovate-oblong, 7 X 4 mm, clawed. Stamens 10, all antheriferous, subequal or alternately long and short, to 4 mm, suberect, ovary sessile, to 3 mm, appressed-pubescent, style reduced, to 0.5 mm. Pod short-stipitate, flat, 3 X 0.4 cm, warty, compressed, downy-tomentose, obtuse, seeds Ca 10, dark brown, flat, ovoid, 3 X 2.5 mm, longitudinal.

Occasional in dry deciduous forests of the Eastern Ghats. Fl. & Fr.: October-January. Nerabylu (CTR), GVS 32016 (MH); Raikia to digi (GJM), CAB 1287 (MH); Talakona (CTR), DRC 2185 (MH); Tirumala-near Microwave Station (CTR), DRC 776 (MH); Tala kona (CTR), DRC 723 (MH); Vayalpad (CDP), JSG 20955 (MH).


Erect or suberect herb, upto 1 m tall, appressed hairy, woody at base. Leaves 4-11 cm long, leaf rachis clothed with straight spreading hairs. Petiole bearing a sessile gland; stipules lanceolate, acuminate with sub oblique or semicordate, many- nervé base. Leaflets 16-24 pairs,
0.8 - 1 X 0.1 - 0.2 cm, linear-oblong, glabrous. Peduncle clothed with pairs of stipule like bracts, pedicels long; buds ovoid. Flowers yellow, 0.8-1 cm across, axillary, solitary or 2-3 fascicled; sepals subulate, 11 mm long, subaristate acuminate, hairy. Petals shorter. Stamens 10, 1-3 staminodes. 4 anthers usually larger, 3-5 mm long. Ovary sessile, style slightly curved. Pods linear-oblong, 2.5 - 4.5 (5) cm long, flat, hairy, seeds 15 - 20, small, pale-brown, shining, oblong with oblique base, compressed.

Rare in the Eastern Ghats. Fl. & Fr.: August-October. Near circuit House (VSKP), GVS 21475 (MH); Kaveripeak - Yercaud (SLM), DBD 31241 (MH); Way to Yercaud (SLM), PRSR 17225 (SKU).


Prostrate herbs with long and slender branches; branchlets densely hispid. Leaves 6-9 cm long; leaflets 25-40 pairs, oblong-elliptic, inequilateral, 2.5-6 X 0.5-1 mm, chartaceous, glabrescent, base and apex obtuse, margin entire, apiculate, petiole short, to 1.5 mm, with a sessile gland at the top, petiolule reduced, stipules auriculate, lanceolate, to 1.5 mm. Flowers 0.8 - 1 cm across, yellow, axillary, solitary or 2 or 3 in fascicles. Peduncle to 6 mm, bracts stipular, bracteoles very small, scarious, 1.5 mm, pedicel very slender, hairy; calyx-lobes 5, linear-lanceolate; 5.6 X 1-2 mm, pilose, apex acute, petals 5, yellow, ovate, 5-5.5 X 2-4 mm, clawed. Stamens 10, all antheriferous, alternately long and short, long ones to 5 mm, short ones 3.5 - 4 mm; ovary to 6 mm, sericeous, style to 1.75 mm, slightly pubescent. Pod short-stipitate, flat, obtuse, strap-shaped, 3.5 - 4 X 0.5 cm, sericeous, compressed, downy tomentose, dehiscent, seeds Ca 15, elliptoid, 2-3 mm, longitudinal. (Fig.23).

Common in scrub forests, hills, grass lands and bare slopes of the Eastern Ghats. Fl. & Fr.: October-May. Ver. N. : Ori. Patwa-ghas; Tel. Nelaponna. Kiliyur water Falls (SLM), PRSR 17219; 17223 (SKU); Near a stream in Araku valley (VSKP), NPBK 10759 (MH); Khauguda (GJM), JSG 13712 (CAL); Shevaroy hills (SLM), KMM 18824 (CAL); Malakondapenta R.F. (PKM), RKM 0519 (CAL); Tickapalli to Linepada (GJM), CAB 1195 (MH); Tirumala (CTR), DRC 477 (MH); Raikia to Digi (GJM), CAB 1286 (MH); Araku valley (VSKP), NPBK 506 (CAL).

Fig. 23. *Cassia mimosoides* L. A. Twig; B. Sepals; C. Petals; D. Stamens; E. Pistil.
Small trees or large shrubs, 10-15 m tall, bark dark in colour, wood yellowish colour, hard; branchlets glabrous. Leaves 15-20 cm long, leaflets 10-12 pairs, obovate-oblong, 2.5 × 0.8 - 1 cm, chartaceous, nearly glabrous above, hairy beneath, base and apex obtuse, mucronate, margin entire, petiole 1.5 cm, rachis and petiole eglandular, petiolule 2 mm, stipules minute, caducous. Flowers yellow in axillary and terminal corymbose racemes, 5-15 cm, peduncle to 2.5 cm, bract stipular, bracteole linear, 4 mm, pedicel to 2 cm across. Calyx-lobes 5, ovate, 8-9 × 2.5 - 7 mm, claw 6 × 5 mm, apex obtuse. Petals 5, yellow, ovate, 7 - 9 × 2.5 - 6 mm. Stamens 10, upper 3 staminodes, to 7 mm, lower 2 large with erect filaments to 1.5 mm and anthers 1 mm, 5 medium with filaments 2 mm and anthers 3 - 4 mm, ovary stipitate to 1 cm, style to 3 mm. Pod short, stiptite, flat, straight, 9.5 × 1 cm, compressed, strongly nerved, sutures thin, beaked, seed Ca 20, ovoid, 4.5 mm, longitudinal. (Fig.24).

Common in dry deciduous forests of the Eastern Ghats. Fl. & Fr.: Throughout the year. Ver.N.: Tel. Pagadi tangedu; Konda tangedu; Tam. Malai Aavaram. Bogada (KNL), PRSR 15451 (SKU); Sheshachalaram hills (CTR), PRSR & VSL 17262 (SKU); Guvvalacheruvu (CDP), RSR & VSL 17244 (SKU); Kalasamudram R.F. (ATP), TP & EC 2801 (SKU); Palkonda R.F. - Sanapaya range (CDP), KNS 2371 (DD); Vellimalai slopes (SA), KRM 79625 (CAL); Kuridimalai (CBT), KSM 523 (CAL); Javadi hills (NA), CECF 3981 (CAL); Pachamalais (TRCNP), KMM & NVGP 15699 (CAL); Balapalle (CDP), JLE 14268 (MH).


Erect herbs or under shrubs, 1-2 m height, crisped hairy in young branches or pubescent. Leaves 4-7 cm long, subsessile or shortly petiolulued, leaflets 3-4 pairs, obovate-oblong, 1.5 - 3 × 1 - 1.5 cm, cuneate rounded at base; lowest pair smallest, opposite, margin entire, apex obtuse, apiculate, glabrous above, glabrous or slightly pubescent beneath, rachis grooved more or less pubescent with a conical gland between the lowest pair of leaflets only. Petiole to 2 cm, eglandular, petiolules 1 - 1.5 mm; pubescent, stipules linear, subulate, caducous; axillary racemes, bracteoles 2, linear, 3-4 mm, pedicel longer, 1-1.5 cm. Flowers bright yellow, to 1.5 - 2 cm across. Calyx-lobes 5, ovate, glabrous, apex acute, petals 5, bright yellow, subequal, oblong, obtuse, the upper petal truncate. Stamens 10; upper 3 staminodes, minute, antheriferous ones 7, subequal, 3 larger anthers beaked at apex, 4 with rounded apex; ovary subsessile, curved, pubescent, style short. Pods short;
Fig. 24. *Cassia montana* Heyne ex Roth A. Twig; B. Sepals; C. Petals; D. Stamens; E. Pistil.

Subshrub, to 2 m tall; erect; branchlets glabrescent. Leaves 10-15 cm, glandular above petioles, leaflets 4-5 pairs, opposite, oblong-lanceolate, 3.5 - 7 X 1.5 - 2.5 cm, chartaceous, glabrous, glandular - pilose, thin hairy beneath, rounded or cuneate at base, margin entire, apex obtuse or acute, apiculate, petiole 2.5-4 cm with a sessile, globose gland at its base, rachis eglandular, petiolule 1 - 1.5 mm, stipules 3 - 4.5 mm, caducous. Peduncle to 2 cm, Racemes axillary and terminal, corymbose, to 3 cm; bracts linear-lanceolate, 7 mm, pedicel to 1.5 cm. Flowers 2 cm across, yellow. Calyx-lobes 5, ovate, 7 - 8.5 X 2-3 mm; apex obtuse, mucronate, petals 5, golden colour, oblong-obovate, distinctly nerved, 8-8.5 X 3-5 mm, claw 3 mm. Stamens 10; upper-3 staminodes; with filaments 5 mm and empty anthers to 5 mm, antheriferous ones 7, 3 medium with flat filaments to 1.5 mm and erect anthers to 3.5 mm, 4 short with thin filaments to 3 mm and anthers 1 mm. Ovary subsessile, to 1.2 cm, densely appressed- pubescent, style to 2.5 mm. Pod short stipitate, slightly falcate, flat, 10-13 X 1 cm, laterally compressed, linear-oblong, acute at apices, brown with yellow margins, seeds 20-25, ovoid, 6.5 X 5 mm, sub-cylindrical, greenish-brown, smooth, glabrous. (Fig. 25).

Fairly common throughout the Eastern Ghats. Fl. September- November. Fr. December-February. Ver.N.: Ori. Kasinda; Tel. Kashindha; Tam. Payaverai. Kakavada forest (EG), PRSR & SSR 15402, 15405 (SKU); Motugudem (KMM), PRSR & SSR 15427 (SKU); G.Udyagiri (PBN), PRSR & VNR 17288 (SKU); Simhachalam (VSKP), GVS 19349 (MH); Kalijai (GJM), DHP 39589 (CAL); Manchang (KP), GPG 21030 (CAL); Hukitola R.F. (KP), GPG 23443; Tippukadu R.F. (NA), KRM 16638 (MH); on way to Borra from Anantagiri (VSKP), NPBK 806 (CAL); Rakeekonda (GJM), VNS 82970 (MH); Guwvalacheruvu-Palkonda R.F. (CDP), KSM 6414 (MH).
Fig. 25. *Cassia occidentalis* L. A. Twig; B. Sepals; C. Petals; D. Stamens; E. Pistil.

Prostrate or decumbent herbs; branches many, 15-40 cm long; branchlets downy-villous. Leaves 1.5 - 4.5 cm, variable, leaflets 16-25 pairs, linear, oblong-elliptic, inequilateral, 0.2-1 X 0.5 - 1 cm, chartaceous, glabrous above, sparsely villous below, nerves prominent, midnerve close to upper margin, base cuneate, margin ciliate, apex obtuse, mucronate, petiole 3.5 mm, with a basal stipitate gland, petiole and petiolule reduced, stipules lanceolate, to 3 mm. Flower(s) pale to bright yellow, 1 cm across, axillary, solitary or 3 in a cluster, bracteoles, 1.5 - 2 mm. Calyx-lobes 5, lanceolate, 3.5 - 4 X 0.5 - 0.1 cm, densely pubescent, apex acute; petals 5, yellow, ovate, 3.25 - 3.5 X 1 mm, clawed. Stamens 5, all antheriferous, erect, filaments to 1.5 mm, empty anthers 1-5 mm; ovary sessile, to 3 mm, densely strigose, style 0.5 - 1 mm. Pod short stipitate, flat, compressed, 3.5 X 0.4 cm, obtuse, pubescent, horned, seeds 10-15, brown, longitudinal, slightly acute at ends. (Fig.26).

Common in dry deciduous forests of the Eastern Ghats. Fl. & Fr. : August-November. Ver. N.: Ori. Ot-loandro; Tel. Nallajeeluga. Chittaru (SLM), PRSR 17228 (SKU); Kalasamudram R.F. (ATP), TP & EC 2803; Kanghatra (KLHN), SKM 4309 (CAL); Gingee R.F. (SA), KRM 13054 (MH); Narthamalai (TRCNP), KRM 25932 (MH); Near Duggama Konda Temple (CDP), KSM 6356 (CAL).


Small or middle sized trees, to 10 m height; bark brownish, rough; wood red in colour, delicate, thin, branchlets tomentose. Leaves 15-25 cm long, rachis glabrescent, leaflets 8-15 pairs, sub-opposite, leaves oblong-elliptic or ovate, inequilateral, 2- 3.5 X 1-1.5 cm, coriaceous, woolly below, glabrous above, young leaves densely yellow pubescent, base subacute, margin entire, apex obtuse, petiole to 1 cm, rachis and petiole eglandular, petiolule to 2 mm, stipules ovate, muriculate, caducous. Racemes axillary, corimbose, 15-20 cm, peduncle to 3 cm, bracts ovate, apex acuminate, 0.5-1 cm; bracteoles to 2.5 mm, pedicel to 1 cm. Flowers pinkish or rose, to 2 cm across. Calyx-lobes 5, ovate, 0.4-1.1 cm, apex obtuse. Petals 5, flame-coloured, ovate-oblong, 0.8 - 1.1 X 0.8 - 9 cm, concave, pubescent without, claw to 2 mm. Stamens 10, all fertile, upper 2 short, with erect filaments to 1 mm and anthers to 2 mm, lower 3 large with curved filaments to 3 mm and erect anthers 5-8 mm, 2 medium with erect filaments to 1 cm and anthers with curved beak to 4
Fig. 26. *Cassia pumila* Lam. A. Twig; B. Sepals; C. Petals; D. Stamens; E. Pistil.
Fig. 27. *Cassia roxburghii* D C. A. Twig; B. Sepals; C. Petals; D. Stamens; E. Pistil.

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*Fig. 27.* *Cassia roxburghii* D C. A. Twig; B. Sepals; C. Petals; D. Stamens; E. Pistil.

Occasional in the Southern Eastern Ghats, frequently found in the Northern Eastern Ghats. Fl. & Fr. : August-December. Ver. N.: Tam. Valkal, Guvvalacheruvu (CDP), PRSR & VSL 17236 (SKU); Chandragiri (CTR), PRSR & VSL 17256 (SKU); Near Ramba (GJM), DHP 39600 (CAL); Cuddalore to Villapuram (SA), PPM 18142 (CAL); Pakamalai R F - Gingee (SA), KRM 52881 (MH & CAL); Horsely hills (CTR), CECF 4399 (CAL).

Cassia senna

Shrub, 1-1.5 m tall, bark pale-yellowish-brown dark, glabrous; branchlets sub-glabrous. Leaves alternate, 6-9 cm long, leaflets 4-7 pairs, opposite, ovate-lanceolate, 1-3 X 0.5 - 0.9 cm, chartaceous, glabrous above, appressed-pubescent below, base cuneate, margin entire, apex acute, apiculate, petiole to 1.5 cm, petiole and rachis eglandular, petiolule to 1 mm, stipules 1.5 mm, spreading or reflexed. Peduncle to 2.5 cm, racemes terminal or axillary, branched or simple to 8 cm, bract ovate, to 2 mm; bracteole to 1.5 mm, pedicel to 5 mm. Flower greenish yellow, 1.5 cm across. Calyx-lobes-5, spatulate, concave, 8-9 X 3-3.75 mm, petals 5, yellow, orbicular-ovate, to 8-9 X 2-4 mm, claw to 2 mm. Stamens 10; upper 3 staminodes to 7-9 mm, antheriferous ones 7, lower large with filaments 2 mm and curved anther to 1 mm, one medium with filament to 1 mm and anther to 1 mm, 4 short, with filaments 0.5 mm and anthers to 4 mm. ovary stipitate, to 9 mm, densely yellowish-pubescent, style 3 mm. Pod short-stipitate, oblong-ovate, compressed, flat. 5 X 2 cm, strongly nerved, greenish black, shortly beaked at apex, indehiscent; seeds Ca 8, ovoid, membranous, 7 X 4 mm, longitudinal. (Fig.28).

Common in the foothills of the Eastern Ghats, cultivated. Fl. & Fr.: July.-September. Ver. N.: Tam. Ponnavari, Kilaikadu (SLM), PRSR 17230 (SKU); Chinnasalai - Kalla Kurichi way (SA), KRM 77301 (CAL); Pachamalais (TRCNP), KMM & NVGP 15691 (MH); Gumkidamarea (SA), KRM 50669 (MH); Nellimalai R.F. (CBT), KRM 14092 (MH).
Fig. 28. Cassia senna L. A. Twig; B. Sepals; C. Petals; D. Staminodes; E. Stamens; F. Pistil.

Moderately-sized trees, 6-10 m tall; bark grey, longitudinally fissured bark, wood dark brown to nearly black, hard and durable; branchlets glabrescent. Leaves 15-20 cm, leaflets 7-10 pairs, elliptic-oblong, 2.5-6 X 1.5-2 cm, coriaceous, glabrous above; pilose below, nerves prominent, base and apex obtuse, margin entire, petiole to 2.5 cm, rachis and petiole eglandular, petiolule to 3 mm, stipules subulate, to 1 mm, caducous. Panicles terminal and axillary, corymbose, to 30 cm; peduncle equal to pedicel, bracteole to 6 mm, obovate. Flowers yellow, to 2 cm across; calyx-lobes-5, ovate, outer 2 smaller, 6-6.5 X 3-4 mm, inner 3 large 7-8 X 4.25 - 6 mm, concave, apex obtuse. Petals 5, golden colour, ovate elliptic, 6.5-9 X 4-6 mm, claw to 1.2 X 6 mm. Stamens 10; upper 3 staminodes; with erect filaments 7.5 - 8 mm and empty anthers to 3 mm, antheriferous ones 7; lower 2 large, with filaments to 2.5 mm and empty anthers to 5 mm, one medium with filament 1.5 mm and anther to 3 mm, others short, with filaments 2 mm and anthers 5 mm, ovary sessile, to 7.5 mm, deeply grooved, pubescent, style 2-5 mm. Pod long stipitate, strap-shaped, flat, 20-25 X 1-1.5 cm, compressed, woody, with thick sutures, seeds 20-30, longitudinal. (Fig.29).

Common in Eastern Ghats, avenue tree and naturalised. Fl. & Fr.: July-December. Ver.N.: Tel. Seematangedu, Nialatangedu; Tam. Sinnakennai, Kassod, Seemalaqari. Simhachalam (VSKP), PRSR 15460 (SKU); Mahendra hills top (GJP), PRSR & VNR 17279 (SKU); Kambukudi poovankolam R.F. (NA), KSM 6051 (CAL); Shevaroy hills (SLM), PPM & CMNH 16411 (CAL); Kothuru (VSKP), NPBK 889 (CAL); Salur (SKLM), NPBK 968 (CAL); Balapalli (CDP), JLE 14295 (MH); Sudikonda (EG), GVS 27409 (MH).


Shrubs or diffuse under shrubs, upto 3 m tall, branchlets nearly glabrescent. Leaves 9-12 cm long, with a solitary conical gland near the base, rachis grooved. Leaflets 6-10 pairs, oblong-lanceolate, 2-4 X 0.8 - 1.2 cm, glaucous, base cuneate, margin entire, apex acuminate, mucronate, membranous, glaucous, lanceolate, acute or acuminate, main nerves 10-12 pairs. Petiolules 1-1.5 mm long, glabrous. Corymbose racemes axillary, short, few-flowered. Pedicel 0.5 mm long, pubescent, bracts small, green, ovate, acute, caducous. Flowers yellow, to 2 cm across. Calyx lobes-5, obtuse, 6-8 X 5.5-6 mm, green. Petals 5, subequal, ovate, obtuse, 9-9.5 X 3-4.5 mm, yellow. Stamens 10, the upper 3 are reduced to staminodes, with filaments 2 mm and empty curved anthers.
Fig. 29. *Cassia siamea* Lam. A. Twig; B. Sepals; C. Petals; D. Staminodes; E. Pistil; F. Stamens.
Fig. 30. *Cassia sophora* L. A. Twig; B. Sepals; C. Petals; D. Stamens; E. Pistil.
7 mm, the remaining 7 usually perfect, lower 3 longer with filaments 1 mm and empty anthers 4.5 mm, 4 lateral ones of which one is sometimes reduced to a staminode, with filaments 3 mm and anther 1 mm. Ovary stipitate; 5 X 1 mm, glabrous, incurved, style 1 mm, glabrous. Pods 7-12 X 0.6-0.8 cm, linear-oblong, apiculate, septicate, straight or slightly curved; seeds 30-40, broadly ovoid, flat, acute, compressed, dark-brown. (Fig.30).

Occasional in Eastern Ghats. Fl. & Fr.: July-January. Ver. N.: Ori. Ghodachakunda, Tel. Pydittangedi, Tam. Ponavarai. Gundlabrahmeswaram (KNL), PRSR 17271 (SKU); Near Kodupalti (G. Udyagiri) (PBN), PRSR & VNR 17286 (SKU); way to Deovall (KP), PRSR & VNR 17299 (SKU); Peddakonda R.F. (ATP), NY 1218 (SKU); Lanjigash (KLHN), SKM 263 (CAL); Nellimalai R.F. (CBT), KRM 14839 (CAL).


Large shrubs or small trees, 2-7 m tall, branchlets glabrous, terete. Leaves 10-14 cm, stipules linear, persistent, rachis with glands between the lower, rarely between all the leaves, leaflets 8-12 pairs, 2-2.5 X 1 - 1.5 cm, elliptic-oblong, base obtuse, margin entire, apex obtuse, glaucous, membranous. Petiole small, eglandular, petiolules 1-1.5 mm; glabrous, bracts small, reflexed, green; caducous. Flowers in axillary and terminal corymbose racemes. Peduncle long, pedicel 1-1.5 cm. Flowers yellow, 1.5 cm across. Calyx lobes 5, lateral small, to 4 X 1.25 mm, 3 are larger 5.75 - 6 X 4-5.25 mm, ovate, apex horned. Petals 5, yellow, obovate, 7-8.5 X 2-4.75 mm, distinctly nerved. Stamens 10, all antheriferous, 5 long, 5 short, 5 long with erect filaments to 1 mm and empty anther 6 mm, 5 short with erect filament 0.75 mm and empty anther 4 mm. Ovary subsessile, to 7 mm, stipitate, glabrous, style short, to 1 mm. Pod 10-15 X 1.5-2 cm, flat, glabrous, linear-oblong, seeds 10-12, compressed, glabrous, dark brown. (Fig.31).

Common in almost all dry deciduous forests of the Eastern Ghats. Fl. & Fr.: October-January. Gani Rf;(KNL), TP & RVR 1792 (SKU); Theetagunta R.F, near Annavaram (EG), GVS 68675 (MH).

Fig. 31. *Cassia suffruticosa* Koen. ex Roth. A. Twig; B. Sepals; C. Petals; D. Stamens; E. Pistil.
Shrubs or small trees, 5-9 m tall; branchlets sparsely pubescent. Leaves bipinnate, 12-15 cm long, rachis pale, puberulous, with a clavate gland between each of the 2-3 basal pairs of leaflets, stipules short, linear, acute, falcately curved, caducous. Leaflets 4-6 pairs, 1.5-3 X 1.15 cm (the lower pair the smallest), elliptic-oblong, subacute, pale green and glabrous above, glaucous and slightly pubescent or glabrous beneath, base rounded, margin entire, apex obtuse, petiole to 2.5 cm, eglandular, petiolule to 1.5 mm, pubescent, racemes axillary corymbose, to 5 cm; peduncle to 4.5 cm, bracts linear, lanceolate, to 6 mm, pedicel to 2 cm. Flowers yellow, 1 cm across. Calyx lobes 5, ovate, unequal, outer 3 smaller, 5-7 X 1-3 mm, inner larger 1-0.9 X 0.5 - 0.6 cm, yellow, glabrous, membranous, reticulately veined, oblong or sub orbicular, Petals 5, yellow, ovate, 1-1.2 X 0.6-1 cm, clawed, broadly oblong, obtuse. Stamens 10, all antheriferous, subequal, 2 + 1 + 4 + 3, filaments long 1.5 mm, medium 1 mm, smaller 0.75 mm, anthers large 7 mm, medium 3.5 mm, smaller 2 mm. Ovary stipitate, to 1 cm, tomentose, style to 4 mm; curved. Pods flat, 15 X 2 cm, thin with oblique partitions between the seeds, linear, straight or very slightly curved, glabrous or with a few scattered hairs, compressed, strongly nerved, obtuse at apices, horned. Seeds 25-30, oblong-ellipsoid, 7 X 4 mm, longitudinal, beaked, compressed, smooth, dark brown, shining, with a shallow oblong pit on each of the flat faces.

Rare in forests of Eastern Ghats. Planted in gardens. Fl. & Fr. August-December. Ver. N.: Tel. Kondatanged, Mettangedu; Tam. Thagarai. Gundumala R.F. (ATP), NY 1228 (MH); Horsely hills (foot hills) (CTR), CECF 1978 (MH); Galikonda (VSKP), CAB 11753 (MH); Anchetti (NA), KCJB 018033 (MH); Hill near Galikonda (VSKP) GVS 42672 (MH).


Large shrubs or small trees; branchlets pubescent. Leaves 6-9 cm long, rachis fulvous hairy without glands, stipules foliaceous, broad, with a filiform tail, subpersistent, leaflets 10-20 pairs, 1-1.5 X 0.5-1 cm, oblong, obtuse, mucronate, clothed with appressed hairs above, densely villous beneath, base rounded, margin entire, petiolules 0.2-0.5 cm, pubescent. Panicle corymbose racemes. Peduncle short, pedicel 0.5 mm, fulvous pubescent, flower bright yellow, to 1 cm across, calyx-lobes 5, divided to the base, pubescent, segments broadly oblong, obtuse, concave, the 3 outer smaller than the 2 inner. Petals 5, oblong, bright yellow, faintly veined with orange. Stamens 10, the 3 upper reduced to staminodes, the remaining 7 perfect, subequal. Ovary stipitate, pubescent, style short. Pod 5-7 X 0.5-1 cm, stalked, slightly tapering to both-ends, straight,
flat, thin, glabrous and shining, the sutures thin. Seeds 16-20, obovoid-cuneate, much compressed, with an oblong shallow pit on each face.

Occasional in Southern-Eastern Ghats. Fl. August-December. Fr. All most throughout the year. Shevaroys-Yercaud lake (SLM), KMM, NVGP & TSJS 18829 (CAL); Along lake side of Yercaud (SLM), SKT 23627 (MH).


Annual herbs, to 60 (120 cm); branchlets glabrous; crisped hairy in young branches. Leaves 5-7 cm long; subsessile or shortly petiolulated, leaflets 3 pairs, obovate-oblong, 2-3 X 1-1.5 cm, thin-coriaceous, glabrous above, pubescent below, base cuneate-rotund, margin entire, apex obtuse, apiculate, petiole to 2 cm, eglandular, racis with 2 glands between two lowest pair of leaflets, petiolule to 2mm, stipules linear, falcate, 0.6 - 1 cm, racemes terminal, corymbose; bracteoles 2, linear, 3-4 mm, peduncle short, pedicel to 1 cm. Flowers golden yellow with reddish tinge, 1.5 - 2 cm across. Calyx-lobes 5, ovate, 6.5-8 X 2-5.5 mm, pubescent, apex obtuse. Petals 5, golden yellow, obovate, subequal, 1-1.4 X 0.5-0.7 cm, claw to 1 cm. Stamens 10; upper 3 staminodes to 6.5 mm, antheriferous ones 7; 2 lower one small with erect filaments to 2.75 mm and anthers 1.75 mm, abruptly tapering at the ends. one medium with filament to 1.5 mm and oblong anther to 1 mm, 4 short ones with filaments to 2.75 mm and oblong anthers 2.75 mm. Ovary subsessile, to 1.5 cm, curved, pubescent, style to 4 mm. Pods short-stipitate, flat, compressed, 9 X 0.4 - 0.6 cm, glabrous, septate between seeds, seeds 20-30, oblong, longitudinal. (Fig.32).

Common on hill edges of the Eastern Ghats. Fl. September.-November. Fr. November-December. Ver. N.: Ori. Chakunda, Dhola chakunda; Tel. Tantipu; Tam. Tagerai. Sethampet Forest (SKLM), PRSR 15464 (SKU); Motugedum forest (KMM), PRSR 15429 (SKU); Palakonda (CDP), PRSR & VSL 17249 (SKU); G.Udyagiri Forest (PBN), PRSR & VNR 17289 (SKU); Hukitola Forest (GTM), GPG 23639 (CAL); Kollayagr R.F. (NA), MBVN 502 (CAL) Vepampalli R.F. - Harur (DMF), EVV 51830 (CAL); Mederametta (PKM), RKM 024 (CAL); Balapalli (CDP), JLE 15027 (CAL); Salur (SKLM), NPBK 1150 (CAL); Chelama (KNL), JLE 22030 (MH).
Fig. 32. *Cassia tora* L. A. Twig; B. Sepals; C. Petals; D. Stamens; E. Pistil.
**DELONIX** Rafinesque

Key - I

1. Petals margin fimbriate; stamens twice as long as petals ...
   - D. elata
1. Petals margin not fimbriate; stamens nearly equal to or shorter than petals ...
   - D. regia

Key - II

1. Bark black, wood strong, yellowish white, pods 8-15 cm long ...
   - D. elata
1. Bark grey to pale brown; wood soft, white, pods 30-40 cm long ...
   - D. regia


Trees upto 12 m tall, bark black; wood strong, yellowish-white; branchlets warty puberulous. Leaves 15-20 cm long, pinnae 6-9 pairs, 4-6 cm long. Leaflets 10-22 pairs, oblong-elliptic, 0.5 - 1 X 0.1 - 0.3 cm, chartaceous, puberulous, base cuneate, margin entire, apex obtuse; petiole to 4 cm; petiolule 0; stipules caducous, bracts small, caducous; racemes terminal, corymbose, to 10 cm; peduncle to 1.5 cm; Pedicel to 2.5 cm; pubescent. Flowers yellowish white, to 5 cm across. Calyx 5-lobes, to 5 mm, thick, spathaceous in bud, lanceolate-elliptic, 1.8 - 2 X 0.3 - 0.5 cm. Petals 5, cream, becoming yellow, obovate suborbicular, 8-9 X 6.5 - 8 mm, shortly clawed, margins curled and fimbriate. Stamens 10, much exserted, subequal, filaments subulate, to 1 cm and empty, anthers 5 mm, villous at base; ovary to 8 mm, sub-sessile, densely pubescent, flat; style to 5 mm. Pod 8-15 X 2.5-3 cm long, pale to dark brown, linear or oblongate, glabrous, reticulate, apices attenuate, horned, sutures grooved; seeds Ca 10. (Fig.33).

Cultivated as avenue tree, occasionally run wild in most part of the Eastern Ghats. Fl. & Fr.: December-June. Ver. N.: Tel. Chitti-Kesar, Sunkesula; Tam. Vedanarayanan, Vadamudukki, Vaaracchi. Dhone South R.F. (KNL), PRSR 15491 (SKU); Chitturu (SLM), PRSR 17231 (SKU); Veeranum kadaladi (NA), EVV 54531 (CAL); Kolli hills (TRCNP), PPM 22517 (CAL); Chandragiri (CTR), CAB 610098 (MH).

Fig. 33. *Delonix elata* (L.) Gamble A. Twig; B. Sepals; C. Petals; D. Stamens; E. Pistil.
PLATE 8:

A. Cassia montana Heyne ex Roth

B. Delonix elata (L.) Gamble
Fig. 34. *Delonix regia* (Boj. ex Hook.) Rafn. A. Twig; B. Sepals; C. Petals; D. Stamens; E. Pistil.
Deciduous trees, 9-12 m tall; with an equal spread of the crown. With grey to pale-brown bark, wood is soft, thick, white, branchlets warty puberulous. Leaves 10-30 cm long, pinnae 8-20 pairs, leaflets 12-30 pairs, oblong-elliptic, 0.7 - 1 X 0.4 - 0.5 cm, glabrous or nearly so, base oblique, margin entire, apex obtuse; petiole to 4 cm; petiolule o; stipules caducous. Racemes terminal, simple or branched. Flowers crimson red in colour, to 3 cm across. Calyx-tube lobes 5, short, to 3 mm, thick, spathaceous in bud, lanceolate-elliptic, 1.6 - 1.9 X 3-4 cm; petals 5, cream becoming yellow, obovate, suboricular, 1.5 - 1.6 X 0.9 - 1.2 cm, with elongated clawed, margins not fimbriate, stamens 10, much exerted, stamens nearly equal to or shorter than petals, filaments subulate, to 1.1 cm and empty anthers 5 mm, villous at base; anthers linear, ovary densely pubescent, sub-sessile, flat, to 9 mm, style to 6 mm; filiform. Pods 30-60 X 3-4 cm, broadly linear, woody, dark brown or reddish brown, flat, beaked, dehiscent. Seeds Ca 8, oblong, glabrous, smooth, white or creamy white. (Fig.34).

Common in almost all parts of the Eastern Ghats. Planted in gardens and along road sides. Fl. April-June. Fr. May onwards. Ver. N.: Ori. Gulmohar; Tel. Sunkesula; Tam. Pedenarayan. Sunkarimetta (VSKP), PRSR 15473 (SKU); Simhachalam hill (VSKP), DCSR 1849 (CAL); Salur-koraput ghat road (KP), RSR 18409 (CAL); Javalagiri forest Rest House (DMP), KMM & NVGP 23236 (CAL); Keerai kadu (SLM), SKT 26640 (MH); Gullemallebad R.F. (KNL), RVR 1438 (SKU).

HARDWICKIA Roxburgh


Large deciduous trees, 14-20 (30) m tall; bark dark grey, rough; wood extremely hard and heavy, dark red coloured, streaked with black or purple; branchlets glaucous. Leaves 2-foliolate, 3-6 cm; leaflets ovate-trapezoid, 2.5-5 X 1.5-3 cm, thick coriaceous, 3-6-nerved from base, glabrous, base oblique, cuneate, margin entire, apex obtuse, rachis with an apical deciduous bristle; petiole to 2 cm; petiolule o; stipules caducous. Panicles axillary or terminal, to 10 X 4 cm; peduncle to 3 cm; bracts minute, caducous, bracteoles scale-like; pedicel to 3 mm. Flowers pale-yellowish, small, to 8 mm across. Calyx-lobes 5, petaloid, greenish-cream, oblong-ovate, 6-8 X 1.25 - 1.75 mm, spreading. Petals 0. stamens 10, subequal, with filaments 1.75 mm and empty anthers 2.25 mm, anthers ovoid. Ovary sessile, ovoid, to 5 mm, slightly glabrous, style to 3 mm; filiform. Pod strap-shaped, 6.5 - 7.5 X 1 - 1.5 cm, flattened, winged, 2-furrowed, glabrous; dry, 1-seeded follicle, the
Fig. 35. *Hardwickia binata* Roxb. A. Twig; B. Sepals; C. Sepals (other flower); D. Stamens; E. Pistil.
seed at the apex where the pod dehisces, base samaroid, seed pendulous, obovate, flattened. (Fig.35).

Common in Dry deciduous forests of the Eastern Ghats. Fl. & Fr.: August-January. Ver.N.: Tel. Yepi; Tam. Acha. Bogada Forest (KNL), PRSR 15455 (SKU); Dhone R.F. (KNL), PRSR 15490 (SKU); Muchukota R.F. (ATP), JSG 11085 (CAL); TP & NY 1138 (SKU); Macherla R.F. (GNT), VRK 3541 (SKU); Anchettu-Kunthukottai (DMP), EVV 57899 (CAL); Natrampalayam forest (DMP), EVV 57960 (CAL); Pachamalais (TRCNP), KMM & NVGP 15653 (CAL); Shevaroy hills (SLM), DHP & CMNH 16408 (CAL); Kambakkam hills (CGP), CAB 16477 (MH).

**PARKINSONIA** Linnaeus

*Parkinsonia aculeata* L. Sp. PI. 375. 1753; FBI 2: 260. 1878; Gamble 1: 397 (281) 1919.

Small trees or armed shrubs, 4-6 m tall; branchlets tomentose; spines erect, woody. Leaves bipinnate, to 3.5 cm; main rachis short, spiny; pinnae 2-3 pairs, long, striate, flattened. Leaflets small, Ca 50 pairs, sub-opposite, oblanceolate, 0.3-0.6 X 0.1-0.3 cm, chartaceous, base cuneate, margin entire, apex obtuse; petiolule short, stipules spinescent, stipels 0. Racemes axillary or terminal, to 20 cm, peduncle to 2-5 cm; bracts caducous; bracteoles 0, pedicel to 1.5 cm. Flowers yellow, 1.5 cm across. Calyx-tube short, lobes 5, disc lined, oblong, 5.5-6.2 mm, subequal, subclavate. Petals 5, yellow, obovate- suborbicular, unequal, 6 X 5.6 mm, upper one to 6 X 6 mm, claw short, to 6 X 2 mm, stout and villous. Stamens 10, free, filaments subequal, 3.5-4 mm and empty anthers 1.5 mm, subulate, densely villous. Ovary sessile or shortly stalked, to 5 mm, style attenuate, to 2 mm. Pods 8-9 X 0.7-1 cm, torulose, turgid above, dehiscent, finely nerved, glabrous attenuate, at apices; seeds 2-6; oblong; smooth, oblique or longitudinal, dark brown. (Fig.36).

Occasional in dry deciduous and scrub forest of the Eastern Ghats. Fl. & Fr.: July-December. Ver. N.: Tel. Simatunma; Tam. Naivelan. Avuku Forest (KNL), PRSR 17233 (SKU); Near Serikoda Forest (RYG), PRSR 17293 (SKU); Mulachintapalli (MBNR), PRSR & TDCK 13641 (SKU); Near Turakapat (SKLM), GVS 62399 (CAL); Talchna (KP), GPG 23788 (CAL); Pachamalais (TRCNP), PPM 22557 (CAL); Chandragiri (CTR), CAB 9923 (MH); Near Tummala bailu (PKM), NRR & VBH 83763 (MH); Sathia hope to Keeranur (SA), KRM 53565 (MH).
Fig. 36. *Parkinsonia aculeata* L. A. Twig; B. Sepals; C. Petals; D. Stamens; E. Pistil.
PELTOPHORUM (Vogel) Benth nom. cons.


Trees, 15-20 m tall; bark brown colour, wood whitish-yellow, thick, hard, younger parts rusty-brownly or greyish-tomentose. Leaves 15-20 cm long, alternate, pinnae 6-9 pairs, 7-10 cm long, leaflets opposite, 9-16 pairs, obliquely-oblong, 1-2 X 0.5 - 0.8 cm, glabrous; broadest on the upper side of the midrib, semi-cordate at base, margin entire, apex obtuse, nerves are distinct. Panicles terminal and axillary, reddish brown rusty tomentose, to 10-35 cm long. Flowers bright yellow, to 1.5 cm across. Calyx-lobes 5, oblong, 6.7-25 X 4-5 mm, subequal, subclavate, petals 5, red in colour, obovate-suborbicular, subequal 0.6-1 X 0.5-0.7 cm, stout, long, ferruginous hairs on back; stamens 10, subequal, free, filaments to 3-4 mm, empty anthers to 4 mm; subulate, filaments with tufts of silky hair at base, to 2 mm, ovary subsessile, 3 mm; glabrescent, style attenuate, to 7 mm. Pods flat, indehiscent, 4-10 X 1.5 - 2.5 cm; lanceolate, dark brown woody, seeds obovate-oblong, compressed, smooth, glabrous. (Fig.37).

Planted as an avenue tree. Fl. March-August. Fr. April- December. Ver, N.: Tel. Pachasunkesula, Konda Chinta; Tam. Lyaluakal, Perunbonnai. Kusemi Forest (SKLM), PRSR 15471 (SKU); Near Kolikoti (PBN), PRSR 17285 (SKU); Padampur (KP), GPG 21070 (CAL); Salur Koraput Ghat (KP), RSR 18412 (CAL); Vecranam palli (SA), NVGP 22688 (CAL); Gourkella (KLHN), SKM 4252 (MH); Coimbatore (CBT), KSM 2526 (MH); Hassanur (CBT), KCJB 224 (MH).

PTEROLOBIUM R.Brown ex Wight & Arnott nom. cons.


Small trees or straggling shrubs, to 6 m tall; branchlets stellate-tomentose; branches dark pink, prickly, prickles recurved, strong, glabrous. Leaves bipinnate, 12-18 cm long, prickly, pinnae 6-9 pairs, 5.5 - 7.5 cm long; leaflets 8-10 pairs, ovate-oblong, 1-1.5 X 0.5-1 cm, chartaceous,
Fig. 37. *Peltophorum pterocarpum* (DC.) Backer ex Heyne A. Twig; B. Sepals; C. Petals; D. Stamens; E. Pistil.
PLATE 9:

A. *Parkinsonia aculeata* L.

B. *Peltophorum pterocarpum* (DC.) Baker ex Heyne
Fig. 38. *Pterolobium hexapetalum* (Roth.) Sant. & Wagh A. Twig; B. Sepals; C. Petals; D. Stamens; E. Pistil.
caducous, glabrous, base cuneate-truncate, margin entire, apex obtuse or retuse. Petiole to 3 cm; petiolule o; stipules and stipels caducous. Racemes axillary or terminal, to 15 X 5 cm, peduncle to 5 cm; pedicel to 2 cm. Bract subulate, bracteoles o; Flowers white with a red tinge, to 1.5 cm across. Calyx-tube short, to 5 mm, persistent, lobes 5, unequal, 3-4 X 1.25 mm; obovate-oblanceolate, hooded. Petals 5, white, subequal, 4 X 1-1.25 mm spreading-suberect, pubescent, clawed, base callose. Stamens 10, free, filaments subequal, 3-4 mm. Subulate, basally villous; anthers uniform to 1 mm. Ovary sessile, to 2 mm, style filiform, 3 mm. Pods samaroid, dark green below. (enclosing the single seed), with reddish terminal wing above, oblong, 3-4 X 1 cm, indehiscent, apically winged, seed solitary, at base flattened, obovoid, 7 x 5 mm. (Fig.38).

Common in most parts of the South-Eastern Ghats. Fl. March-May. Fr. April-December. Ver.N.: Tel. Korintha, Pariki, Tam. Karindu, Pulliindu. Bogada Forest (KNL), PRSR 15454 (SKU); Kollihills (TRCNP), PPM 23502 (CAL); Morappur R.F. (DMP), EVV 518760 (CAL); Shevaroys Yercaud Ghat Road (SLM), KMM 23486 (CAL); Innerjavadi R.F. (NA), KSM 6026 (CAL); Nellimalai R.F. (CBT), KRM 14054 (MH); Balapalle (CDP), JLE 15758 (MH); Kondapalli hills (KSN), CAB 8136 (MH); Chelama (KNL), JLE 16731 (MH); Foot of Pachamalai (TRCNP), KMS 6144 (MH).


Small trees or large shrubs, 8-10 m tall. Bark greyish coloured, rough, wood reddish-brown, soft, branches glabrous. Leaves even pinnate, 20-25 cm long, rachis glabrous, cory at the base. Leaflets 4-6 pairs, 15 X 7 cm oblong-lanceolate, obtuse or acute, quite glabrous, base rounded or cuneate, slightly oblique; petiolules short, stout, wrinkled, stipels intrapetiolar, deciduous. Flowers fragrant, brilliant orange yellow scarlet, pink with age in short dense often sub-lateral corymbose panicles; peduncles stout; pedicels very short, red, glabrous; bracts ovate, subacute; bracteoles 2, appearing like calyx, spathulate-oblong, subacute, ciliolate, amplexicaul, coloured. Calyx passing from yellow to orange and finally red; 0.8 - 1.1 X 0.3 - 0.4 cm, sold at the base, segments 4, obovate-oblong, petals 0. Stamens 7, much exserted, filaments filiform, thrice as long as the calyx-segments; 1.2 - 1.8 cm; anthers purple. Ovary long, stipitate, glabrous, 7 mm; style curved; to 4 mm. Pod 7 - 9 X 2.5 - 3.5 cm, orange red colour, flat, linear,
Fig. 39. *Saraca asoca* (Roxb.) de Wilde. A. Twig; B. Sepals; C. Bracts; D. Stamens; E. Pistil; F. Bracts entire; G. Pod.
coriaceous or almost woody, tapering to both ends, compressed, glabrous, veined, seeds 4 - 8, obovate-orbicular, compressed, 1.5 cm. (Fig.39).

Occasionally planted in gardens in Eastern Ghats Fl.: March- April. Ver. N.: Ori Ashoko; Tel. Asokamu; Tam. Asoka, Asavu. Tirumala hills (CTR), PRSR 17258 (SKU); Palkond hills (VSKP), JLE 25513 (MH) and JSG 14037 (CAL).

**TAMARINDUS** Linnaeus


Trees, about 15-30 m tall; bark is dark grey, fissured; wood dark purplish-brown colour, very hard and heavy, branchlets warty tomentose. Leaves even pinnate, 8 cm long; leaflets 13-16 pairs, narrowly oblong, 1.5 X 0.7 cm, chartaceous, glabrous or puberulous, base and apex obtuse, margin entire, petiole to 7 mm, petiolule reduced; stipules caducous. Racemes terminal on short branchlets, to 5 X 2 cm; peduncle to 1 cm; bracts and bracteoles ovate, oblong, coloured; pedicels to 4 mm; buds pinkish-red. Flowers yellow with pink string, to 1 cm across. Calyx-tube narrowly turbinate; to 7 mm, lined by disc, lobes 4, subequal, oblong. 8 X 2.75 - 3.5 mm. Petals 3, yellow, outer one to 9 X 1.75 mm, rolled up, pink-dotted, laterals clawed, subequal, 8 X 2.25 - 3 mm, oblong-oblancoelolate, stamens 3, monadelphous, filaments to 6 mm, base pubescent, empty anthers 2 mm, ovary stipitate, to 5 mm; tomentose, style attenuate, 3 mm. Pod linear-oblong, to 10-15 X 1-2 cm, slightly compressed, falcate, thick, fruit wall crustaceous, leathery, indehiscent, seeds 3-8 or more, obovoid, orbicular, compressed. (Fig.40).

Common throughout Eastern Ghats, cultivated and self-sown. It is planted as an avenue tree. Fl. April-June. Fr. December-March. Ver. N.: Ori. Kaiyan. Tel. Chinta. Tam. Puli. Kakavada Forest (EG), PRSR & SSR 15406 (SKU); Pad co ru 12th mile stone (VSKP), PRSR 15485 (SKU); North Dhone RF (KNL), RVR 1312 (SKU); on the way towards Punyagiri hills (VSKP), GVS 19401 (MH); Salur-Koraput Ghat Road (KP), RSR 18401 (CAL); Khandijharan (GJM), GPG 20905 (CAL); Pachidya (GJM), VNS 5847 (MH); Kolli hills (TRCNP), PPM 23528 (CAL); Shevaroys, Kuppanus to Kottachedu Jeep Road (SLM), KMM, PPM & CMNH 16579 (CAL).
Fig. 40. *Tamarindus indica* L. A. Twig; B. Sepals; C. Petals; D. Stamens; E. Pistil; F. Pod.
PLATE 10:

A. *Saraca asoca* (Roxb.) de Wilde

B. *Tamarindus indica* L.
MIMOSACEAE

1. Flowers tetrameric ••• Mimosa

1. Flowers pentamerous

2. Stamens 10

3. Plants armed

4. Flowers bicoloured ••• Dichrochostachys

4. Flowers monocoloured ••• Prosopis

3. Plants unarmed

5. Flower in globose heads

6. Aquatic or terrestrial herbs or small shrubs

7. Flowers yellow in colour ••• Neptunia

7. Flowers white in colour ••• Desmanthus

6. Large shrubs or small trees

8. Wild; pinnae only 2 ••• Xylia

8. Planted; pinnae more than 2 pairs

9. Branchlets glabrescent, bark smooth, wood delicate, pinnae 3-8 pairs

leaflets 10-15 pairs ••• Leucaena

9. Branchlets pubescent, bark rough, wood hard, pinnae 20-40 pairs

leaflets 60-80 pairs ••• Parkia

5. Flower in elongated spike

10. Gigantic lianas, pinnae 2 pairs, leaflets 2-8 pairs ••• Entada

10. Trees, pinnae 4-6 pairs, leaflets 5-8 ••• Adenanthera

2. Stamens many

11. Unarmed

12. Trees

13. Petiole glandular ••• Albizia

13. Petiole eglandular ••• Samanea

12. Large shrubs ••• Calliandra

11. Mostly armed

14. Pinnae 1-pair ••• Pithecellobium

14. Pinnae more than 1-pair ••• Acacia
(in *Acacia auriculiformis* phyllodes are present unarmed small tree)

KEY - II

1. Plants armed
   2. Pods dehiscent
      3. Pods spirally coiled
      4. Pods bristly or spinous along the margins
      4. Pods not bristly or spinous along the margins
      (in *Acacia auriculiformis* pods coiled)
   2. Pods indehiscent
      5. Pods straight or slightly curved
      5. Pods coiled
   1. Plants unarmed.
   6. Stamens not more than 10
      7. Pods indehiscent
      7. Pods dehiscent
      8. Pods woody
      9. Pods elongate, 60-80 X 6-8 cm, indented between seeds, seeds 10-16
      9. Pods 10-15 X 4 cm, septate between seeds, seeds 4-6, pods shoe-shaped
      8. Pods not woody
      10. Seeds less than 15 (4-15)
      11. Pods short, 3-5 cm, seeds 4-7
      11. Pods 11-21 cm, seeds 8-15
      10. Seeds more than 20 (20-30)
      12. Pods 4-6 cm long, narrow, acute
      12. Pods 5-12 cm long, broad, triangular at the apex
   6. Stamens many
      13. Pods woody
      13. Pods not woody
      14. Pods straight, thin, compressed
      14. Pods recurving, thick, erect, turgid

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Note: Recently Chakrabarthy and Gangopadhyay (1996) have revised Acacia in India where they reported 20 indigenous species and 14 exotic species, now more or less naturalised in India. They reduced Acacia chundra, A. torta and A. donaldii to synonymy.

1. Erect trees or shrubs
   2. Phyllodes, falcate
   2. Phyllodes absent
      3. Pinnae less than 12 pairs
         4. Branchlets pubescent
            5. Leaflets less than 15 pairs
               6. Trees with silvery foliage
               6. Trees without silvery foliage
            5. Leaflets more than 15 pairs
               7. Flower heads terminal
               7. Flower heads axillary
                  8. Flowers yellow
                  8. Flowers greenish white
            4. Branchlets glabrous
               9. Leaflets not more than 12 pairs
                  10. Stipular thorns equal
                  10. Stipular thorns unequal
                     11. Trees forming umbrella like shape at old
                     11. Trees not forming umbrella like shape at old
               9. Leaflets more than 12 pairs
                  12. Flowers in spikes
                  12. Flowers in globes heads
                     13. Leaf rachis with glands
                     13. Leaf rachis without glands
               3. Pinnae more than 12 pairs
                  14. Leaf rachis glabrous, leaflets 15-25 pairs
                  14. Leaf rachis pubescent, leaflets 25-40 pairs

... A. auriculiformis
... A. dealbata
... A. modestae
... A. leucophloea
... A. nilotica
... A. tomentosa
... A. lenticularis
... A. horrida
... A. eburnea
... A. decurrens
... A. planifrons
... A. farnesiana
... A. ferruginea
... A. catechu
1. Climbing shrubs
15. Leaflets 32-45 pairs
   16. Flowers sessile
   16. Flower pedicelled
15. Leaflets 10-35 pairs
   17. Pinnae 8-15 pairs
   17. Pinnae 6-8 pairs

   ... A. hohenackeri
   ... A. pennata
   ... A. sinuata
   ... A. caesia

KEY - II

1. Stipular spines present
2. Pods stipitate
   3. Leaflets between 3-17 pairs
      4. Pods straight
      4. Pods curved
      5. Pods cylindric
      5. Pods flattened
   3. Leaflets between 15-60 pairs
      6. Pods moniliform
      6. Pods not moniliform
      7. Young pods tomentose
      7. Young pods glabrous

2. Pods sessile or subsessile
   8. Pods tomentose
   9. Pods distinctly constricted between seeds
      9. Pods not distinctly constricted between seeds
   8. Pods glabrous
   10. Seeds many
      10. Seeds 2-8
      11. Pods turgid
      11. Pods flat
      12. Pod apex horned
      12. Pod apex not horned

1. Stipular spines absent or rudimentary

... A. modeste
... A. farnesiana
... A. eburnea
... A. nilotica
... A. tomentosa
... A. ferruginea
... A. leucophloea
... A. decurrens
... A. catechu
... A. planifrons
... A. horrida
... A. lenticularis
13. Pods stipitate
14. Pods thick, much wrinkled
14. Pods thin, straight
15. Seeds 2-7
15. Seeds 8-14
16. Pods apex horned, coppery turning brown
16. Pods apex not horned, brown
13. Pods sessile or sub sessile
17. Pods coiled
17. Pods not coiled or twisted

\[ \text{A. hohenackeri} \]

15. Seeds 2-7
14. Pods thick, much wrinkled
14. Pods thin, straight

\[ \text{A. sinuata} \]

15. Seeds 8-14
16. Pods apex horned, coppery turning brown
16. Pods apex not horned, brown
13. Pods sessile or sub sessile
17. Pods coiled
17. Pods not coiled or twisted

\[ \text{A. caesia} \]

15. Seeds 8-14
16. Pods apex not horned, brown
13. Pods sessile or sub sessile
17. Pods coiled
17. Pods not coiled or twisted

\[ \text{A. pennata} \]

13. Pods sessile or sub sessile
17. Pods coiled
17. Pods not coiled or twisted

\[ \text{A. auriculiformis} \]

Unarmed medium sized trees; about 15 m tall; bark whitish, wood thin delicate; branchlets glabrous and glaucous, slightly angular. Phyllodes alternate, elliptic, falcate, 10-14 X 2.5-3.5 cm, thick-coriaceous, with 4-6 principal sub-parallel-nerves tapering at the ends, glabrous, base attenuate, margin entire, apex obtuse; petiole to 2 cm; stipules to 1.5 mm. Spike(s) axillary, solitary or paired, to 8 cm; peduncle to 1 cm. Flowers yellow, small, 2.5 mm across. Calyx 5-lobed, campanulate, 2 mm, acute, half way down. Corolla 5-toothed, yellow, lanceolate, 2 mm, equal to calyx; Stamens numerous, filaments to 3 mm, basally connate, ovary subsessile, globose, to 1 mm, pubescent, style short. Pod coiled or spirally twisted, 3-6 cm; margin wrinkled at outer side, entire at inner side; seeds 5-7, brown colour. (Fig.41).

Introduced, commonly planted in hills and social forestry. Fl. December-February. Fr. February-April. Kasemi Forest (SKLM), PRSR 15470 (SKU); Barhapahada (SBP), PRSR & VNR 17273 (SKU); way to G. Udyagiri (PBN), PRSR & VNR 17287 (SKU); Burla (SBP), SP & APD 211 (CAL); Hogainakkal (DMP), KMM & NVGP 23113 (CAL); Marakkanam (SA), KRM 5110 (MH).

\[ \text{A. caesia} \]

\[ \text{A. intisa} \]

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Fig. 41. *Acacia auriculiformis* A. Cunn. ex Benth. A. Twig; B. Flower; C. Calyx split open; D. Stamens; E. Pistil; F. Pod.

Albizia sikharamensis Sahni & Bennet in Indian for. 101 : 337. 1975.

Large climbing shrubs, about 10-15 m tall; branches prickly, sparingly grooved, puberulous when young. Leaves bipinnate, 9-14 cm long, alternate, pubescent, internodal thorns hooked; pinnae 6-8 pairs, 4-8 cm long; leaflets 10-15 pairs, not overlapping. 1- 1.5 X 0.4-0.7 cm, oblong, glabrous above, glabrescent beneath, base unequally truncate, margin entire, apex obtuse, apiculate, nerves prominent above and below; petiole to 6 cm, prickleld on the under side with a convex elongate gland at base, rachis prickleld, with glands opposite to lower most and 2 upper most pairs of pinnae. Stipular thorns absent. Flower heads in long terminal panicles, to 10 cm, pubescent, 2 or 3 in a cluster, peduncle to 4 cm, rachis prickleld, bracts lanceolate, apex cuspidate, 0.5-1 cm, bracteoles to 1 mm. Flowers pale yellow, to 3 mm across. Calyx-tube campanulate, to 2 mm, 5-lobed, pubescent, corolla half way down, petals cream, ovate, apex acute, 2.25 mm. Stamens numerous, 2-5 mm long, basally connate; ovary stipitate, oblong, to 4 mm, pubescent, style to 4 mm. Pod stipitate, 8.5-11.5 X 1.5-2 cm, thin, flat, glabrous, base and apex obtuse, horned, coppery turning brown. Seeds 9-12, brown colour. (Fig.42).

Frequent in open forests and scrub forests. Fl. October-December; Fr. December onwards.

Ver.N.: Ori. Dentari; Tel. Korintha, Yerracheekil; Tam. Karindu. Simhachalam (VSKP), PRSR 15463 (SKU); Palakonda hills (near Guvalacheruvu) (CDP), PRSR 17241 (SKU); Yadiki R.F. (ATP), TP & NY 485 (SKU); North Dhone R.F (KNL), RVR 1634 (SKU); on way to Tirumala (CTR), KSM 6953 (MH); Uparapalli (CDP), JSG 18187 (MH); Amirthe (NA), MBVN 1059 (MH); Bettamogilalam (SLM), CAB 9808 (MH); Tippukadu R.F (NA), KRM 17613 (MH); Gomuki-Vellimalai (SA), KRM 77377 (MH); Yercaud ghat road (SLM), AM 13354 (CAL); Kolli hills Ghat road H.P. Bend 99 (TRCNP), AM 13286 (CAL); Narsingnath (GJP), GPG 20984 (CAL); Mattillichchaea Kottla (KP), RSR 18626 (CAL); Salur-Koraput Ghat road (KP), RSR 18421 (CAL).

Note: Wight & Arn. correctly pointed out a confusion arising from Linnaeus (Sp. Pl. 522. 1753) who established his Mimosa intsia from Rheede’s figure, and of course characterised it in nearly the same terms as his M. caesia, C. Ohashi (Enum. Fl. Pl. Nepal 2 : 103. 1979) has included both the above names under Acacia intsia (L.) Willd. Sp. Pl. 4 : 1091. 1806.
Fig. 42. Acacia caesia (L.) Willd. A. Twig; B. Flower; C. Calyx split open; D. Corolla split open; E. Staminal Column; F. Pistil; G. Pod.

Moderate-sized deciduous trees, about 5-7 m tall; bark dark greyish-brown, rough, wood red, hard and close grained; branchlets dark-brown, smooth or glabrous. Leaves bipinnate, 5-6 cm long, main rachis 10 cm long, pubescent, with glands between many of the pairs of pinnae and a large conspicuous gland at or near the middle of the petiole. Stipular thorns short, 0.4 cm long, hooked, from a broad triangular base, polished; pinnae 20-25 pairs, 1.5-2 cm long, nearly sessile, their rachises pubescent. Leaflets 30-35 pairs, linear oblong, base cordate, margin entire, 2-2.5 X 1-1.5 mm, apex subacute, peduncle 2-3 cm long. Flowers white or yellowish in spikes, axillary. Spikes 2-4 cm long. Flowers to 3 mm across. Calyx 4-teethed, to 1 mm, campanulate; hairy without, teeth deltoid, ciliate, corolla 4, to 2 mm long, lobes ovate-oblong, subacute, pubescent, stamens numerous, free, filaments 3 mm; anthers minute; ovary 0.75 mm, sessile, glabrous, style 2.25 mm, filiform. Pod flat, smooth or glabrescent, acute at both ends, grey, dehiscent, seeds many. (Fig.43).

Occasional in dry deciduous forests of Eastern Ghats. Fl. July-September. Fr. December onwards. Ver.N.: Ori. Khairo; Tel. Nallasundra; Tam. Othalei, Kasukkoti. Kalasamudram R.F (ATP), EC 2877 and TP & EC 2830 (SKU); Lower Ahobilam (KNL), TP & RVR 2583 (SKU); Cheedipalem (EG), GVS 27437 (MH); Arka (GJM), JSG 13983 (CAL); Rodapodor (GJM), JSG 13810 (CAL); Forest near-Srungavara Pukota (VSKP), NPBK 11012 (MH); Way to Jammalakona (NA), MBVN 878 (MH); Kambakkam hills (CGP), MCB, 45146 (MH); on way to Jammalakona (CTR), GVS 45868 (MH); Chittor Reserve Forest (CTR), KCJB 435 (MH).


Trees, 4-6 m tall; with silvery foliage, bark brown, rough, branchlets densely tomentose, leaves bipinnate, petiole short, gland above the middle of petiole, main rachis densely pubescent with gland between the upper most pair of pinnae. Stipular spines short or O. Pinnae 3-5 pairs, 1-2 cm long, leaflets 8-15 pairs, 0.3-0.6 X 0.1-0.2 mm, linear, subobtuse, tomentose, pale green, margin
Fig. 43. *Acacia catechu* (L.f.) Willd. A. Twig; B. Flower; C. Calyx entire; D. Calyx split open; E. Corolla split open; F. Staminal column; G. Pistil.
entire, base truncate. Flower heads in panicles, axillary, fragrant, peduncle short, calyx 5-lobed, campanulate, deltoid, divided about half way down, corolla 5-toothed, white, twice as long as the calyx, divided half way down. lanceolate, acute, stamens numerous, free or slightly connate, ovary sessile, style short. Pod sessile, thin, 3-5 X 1-1.5 cm, linear oblong, flat, attenuate at both ends. narrowly constricted between the seeds, pale brown, rusty when young, glabrous at old. seeds 4-6.


Trees, 4-6 m tall; bark rough, brown, branchlets glabrous, leaves bipinnate, petiole short, gland above the middle of petiole, main rachis pubescent with gland between the upper most pair of pinnate; Stipular spines short, straight or slightly curved upwards, dark brown, polished. Pinnae 3-5 pairs, 1-2 cm long, leaflets 8-15 pairs, 0.2-0.3 X 0.1 mm, linear, subobtuse, glabrous, pale glaucous, green, margin entire, base truncate. Flower heads in 2-4 cm long spikes, axillary, fragrant; peduncle short, calyx 5-lobed, campanulate, divided about half way down, deltoid. Corolla 5-toothed, white, twice as long as the calyx, divided half way down; lanceolate, acute, stamens numerous, free, ovary sub sessile, style short. Pods shortly stalked, 4-6 X 1.5-2 cm, distinctly constricted between seeds, linear-oblong, thin, flat, attenuate at both ends, reticulately veined, pale brown, rusty tomentose when young, at old glabrous. Seeds 5-6.


Small trees; upto 8 m tall; bark of the young branches purplish-brown; branchlets glabrous, warty, dilated at nodes. Leaves 2-5 in a cluster, 2-3 cm long, pinnae 5-8 pairs, 0.5-1 cm long; leaflets 7-10 pairs, ovate, to 2.5 X 1 mm, pubescent, base obtuse, margin entire, apex subacute, nerves faint, midnerve near distal margin, petiole to 1 cm, rachis with glands at the basal and the upper most pinnae; stipular thorns unequal, straight, 1.5 cm long, ivory-white, gradually tapering from a broad base to a very sharp point. Flower-heads to 1 cm across, in racemes, to 4 cm; flowers Ca. 30 per head; bracteoles grouped as involucels at the base of heads. Flowers orange yellow, to 1.5 mm across. Calyx-tube campanulate, 5-toothed, short to 0.5 mm; petals 5, 1.5 mm long, orange yellow. Stamens numerous, filaments to 3 mm, basally connate, ovary stipitate, to 0.5 mm; style to 4 mm. Pods stipitate, very thin, subterete, to 8 cm, glabrous, curved, basally attenuate, apically obtuse; seeds 5-10, ovoid.

Occasional in scrub forest of Eastern Ghats. Fl. & Fr.: October-April. Ver.N.: Tam. Chiliodai. Chandragiri (CTR), CECF 4264 (CAL); Kodur Reserve forest (CDP), JSG 15010 (MH); Kambakkam hills (CGP), CAB 10249 (MH); Hussainapuram (CDP), JSG 11138 (MH).


Thorny shrubs or small trees, upto 8 m tall, branches warty, slender, often zig-zag, stipular spines unequal, 2-2.5 cm long, straight. Leaves 4-5 cm long, 5 in a cluster, main rachis slightly pubescent, eglandular, petiole 0.5-0.7 cm, usually furnished with a minute gland about the middle; stipules spinescent, minute, pinnae 4-7 pairs, 1-2 cm long. Leaflets 13-17 pairs, 3.5-4 X 0.5-1 mm, elliptic, overlapping, glabrous, base truncate, margin entire, apex obtuse, nerves prominent below. Flowers in globose heads, to 7 mm across, creamy white, fragrant, peduncle 0.75-1 mm long, pubescent, crowded on axillary nodes. Flowers creamy white or yellow, to 5 mm across. Calyx 5-toothed, to 1.2 mm long, teeth short, acute, triangular, petals 5, to 2 mm long, lobes very short, pubescent, stamens numerous, free, filaments to 4 mm, anthers small, basally connate, ovary stipitate, 1 mm long, style filiform, to 3 mm long. Pods 5-8 cm long, sub-cylindrical, obtuse or hooked at apex, dehiscent, slightly curved, glabrous, pulpy, turgid, brown; seeds 4-6. dark brown. (Fig.44).
Fig. 44. *Acacia farnesiana* (L.) Willd. A. Twig; B. Flower; C. Calyx split open; D. Corolla split open; E. Pistil.
Common in open forests of Eastern Ghats, along road sides and in hedges. Planted. Fl. & Fr.: August-March. Ver. N.: Ori. Kapur; Tel. Kusturi; Tam. Veddavala. Simhachalam (VSKP), PRSR 15461 (SKU); Gutturkona (ATP), NY 980 (SKU); near Kalavabuga- Hussainapuram (KNL), RVR 3130 (SKU); Kilagada-Jolaput (VSKP), GVS 33311 (MH); Bogada (KNL), JLE 32532 (MH); Kottaiyer Yelagiri hills (NA), MBVN 551 (CAL); Kavalur (NA), EVV 54509 (CAL); Raikia to Digi (GJM), CAB 1315 (MH); Morappur (SLM), CAB 11641 (MH).


Deciduous trees, upto 10 m tall; bark grey, cracking into pieces, wood olive-brown, very hard, branchlets glabrous, armed with prickles. Leaves alternate, 7-10 cm long, petiole 2-3 cm, with a gland near the middle, rachis terete, glabrous, with glands opposite to the two uppermost pinnae, stipular thorns short, erect or hooked. Pinnae 6 cm long, 6-8 pairs, leaflets 15-25 pairs, oblong, 0.3-1 X 0.1-0.3 cm, glaucous, base oblique, margin sparsely ciliate, apex subacute, nerves prominent above, midnerve near distal margin. Flowers creamy-white in spikes, axillary, solitary or in pairs, peduncle 2-2.5 cm; bract small, caducous; bracteoles caducous. Flowers slightly yellow, to 3 mm across, calyx 5-lobed, to 1 mm, puberulous without, petals 5, yellow, to 1 mm, stamens numerous, 4 mm, basally connate, ovary stipitate, terete, to 1 mm; style to 3 mm. Pod stipitate, 7-16 X 2 cm, grey, lanceolate, glabrous, apex obtuse, nerved, seeds 4-6, grey.

Occasional in foot hills of scrub forest in Eastern Ghats. Fl. March-April. Fr. November-January. Ver.N.: Ori. Kanta Chira; Tel. Ansandra; Tam. Parambali. Donubai (SKLM), PRSR 15467 (SKU); W. Surada (GJM), JSG 14067 (CAL); Surada (GJM), JSG 13980 (CAL); Hukuma (GJM), JSG 14078 (CAL); Thirthamalai slopes (DMP), KMM & NVGP 14150 (CAL); Aruna R.F (SLM), NVGP 14383 (CAL); Gingee R.F (SA), KRM 13022 (CAL); Gansakur (GJM), JSG 13638 (MH); Thakkampatti path-foot hills (SLM), AM 13475 (MH); Anaikatty (CBT), MVV 563 (MH).


Climbing shrubs with small recurved prickles on stems and leaf rachises. Leaves upto 15 cm long, no stipular spines, petiole gland oblong near the base of the petiole; rachis prickled, pinnae 6-12 pairs, 7 cm long, with gland between upper 1-2 pairs, leaflets 35-45 pairs, oblong, 8 X 1.5 mm.
more or less distant, not overlapping, glabrous above, pubescent beneath, base obtuse or truncate, margin entire, apex acute. Flower heads whitish-yellow, 1 cm across, in sessile heads, pedicel short, bracts short, caducous, bracteoles caducous, calyx 5-lobed, pubescent, petals 5, whitish yellow, hardly twice as long as calyx. Stamens numerous, filaments short, basally connate, ovary stipitate, style short. Pod 7 cm long, thin, flat, coriaceous, stalked, to 18 X 3.5 cm, broad, the sutures straight, thick, seeds 2-4, ovoid.

Rare in moist deciduous forests of Southern Eastern Ghats. Especially Coimbatore and East Godavari districts. Fl. & Fr.: April-June. Athikkadavu (CBT), **NCRK 82317** (CAL); Near dam on Dummakonda stream (EG), **GVS 68638** (MH & CAL).

**NOTE**: Gamble in his Flora of Presidency of Madras has written that this particular species occurs in western ghats only. But G.V. Subba Rao and N.C. Rathakrishna collected this species from East Godavari and Coimbatore districts respectively.


Shrub or small tree, forming an umbrella-like top when old; 6-8 m tall, bark dark reddish-brown; wood reddish, very hard. Young branches dark brown, striate, glabrous. Leaves bipinnate, often fasciculate, 2-4 cm long, main rachis slightly pubescent, eglandular; petiole 1.5-2.5 cm, petiole with gland about the middle, stipular spines unequal, the smaller 0.5-1 cm long, the large 2-2.5 cm long, connate at the base, conical, hollow, straight, sharp. Ivory-white or rarely brown, polished, pinnae 2-5 pairs, 0.5-1 cm. Leaflets 6-10 pairs, elliptic or linear-ovate, 2-3 X 1 mm, glabrous, base oblique, truncate, margin sparsely ciliate or entire, apex obtuse. Flowers at first white, afterwards turning yellow, fragrant in elongated spikes, to 2-5 cm long, often fasciculate. Peduncle to 1 cm, bracts and bracteoles caducous. Flowers yellow, to 7 mm across. Calyx 4-lobed, campanulate, 1 mm long, glabrous, teeth short, petals 4, 2 mm long, lobes triangular, divided one fourth of the way down. Stamens numerous, free, filaments 4 mm, basally connate. Ovary sub-sessile or slightly stalked, 0.75 mm; style 2.25 mm, filiform. Pod flat, 3 X 1.5 cm, shortly stalked, recurved, glabrous, rich brown colour, apex obtuse, horned; seeds 5-8, ovoid, to 5 mm. (Fig.45).
Fig. 45. *Acacia horrida* (L.f.) Willd. A. Twig; B. Flower; C. Calyx split open; D. Corolla split open; E. Stamens; F. Pistil.
PLATE. 11:

A. Acacia auriculiformis A. Cunn. ex Benth.

B. Acacia horrida (L.f.) Willd.
Common in foot hills of scrub forest in Eastern ghats. Fl. & Fr. : August-February. Ver.N.:
Tel. Pakitumma, Akituma, Tam. Kaarodai. North Dhone R.F (KNL), PRSR 15489 (SKU); Palakonda
hills (CDP), PRSR & VSL 17239 (SKU); Kallakurichi Cuddalore road forest (SA), KRM 77302 (CAL);
Takarai R.F (SA), KRM 52837 (CAL); Kolli hills (TRCNP), PPM 22567 (CAL); Pacchaimalais (TRCNP),
NVGP & CMNH 17651 (CAL); Pulivalaram forest (TRCNP), KMM & CMNH 19303 (CAL); Kucholi
(GJM), CECF 140393 (CAL); Batipathar (KP), GPG & DCSR 21146 (CAL).

Acacia lenticularis Buch.-Ham. ex Benth. in Hook. Lond. J. Bot. 1 : 508. 1842; FBI 2 : 296. 1878;
1996.

Trees, 6-13 m tall, bark brown-grey or dark-grey with oblong flakes; wood very hard,
olive-brown, branchlets glabrous, old trees nearly unarmed, straight. Leaves bipinnate, 12.5-18 cm
long, petiole 2-4 cm long, eglandular, glabrous or slightly hairy with a gland below the pinnae,
stipular thorns short, slightly recurved, compressed. Pinnae 2-4, 7.5-12.5 cm long; leaflets 7-12 pairs,
subsessile, oblong or obovate-oblong, 1.8-3.7 X 1.5 cm, glabrous or nearly so, margin entire, apex
obtuse, base oblique, nearly median midrib. Flower heads white in dense spikes, 1.8 cm across,
with hairy rachis, 7-12.5 cm long, calyx 5-lobed, teeth acute, campanulate, slightly hairy, corolla
5-toothed, greenish, twice the calyx, stamens numerous, filaments long, slightly connate, ovary
subsessile, style long, filiform. Pods flat, straight, 12-22.5 X 2.5-3.7 cm, sutures thickened, glabrous,
brown; seeds 4-8.

Ori. Ghar-Khair, Khadar. Kucholi (GJM), CECF 140393 (CAL); Batipathar (KP), GPG & DCSR 21146
(CAL); Satkosia (KLHN), BH 5530 (RRL-B).

Acacia leucophloea (Roxb.) Willd. Sp. Pl. 4 : 1083; 1806; FBI 2 : 294. 1878; Gamble 1 : 427 (302).
1919; Chakrabarty & Gangopadhyay In J. Econ. Tax. Bot. 20 : 615. 1996. Mimosa
leucophloea Roxb. Pl. Cor. t. 150. 1800.

Moderate-sized or large trees, 12-15 m tall, bark grey and smooth when young, dark brown
and rough when old, wood reddish-brown, hard and tough, branches pale, striate, puberulous when
young. Leaves alternate or clustered, 2-5 cm; main rachis densely pubescent, usually with a
cup-shaped glanc between 4 upper most pinnae, petiole 0.5-1 cm with a gland near the middle or
at base; spines variable in length, stipular thorns short or long, to 1 cm, grey, straight, pinnae 6-9 pairs, subsessile, 1.5-2 cm long, rachis slightly pubescent; leaflets 15-25 pairs, elliptic, 1.5-2 X 0.5 mm. Slightly falcate, glabrous above, pubescent below, base oblique, margin ciliate, apex acute, overlapping. Flowers pale yellow in heads of large terminal tomentose panicles, about 20 cm, heads numerous, globose, peduncle 0.6-1 cm; bracts ovate, minute; bracteoles in the middle of peduncle; flower yellow, to 1 mm across. Calyx 5-lobed, to 0.5 mm, teeth short, pubescent, teeth apex ciliate, lobed, corolla 5-lobed, cream to yellow, to 1.75 mm, subacute, stamens numerous, filaments to 3 mm, basally connate, ovary stipitate, to 0.5 mm; style 2.5 mm, filiform. Pods sessile, flat, 10-15 x 0.5-1 cm long, thin, straight or slightly curved, turgid, with rusty tomentose. Seeds 10-15, angular, ovoid, to 6 X 4 mm, pale brown. (Fig.46).

Frequent in dry deciduous forests of the Eastern ghats. Fl. August-September. Fr. October.-February. Ver. N.: Ori. Gohira; Tel. Tellatuma; Tam. Velvclam. Dora Sanibhavi (KLN). PRSR & SPG 15449 (SKU); Semedu (SLM), PRSR 15498 (SKU); Palakonda hills (CDP), PRSR & VSL 17250 (SKU); Belugam (GJM), DHP 39523 (CAL); Dukura-vdala (KP), GPG 12226 (CAL); Edakkar R.F. (SA), KRM 80806 (CAL); Kotiapalli R.F. (DMP), EVV 58005 (CAL); Gingee R.F (SA), KRM 13006 (CAL); Mederametta (PKM), RKM 0237 (CAL); Addatigala (EG), GVS 68603 (CAL); Salur (SKLM), NPBK 1018 (CAL); Rukeekonda (GJM), VNS 6077 (MH); Talakona R.F (CTR), DRC 416 (MH); Vandalur R.F. (CGP), ANH 45521 (MH).


Small trees, 2-4 m; bark rough branchlets without silvery foliage, with numerous irregular cracks. Leaves bipinnate, 2-4 cm long. Stipular thorns short, petiole short, 1 cm long, main rachis glabrous, a gland between 2,3 pairs of pinnae, pinnae 3-4 pairs, leaflets 3-6 pairs, very small, 2-3 X 1 mm, broadly ovate or obovate, oblique, margin entire, glabrous, obtuse, slightly acute. Cylindric drooping spikes 4-5 cm long, flowers white or cream., calyx 5-lobed, campanulate, acute, corolla 5-toothed, acute, glabrous, stamens numerous, basally connate, ovary stipitate, style short. Pods stipitate, straight or slightly curved; 2.5-5 X 0.7 cm, glabrous, dehiscent, seeds 2-4.

Introduced, planted on the hill stations of Eastern Ghats. Fl. & Fr. : Most part of the year. Book’s hill (SBP) HHH 3610 (MH).
Fig. 46. *Acacia leucophloea* (Roxb.) Willd. A. Twig; B. Flower; C. Calyx entire; D. Calyx split open; E. Corolla split open; F. Stamens; G. Pistil.
Acacia nilotica (L.) Willd. ex Del. subsp. indica (Benth.) Brenan in Kew Bull. 12 : 84. 1957.

Trees, 12-15 m tall, bark dark brown, fissured, rough, wood reddish-brown, hard and strong, young branches sparsely puberulous. Leaves alternate, 4-7 cm long, stipular spines straight, to 2 cm long, white, rachis grey-pubescent, generally with a gland between the first pair of pinnae and one between the terminal pair; petiole to 1 cm, with a gland near the lower most pinnae; pinnae 4-8 pairs, 1-3.5 cm long, leaflets 15-25 pairs, subsessile, elliptic, glabrous, 4 X 1 mm, base oblique, obtuse, margin entire, apex rotund, nerves obscure. Flower heads globose, yellow 1 cm across, in an axillary cluster, about 50- flowered per head; peduncle to 1.5 cm; 2 bracteoles near or above the mid peduncle. Flowers yellow, to 1 mm across. Calyx 5- toothed, 1 X 2 mm, glabrous without, corolla 5-toothed, bright yellow, 2 X 3 mm, glabrous without, stamens numerous, filaments 4 mm, basally connate. ovary stipitate, terete, to 1 mm; style to 4 mm. Pod stipitate, 10-18 X 1-1.5 cm, glaucous, moniliform constricted, apex horned, indehiscent, seeds 13-15. (Fig.47).

Frequent in waste lands. Fl. August-December., Fr.January-April. Ver. N.: Ori. Babur, Tel. Nallatuma; Tam. Karuvelam. Cumbum Forest (PKM), PRRS 15458 (SKU); Mentur (EG), PRRS 15430 (SKU); near Diguvametta (KLN), PRRS 15458 (SKU); Vadapalli (EG), DCSR 140 (CAL); Malda (KP). GPG 20578 (CAL); Balugaon (GJM), DHP 39502 (CAL); Gurgaria (KP), GPG 12393 (CAL); Harur Road-Tanipadi (NA), EVV 55653 (CAL); Kolli hills on the way to Varagoor (TRCNP), PPM 23546 (CAL); Periakalrayans (SLM), NVGP & CMNH 17647 (CAL); Mederametta (PKM), RKM 0240 (CAL); Balapalle (CDP), JLE 14316 (CAL); Kothuru (VSDK), NPBK 851 (CAL); Bairlut Forest (KLN), VSK 79504 (MH).


Large prickly, glabrescent, climbing shrubs or small trees, 4-6 m, young branchlets yellowish tomentose. Internodal thorns short, erect or recurved. Leaves alternate, 10-13 cm long, petiole 2- 2.5 cm long; main rachis slightly pubescent, grooved, often prickly with a large oblong gland above the middle of the petiole and one between each of the 2-4 upper pairs of pinnae; pinnae
Fig. 47. *Acacia nilotica* (L.) Willd. A. Twig; B. Flower; C. Calyx split open; D. Corolla split open; E. Staminal column; F. Anthers; G. Pistil.
9-16 pairs, 2.5-4 cm long, subsessile, slightly curved, their rachises slightly pubescent. Leaflets 32-45 pairs, overlapping, 3-4 X 1 mm, elliptic, glabrous, base truncate, margin ciliate, apex acute, mid nerve very close to dorsal margin. Stipular thorns 0, flowers white in globose heads, 1-5 cm across, in terminal or axillary racemes, 1-3 in a cluster. Peduncle to 2 cm; bracts lanceolate, to 8 mm, bracteoles 1 mm, pedicel to 1 mm. Flowers white, to 4 mm across, calyx 5-lobed, 1 mm, glabrous, divided one third of the way down; lobes linear-lanceolate, acute corolla 5-toothed, cream, 2 mm, acute, stamens numerous, very shortly connate at base; 4 mm long, anthers small, ovary stalked, to 1 mm, villous, style filiform, to 3 mm. Pod stalked, 14-18 X 2.5 cm, flat, straight, thin, dry, strap-shaped, rounded or shortly apiculate, brown, glabrous, sutures prominent. Seeds 8-14, ovoid-oblong, compressed, dark-brown. (Fig.48).

Fairly common in foot hills of mixed forests in Eastern Ghats. Fl. May-August. Fr. October-December. Ver.N.: Ori. Dantari, Nalikonti, Tel. Karusikaya, Mullugorinth; Tam. Vellaindu. Lankapakala Forest (EG), PRSR & SSR 15409 (SKU); Donubai (SKLM), PRSR 15466 (SKU); near Kollitemple (TRCNP), PRSR 15500 (SKU); Ahobilam (KNL), JLE 25596 (MH); Punyagiri hill (VSKP), GVS 19422 (MH); Rallapenta R.F (KNL), RVR & PVP 2170 (MH); Rogada (GJM), JSG 14076 (CAL); Urigan Forest (DMP), KMM & NVGP 16977 (CAL); Shevaroys (SLM), VAA 13783 (CAL); Rampa hills (EG), VNS 34 (CAL); Forest near Araku (VSKP), NPBK 10794 (CAL); Curangi (GJM), VNS 5824 (MH), Boragharo (GJM), VNS 5941 (MH); Chelama (KNL), JLE 16744 (MH).


Small trees, 4-6 m tall, with an erect stem, form an umbrella like crown; bark thick, dark grey in older parts, purplish in younger branches. Wood pale yellow, hard and heavy, branchlets warty. Leaves bi-pinnate, small, 2-3 cm long, 3-5 in a cluster. Petiole 1 cm long, with a gland near middle, main rachis glabrous, with glands opposite to the basal and two upper most pinnae; stipular spines two kinds, either very short or long, 2-3 cm, curved down wards, straight, divericate, white with a brown point; pinnae 3-6 pairs, 0.5-1.5 mm long, closely placed near the end of the rachis. Leaflets 6-13 pairs, linear-oblong, 0.2-0.4 cm long, glabrous, base oblique, margin entire, apex round, flower heads yellow, to 1 cm across, in axillary fascicles, peduncle to 1 cm, bracteoles erect, below the middle of the peduncle. Flowers yellow, to 2 mm across. Calyx 5-lobed, 1 mm, campanulate, teeth very short, acute, corolla 5-toothed, 2 mm long; lobes short, acute, villous.
Fig. 48. Acacia pennata (L.) Willd. A. Twig; B. Flower; C. Calyx split open; D. Corolla split open; E. Staminal column; F. Pistil; G. Pods.
PLATE 12:

A. Acacia nilotica (L.) Willd.

B. Acacia pennata (L.) Willd.
Fig. 49. *Acacia planifrons* Wight & Arn. A. Twig; B. Flower;
C. Calyx split open; D. Corolla split open;
E. Stamens; F. Pistil; G. Pod.
Stamens numerous, filaments 4mm long, exserted, free anthers small. Ovary sessile, 1mm; style filiform, to 3mm. Pods 2cm long, sub-terete, acute, turgid, circinate, glabrous, seeds 2-3, obovate.

(Fig.49)

Rare in scrub forest of Eastern ghats. Fl. & Fr.: January-March. Ver. N.: Tel. Godugutumma, Tam. Kudal-vel, sithal, odal. Guttur kona (ATP), NY 980 (SKU); Karempudi ghat (GNT), CAB 4753 (MH); Chennimalai (CBT), CECF 2167 (CAL); Nellimali R.F. (CBT), KRM 14836 (MH); Ayyampatti - Bommidi (DMP), EVV 57999 (MH).


Prickly climbing shrubs, about 15-20m tall; branchlets apically yellowish - tomentose, basally glabrescent, warty, internodal thorns hooked, 5mm long. Leaves alternate, 7-10 cm long. Petiole to 3cm long, a gland below the middle, rachis prickled with a gland between upper most pair of pinnae. Stipular thorns 0, pinnae 8-15 pairs, not overlapping, to 4cm long, leaflets 25-30 pairs, linear, 3-5 X 2mm, pubescent, base oblique, margin entire, apex obtuse, apiculate, midnerve near distal margin. Flower - heads creamy white, to 1 cm across, in terminal and /or axillary racemes or panicles, to 9 cm. Peduncle 2-3cm, bracts ovate, to 5mm, bracteols to 1mm. Flowers creamy, to 2mm across, sessile, calyx 5-lobed, elongated, to 3mm, nearly equal to petals. Corolla 5-toothed, cream, 3-5mm, Stamens numerous, to 4mm, basally connate, ovary stipitate, terete, to 1mm, glabrous, style 4- 5mm. Pods 12-15 X 2-2.5cm, fleshy, brown colour, wrinkled when dry, obtuse, acute, often indented on sutures, depressed between seeds; Seeds 11-14, brown colour.

Occasional in mixed forests of Eastern Ghats. Fl. April - June, Fr. January - March. Ver. N.: Ori. Sikai; Tel. Sigekai, Shikai; Tam. Seeyakkaae. Donubai (SKLM), PRSR 15469 (SKU); Olugupitti (VSKP), GVS 42655 (MH); Upparapalli (CDP), JSG 18187 (MH); Vrigam Forests (DMP), KMM &

Small tree, 9 - 12m; bark yellowish, with large lenticels, tomentose. Wood grey, hard, smooth. Branchlets grey - pubescent. Young parts leaves and spines grey. Leaves bipinnate, to 5cm long, petiole short, petiole gland below the lowest pair of pinnae; main rachis densely pubescent or tomentose, rachis ending in a short spine; stipular spines 2.2 cm long, straight, rapidly tapering from a broad base, brown; pinnae 6-12 pairs, 2.5 cm long, sessile, their rachises densely pubescent, leaflets 20- 30 pairs, 2-2.5 x 1mm, linear, oblong, obtuse, sessile, pubescent on both sides. Flowers in globose heads, greenish - white, 1-2 cm across, axillary. Peduncles long, stout, densely downy, bracts a little above the middle of the peduncle. Calyx 5-lobed, campanulate, rounded, pubescent, ciliolate. Corolla 5-toothed, greenish - white, two or three times as long as calyx, pubescent, sub-acute, ciliolate. Stamens numerous, free or very shortly connate at base; ovary very shortly stalked, glabrous, style short, filiform. Pod 10-15 x 1-1.5 cm, thick stipitate, flat, yellow - brown or reddish, slightly falcate, sharply pointed, at first pubescent, after wards glabrous. Seeds 6-8, ellipsoid, compressed slightly depressed between the seeds.

Common in Northern-Eastern Ghats, occasional in Southern-Eastern Ghats. Fl. May - June. Fr. April on words. Ver. N. : Tam. Anaimalli. Mahendragiri hills (GJM), CECF 141 (CAL); Qnanashi (CBT), CECF 2124 (CAL); Kodur (CDP), JSG 18218 (MH); Siddout hill (CDP), JSG 10874 (MH).

ADENANTHERA Linnaeus


Large deciduous tree, 11-16 m tall. Bark grey, wood hard, close grained, red; branchlets glabrous. Leaves bipinnate, alternate or clustered, 15-20 cm, petiole 2-4 cm long; pinnae 4-6 pairs, sub- opposite or opposite; leaflets 5-8 pairs, oblong-elliptic, subopposite, inequilateral, 2.5-3.5 x 1-1.5 cm, puberulous, margin entire, base truncate, apex obtuse, apiculate; foliar glands absent, petiolule to 2 mm; stipules caducous, stipels absent. Peduncle to 5 cm; Racemes axillary, spiciform, 15-20 cm; flowers clustered; bracts linear, to 4 mm; bracteoles to 1 mm; pedicel very short, flowers
bisexual, calyx 5-lobed, campanulate, minute, lobes short, pubescent, corolle 5-toothed pale yellow, lanceolate, connate at the base only. Stamens 10, free, hardly exserted; filaments filiform, anthers gland-crested, ovary subsessile, flat, style short. Pods spirally coiled after dehiscence, 11-21 X 0.8 - 1 cm, thin, septate dehiscent into 2 valves. Pointed tapering to the base, seeds 8-15, lenticular, globose, with a blunt keel, red, bright, smooth, shining, usually brilliant scarlet.


**ALBIZIA** Durazzini

Note: Recently Chakrabarty and Gangopadhyay (1996) have revised *Albizia* in India. They reduced *Albizia orissensis* to synonym and excluded *Albizia sikharamensis*.

**Key - I**

1. Pinnae not more than 6 pairs (2-6)
   2. Leaf rachis glabrous
      3. Flowers sessile, greenish white
         3. Flowers pedicelled, whitish yellow
      2. Leaf rachis other than glabrous
         4. A discoid gland below middle of the petiole
            4. A gland above middle of the petiole
   1. Pinnae more than 6 pairs
      5. Leaflets 15-25 pairs
      5. Leaflets 25-30 pairs

**Key - II**

1. Pods sessile
   2. Pods glabrous
      2. Pods other than glabrous
         3. Pods indehiscent
            3. Pods dehiscent
               4. Seeds 6-10, pods thin, bright orange brown

... A. procera
... A. lebbeck
... A. odoratissima
... A. amara
... A. chinensis
... A. thompsoni
... A. procera
4. Seeds 6-8, pods thick, shining, rich brown  

1. Pods stipitate
5. Seeds 6-8, pods strongly nerved, greysh brown  
5. Seeds 8-12, pods obscurly nerved, pale brown  

A. thompsoni

A. amara

A. chinensis


Unarmed deciduous trees, upto 10 m tall; bark greenish with yellow tomentose, smooth; wood purplish brown, with lighter bands, very hard, strong, branchlets densely yellowish or grey pubescent. Leaves bipinnate, 12 cm long, pubescent, petiole to 3 cm, with a small gland near middle of the petiole, rachis with gland between 4 upper pinnae. Stipules minute, linear, subulate, 1 cm, caducous. Pinnae 6-10 pairs, 1.5-5 cm long, rachises pubescent, leaflets 15-25 pairs, sessile, narrow-elliptic, overlapping, 6-8 X 1.5 - 2.5 mm, appressed pubescent or glabrescent, base subacute, margin sparsely ciliate, apex obtuse, middle nerve nearly central. Peduncle 5 cm. Flower-heads creamy- white to pale yellow, 2 cm across, solitary or 2-3 fascicled in upper axils. 12-20 flowers per head; bracts to 5 mm, caducous, pedicel to 1 mm. Flowers yellow, to 1 mm across. Calyx 5-lobed, to 2 mm, acute, ciliate, pubescent without, corolla 5-toothed, to 5 mm, pubescent without, linear-lanceolate, ciliate at apex. Staminal tube to 9 cm; stamens many, filaments to 9 mm, basally connate, ovary stipitate, to 2 mm, style to 7 mm. Pods flat, compressed, greyish-brown, 8-20 X 2-3 cm, strongly nerved, straight or wavy along margins, base and apex rotund, horned, indehiscent, seeds 6-8, ovoid, 1 X 0.5 cm; brick red. (Fig.50).

Common in dry deciduous forest of Eastern Ghats, occasional in mixed forest. Fl. March-May. Fr. June onwards. Ver. N: Tel. Nailrange; Tam. Wunja. Pampampet (EG), PRSR 15412 (SKU); Palakonda hills (CDP), PRSR & VSL 17248 (SKU); Horsely hills down (CTR), PRSR & VSL 17268 (SKU); Sonepaya ghat (CDP), JSG 1036 (MH); Devadanam pettal (SA), KRM 51148 (CAL); Pacha malai way to Nanalodai (TRCNP), CHNH 22621 (CAL); Pakamalai R.F (SA), KRM 60326 (CAL); Chinnaaurittapenta R.F (PKM), RKM 0580 (CAL); Rampa hills (EG), VNS 107 (CAL); Sankagiri hills (SLM), KMM 19896 (CAL); Shevaroys (SLM), KMM, NVGP & TSJS 18899 (CAL); Kolli hills (SLM), AM 13282 (CAL); Kambakkam hills (CGP), DNS 8944 (MH); Chelama (KNL), JLE 23702 (MH).
Fig. 50. *Albizia amara* (Roxb.) Bolvin A. Twig; B. Flower; C. Calyx entire; D. Calyx split open; E. Corolla split open; F. Pistil.

Large unarmed deciduous trees, 20-25 m tall, bark grey, horizontally furrowed; wood brown, soft; branchlets densely yellowish pubescent. Leaves bipinnate, 14-20 cm long, main rachis at first pubescent, after wards glabrous, petiole 3 cm, a gland below middle of petiole, rachis with gland between base of most of the pinnae; stipules very large, 2 X 2 cm, ovate, deciduous, sometimes exceeding 1 cm long, unequally cordate, acuminate with a filiform tail, membranous, pubescent, orange brown, base much dilated on one side; pinnae 6-13 pairs, shortly stalked, 3.5-9 cm, rachises fairly pubescent. Leaflets 25-30 pairs, sessile, narrow-elliptic, 4.5-6.5 X 1.5-2 mm, pubescent, base oblique, truncate, margin ciliate, apex acute, nerves obscure, mid nerve very close to upper margin; peduncle to 1 cm. Flower-heads 1-few, 2 cm across, in axillary or terminal racemes; bracts stipular, persistent, pedicel 1 mm, flowers yellow, to 5 mm across. Calyx 5-lobed, short, 3 mm, campanulate, pubescent without, acute. Corolla 5-toothed, yellowish-white, to 5 mm, densely pubescent without. Lobes half way down, lanceolate, acute, stamens many, filaments to 8 mm, basally connate, ovary stipitate, to 4 mm, style 1 cm. Pods flat, compressed, 15-25 X 3- 4 cm, thin, obscurely nerved, straight or wavy along margins, apices round or tapering, pale-brown. Seeds 8-12, ovate, much compressed, dark brown, smooth. (Fig.51).

Occasional in hill regions of the deciduous forests of Eastern Ghats. Fl. & Fr. : April.-December. Ver. N.: Ori. Ghora-lenja, Barangi; Tel. Nallaregi, Bandichinduga, Konda chiragu. Tam. Nirusil, Silai-Vagae Pilivagai. Papampet (EG), PRSR 15418 (SKU); Sunkarametta (VSKP), PRSR & SSR 15475 (SKU); Borraacaves (VSKP), PRSR 15477 (SKU); Rayagada upto 12 miles (RYG), RSR 18610 (CAL); Udaba (GJM), CAB 1477 (MH); Gomuki-vellimalai (SA), KRM 17389 (CAL); Nilavarampadu (VSKP), VNS 538 (CAL); Anantagiri (VSKP), GVS 21773 (MH); Gudem (VSKP), GVS 42800 (MH).
Fig. 51. Albizia chinensis (Osbeck) Merr. A. Twig; B. Flower; C. Calyx entire; D. Calyx split open; E. Corolla split open; F. Stamens; G. Pistil; H. Pods.
PLATE. 13:

A. Acacia planifrons Wight & Arn.

B. Albizia chinensis (Osbeck) Merr.

Large unarmed deciduous trees, 14-18 m tall, bark brownish grey; wood dark brown, streaked, hard, branchlets puberulous to glabrous, Leaves 10-25 pairs, rachis 10 cm long, Petiole 5-8 cm, with a gland near base of the petiole and one gland below the upper most pair of pinnae. Pinnae 2-3 pairs, 6-15 cm long; Petiolule to 1 mm, leaflets 4-8 pairs, basal ones oblong, elliptic; terminals obovate, 2-4 X 1-2 cm, thin, coriaceous, glabrous above, pubescent along nerves below, base oblique, obtuse, margin entire, apex obtuse-retuse, apiculate, nerves prominent, midnerv nearer the upper margin; Peduncle 4-6 cm. Flower heads to 3 cm across, solitary or 2-3 fascicled, white-cream in upper axils, bracts linear, caducous; pedicels to 3 mm, flower whitish yellow, 2.5 mm across. Calyx 5-lobed, 4 mm, turbinate, acute, pubescent without, corolla 5-toothed, greenish, acute, lanceolate, to 9 mm, pubescent without, staminal tube to 1.8 cm, stamens many, filaments pink or greenish, to 1 cm. Ovary subsessile, to 3 mm, style to 7 mm. Pod flat, oblong-elliptic, compressed, 10-20 X 3.5 - 4.5 cm, glabrous, yellow, straight or wavy along margin, strongly nervcd, base and apex obtuse. Some times abruptly tapering, rarely horned, tumid and reticulate above seed. Seeds 4-12, spherical or reniform, smooth, glabrous, yellowish brown. (Fig. 52).

Common in most parts of the Eastern Ghats, run wild and cultivated. Commonly grown as avenue tree along road sides. Fl. & Fr. : July-March. Ver. N.: Ori. Siriso, Tel. Dirasana; Tam. Vagli. Upper Ahobilum (KNL), PRSR 15442 (SKU); Brook's hill (SBP), SP & APD 399 (CAL); Lergaon (KP), GPG 20885 (CAL); Shevaroys Yercaud wood lands to pallipalty bridlepath (SLM), KMM 18996 (CAL); Nallagunta R.F (PKM) RKM 0629 (CAL); Forest near Tulabada gedda (VSKP), GVS 47371 (CAL); Punyagiri (VSKP), GVS 23314 (MH); on way to Gundla brahmeswaram-Chelama (KNL), JLE 23719 (MH); Rollapenta (KNL), JLE 42261 (MH); Gingee Forest (SA), KMS 12170 (MH); Foot of Pachamalais (TRCNP), KMS 7892 (MH); Sandorovm (CGP), ANH 47010 (MH).

Fig. 52. *Albizia lebbeck* (L.) Willd. A. Twig; B. Flower; C. Calyx split open; D. Corolla split open; E. Pistil; F. Pods.
Large unarmed evergreen trees, 15-20 m; bark dark grey with irregular cracks; wood dark brown, hard, close-grained; branchlets appressed pubescent. Leaves bipinnate, 15-20 cm long, main rachis downy pubescent, petiole to 4.5 cm, glabrous, with a discoid gland below middle; rachis slightly pubescent, with a gland opposite to uppermost pair of pinnae. Pinnae 3-5 pairs, 6-13 cm, their rachises pubescent, leaflets 6-15 pairs, oblong-elliptic, terminal one obovate, 1.2-5 X 0.5-1 cm, puberulous or glabrescent, base oblique, truncate, margin entire, apex obtuse; nerves prominent below, midnerves close to upper margin. Stipules caducous, peduncle to 2 cm, flower heads white, globose, 1-1.5 cm across, sessile, in umbellate to corymbose panicles to 12 cm; bracts subulate, to 4 mm. Sessile, Flower 2-3 mm across. Calyx 5-lobed, to 1 mm, pubescent without, ciliolate, corolla toothed, to 4.5 mm, pubescent without, acute, ciliolate. Staminal tube to 9 mm, stamens many, filaments to 9 mm. Ovary stipitate, 1.5 mm; style to 4.5 mm. Pods subsessile, compressed, flat, 13-15 X 2-2.5 cm, straight, smooth, reticulate above seeds, apically acute or obtuse, nerved, indehiscent, brown or drying black. Seeds 8-12, yellow or yellowish-brown. (Fig. 53).

Common in Eastern Ghats. Fl. May-June; Fr. November-February. Ver.N.: Ori. Kala siriso, Sirish; Tel. Chinduga, Tam. Karuvagei. Penjerikonda Forest to Lakapakala Forest (EG), PRSR & SSR 15408, 15414; (SKU); Upper Ahobilum (KNL), PRSR 15437, 15443 (SKU); Baramakond (VSKP), KCJB 17144 (MH); Nivangiri (KLHN), SKM 4144 (CAL); Narsingnath (GJM), GPG (CAL); Malkangiri (KP), RSR 18433 (CAL); Inoragada (GJM), JSG 13682 (CAL); Guthirayan hills (DM), KMM & NVGP 23040 (MH); Konapalli R.F (PKM), RKM 0810 (CAL); Near Sikharam (PKM), RKM 0585 (CAL); Near Addatigala Vantamamide (EG), GVS 68602 (CAL); Anantagiri (VSKP), NPBK 815 (CAL); Salur-Jeypore Road side (SKLM), NPBK 1058 (CAL); Near Talakona temple stream (CTR), GVS 46007 (MH); Mantur (WG), CAB 4955 (MH).


Large unarmed deciduous trees, 20-30 tall; bark yellowish white, wood brown, hard. Branchlets glabrescent, pale lenticellate. Leaves bipinnate, 10-20 cm long, main rachis glabrous, with a large gland near base of petiole, pinnae 2-4 pairs, 4-6 cm long, rachises glabrous, with an oval gland below the upper most pair of leaflets, leaflets 4-8 pairs, apex obtuse or sub acute, 2-6 X 1.5-3 cm; glabrous above, slightly grey-pubescent beneath, base obliquely cuneate, margin entire,
Fig. 53. Albizia odoratissima (L.f.) Benth. A. Twig; B. Flower; C. Calyx entire; D. Calyx split open; E. Corolla split open; F. Pistil; G. Pod.
petiolules long, peduncles long. Flowers greenish-white, sessile, in globose heads, 12-20 flowers per head, in terminal panicles. Calyx 5-lobed, campanulate or tubular, glabrous without, teeth distinct, triangular, corolla 5-toothed, connate, funnel-shaped, pubescent without, teeth lanceolate, twice as long as calyx. Stamens many, monadelphous at the base, filaments long, ovary sessile or shortly stalked. Style long, filiform. Pods scarcely stalked, dehiscent, 5-9 X 2-2.5 cm, thin, flexible, bright orange brown, smooth, glossy, faintly reticulate above the seeds. Seeds 6-10; broadly ovate, much flattened, pale-brown.

Occasional in deciduous forests of Eastern Ghats. Often planted for ornament or in avenues. Fl. April-June, Fr. July-December. Ver. N.: Sarapatri, Garkhair, Tentra, Tel. Tellachindugu, Tam. Kondavaghe, Gazulapalli (KNL), CAB 8062 (CAL); Galikonda (VSKP), CAB 11768 (MH); Gudem (VSKP), GVS 42800 (MH); Maruthamalai (CBT), KMS 716 (CAL).


Large unarmed deciduous trees, 12-13 m tall; bark black, rough, wood thick white in colour, branchlets pubescent, leaves bipinnate, 16-19 cm long, petiole short, a gland above middle of the petiole, rachis tomentose with a gland between the uppermost pairs of pinnae. Pinnae 4-6 pairs, 8-16 cm long, leaflets 15-19 pairs, overlapping, oblong, slightly falcate, 1-1.5 X 0.4-0.5 cm, broadest on the lower side of the midrib, rounded or semi cordate at base, margin entire, apex obtuse, appressed pubescent when young, ashy grey when dry. Peduncle 2-4 cm, Flowers pale yellow, in globose heads. Pedicel short, 3 mm; Flowers yellow, 1.5-2 mm across, calyx 5-lobed, to 3 mm, campanulate, pubescent without, triangular, corolla 5-toothed to 3.5 mm, pubescent without, lanceolate, acute, staminal tube 6 mm, stamens many, filaments 5 mm, monadelphous at the base. Ovary 1.5 mm, sessile or shortly stalked, style to 3.5 mm, filiform. Pods moderately thick, 10-12 X 2-2.5 cm, shining, rich brown, dehiscent, seeds 6-8, brown. (Fig.54)

Occasional in forests of Eastern Ghats. Fl. & Fr.: April-October. Ver. N.: Tel. Kondala. Sunkarametta (VSKP), PRSR 15474 (SKU); Kalasamudram R.F (ATP), EC 2978 (SKU); Hatiguda hill area (GJM), JSG 13654 (CAL).
Fig. 54. *Albizia thompsonii* Brandis A. Twig; B. Flower; C. Calyx entire; D. Calyx split open; E. Corolla split open; F. Pistil; G. Pod.
EXCLUDED SPECIES

Albizia sikharamensis Sahni & Bennet in Indian Forester 101 : 337. 1975. Acacia caesia (see Chakrabarty & Gangopadhyay, 1996).

CALLIANDRA Bentham


Large shrubs, 6-8 m tall; branchlets apically strigose. Leaves bipinnate, 20-25 cm long, petiole to 2 cm, eglandular, pinnae 12-15 pairs, opposite, leaflets 45-50 pairs, elliptic, 4-8 X 1-2 mm, glabrous, membranous, base oblique, truncate, margin sparsely ciliate, apex acute, nerves prominent below, mid nerve closer to upper margin, laterals joining in the intra-marginal nerve; peduncle 2 cm; racemes 14-17 cm with interrupted umbellate, flowers 3.7-4 cm long, 5-8 in a cluster; pedicel 5-7 mm, flower purplish, 1.5 mm across, calyx 5-lobed, 4 mm; campanulate, acute, triangular, very shortly downy, connate above middle. Corolla 5-toothed, pink, teeth acute, triangular, 9 mm, below half way down, glabrous, lobes ovate-lanceolate, prominently nerved. Staminal tube 3-7 cm long, stamens many, filaments 3.8 cm long, anthers exserted, ovary ellipsoid, glabrous, to 5 mm, style to 3.5 cm. Pods oblong, 10-14 X 1-1.5 cm, flattened, erect or spreading, prominently nerved, strigose, base attenuate, thickened along margins, apex subacute, horned, dehiscent from apex, seeds 6-8.

Avenue shrubs. Fl. July-December. Fr. November onwards. G. Udyagiri (PBN), PRSR 17283 (SKU); Serikoda (RYG), PRSR 17292 (SKU).

DESMANTHUS Willdenow


Under shrubs; 1 m tall; branches warty, glabrescent leaves bipinnate, 3.5-4.5 cm long; pinnae 3-5 pairs, 3.5-4 cm long, leaflets 10-15 pairs, subsessile, oblong-linear, margin ciliate, truncate at base, mucronate at apex, 5.5-6.5 X 1-2 mm; glabrescent below, slightly pubescent above, petiole short, 1-1.5 cm; eglandular, main rachis with a large oblong gland below lower most pair of
Pinnae; petiolule sub sessile, stipules subulate, persistent, caducous, stipels absent. Flowers white in small peduncled heads, in the axils of leaves. Peduncle 2.5-3.5 cm long, glabrous, filiform bracts lanceolate, pedicel short, flower 1 mm across. Calyx 5-lobed, campanulate, triangular; glabrous. Corolla 5-toothed. Slightly coherent from above middle, glabrescent without. Stamens 10, free, exserted, ovary sessile, style long. Pods straight, 4-6 X 0.7-0.9 cm long, narrow, coriaceous, dehiscent along sutures. Seeds 20-25, small, ovoid, smooth.

Introduced occasionally planted in Koraput and Coimbatore districts of Eastern Ghats. Fl. & Fr.: June-October. Marthumalai hills (Lowerpart) (CBT), PRSR 18101 (SKU); Koraput Forest (KP), DCSR 1505 (CAL); near Ramanathapuram (CBT), MCB 28482 (MH).

**Dichrostachys** (DC.) Wight & Arnott nom. cons.


Thorny armed shrubs or small trees; 4-6 m tall, bark grey or light brown, wood red streaked, with black, very hard and tough, branchlets densely pubescent, spine tipped. Leaves bipinnate, alternate or 3 in a cluster, 5-10 cm long, rachis pubescent, with glands between all pairs of pinnae; pinnae 5-10 pairs, 1-1.5 cm, leaflets 10-20 pairs, 2.5 X 1 mm, sessile, linear-oblong, close, pubescent beneath, base obtuse, margin entire, apex acute, petiole 6-8 mm, eglandular, rachis pubescent, with stipitate glands opposite to pinnae, stipules 2, minute; stipels 0. Flowers in cylindric peduncled spikes on short axillary branches, bicoloured, upper flowers yellow, bisexual, lower ones pink, sterile, peduncle to 1.5 cm, bract oblong, 1 mm. Flower 1 mm across. Calyx 5-lobed, 0.05 mm, campanulate, pubescent without, corolla 5-toothed, 1.5 X 0.5 mm, pink lanceolate, glabrous without, valvate, stamens 10, free, filaments to 0.5 mm, anthers 0.05 mm, gland crested, exserted; ovary stipitate, pilose, to 0.1 mm, style 0.3 mm. sterile flowers with elongate staminodes to 1 mm, with eglandular anthers. Pods linear, flat, 4-5 cm long, coiled when ripe, septate, indehiscent or opening from apex, seeds 4-6, ovoid, compressed. (Fig.55).

Common in open forests and scrub forests. Fl. & Fr.: Ori. Koiridyo. Tel. Velthuru, Tam. Uadatalia. Penzarkonda hills (EG), PRSR 15413 (SKU); Kalasamudram (ATP), PRSR 15493 (SKU);
Fig. 55. *Dichrostachys cinerea* (L.) Wight & Arn. A. Twig; B. Flower; C. Calyx entire; D. Corolla split open; E. Anthers; F. Pistil; G. Pods.
PLATE 14:

A. Desmanthus virgatus (L.) Willd.

B. Dichrostachys cinerea (L.) Wight & Arn.

Unarmed gigantic lianas, up to 30 m long, thick stems are spirally twisted, wood, delicate, branchlets terete, glabrous. Leaves alternate, bipinnate up to 20 cm long, pinnae 2 pairs, 8-12 cm long, leaflets about 2 pairs, even pinnate, ovate-obovate, 4.5-6.5 X 2.5-3.5 cm, chartaceous, glabrous, base subacute-cuneate, margin entire, apex obtuse, retuse glands O; petiole to 3 cm; main rachis generally ending in a bifid tendril. Tendril strongly forked, 1.5 cm, hooked, petiolule to 3 mm, stipules small, setaceous, stipels 0. Flowers pale green in panicked spikes, polygamous peduncle to 8 cm long, bracts linear, flower 2 mm across, calyx 5-lobed, campanulate, 1 mm, petals 5, oblanceolate, 3 mm. Stamens 10, free, filaments apically dilated, subequal, 4.5 mm and 5.5 mm, anthers gland crested, oblong, 0.05 mm, ovary stipitate, 1.5 mm, style 4.5 mm. Pods elongate, flat, 60-80 X 6-8 cm, woody, falcate, sutures very thick, indented between the seeds. Seeds 10-16, orbicular or orbicular-oblong, 4 cm in diameter, compressed, hard, smooth, brown. (Fig.56).

Occasional in Rampa hills, Seshachalam hills, Kolli hills and Nallamalai hills. Fl. April-June, Fr. June onwards. Ver. N.: Ori. Koiridyo, Tel. Gilla Teega, Tikkativva, Tam. Cilla, Irikki, Samudrapuliyam. Gundlabrahmeswaram Forest (KNL), SSR & PRSR 15492 (SKU); Kolli hills (TRCNP), PRSR 17206 (SKU); Rollapenta R.F (KNL), RVR 2351 (SKU); Mantrala kanuma (KNL), JSG 18720 (MH); Cuddapah forests (CDP), CBDM 18605 (MH); Gundlakamma-Gundlabrahmeswaram (KNL), JLE 23794 (MH); Rollapenta R.F (PKM), RKM 0743 (CAL).
Fig. 56. *Entada pursaetha* DC. A. Twig; B. Flower; C. Calyx entire; D. Upper view of the flower entire and with stamens; E. Anthers; F. Pistil; G. Pod.
LEUCAENA Bentham

1 : 12. 1783. Leucaena glauca auct. non Benth. In J. Bot. (Hooker) 4 : 416. 1842; FBI 2 :
290. 1878; Gamble 2 : 419 (297). 1919.

Large erect, unarmed deciduous trees or large shrubs, 6-20 m tall; bark smooth; wood
delicate, branchlets glabrescent. Leaves bipinnate, 10-15 cm long, main rachis slender, pubescent,
ending in a weak spine, petiole 1-2 mm in long; pinnae 3-8 pairs, 2-3 cm long, shortly stalked,
rachises pubescent, leaflets 10-15 pairs, rather distant, 0.6-1.5 X 0.5-0.9 cm, membranous, glaucous,
linear-oblong, apex acute, glabrous or nearly so above, finely pubescent beneath, base oblique or
rounded, margin entire. Flowers white in dense globose heads, heads solitary in the axils of leaves.
Peduncles 1-1.5 cm long, slender, pubescent, elongate and slightly thickened in pod. Flower to
0.6 mm across. Calyx 5-lobed, 3 mm long, campanulate membranous, short tooth, glabrous,
triangular, corolla 5-toothed, 2.5 mm long, whitish, saphate oblong, glabrous; stamens 10, 0.7
mm long, much exserted, anthers not gland crested. Ovary shortly stalked, 3 mm. Slightly hairy at
one side, style 3 mm. Pods 5-12 X 1-1.5 cm, straight, flat; obliquely triangular at the apex, narrowed
at the base into 1-1.5 cm long stalk, glabrous, linear-oblong, strap-shaped, pale to dark brown.
Seeds 20-30, ovoid. (Fig. 57).

Frequently found in forest hedges and near villages. Cultivated in afforestation on the hills.
subabul, Tam. Natlu cauundal. Tutuganta (WG), PRSR & SSR 15420, 15432 (SKU); Maddepadu
Palakonda hills (CDP), PRSR & VSL 17242 (SKU); Near Chandupattu (GJM), PRSR & VNR 17277
(SKU); Narayana Kuppam (NA), EVV 55664 (CAL); Shevaroy hills (SLM), VAA 13765 (CAL); Deogan
(GJM), GPG 8362 (CAL); Poramananderpur (GJM), GPG 23770 (CAL); Hagananakal (SLM), CAB
11624 (MH); Chandragiri (CTR), CAB 10095 (MH); Araku towards-Jolaput (VSKP), GVS 19691 (MH);
Puthur (SA), KMM (MH).

MIMOSA Linnaeus

1. Spreading herbs
2. Straggling shrubs
   2. Branchlets glabrous

... M. pudica
... M. polyancistra
Fig. 57. *Leucaena leucocephala* (Lam.) de Wit A. Twig; B. Flower; C. Calyx and Corolla split open; D. Corolla split open; E. Petals; F. Anthers; G. Pistil; H. Pod.
2. Branchelets pubescent

3. Leaf rachis pubescent, without prickles (rarely prickles) ... M. hamata

3. Leaf rachis not pubescent, with prickles

4. Leaflets overlapping, leaflets 8-12 ... M. intsia

4. Leaflets not overlapping (touching) leaflets 6-8 ... M. prainiana

KEY - II

1. Pods stipitate

2. Prickly along the sutures ... M. prainiana

2. Prickles absent along the sutures ... M. intsia

1. Pods subsessile

3. Bristly along the margins ... M. pudica

3. Prickly along both sutures

4. Pods pubescent, seeds 4-8, ellipsoid ... M. hamata

4. Pods glabrous, seeds 3-6, flattened ... M. polyancistra


Much branched prickly shrubs, upto 2 m tall; branchlets pubescent, with numerous slightly curved or straight prickles. Leaves bipinnate, 3-6 cm long, main rachis pubescent, some times prickly, stipules minute, subulate, hairy, pinnae 4-6 pairs, 1.5 - 2 cm long; shortly stalked. Leaflets 6-10 pairs, obovate-oblong, 4-6 X 2.5-3 mm, hairy beneath, glabrous or nearly so above, apex acute, mucronate, base oblique, rounded, petiolules very short. Flowers pink, in globose heads; axillary, solitary and in short terminal racemes. Slender downy, often with a few prickles, bracteole solitary, linear - spatulate, ciliate at the apex. Flower 2mm across, calyx 5-toothed, to 0.09 mm, short. Campanulate, corolla 4-toothed, pink, to 3mm long, divided nearly half-way down, valvate, connate at base, glabrous without, stamens 8, much exserted, filaments to 5mm, filiform, connate at base. Anthers minute, 0.5 mm. Ovary subsessile, globose, to 1mm, pubescent or slightly hairy, style to 4 mm. Pods flat, strongly falcate, 3-6 X 1-1.5 cm, reddish brown, nearly glabrous, prickly along both sutures. Seeds 4-8, light reddish-brown, ellipsoidal, glabrous. (Fig.58).

Common in scrub forests Fl. & Fr. : June.- November. Mutalapadu (KNL), PRSR, SSR & SPG 15448 (SKU); Guvvalacheruvu R.F (CDP), PRSR & VSL 17238 (SKU); Cuddapah Forest (CDP), JSG 16373 (MH); Chintaldevi (NLR), KCJB 16415 (MH).
Fig. 58. *Mimosa hamata* Willd. A. Twig; B. Flower; C. Calyx split open; D. Corolla split open; E. Staminal column; F. Anthers; G. Pistil; H. Pods.

Large armed straggling shrubs, 6-8 m, bark greyish, rough; branchlets pubescent, prickles short, hooked, to 5 mm. Leaves bipinnate, 9-13 cm long, main rachis slender, grooved, closely set with numerous hooked prickles, stipules linear, to 4 mm, pinnae 4-8 pairs, 4-9 cm long, shortly stalked, the rachises without prickles. Leaflets 8-12 pairs, oblong-elliptic, 0.5-1.5 X 0.3-0.4 cm, overlapping, midnerve close to upper margin, base truncate, margin entire, apex obtuse, acute, stipels minute, petiole to 3 cm, prickled, unequal-sided, glabrous above, slightly pubescent beneath, base obliquely rounded or truncate, petiololes very short. Flower heads pink, to 1.5 cm across. 3-5 in a cluster on racemes, to 10 cm, peduncle to 3 cm; bracteole linear-spathulate. Flowers pink, to 2 mm across. Calyx 4-lobed, 1 mm, teeth very short, ciliolate. Corolla 4-toothed, rose to pink, to 2 mm, connate at base, glabrous without, stamens 10-12, to 7 mm, pistillode 0. Bisexual, stamens 8, filaments 6.5 mm, exserted. Ovary stipitate, terete, 1 mm, style to 6 mm, filiform. Pod stipitate, falcate, 8 X 2 cm, jointed, thin, spinous along margins, strongly nerved, apices obtuse, horned, seeds 5-8, flat, ovoid, beaked, dark brown. (Fig.59).

Frequent in scrub forests of Eastern Ghats. Fl. July-October. Fr.: November-January. Ver.N.: Tel. Korintha, Tam. Kattu sikkai, Chembab. Sunkarimetta (VSKP), PRSR 15476 (SKU); Donubai (SKLM), PRSR 15468 (SKU); Eswarmala R.F (ATP), TP & NY 837 (SKU); Balugaon (GJM), DHP 39541 (CAL); Sambodala (KLHN), SKM 4367 (CAL); Gapteswar (GJP), GVS 30416 (CAL); Vellimali-Gomukidam (SA), KRM 79616 (CAL); Javadi hills (SLM), CECF 3983 (CAL); Kambakkam hill (CGP), CECF 4756 (CAL); Salur (SKLM), NPBK 970 (CAL); Anantagiri (VSKP), NPBK 805 (CAL); Lankamalai R.F (CDP), KSM 6340 (CAL); between Devipatham & Rampachodavaram (EG), GVS 67561 (MH); Kiliyur water falls-Yercaud (SLM), AVNR 26958 (MH); Kollimalai (TRCNP), KCJB 13015 (MH); Urigam forest (DMP), EVV 57953 (MH); Pakamalai R.F (SA), KRM 53501 (MH).


Straggling shrubs, upto 2 m tall, branches prickly, terete, glabrous. Prickles whitish, to 1 cm, straight or slightly curved. Leaves bipinnate, alternate, 10-15 cm long, main rachis pubescent, prickly, stipules minute, subulate, hairy, pinnae 3-5 pairs, to 4 cm long, shortly stalked, their rachises...
Fig. 59. *Mimosa intisia* L. A. Twig; B. Flower; C. Calyx entire; D. Corolla split open; E. Stamens; F. Pistil; G. Pod.
Fig. 60. *Mimosa polyancistra* Benth. A. Twig; B. Flower; C. Calyx entire; D. Corolla split open; E. Stamens; F. Pistil.
downy. Sometimes prickly. Leaflets 4-7 pairs, linear-ovate, oblong, obovate, 0.8 X 0.7 cm, faintly puberulous, rounded at base, apex slightly mucronate, peduncle short. Flowers pink in globose heads, 1-2 cm across. Pedicel short, bracts small, deciduous, bracteoles minute. Pedicel short, calyx 4-lobed, to 0.7 mm (nearly 1 mm), shortly toothed, campanulate, corolla 4-toothed, to 2 mm long, divided at apex, connate at base, stamens 8, much exserted, filaments to 6 mm, filiform, anthers minute, ovary subsessile, glabrous, globose, to 1 mm, pubescent at base, style 5 mm. Pods 8 X 1.5 cm, pointed at tips, flattened, prickly, seeds 3-6, orbicular, flattened. (Fig.60).

Occasional in scrub forests of Eastern Ghats. Fl. & Fr. August- December. Ver.N.: Tel. Errsandra, Pariki, Dorasanibhavi (KNL), PRSR 15450 (SKU); Kiliyar water falls (SLM), PRSR 17222 (SKU); Guvvalacheruvu (CDP), PRSR 17245 (SKU); Chelama (KNL), JLE 16723 (MH); Palakonda R.F (CDP), CS 7738 (MH); Tunnel beat, Diguvametta (PKM), RKM 0525 (CAL); Palkonda (CDP), CECF 4697 (CAL); Lankmalai R.F Sidhout range (CDP), KNS 2397 (DD); Forest near Girany road, Chelama (KNL), JLE 22068 (MH).


Straggling thorny shrubs, to 6 m, branchlets pubescent, with numerous closely set curved or straight short prickles. Leaves bipinnate, 5-8 cm long, main rachis slender, grooved, with hooked prickles, stipules minute, linear, to 2 mm. Pinnae 4-7 pairs, 1.5-2.5 cm long, shortly stalked, rachises without prickles, leaflets 6-8 pairs, sub-ovate-oblong, 3.5 X 2-2.5 mm, hairy beneath, glabrous or nearly so above, touching each other or slightly overlapping, base rounded, apex slightly mucronate, margin entire, petiolules very short. Flowers pink in axillary pedunculate heads, 1-few, to 1 cm across. Peduncle slender, grooved, without prickles; bracteole minute. Flower 2-3 mm across. Calyx 4-lobed, to 0.5 mm, teeth very short, campanulate, corolla 4-toothed, pink, to 2 mm, glabrous without, connate at base, divided nearly half way down. Stamens 8, filaments 8 mm, exserted, filiform, basally connate, anthers small, 0.2 mm. Ovary stipitate, slightly pubescent at base or almost glabrous, terete, 1 mm, style to 8 mm. Pod 6-8 X 1.5 cm, 5-7-jointed, obtuse or slight acute, stipitate, prickly along the sutures, dark brick colour, minutely pubescent, slightly curved, seeds 5-8, small, ovoid. (Fig.61).

Occasional in forest of Eastern Ghats. Fl. & Fr. : August- December. Ver.N.: Tel. Sandra. Pinjerikonda (EG), PRSR 15415 (SKU); Penakacherla (ATP), JSG 20832 (MH).
Fig. 61. *Mimosa prainiana* Gamble A. Twig; B. Flower; C. Calyx entire; D. Corolla split open; E. Stamens; F. Pistil; G. Pod.
PLATE 15:

A. *Leucaena leucocephala* (Lam.) de Wit

B. *Mimosa prainiana* Gamble

Spreading herbs, up to 5 cm tall; branchlets glabrescent or hispid, stems and branches sparingly prickly, prickles short, erect or curved, to 4 mm. Leaves 4-6 cm, sensitive, digitate, petioles 1-2 cm, rachis and petiole hispid, stipules to 5 mm, linear, lanceolate, acute, bristly, pinnae 1-2 pairs, 4-6 cm, sessile or nearly so, rachises with bristles. Leaflets 10-16 pairs, elliptic-oblong, 4-6 X 1-1.5 mm, overlapping, hispid, base truncate-obtuse, margin ciliate, apex acute, glabrous above, clothed with appressed bristles beneath. Flower-heads pink, 1 cm across, 2 or 3 in a cluster, axillary, oblong-globose, peduncle 2-3 cm, bracteoles 2-3, linear, to 4 mm, acute, bristle. Flowers pink, to 0.8 mm across. Calyx 4-lobed, to less than 1 mm, campanulate. Corolla 4-toothed, 1.5 mm, triangular, connate at base, stamens 4, much exserted, filaments to 5 mm, anthers minute. Ovary sub sessile, globose, to 1.5 mm, style to 5 mm. Pods clustered, flat, 1-1.5 X 0.5-0.7 cm, slightly recurved, 2-4-jointed, bristly along margins, apex obtuse, horned, glabrous, seeds 2-5, compressed, ovoid. (Fig. 62).

Common in moist deciduous forests. Fl. November-March. Fr. January-May. Ver. N.: Ori. Lajakuli, Lajkuli, Nachkuli, Tel. Lajjavathi, Tam. Totalvadi. Maredumilli forest (EG), PRSR & SSR 15422 (SKU); Semedu (SLM), PRSR 15495 (SKU); near Kiliyer water falls (SLM), PRSR 17220 (SKU); near Gumma (RYG), PRSR & SPSR 17220 (SKU); Balukhand RF. (KP), VAH 148 (CAL); Koraput Jeypore Ghat Road 7 miles (KP), 18622 (CAL); Kottaiyur R.F. (NA), MBVN 582 (CAL); Sunkarimetta (VSKP), NPBK 759 (CAL); Salur Ghat Road (SKLM), NPBK 896 (CAL); Anantagiri (VSKP), GVS 19445 (MH).

NEPTUNIA Loureiro

KEY - I

1. Aquatic, free floating herbs...

... N. oleracea

1. Terrestrial, prostrate herbs or under shrubs

2. Pinnae 2-3 pairs, leaflets 10-30 pairs...

... N. plena

2. Pinnae 1-3 pairs, leaflets 10-15 pairs...

... N. triquetra

KEY - II

1. Pods long beaked, leaf rachis eglandular...

... N. oleracea

1. Pods short beaked or apiculate, leaf rachis with a gland between the lowest pair of pinnae
Fig. 62. *Mimosa pudica* L. A. Twig; B. Flower; C. Calyx entire; D. Corolla split open; E. Stamens; F. Pistil.

Annual free floating herbs; stem terete, soft, swollen, not much branched, with slender fibrous roots in abundance from the leaf and flower bearing nodes, with white spongy floats on the internodes. Leaves alternate, bipinnate, 6 cm long, stipules obliquely ovate, cordate, acute; petioles 1-2 cm, pinnae 2-3 pairs, 3-5 cm, opposite, shortly stalked. Leaflets 10-15 pairs, sessile, narrow-oblong, 3-8 X 1.5-2 mm, glabrous, inequilateral, base truncate, margin entire, apex obtuse. Flowers yellow, minute in oblong heads, 1 cm across, axillary, lower flowers replaced by numerous yellow staminodes. Peduncles 6-10 cm long, stout, erect, tapering, glabrous, frequently membranous, ovate, acute. Upper flowers male, middle and base sterile flowers. Flower 1.5-2 mm across, calyx 5-lobed, 2 mm, membranous, campanulate, acute, calyx in male to 1 mm, corolla 5-toothed, 3.5 mm long, lobes linear, oblong, acute, glabrous without (corolla in male 2.5 mm long). Stamens 10, to 2 mm long, much exserted; free, filaments slender, subequal, anthers gland-crested. Staminodes in neuter flowers flattened, to 7 mm. Ovary stipitate, 2 mm, style to 5 mm long, filiform. Pods stipitate, flat, slightly curved, oblique at base, septate between seeds, beaked, dry dehiscent, reddish-brown. Seeds 5-7, obovoid-oblong, slightly compressed, brown. (Fig.63).

Occasional in tanks and stagnant water courses on hills of Eastern Ghats. Fl. January-March. Fr. March-July. Ver.N.: Tel. Nirthalavapu, Nidrayam, Tam. Sundaikeerai. On the way to Kavalur (SLM), PRSR 17226 (SKU); Chandragiri (CTR), PRSR & VSL 17257 (SKU); Horsely hills down (CTR), PRSR & VSL 17269 (SKU); pond near Chettarpore (WG), KSM 5115 (MH); Bhatipathar (GJM), GPG 20785 (CAL); Chidambaraam (SA), KRM 80815 (CAL); Poovarasankudi (TRCP) KRM 25907 (MH); Ramsagar Parlakhamundi (GJM), BH 2970 (RRL-B), near Ganjam (GJM), BH 2680 (RRL-B).


Under shrubs, stem erect, moderately stout, glabrous, stem angled, more or less compressed. Leaves bipinnate, 3-7 cm long, pinnae 2-3 pairs, 4-6 cm long, rachis with gland between lower pair of pinnae, petioles short, stipules obliquely ovate, acuminate, persistent, leaflets
Fig. 63. *Neptunia oleracea* Lour. A. Twig; B. Bisexual flower; C. Sterile flower; D. Calyx split open; E. Petals; F. Stamens; G. Sterile stamens; H & I. Pistil.
PLATE 16:

A. *Mimosa pudica* L.

B. *Neptunia oleracea* Lour.
10-30 pairs, petiolule very short, elliptic-oblong, 4-6 X 2 mm, glabrous above, obtuse, apiculate, base oblique, margin ciliate. Flower heads yellow, globose, peduncle axillary. Pods 2-4 X 0.5-1 cm long, flat, obtuse, apiculate, straight, slightly pubescent, brown, seeds 6-7, oblong-obovate, glabrous, polished.

Introduced. Fl. & Fr. May-November. Shevaroy hills (SLM), JSG 368; 410 (MH).


Low perennial, prostrate glabrous herbs, somewhat woody at base, stem abruptly slender, compressed, more or less angled. Leaves bipinnate, 2-6 cm long, pinnae 1-3 pairs, 5 cm long, the lower pair with a small gland in between. Petioles less than 1 mm, stipules obliquely ovate, acuminate, persistent, leaflets 10-15 pairs, sessile, elliptic-oblong, 5 X 2 mm, glabrous, base oblique, margin ciliate, apex rounded. Heads yellow, globose, 1-1.5 cm across, solitary, axillary, sterile flowers few or absent. Bracteole to 1 mm. Pedicel minute. Flower yellow, to 5 mm across. Calyx 5-lobed, minute, to 1 mm, campanulate, corolla 5-toothed, free or acute at the apex, connate at the base, to 3 mm, stamens 10, much exserted, filaments slender, to 4 mm, subequal anthers small, a gland-crested; ovary stalked, 1.5 mm, glabrous, style to 3.5 mm, filiform. Pods oblong, 1-2 X 0.5 cm, flat, straight, nearly equal-sided and tapering at the base, rounded and with a minute beak at the apex, veined, glabrous, dark-brown, black when ripe. Seeds 4-6, oblong-obovate, compressed, dark brown, glabrous, polished. (Fig.64).

Common among grasses. Fl. & Fr.: May-November. Somayajula Palli R.F (KNL), RVR 1888 (SKU); Chintakunta (ATP), TP 459 (SKU); Emora (CGP), DNS 10 (MH); Balugaon (GJM), DHP 39595 (MH); Phirangipuram (GNT), CAB 4610 (MH); Neyilriver (CBT), MCB 28886 (MH).

**PARKIA R. Brown**

**Parkia biglandulosa** Wight & Arn. Prodr. 279. 1834; FBI 2 : 289. 1878.

Unarmed tree, 15-20 m tall, bark black, rough, wood brown, hard, thick, branchlets pubescent. Leaves alternate, bipinnate, 10-14 cm long, pinnae 20-40 pairs, 5-9 cm, leaflets 60-80 pairs, oblong, 2-4 X 0.2-0.5 mm, inequilateral, glabrous above, puberulous below, base truncate, margin ciliate, apex acute obtuse; petiole to 3 cm, with oblong basal glands on the upper side; rachis pubescent, glands opposite to 6 upper pinnae, stipules minute, stipels 0. Flower heads large, globose, axillary, solitary, 4-5.5 X 3.5-5 cm, pendulous, peduncle 6-10 cm, bract clavate, to 1.2 cm,
Neptunia triquetra (Willd.) Benth. A. Twig; B. Flower; C. Calyx split open; D. Petals; E. Bracteole; F. Stamens; G. Anthers; H. Pistil.

Fig. 64.
apex dilated. Calyx 5-lobed, infundibuliform; corolla 5-toothed, cream, subequal to calyx, basally connate, staminal tube long, stamens 10, monadelphous, filament long, anthers eglandular. Ovary stipitate, glabrous, style short. Pod with an elongate stipe, 14-16 cm, oblong-linear, compressed brown, dehiscent, slightly curved when dry. Seeds 6-13; ellipsoid, compressed to ovoid.


Middle-sized armed tree, 13-15 m tall, armed with straight stipular thorns. Wood reddish, strong; branchlets densely tomentose. Leaves bipinnate, petiole 1.5 cm, with a solitary apical concave gland. Pinnae 2 pairs, leaflets 1 pair, obliquely oblong, 2.3 X 0.5-1 cm, glabrous, base and apex obtuse, margin entire, apiculate, petiolule to 1 mm; stipular spines erect, to 1.5 cm; stipels linear, 1 mm. Flowers white in heads, heads in terminal and axillary panicles, 9-12 cm long, peduncle 1-1.5 cm, bract small, bracteole close to calyx, caducous. Flower to 1 mm across. Calyx 5-lobed, campanulate, 1 mm, pubescent. Corolla 5-toothed, cream, to 2.5 mm, connate above the middle, valvate, densely tomentose without, staminal tube to 6 mm. Stamens many, monadelphous, filaments 4.5 mm, anthers eglandular, ovary sessile, to 1 mm, glabrous, style 1.5 mm. Pods strap-shaped, 13-15 X 0.1-1 cm, torulose, spirally twisted, sub moniliform, turgid, dehiscent, seeds black, 5-7, broadly ovate, covered by reddish-white aril. (Fig.65).

Occasionally present in forest, cultivated as a hedge plant, waste lands and along road sides. Fl. & Fr.: November-June. Ver. N: Ori. Simaboina, Tel. Simachinta, Tam. Kodukkaapulli. Bhimudupakala (EG), PRSR & SSR 15410 (SKU); Talakona (CTR), PRSR & VSL 17264 (SKU); G.Udyagiri (PBN), PRSR & VNR 17290 (SKU); Yaganti near Bugganipalli (KNL), RVR 3088 (SKU); way to Tirumala (CTR), KSM 7875 (MH); Notchedinger (KP), GVS 30246 (CAL); Podampur (GJM), GPG 20577 (CAL); Donkanikotta Forest (DMP), KMM & NVGP 17227 (CAL); Vellingiri hills (CBT), KMS 2260 (CAL), Chandragiri (CTR), CAB 9983 (MH); Anantagiri (VSKP), GVS 19498 (MH).
Fig. 65. *Pithecellobium dulce* (Roxb.) Benth. A. Twig; B. Flower; C. Calyx split open; D. Corolla split open; E. Anthers; F. Pistil; G. Pods.
PROSOPIS Linnaeus

Key : 1

1. Pinnae only 1 pair, corolla pilose upto above middle ... P. glandulosa

1. Pinnae 1-3 pairs, corolla other than pilose

2. Leaflets 15-17 pairs ... P. chilensis

2. Leaflets 7-15 pairs ... P. cineraria

KEY - II

1. Pods turgid, moniliform, ovary sessile ... P. cineraria

1. Pods compressed, straight with parallel sutures or sub moniliform, ovary stipitate

2. Seeds 15-19 ... P. chilensis

2. Seeds 10 ... P. glandulosa


Armed shrubs or small trees, 8-10 m; branchlets glabrous; spines axillary, 1-1.5 cm long, straight. Leaves alternate or clustered, bipinnate, pinnae 1-2 pairs, 4-6 cm long, leaflets 15-17 pairs, oblong, 0.7-1.5 X 0.2-0.3 cm, chartaceous, inequilateral, glabrous, base and apex obtuse, margin entire, petiole 1-2 cm, glabrous, prolonged above as a bristle, eglandular; rachis with a solitary gland; petiolule sessile, stipules spinescent; peduncle 2-2.5 cm. Flowers yellow, spike 2-8 cm long, axillary, solitary, bisexual, bracteole linear, to 1.5 mm; pedicel to 0.5 mm. Flower yellow, 1.5 mm across. Calyx 5-lobed, campanulate, 1 X 0.7 mm, triangular, corolla 5-toothed, 1.5 X 1 mm, pilose within, united below middle, stamens 10, free, filament 4 mm, anther with a deciduous gland. Ovary stipitate, to 2 mm, pubescent, style to 1.5 mm. Pod drupaceous, 8-15 X 0.8-0.9 cm, straight or slightly curved, compressed, septate, indehiscent, seeds 15-19, ovoid. (Fig. 66).

Fig. 66. *Prosopis chilensis* (Molina) Stuntz

A. Twig; B. Flower; C. Calyx split open; D. Corolla split open; E. Stamens; F. Anthers; G. Pistil.

Middle-sized armed glabrous thorny trees; 8-10 m tall, bark thick, grey, rough with deep fissures and cracks. Sap-wood large, irregular masses, of dark-brown heart wood in the centre of old trees, branchlets armed with scattered broad-based conical prickles, 0.2-0.8 mm. Leaves bipinnate, 3.5-5 cm long, main rachis glabrous or puberulous. Pinnae 2-3 pairs, opposite, 1-3 cm long, leaflets 7-15 pairs, sessile, oblong, 0.6-1.2 X 0.3-0.5 cm, appressed hairy, base oblique, margin entire, apex rounded, mucronate, unequal-sided, grey, glabrous. Flowers yellow, in 6-10 cm long slender, simple or branched spike, peduncled, axillary, bracts small, membranous, pedicel minute. Flower yellow, 1.5-2 mm across. Calyx 5-lobed, 2 X 3 mm, cup-shaped, membranous, petals 5, 2-3 mm, acute, yellow. Stamens 10, free, exserted, filaments 4 mm, anthers gland-tipped. Ovary sessile, to 2.5 mm, glabrous, style filiform, to 1.5 mm. Pod straight or curved, 5-10 cm long, turgid, moniliform, slender, cylindric, torulose, glabrous pendent. Seeds 10-15, dull brown, oblong. (Fig.67).

Common in open forest, more rarely in interior forests. Fl. & Fr. October-June. Ver.N.: Ori. Shami, Tel. Jammi, Tam. Perumbe. Maredumilli (EG), PRSR & SSR 15421 (SKU); Devanipenta (KNL). PRSR & SSR 15447 (SKU); Shevaroy hills (SLM), JSG 331 (CAL); Near Virudachalam (SA), KRM 90409 (CAL); Kambakkam hills (CGP), CAB 9002; 8958 (MH); Tirupathi (CTR), DRC 23087 (MH); Chandragiri (CTR), CAB 10094 (MH); Sidhoot hill (CDP), JSG 10869 (MH); Srisailam (KNL), PSK 79540 (MH).


Small tree, upto 4 m tall; bark grey; branchlets glabrous, spines axillary, to 1.5 cm, straight, leaves bipinnate, petiole 5-6 cm, eglandular, pinnae 1 pair, 14-16 cm long, leaflets 12-14 pairs, linear, oblong, 2-3.5 X 0.3-0.5 cm, glabrous, apex acute, margin entire, base connate, petiolule short,
Fig. 67. *Prosopis cineraria* (L.) Druce A. Twig; B. Flower; C. Calyx split open; D. Petals; E. Stamens; F. Pistil.
Fig. 68. *Prosopis glandulosa* Torrey A. Twig; B. Flower; C. Petal; D. Corolla split open; E. Stamens; F. Pistil.
1 mm, rachis with a solitary gland, stipules spinescent, stipels 0. Flower heads creamish-yellow, to 7.5 cm long axillary spikes. Peduncle 1-1.5 cm. Pedicel 0.20 mm. Flower to 1 mm across, calyx 5-lobed, campanulate to 1.25 mm, glabrous without, corolla 5-toothed, cream, 3 X 3 mm, pilose on apex upto above middle, united above middle. Stamens 10, free, filaments to 5 mm, anthers 0.2 mm wth a deciduous gland. Ovary stipitate, to 2 mm, pubescent, style 3.5 mm. Pods straight or slightly curved, compressed, beaked, 14-18 X 0.5-1 cm, indehiscent. Seeds more than 10. (Fig.68).

Introduced and Naturalised. Fl. January-February, Fr. March- April. Owk R.F (KNL), RVR 3049 (SKU); Devipatnam (EG), GVS 24434 (MH); Visakhapatnam (VSKP), GVS 22546 (MH); Palamalai (CBT), MVV 6 (MH); Foot of Kannamali (CBT), CPSM 690 (MH); Pannapatti Hogainokal (SLM), EVV 20708 (MH).

**SAMANEA** (A.P. de Candolle) Merrill


Large unarmed tree, 15-20 m tall. Bark whitish, rough, wood thick, brownish, delicate. Branchlets yellowish-tomentose, leaves alternate, bipinnate, 10-16 cm long. Pinnae 2-4 pairs, 6-8 cm long; leaflets 6-7 pairs; basal pairs oblong-elliptic, 1-2.5 X 0.7-1.5 cm; upper ones obovate, inequilateral, 1-3.5 X 0.7-2.5 cm, puberulous or glabrous above, pubescent below, base truncate, cuneate, margin entire, apex obtuse, apiculate, petiole 3.5-4.5 cm, eglandular, rachis tomentose, with glands opposite to all most all pinnae. Petiolule reduced or O; stipules linear to 3-5 mm, caducous; stipels 0. Flower heads pinkish-brown in terminal or axillary corymbose panicles, 2 cm across. Peduncle 4-6 cm; bracts lanceolate, 0.6-1 cm; bracteoles linear, to 5 mm, pedicel to 1.5 mm. Flowers pinkish-brown, 20-25 per head, each 2.5-3.5 cm long, to 5 mm across. Calyx 5-lobed, to 6 mm, pubescent, ovate, acute, triangular, connate from above middle. Corolla 5-toothed, to 6 mm, connate from above middle, densely pubescent, staminal tube 2.9 cm, stamens many, monadelphous, filaments to 2.6 cm, apex pinkish, base white; anthers small, eglandular, ovary stipitate, to 6 mm, style to 2.7 cm, glabrous. Pods linear-oblong. 10-13 X 1-1.5 cm, slightly twisted, woody. Septate between seeds, dehiscent, brownish-black. Seeds 8-10, ovoid. (Fig.69).
Fig. 69. *Samanea saman* (Jacq.) Merr. A. Twig; B. Flower; C. Calyx split open; D. Corolla split open; E. Pistil; F. Anthers.

Unarmed deciduous trees, upto 15 m; bark reddish grey, rough, wood hard; branchlets brown tomentose. Leaves bipinnate, 15-20 cm long, petiole 4-5 cm long, with a gland at the apex between the pinnae, pinnae 2, terminal on the petiole, 10-15 cm long, leaflets 2-4 pairs, diminishing downwards, with often a small unopposed leaflets on the outside below the lowest pair of leaflets, elliptic-lanceolate, lower ones 2-3 X 1-2.5 cm, upper ones 4-7 X 2.5 - 3.5, oblong, acute, base rounded, margin entire, apex acuminate, glands present in between each pair of leaflets, sub coriaceous, glabrous, entire, petiolules, 0.8-0.9 mm long. Flowers yellowish white, sessile, in dense globose heads. Peduncles 1-2 cm long, axillary, fascicled or racemose, bracts 0, bracteole club shaped. Flower yellow, 1.5 mm across, calyx 5- toothed, tubular, 2 mm. Corolla yellowish-white, 5-toothed, to 4 mm, samens 10, free, filaments 7 mm long, slender, exserted, anthers crest when young with a stalked deciduous gland. Ovary sessile, to 2mm, style filiform, 8 mm. Pods flat, large, 10-15 X 4 cm, thick, woody, oblong, falcate, rusty-tomentose, septate between the seeds, dehiscent, some what shoe-shaped, seeds 4-6, oblong-ellipsoid, brown, smooth, polished. (Fig.70)
Fig. 70 *Xyilia xylocarpa* (Roxb.) Taub. A. Twig; B. Inflorescens; C. Flower; D. Calyx split open; E. Corolla split open; F. Stamens; G. Anthers; H. Pistil.
PLATE. 17:

A. *Pithecellobium dulce* (Roxb.) Benth.

B. *Xyia xylocarpa* (Roxb.) Taub.