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AND ADJOININGS, MAHARASHTRA**

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&

M.P. NAYAR



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Cover Photo : Barleria lawii T. And.

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Barleria lawii T. And.



Pogostemon benghalensis (Burm. f.) O. Ktze.



Euphorbia pycnostegia Boiss.



Cymbopogon martinii (Roxb.) Wats.

ACANTHACEAE

1. Corolla of 5-subequal lobes :
 2. Stamens 4 :
 3. Flowers solitary or in fascicles ... **DIPTERACANTHUS**
 3. Flowers in spikes or racemes :
 4. Flowers in racemes ... **ASYSTASIA**
 4. Flowers in spikes :
 5. Calyx 2-lipped ... **NEURACANTHUS**
 5. Calyx 5-lobed :
 6. Leaves sessile ; bracts bristly with jointed hairs ... **PLEOCAULUS**
 6. Leaves petioled ; bracts not as above :
 7. Flowers uniformly white :
 8. Bracteoles present ; capsules 2-seeded ... **THELEPAEPALAE**
 8. Bracteoles absent ; capsules 4-seeded ... **PHAULOPSIS**
 7. Flowers with white tube and blue or purple limb :
 9. Bracts orbicular ; capsules 2-seeded ... **CARVIA**
 9. Bracts obovate-oblong ; capsules 4-seeded ... **SUPUSHPA**
 2. Stamens 2 :
 10. Calyx 4-lobed ... **BARLERIA**
 10. Calyx 5-lobed :
 11. Bracts obovate, reticulately veined ... **ERANTHEMUM**
 11. Bracts elliptic or ovate, not reticulately veined :
 12. Flowers in elongated spikes ; capsules 4-seeded ... **NILGIRIANTHUS**
 12. Flowers in capitate spikes ; capsules 6 - 10-seeded ... **HEMIGRAPHIS**
 1. Corolla 2-lipped :
 13. Upper lip of corolla obsolete ... **BLEPHARIS**

13. Upper lip of corolla well-developed :

14. Stamens 4 :

15. Corolla lobes twisted in buds ; seeds 8-10 ... **HYGROPHILA**

15. Corolla lobes imbricate in buds ; seeds 2-4 ... **LEPIDAGATHIS**

14. Stamens 2 :

16. Capsules 2 - 4-seeded :

17. Prostrate herbs ; flowers in axillary cymes ... **DICLIPTERA**

17. Erect herbs or shrubs ; flowers in spikes :

18. Lower anther cells spurred at base :

19. Placentas separating elastically from the valves from base upwards ... **RUNGIA**

19. Placentas not separating elastically from the valves ... **JUSTICIA**

18. Anther cells not spurred :

20. Flowers white ... **RHINACANTHUS**

20. Flowers pink or blue :

21. Flowers in trichotomous cymes ; bracts linear ... **PERISTROPHE**

21. Flowers in spikes ; bracts elliptic-lanceolate :

22. Flowers blue ; bracts aristate ... **ECBOLIUM**

22. Flowers pink ; bracts not aristate ... **ROSTELLULARIA**

16. Capsules 6-many-seeded :

23. Branches reduced to spiny cladodes ... **HAPLANTHODES**

23. Branches not as above :

24. Flowers white in axillary racemes ... **ANDROGRAPHIS**

24. Flowers pink in terminal spikes ... **GYMNOSTACHYUM**

ANDROGRAPHIS Wall.

Andrographis echinoides (L.) Nees in Wall. Pl. As. Rar. 3 : 117. 1832 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 505. 1884 ; Cooke, Fl. Pres. Bombay 2 : 451. 1958 (Repr. ed.) ; Puri & Mahajan in Bull. Bot. Surv. India 2 : 129. 1960. *Justicia echinoides* L. Sp. Pl. 16. 1753.

Herbs, 15 - 40 cm high ; branches quadrangular, grooved, hairy. Leaves sessile, oblong, 3 - 8 × 1.0 - 1.5 cm, base cuneate, apex obtuse, sparsely hairy. Calyx lobes linear, acute, glandular-hairy ; corolla : upper lip obovate-oblong, 2-lobed, lower 3-lobed. Capsules elliptic-lanceolate, 0.8 - 1.2 cm long, hairy. Seeds oblong, pitted.

Fls. & Frts. : August - September.

Distrib. : Occasional annuals in open grasslands. Mahabaleshwar.

ASYSTASIA Bl.

Asystasia dalzelliana Sant. in Kew Bull. 1948 : 276. 1948 & Sant. in Univ. Bombay Bot. Mem. 2 : 68. 1952. *A. violacea* Dalz. ex C.B. Cl. in Hook. f. Fl. Brit. India 4 : 494. 1884 non Dalz. 1850 ; Cooke, Fl. Pres. Bombay 2 : 467. 1958 (Repr. ed.).

Stems subscentent, quadrangular, striate. Leaves elliptic-lanceolate, 5.0 - 7.5 × 2.4 - 3.6 cm, base truncate, apex acute, pubescent. Flowers purple ; calyx and corolla hairy without. Capsules clavate, 1.0 - 1.5 cm long, pubescent.

Fls. & Frts. : July - November.

Distrib. : Common in forest undergrowth. Koyna, Mahabaleshwar, Panchgani, Tapola, Wai.

BARLERIA L.

- | | | |
|--|-----|---|
| 1. Armed ; capsules 2-seeded | ... | <i>B. prionitis</i> |
| 1. Unarmed ; capsules 4-seeded : | | |
| 2. Seeds glabrous | ... | <i>B. gibsonioides</i> |
| 2. Seeds hairy : | | |
| 3. Flowers white in cymes ; capsules obovoid | ... | <i>B. lawii</i> |
| 3. Flowers bluish in spikes ; capsules ellipsoid : | | |
| 4. Outer sepals spinous-tipped | ... | <i>B. cristata</i> |
| 4. Outer sepals not as above | ... | <i>B. strigosa</i>
var <i>terminalis</i> |

Barleria cristata L, Sp. Pl. 636. 1753 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 488. 1884 ; Cooke, Fl. Pres. Bombay 2 : 460. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 59. 1952.

Herbs, 1 - 2 m high ; stems quadrangular, hairy. Leaves elliptic-oblong, 3.0 - 7.5 × 1.5 - 3.0 cm, hairy. Calyx and corolla pubescent ; bracteoles membranous, linear, ca 1.3 cm long, hairy, margin ciliate, toothed. Capsules 1.0 - 1.5 cm long. Seeds orbicular.

Fls. & Frts. : September - October.

Illus. : Wight, Ic. t. 453. 1841.

Distrib. : Occasional near forest clearings. Morgiri, Yavtेशwar.

B. gibsonioides Blatt. in J. Bombay nat. Hist. Soc. 32 : 733, t. 1. 1928 ; Sant. in Univ. Bombay Bot. Mem. 2 : 64. 1952.

Undershrubs, ca 1 m high ; stems quadrangular, obscurely winged. Leaves ovate to ovate-oblong, upto 14 × 10 cm, margin spiny. Flowers purple in dense terminal, ca 10 cm long spikes ; bracts foliaceous, elliptic-lanceolate, acute ; bracteoles linear ; corolla glandular-hairy. Capsules oblong.

Fls. & Frts. : October.

Illus. : Blatt. *op. cit.*

Notes : Known only by Blatter's report (*op. cit.*), no herbarium specimen is available in any herbarium. Below Godowli, 3 miles from Panchgani, Blatter 1-7 (BLAT).

B. lawii T. And. in J. Linn. Soc. 9 : 492. 1867 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 486. 1884 ; Cooke, Fl. Pres. Bombay 2 : 460. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 59. 1952.

Shrubs, 1 - 2 m high, hairy. Leaves elliptic, 3 - 9 × 1.3 - 3.2 cm, base tapering into short petiole, apex acuminate, hairy. Bracteoles linear-lanceolate ; calyx lobes in 2 pairs, outer elliptic-lanceolate, acute, longer than inner pair, reticulately nerved, inner lanceolate, acute. Seeds orbicular.

Fls. & Frts. : November.

Illus. : Bedd. Ic. 62, t. 258. 1874 (*B. beddomei* T. And. ex Bedd.).

Distrib. : Occasional on grassy slopes. Mahabaleshwar-Pratapgad, Bhide 1171 ; Pali-Nagthana, Gammie s.n.

Notes : Lee (1885) reported *Barleria grandiflora* from Mahabaleshwar. In this context it should be remembered that *B. lawii* T. And. is often mistaken for *B. grandiflora* Dalz. The differences between the two species as given by Cooke (*op. cit.*) are tabulated below :

<i>B. lawii</i>	<i>B. grandiflora</i>
1. Branches appressed hairy.	1. Branches glabrous except for a few hairs at nodes.
2. Leaves glabrous or slightly hairy and lincolate above, hairy on the nerves beneath; nerves beneath ; nerves 6 pairs.	2. Leaves glabrous ; nerves 8 10 pairs.
3. Bracteoles linear-lanceolate.	3. Bracteoles linear-ligulate.
4. Outer sepals hairy on both surfaces.	4. Outer sepals glabrous without.
5. Capsules obovoid, glabrous.	5. Capsules oblong, glandular-pubescent.
6. Seeds silky hairy.	6. Seeds glabrous.

Santapau (*op. cit.*) pointed out some differences in features like size of corolla, apex of corolla lobes and venation of dry corollas. Surprisingly he had not mentioned any of the features tabulated above. Depending upon Santapau's remarks, Bole & Almeida (1985) have concluded that both these species should be merged as characters are not distinct enough to maintain them separately. In that case, *B. grandiflora* Dalz. will be the valid name as it antedates *B. lawii*. However, merging of the two species does not arise at all as both are taxonomically distinct. Incidentally, *B. lawii* occurs in Konkan and Deccan too, whereas *B. grandiflora* has been collected so far from Konkan only. Therefore, Lee's report of *B. grandiflora* from Mahabaleshwar (1885) is probably *B. lawii* only.

Barleria prionitis L. Sp. Pl. 636. 1753 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 482. 1884 ; Cooke, Fl. Pres. Bombay 2 : 457. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 57. 1952. '*Kate-koranti*'.

Shrubs, ca 1.5 m high ; stems quadrangular. Leaves elliptic, 6 - 12 × 2 - 4 cm, pubescent beneath when young, tapering into short petioles. Flowers yellow, in lax spikes ; bracts oblong, lanceolate, bristle pointed, ca 3 cm long ; calyx : outer lobes oblong-lanceolate, mucronate, inner linear-lanceolate. Capsules ovoid with a long beak, ca 2 cm long.

Fls. & Frts. : November - December.

Illus. : Wight, Ic. t. 452, 1841 ; Maheshwari, Ill. Fl. Delhi f. 170, 1966.

Distrib. : Frequent in waste places, also cultivated in gardens or near cultivated fields as a hedge plant. Kumbharli ghat.

Barleria strigosa Willd. var. **terminalis** (Nees) C.B.Cl. in Hook. f. Fl. Brit. India 4 : 490. 1884 ; Cooke, Fl. Pres. Bombay 2 : 462. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 61. 1952. *B. terminalis* Nees in DC. Prodr. 11 : 225. 1847 ; Malhotra & Moorthy in Indian Forester 107 : 448, t. 1. 1981.

Shrubs, 1 - 2 m high ; stems sparsely strigose. Leaves elliptic-lanceolate, 6 - 14 × 2.5 - 6.0 cm, strigose. Bracts and bracteoles lanceolate, ca 1 cm long, hairy ; calyx lobes in unequal pairs ; outer elliptic-lanceolate, strigosely hairy, inner linear, acute. Capsules 1.0 - 1.5 cm long.

Fls. & Frts. : November - January.

Illus. : Malhotra & Moorthy, *op. cit.*

Distrib. : Common throughout the district on grassy hill-slopes and along ghats. Fitzgerald ghat, Kelghar ghat, Kistrude, Koyna, Mahabaleshwar, Mahabaleshwar-Pratapgad, Tapola.

BLEPHARIS A.L. Juss.

Blepharis asperima Nees in DC. Prodr. 11 : 267. 1847 ; C. B. Cl. in Hook. f. Fl. Brit. India 4 : 478. 1884 ; Cooke, Fl. Pres. Bombay 2 : 424. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 14. 1952. '*Akada*'.

Herbs, 25 - 40 cm long ; stems suberect or prostrate, rooting at nodes. Leaves ovate-lanceolate, 2 - 6 × 1 - 3 cm, hairy. Flowers blue, solitary or in terminal spikes ; bracteoles 3 - 4 pairs, ovate-lanceolate ; calyx lobes 4, oblong-spathulate, unequal ; corolla 2.0 - 2.5 cm long, lower lip oblong, 3-lobed. Capsules 0.4 - 0.6 cm long.

Fls. & Frts. : Throughout the year.

Illus. ; Wight, Ic. t. 1534. 1850.

Distrib. : Common near forest margins. Kas, Kelghar ghat, Koyna, Mahabaleshwar, Panchgani.

CARVIA Bremek.

Carvia callosa (Nees) Bremek. in Verh. Nederl. Akad. Wet. 2, 40 : 187 1944 ; Sant. in Univ. Bombay Bot. Mem. 2 : 46. 1952. *Strobilanthes callosus* Nees in Wall. Pl. As. Rar. 3 : 85. 1832 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 451. 1884 ; Cooke, Fl. Pres. Bombay 2 : 444. 1958 (Repr. ed.). 'Karvi'.

Shrubs, 2-4 m high ; stems warted. Leaves elliptic-lanceolate, 12-22 × 5-9 cm, base rounded or tapering, apex acuminate, margins crenate, ciliate, sparsely hairy. Bracts imbricate, green with a pinkish tinge. Calyx lobes elliptic-lanceolate, pubescent ; corolla tube slightly curved, lobes rounded at apex ; filaments of longer stamens bearded. Capsules 0.3-0.6 cm long.

Fls. & Frts. : September-January.

Illus. : Wight, Ic. t. 1520. 1850.

Distrib. : One of the most common components of deciduous and evergreen forest, found in association with *Cynoglossum zeylanicum*. It flowers at interval of 8 years. Bamnoli, Kas, Khambli-Chorghe ghat, Mahabaleshwar, Nauja, Pratapgad, Satara.

DICLIPTERA A.L. Juss.

Dicliptera zeylanica Nees in DC. Prodr. 11 : 474. 1847 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 552. 1884 ; Cooke, Fl. Pres. Bombay 2 : 482, 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 79. 1952.

Stems hairy or densely white woolly. Leaves ovate, 2.5-7.5 × 1.2-4.0 cm, hairy. Flowers pink ; bracts broadly ovate in opposite pairs enclosing 1-3 flowers, hairy ; corolla : upper lip obovate, entire, lower oblong, 3-lobed. Capsules obovoid, ca 0.5 cm long.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 1551. 1849 (*D. bivalvis* Nees *op. cit.* 475).

Distrib. : Common in shady localities near forest edges. Bamnoli, Koyna, Mahabaleshwar.

DIPTERACANTHUS Nees

Dipteracanthus prostratus (Poir.) Nees in Wall. Pl. As. Rar. 3 : 81. 1832 ; Sant. in Univ. Bombay Bot. Mem. 2 : 24. 1952. *Ruellia prostrata* Poir. in Lam. Encycl. 6 : 349. 1804 ; C.B. Cl. in Hook. f. Fl. Brit. India

4 : 411. 1884. *R. prostrata* Poir. var. *dejecta* C.B. Cl. *op. cit.* 412 ; Cooke, Fl. Pres. Bombay 2 : 431. 1958 (Repr. ed.).

Herbs, 20 - 50 cm long. Leaves ovate or elliptic, 1 - 2 × 0.7 - 1.4 cm, sparsely hairy. Flowers sessile, pale violet ; calyx 5-lobed, hairy ; corolla tube narrowly cylindrical below, infundibuliform above, pubescent ; lobes obovate-oblong. Capsules clavate, ca 1 cm long.

Fls. & Frts. : Throughout the year.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 525. 1982.

Distrib. : Common in drier parts of the district. Jarandeshwar, Phaltan, Satara road station, Shirgaon ghat.

ECBOLIUM Kurz

Ecbolium viride (Forsk.) Alst. var. *laetevirens* (C. B. Cl.) Sant. in Rec. Bot. Surv. India 16(1) : 208. 1960 (2nd ed.) & 208. 1967 (3rd Rev. ed.). *E. linnaeanum* var. *laeteviren* (Vahl) C.B. Cl. in Hook. f. Fl. Brit. India 4 : 545. 1885 ; Cooke, Fl. Pres. Bombay 2 : 484. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 82. 1952. '*Ran-aboli*'.

Undershrubs, ca 1 m high. Leaves elliptic-lanceolate, 8 - 13 × 2 - 4 cm. Flowers in lax, 6 - 10 cm long. spikes ; bracts imbricate, foliaceous, pubescent, ciliate ; bracteoles lanceolate, acute ; calyx lobes 5, linear, hairy ; corolla hairy without, lower lip 3-lobed, upper narrowly linear, notched at apex. Capsules 1.5 - 2.5 cm long, pubescent.

Fls. & Frts. : September - November.

Illus. : Wight, Ic. t. 463. 1841 (*Justicia ecbolium* L. Sp. Pl. 15. 1753).

Distrib. : Frequent in semi-evergreen forests as undergrowth, worth introducing in gardens as an ornamental plant. Jangli Jaigad, Nauja, Shirshingi.

ERANTHEMUM L.

Eranthemum roseum (Vahl) R. Br. Prodr. 477. 1810 ; Sant. in Univ. Bombay Bot. Mem. 2 : 34. 1952 ; Bole & Almeida in J. Bombay nat. Hist. Soc. 82 : 76. 1985. *Justicia rosea* Vahl, Enum. Pl. 1 : 165. 1804. *Daedala-canthus roseus* T. And. in J. Linn. Soc. 9 : 487. 1867 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 419. 1884 ; Cooke, Fl. Pres. Bombay 2 : 439. 1958 (Repr. ed.). '*Dasamuli*'. (Fig. 39).

Shrubs, ca 1.5 m high ; stems quadrangular, hairy. Leaves oblong-lanceolate, 6 - 15 × 3.0 - 5.5 cm, base narrowed, apex acuminate. Flowers

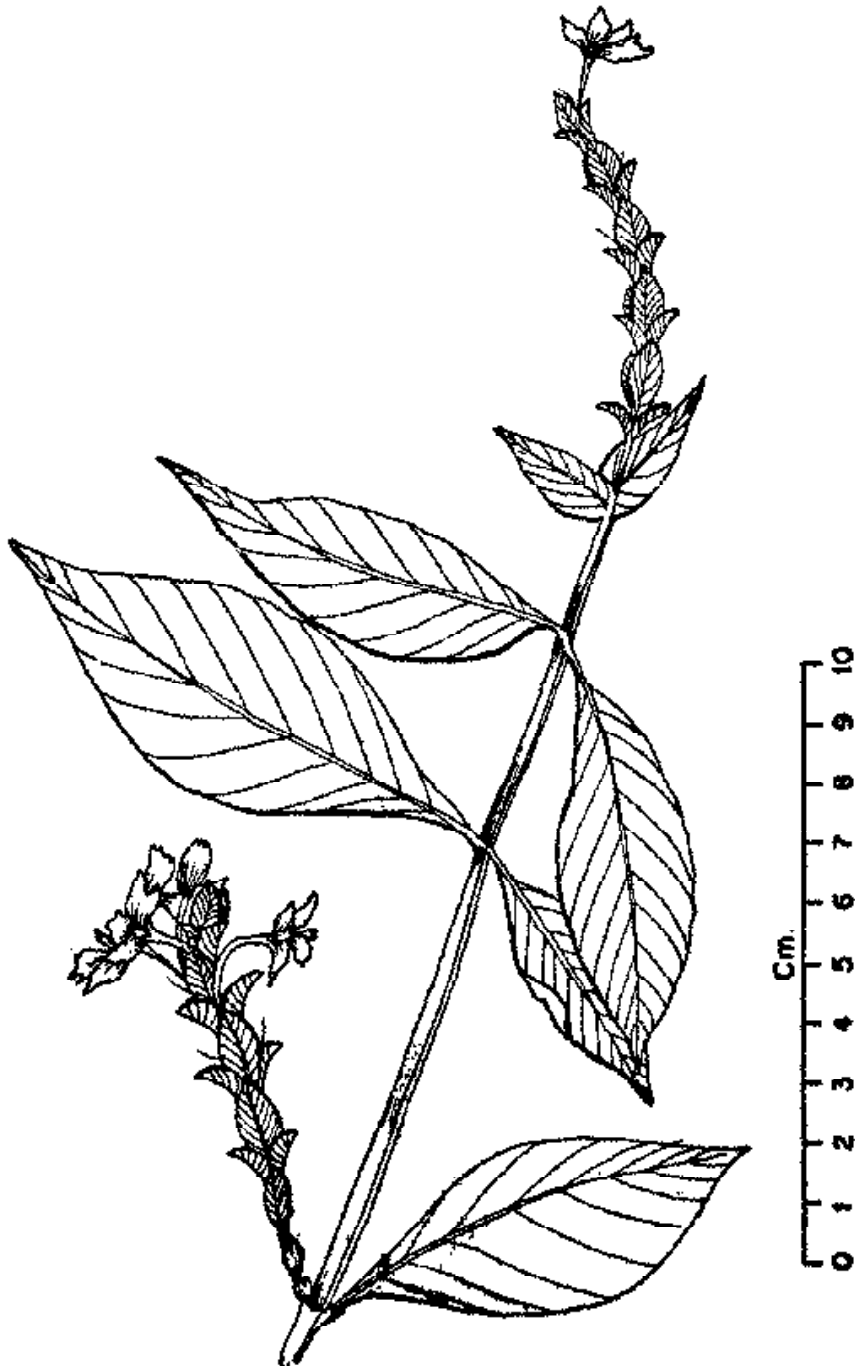


Fig. 39. *Eranthemum roseum* (Vahl) R. Br.

blue, fading red in axillary and terminal, solitary or paired spikes ; bracts white with green nerves, hairy. Capsules clavate, *ca* 1.2 cm long.

Fls. & Frts. : Throughout the year.

Distrib. : Common in shady places near forest clearings. Ambeghar, Koyna, Mahabaleshwar, Morgiri, Nauja, Satara, Umarkanchan.

GYMNOSTACHYUM Nees

Gymnostachyum glabrum (Dalz.) T. And. in J. Linn. Soc. 9 : 506. 1867 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 509. 1884 ; Cooke, Fl. Pres. Bombay 2 : 454. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 54. 1952. *Cryptophragmium glabrum* Dalz. in Kew J. Bot. 2 : 338. 1850.

Herbs, *ca* 1 m high ; stems obtusely quadrangular. Leaves elliptic-lanceolate, 4 - 16 × 1.4 - 4.0 cm, tapering into short petioles, margins wavy. Bracts lanceolate, acute ; calyx glandular hairy, lobes linear-lanceolate, acute ; corolla : upper lip 2-lobed, lower 3-lobed, lobes oblong, obtuse. Capsules subcylindric 1.0 - 1.5 cm long, glandular-hairy.

Fls. & Frts. : February.

Illus. : Bedd. Ic. t. 251. 1874.

Distrib. : Rare near forest clearings in semi-evergreen and deciduous forests. Mahabaleshwar, Law (Sant. *op. cit.*) ; Nauja, Kochhar 154314.

HAPLANTHODES O. Ktze.

- | | | |
|---|-----|---------------------------|
| 1. Cladodes quadrangular, more than 1 cm long ; capsules glabrous | ... | <i>H. verticillata</i> |
| 1. Cladodes filiform, upto 1 cm long ; capsules pubescent : | | |
| 2. Flowers in terminal whorls ; cladodes erect | ... | <i>H. neilgherryensis</i> |
| 2. Flowers in axillary whorls ; cladodes curved | ... | <i>H. tentaculata</i> |

Haplanthodes neilgherryensis (Wight) R.B. Majumder in Bull. Bot. Soc. Beng. 25 : 76. 1971 ; Panigr. & Das in Bull. Bot. Surv. India 23 : 201. 1981. *Haplanthus neilgherryensis* Wight, Ic. t. 1556. 1850 ; Sant. in Univ. Bombay Bot. Mem. 2 : 52. 1952. *H. tentaculatus* Nees in DC. Prodr. 11 : 513. 1847, *p.p.* ; Cooke, Fl. Pres. Bombay 2 : 453. 1958 (Repr. ed.) *p.p.* *H. tentaculatus* var. *neilgherryensis* C B. Cl. in Hook. f. Fl. Brit. India 4 : 507. 1884. *Bremekampia neilgherryensis* (Wight) Sreem. in Bull. Bot. Surv. India 6 : 323. 1965.

Herbs, 20-30 cm high, pubescent. Leaves ovate, $2-5 \times 1.0-3.5$ cm, base decurrent into petioles, apex acuminate; spines densely hairy. Flowers purple. Capsules *ca* 0.7 cm long.

Fls. & Frts. : December - February.

Illus. : Wight, *op. cit.*

Distrib. : Common in forest undergrowth. Koyna, Mahabaleshwar-Pratapgad, Punoli, Shirshingi.

Haplanthodes tentaculata (L.) R.B. Majumdar in Bull. Bot. Soc. Beng. 24 : 76. 1971. Panigr. & Das in Bull. Bot. Surv. India 23 : 201. 1981. *Ruellia tentaculata* L. in Torner, Cent. Pl. 22. 1756. *Haplanthus tentaculatus* (L.) Nees in DC. Prodr. 11 : 513. 1847, *p.p.* ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 507. 1884 ; Cooke, Fl. Pres. Bombay 2 : 453. 1958 (Repr. ed.) *p.p.* ; Chavan *et al.*, in M.V.M. Patrika 8 : 10. 1973. *H. tentaculata* var. *neesiana* Sant. in Univ. Bombay Bot. Mem. 2 : 52. 1952. *Bremekampia tentaculata* (L.) Sreem. in Bull. Bot. Surv. India 6 : 423. 1965.

Herbs, 30-50 cm high; stems quadrangular cladodes glandular hairy. Leaves ovate, acuminate, decurrent into obscure petiole pubescent. Flowers blue or purple in the midst of cladodes. Capsules oblong.

Fls. & Frts. : December.

Notes : Rare, included on the authority of Chavan *et al.* (*op. cit.*) who reported it from Kas, near Satara.

H. verticillata (Roxb.) R.B. Majumder in Bull. Bot. Soc. Beng. 25 : 76. 1971 ; Panigr. & Das in Bull. Bot. Surv. India 23 : 199. 1981. *Justicia verticillata* Roxb. Fl. Ind. (Carey ed.) 1 : 135. 1832. *Haplanthus verticillatus* (Roxb.) Nees in DC. Prodr. 11 : 513. 1847 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 506. 1884 ; Cooke, Fl. Pres. Bombay 2 : 452. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 51. 1952. *Bremekampia verticillata* (Roxb.) Sreem. in Bull. Bot. Surv. India 6 : 323. 1965. (Fig. 40).

Herbs, 30-60 cm high, glabrous below, pubescent above. Leaves ovate, upto 4.0×1.5 cm, pubescent above and on nerves beneath; spines 1.0-2.5 cm long, hairy with two sharp teeth at apex. Flowers sessile, purple; calyx and corolla glandular-pubescent. Capsules *ca* 1 cm long.

Fls. & Frts. : November - December.

Distrib. : Frequent in forest undergrowth, also along roadsides in shady areas. Way to Jangli Jaigad, Lingmala, Mahabaleshwar.

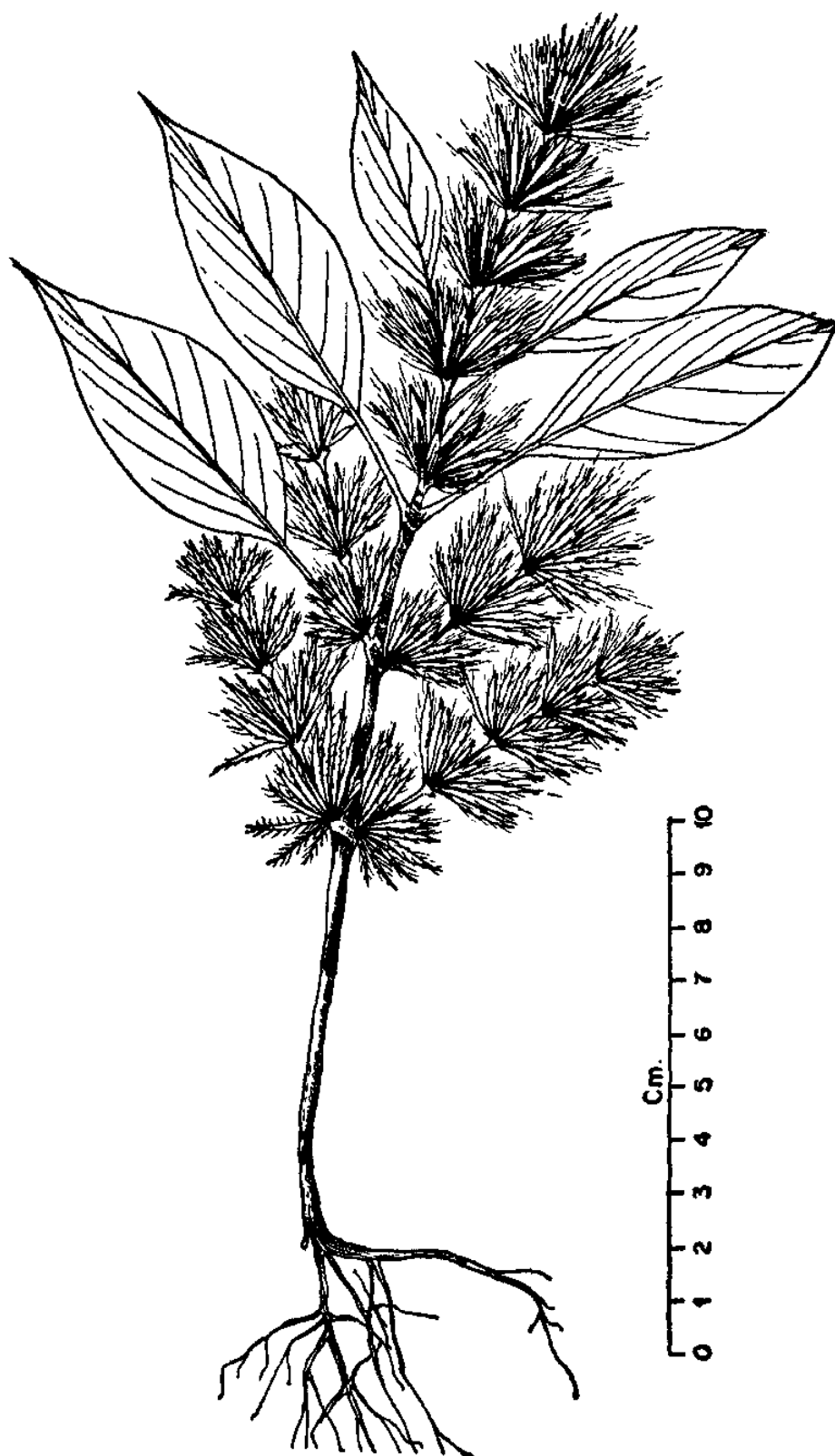


Fig. 40. *Haplanthodes verticillata* (Roxb.) R.B. Majumdar

HEMIGRAPHIS Nees

- | | |
|---|---------------------|
| 1. Bracts of inner flowers longer than calyx ; capsules 8 - 10-seeded | <i>H. crenata</i> |
| 1. Bracts of inner flowers as long as calyx ; capsules 6-seeded | <i>H. latebrosa</i> |

Hemigraphis crenata (Bth. ex Hohen.) Bremek. in Verh. Nederl. Akad. Wet. 2, 40 : 137. 1944. Sant. in Univ. Bombay Bot. Mem. 2 : 27. 1952. *Ruellia crenata* Bth. ex Hohen. in Flora 32 : 558. 1849. *R. elegans* var. *crenata* (Bth. ex Hohen.) C.B. Cl. in Hook. f. Fl. Brit. India 4 : 425. 1884 ; Cooke, Fl. Pres. Bombay 2 : 435. 1958 (Repr. ed.).

Herbs, diffuse, viscid-pubescent. Leaves ovate-elliptic, 2 - 4 × 1.5 - 3.5 cm, base cuneate, apex subobtusely hairy. Inflorescence glandular-hairy ; corolla tube white, lobes blue, obovate, rounded. Capsules ca 0.6 cm long.

Fls. & Frts. : December.

Distrib. : Rare in semi-evergreen forests. Koyna, Kochhar 154334.

H. latebrosa (Heyne ex Roth) Nees in DC. Prodr. 11 : 723. 1847 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 423. 1884 ; Cooke, Fl. Pres. Bombay 2 : 434. 1958 (Repr. ed.). *Ruellia latebrosa* Heyne ex Roth, Nov. Pl. Sp. 307. 1821.

Herbs, 20 - 75 cm high ; stems hairy, shining. Leaves ovate, 3.0 - 4.5 × 2.0 - 2.5 cm, margins coarsely crenate, hairy. Bracts foliaceous, hairy, densely ciliate on margins ; calyx lobes linear, acute, white at base, green at apex, hairy ; corolla tube white, lobes blue, obovate. Capsules linear-oblong, ca 0.5 cm long ; seeds suborbicular, yellowish-brown, hairy.

Fls. & Frts. : May - December.

Illus. : Wight, Ic. t. 1504. 1850.

Distrib. : Common in forest undergrowth and along roadsides. Gadoli, Mahabaleshwar, Pratapgad, Shirshingi.

HYGROPHILA R. Br.

- | | | |
|---|-----|----------------------|
| 1. Armed, erect herbs ; flowers in axillary whorls | ... | <i>H. auriculata</i> |
| 1. Unarmed, procumbent herbs ; flowers in terminal spikes | ... | <i>H. serpyllum</i> |

Hygrophila auriculata (Schum.) Heine in Kew Bull. 16 : 172. 1962 ; Bole & Almeida in J. Bombay nat. Hist. Soc. 82 : 77. 1985. *Barleria auriculata* Schum. in Schum. & Thonn. Beskr. Guin. Pl. 285. 1827. *B. longifolia* L. Amoen. Acad. 4 : 320. 1759 (non *H. longifolia* Nees 1847). *Asteracantha longifolia* (L.) Nees in Wall. Pl. As. Rar. 3 : 90. 1832 ; Cooke, Fl. Pres. Bombay 2 : 428. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 17. 1952. *H. spinosa* T. And. in Thw. Enum. Pl. Zeyl. 225. 1860 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 408. 1884. '*Talimkhana*'.

Herbs, 1.0 - 1.5 m high ; stems sub-quadrangular, white hairy. Leaves sessile, whorled, oblong-lanceolate, 5 - 11 × 2.0 - 4.5 cm, densely hairy ; spines yellow, 3 - 4 cm long. Flowers blue ; bracts and bracteoles linear-lanceolate, hairy. Capsules ca 1 cm long.

Fls. & Frts. : February - November.

Illus. : Wight, Ic. t. 449. 1841 (*A. longifolia*).

Distrib. : Common in fresh water, in swamps. Koyna, Kumbharli ghat, Mahabaleshwar, Morgiri, Pirachi, Wadi, Pratapgad.

H. serpyllum (Nees) T. And. in J. Linn. Soc. 9 : 456. 1867 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 406. 1884 ; Cooke, Fl. Pres. Bombay 2 : 429. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 19. 1952. *Physichilus serpyllum* Nees in Hook. Comp. Bot. Mag. 2 : 311. 1837.

Stems sparsely hairy. Leaves obovate, 2 - 3 × 0.6 - 1.5 cm, hairy. Flowers bluish-purple ; bracts elliptic, hairy ; bracteoles linear, hairy ; calyx lobes narrowly linear, ciliate ; corolla tube swollen at apex ; Capsules linear-oblong, 0.6 - 0.8 cm long. Seeds orbicular-ovoid.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 1493. 1849 (*P. serphyllum*).

Distrib. : Common in large patches in wet grounds and along water courses. Bamnoli, Koyna, Kumbharli ghat, Mahabaleshwar, Nauja, Pali-Nagthana, Shirshingi.

JUSTICIA L.

- | | | |
|----------------------------------|-----|-----------------------|
| 1. Calyx 4-lobed | ... | <i>J. micrantha</i> |
| 1. Calyx 5-lobed : | | |
| 2. Stems procumbent : | | |
| 3. Inflorescence glandular-hairy | ... | <i>J. wynaadensis</i> |
| 3. Inflorescence glabrous | ... | <i>J. trinervia</i> |

2. Stems erect :

4. Stems cylindric ; margins of bracts scarious ... *J. betonica*
 4. Stems quadrangular ; margins of bracts herbaceous ... *J. santapauli*

Justicia betonica L. Sp. Pl. 15. 1753 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 525. 1885 ; Sant. in Univ. Bombay Bot. Mem. 2 : 85. 1952. *J. betonica* L. var. *ramosissima* C.B. Cl. op. cit. ; Cooke, Fl. Pres. Bombay 2 : 486. 1958 (Repr. ed.).

Undershrubs, ca 1 m high ; stems with a purple tinge, swollen at nodes. Leaves ovate, 3.5 - 7.0 × 1.3 - 4.0 cm, base attenuate, apex acute. Bracts ovate, acute, membranous ; calyx lobes lanceolate, acute, ciliate ; corolla : upper lip 2-lobed, lower 3-lobed, lobes oblong. Capsules clavate, ca 1 cm long.

Fls. & Frts. : January - November.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 534. 1982.

Distrib. : Common in open and along roadsides. It can be easily identified because of conspicuous white bracts. Deshmukhwadi, Dicholi, Jadholi, Koyna, Mahabaleshwar, Mahabaleshwar-Pratapgad, Yavteshwar.

J. micrantha Wall. ex C.B. Cl. in Hook. f. Fl. Brit. India 4 : 536. 1885 ; Cooke, Fl. Pres. Bombay 2 : 489. 1958 (Repr. ed) ; Sant. in Univ. Bombay Bot. Mem. 2 : 87. 1952.

Herbs, 30 - 60 cm long ; stems grooved, pubescent when young. Leaves elliptic, 1.5 - 4.5 × 0.7 - 2.0 cm hairy. Flowers pink-purple in dense, axillary and terminal spikes ; Bracts and bracteoles linear, margins scarious, hispid ; calyx lobes linear, scarious, midnerve aristate. Capsules oblong, ca 0.5 cm long, tapering at apex.

Fls. & Frts. : September - November.

Distrib. : Common in shady places along forest edges, also found in open situations along ghats. Jadholi, Mahabaleshwar, Panchgani, Shirshingi.

J. santapauli Bennett in J. Bombay nat. Hist. Soc. 67 : 358. 1970. *J. montana* (Nees) Wall. ex T. And. in J. Linn. Soc. 9 : 509. 1867 non Roxb. 1805 ; C.B.Cl. in Hook. f. Fl. Brit. India 5 : 1885 ; Cooke, Fl. Pres. Bombay 2 : 485. 1958 ; Sant. in Univ. Bombay Bot. Mem. 2 : 85. 1952.

Undershrubs, 60 - 70 cm high. Leaves elliptic-lanceolate, 10 - 25 × 5 - 10 cm, base narrowed into petiole, apex acute. Flowers white with pink streaks in 8 - 15 cm long spikes ; bracts ovate-oblong ; bracteoles elliptic. Capsules clavate, ca 1.5 cm long.

Fls. & Frts. : February April.

Illus. : Wight, Ic. t. 1538. 1850 (*Hemichoriste montana* Nees in Wall. Pl. As. Rar. 3 : 102. 1832).

Distrib. : Rare, found in open situations. Mahabaleshwar, Dalzell s.n. (Sant. op. cit.) ; Vasota, Kochhar 154376.

Justicia trinervia Vahl, Enum. Pl. 1 : 156. 1804, C.B.Cl. in Hook. f. Fl. Brit. India 4 : 256. 1884 ; Cooke, Fl. Pres. Bombay 2 : 487. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 86. 1952.

Herbs, rootstock woody. Leaves sessile, elliptic, $1.5 - 2.7 \times 0.7$ 1.2 cm. Bracts lanceolate, white with green nerves ; calyx lobes lanceolate, 3-nerved ; corolla lobes ovate, concave. Capsules oblong, shortly apiculate, pubescent.

Fls. & Frts. : October January.

Distrib. : Common on rocky plateaus. Koyna, Mahabaleshwar, Panchgani.

J. wynaadensis (Nees) T. And. in J. Linn. Soc. Bot. 9 : 515. 1867 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 533. 1885 ; Cooke, Fl. Pres. Bombay 2 : 488. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 87. 1952 ; Ramamoorthy in Saldanha & Nicolson, Fl. Hassan Dist. 552. 1976. *Gendarussa wynaadensis* Nees in Wall. Pl. As Rar. 3 : 104. 1832.

Branches terete, internodes long. Leaves elliptic-lanceolate, $5 - 10 \times 2.0 - 5.5$ cm. Flowers white with purple streaks in elongate, drooping, 3 - 6 cm long spikes ; bracts ovate, acute ; bracteoles linear, acute. Corolla : upper lip obscurely notched, lower 3-lobed. Capsules ca 1.5 cm long, pubescent.

Fls. & Frts. : February.

Illus. : Wight, Ic. t. 1545. 1850 [*Adhatoda wynaadensis* (Heyne) Nees in DC. Prodr. 11 : 406. 1847].

Distrib. : Occasional in semi-evergreen forests along ghats. Kumbhari ghat, Hills near par below Mahabaleshwar.

CULTIVATED SPECIES

J. gendarussa Burm. f. Fl. Ind. 10. 1768 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 532. 1885 ; Cooke, Fl. Pres. Bombay 2 : 492. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 91. 1952.

Shrubs, ca 3 m high ; young branches with a purple tinge. Leaves lanceolate, $4-8 \times 0.6-1.2$ cm. Flowers white with purple spots in terminal 3-5 cm long racemes.

Fls. : January - June.

Illus. : Wight, Ic. t. 468. 1841 (*Gendarussa vulgaris* Nees in Wall. Pl. As. Rar. 3 : 104. 1832).

Distrib. : Cultivated as hedge plant. Mahabaleshwar.

LEPIDAGATHIS Willd.

- | | | |
|---|-----|-----------------------|
| 1. Flowers in globose heads ; calyx 4-lobed | ... | <i>L. cristata</i> |
| 1. Flowers in terminal spikes ; calyx 5-lobed : | | |
| 2. Flowers creamish ; seeds 2 | ... | <i>L. prostrata</i> |
| 2. Flowers white with pink-streaks ; seeds 4 : | | |
| 3. Stems erect, calyx lobes spinous-tipped | ... | <i>L. cuspidata</i> |
| 3. Stems diffuse ; calyx lobes not spinous-tipped | ... | <i>L. fasciculata</i> |

Lepidagathis cristata Willd. Sp. Pl. 3 : 400. 1800 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 516. 1885 ; Cooke, Fl. Pres. Bombay 2 : 470. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 71. 1952.

Herbs, branches spreading, rootstock woody. Leaves sessile, linear-oblong, $2.5-4.0 \times 0.7-1.0$ cm, base and apex acute. Bracts ovate, acuminate, spiny, ca 0.5 cm long ; calyx lobes elliptic, acute, spinous toothed, hairy without ; corolla white with brown streaks. Capsules oblong, ca 0.5 cm long.

Fls. & Frts. : September - December.

Illus. : Wight, Ic. t. 455. 1841.

Distrib. : Common perennial in drier parts of the district near cultivated fields and along roadsides. Jarandeshwar, Shirgaon ghat.

L. cuspidata Nees in Wall. Pl. As. Rar. 3 : 97. 1832 ; C. B. Cl. in Hook. f. Fl. Brit. India 4 : 519. 1885 ; Cooke, Fl. Pres. Bombay 2 : 474. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 73. 1952.

Herbs, ca 1 m high ; stems quadrangular. Leaves oblong-lanceolate, $2-3 \times 1.0-1.4$ cm, base cuneate, decurrent into petiole, apex acute. Bracts ovate-elliptic, bristle pointed, 3-nerved, pubescent ; bracteoles linear-lanceolate, 1-nerved ; calyx lobes oblong-lanceolate ; corolla : upper

lip ovate, acute, slightly notched ; lower with 3 rounded lobes. Capsules ovoid-lanceolate, 2-valved.

Fls. & Frts. : Throughout the year.

Illus. : Bedd. Ic. t. 227. 1872.

Distrib. : Common in deciduous forests, grows in dense patches. Mahabaleshwar, Taldeo.

Lepidagathis fasciculata (Retz.) Nees in Wall. Pl. As. Rar. 3 : 95. 1832 ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 522. 1885 ; Cooke, Fl. Pres. Bombay 2 : 476. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 74. 1952. *Ruellia fasciculata* Retz. Obs. Bot. 4 : 28. 1786.

Herbs, *ca* 30 cm long ; branches quadrangular, softly hairy. Leaves ovate in unequal pairs, 1.5 - 4.0 × 0.8 - 2.0 cm, base decurrent into petiole, apex subacute, margins crenate, pubescent. Bracts ovate, acute, 3-nerved, hairy ; bracteoles linear, hairy ; calyx lobes linear-lanceolate, hairy. Capsules oblong-lanceolate, *ca* 0.8 cm long.

Fls. & Frts. : February.

Illus. : Bedd. Ic. t. 228. 1872.

Distrib. : Slender herbs, occasional at higher altitudes *ca* 1000 m. Way to Jangli Jaigad, Mahabaleshwar.

L. prostrata Dalz. in Kew J. Bot. 2 : 138. 1850 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 518. 1885 ; Cooke, Fl. Pres. Bombay 2 : 473. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 73. 1952.

Stems creeping, rooting at base. Leaves sessile, oblong, 1.5 - 2.5 × 0.7 - 1.5 cm, spinous tipped. Flowers in softly pubescent 5 cm long spikes ; bracts oblong, glandular pubescent, spinous-tipped, ciliate ; bracteoles linear-lanceolate ; corolla : upper lip rounded, shortly 2-toothed, dotted with brownish spot, lower 3-lobed. Capsules 2-valved, ovoid-lanceolate, compressed.

Fls. & Frts. : Throughout the year.

Distrib. : Common on rocky slopes or plateaus. Kas, Kumbharli ghat, Mahabaleshwar, Panchgani, Parli.

NEURACANTHUS Nees

Neuracanthus sphaerostachyus (Nees) Dalz. in Kew J. Bot. 2 : 140. 1850 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 491. 1885 ; Cooke, Fl. Pres. Bombay 2 : 465. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 66. 1952. *Lepidagathis sphaerostachya* Nees in DC. Prodr. 11 : 254. 1847.

Herbs, 30-50 cm high; stems obtusely quadrangular, scabrous. Leaves subsessile, elliptic-oblong, $4-7 \times 1.5-4.0$ cm. Flowers in axillary, silky-hairy spikes; bracts broadly elliptic to suborbicular, 5-7 nerved; corolla tube white, lobes blue with 5 hairy bands on outer surface. Capsules ovoid.

Fls. & Frts. : September - October.

Illus : Wight, Ic. t. 1531. 1850 (*N. lawii*).

Distrib. : Rare near forest clearings. Satara, *Blatter* 23879 (*BLAT*).

NILGIRIANTHUS Bremek.

- | | | |
|---|-----|-----------------------|
| 1. Petioles narrowly winged; bracts ovate | ... | <i>N. reticulatus</i> |
| 1. Petioles not winged; bracts elliptic-obovate | ... | <i>N. lupulinus</i> |

Nilgiranthus lupulinus (Nees) Bremek. in *Verh. Nederl. Akad. Wet.* 2, 40 : 173. 1944; Sant. in *Univ. Bombay Bot. Mem.* 2 : 41. 1952. *Strobilanthes lupulinus* Nees in *Wall. Pl. As. Rar.* 3 : 85. 1832; C.B. Cl. in *Hook. f. Fl. Brit. India* 4 : 443. 1884; Cooke, *Fl. Pres. Bombay* 2 : 443. 1958 (Repr. ed.).

Branches woody, hairy when young. Leaves broadly elliptic, $10-15 \times 3-7$ cm, base cuneate, apex acuminate, scabrous above. Spikes 3 cm long; bracts glandular-hairy; calyx lobes linear-oblong, margins scarious, hairy at apex; corolla hairy within. Capsules oblong, ca 1 cm long.

Fls. & Frts. : October - January.

Distrib. : Rare in the district as well as in Maharashtra. There are only two collections from Ratnagiri except the present collection from Maharashtra in *BSI*. Koyana, *Kochhar* 158320.

N. reticulatus (Stapf) Bremek. in *Verh. Nederl. Akad.* 2, 50 : 173. 1944; Sant. in *Univ. Bombay Bot. Mem.* 2 : 41. 1952. *Strobilanthes reticulatus* Stapf in *Kew Bull.* 1894 : 347. 1894; Cooke, *Fl. Pres. Bombay* 2 : 442. 1958 (Repr. ed.).

Undershrubs, 30-60 cm high; branches sub-quadrangular, shortly strigose. Leaves ovate-lanceolate, $2-5 \times 1.5-3.0$ cm, sparsely strigose, margins crenate. Flowers blue in axillary, ca 2 cm long, shortly pedunculate spikes; bracts 1-2 cm long, strigose. Capsules oblong, ca 1 cm long, yellowish.

Fls. & Frts. : September - November.

Illus. : Talbot, For. Fl, Bombay Pres. & Sind 2 : 324, f. 443. 1911.

Distrib. : Common on grassy slopes or rocky plateaus at higher altitudes. It flowers at an interval of 12 years (Suryanarayana, 1970). Mahabaleshwar.

PERISTROPHE Nees

Peristrophe paniculata (Forsk.) Brummitt in Kew Bull. 38 : 451. 1983. *Dianthera paniculata* Forsk. Fl. Aeg.-Arab. 7. 1775. *P. bicalyculata* (Retz.) Nees in Wall. Pl. As. Rar. 3 : 113. 1832 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 554. 1885 ; Cooke, Fl. Pres. Bombay 2 : 495. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 93. 1952.

Herbs, ca 1 m high ; stems 6-angled, scabrid on the angles. Leaves ovate, 3 5 × 1.5 2.5 cm, base rounded or acute, apex acuminate, hairy. Flowers pink ; bracts in opposite unequal pairs ; calyx lobes lanceolate, margins ciliate ; corolla tube twisted, lips unequal, puberulous without. Capsules ellipsoid, ca 0.2 cm long.

Fls. & Frts. : November - January.

Illus. : Maheshwari, Ill. Fl. Delhi, f. 166. 1966.

Distrib. : Occasional near cultivated fields or in waste places. Koyna, Mahabaleshwar, Pirachi wadi.

PHAULOPSIS Willd. Corr. Spr.

Phaulopsis imbricata (Forsk.) Sweet, Hort. Brit. 327. 1827 ; Rani & Matthew in Matthew, Fl. Tamilnadu Carnatic 3 : 1194, pl. 89S & 91. 1983. *Ruellia imbricata* Forsk. Fl. Aeg.-Arab. 113. 1775. *P. dorsiflora* (Retz.) Sant. in Kew Bull. 3 : 276. 1948 & in Univ. Bombay Bot. Mem. 2 : 30. 1952. *Micranthus oppositifolius* Wendl. Bot. Beobacht. 39. 1798 ; Cooke, Fl. Pres. Bombay 2 : 436. 1958 (Repr. ed.). *P. parviflora* Willd. Sp. Pl. 3 : 342. 1801 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 417. 1884.

Herbs, 30 50 cm high ; stems slender, often prostrate, divaricately branched. Leaves ovate, 1.5 - 7.0 × 1.0 4.5 cm, base unequal, apex acuminate, entire or sub-crenate, pubescent. Flowers sessile ; bracts reniform or orbicular, glandular hairy ; calyx glandular-hairy, one lobe broadly ovate, obtuse, larger than the other 4, linear-subulate lobes. Capsules clavate, ca 0.6 cm long.

Fls. & Frts. : November - January.

Illus. : Wight, Ic. t. 1533. 1850 (*Aetheilema reniforme* Nees in Wall. Pl. As. Rar. 3 : 94. 1832) ; Rani & Matthew, *op. cit.*

Distrib. : Rare perennial along ghats and river banks. Mahabaleshwar, Birdwood, Cooke, Graham (Cooke, *op. cit.*).

PLEOCAULUS Bremek.

Pleocaulus ritchiei (C.B.Cl.) Bremek. in Verh. Nederl. Akad. Wet. 2, 40 : 185. 1944 ; Sant. in Univ. Bombay Bot. Mem. 2 : 45. 1952. *Strobilanthes sessilis* Nees var. *ritchiei* C.B.Cl. in Hook. f. Fl. Brit. India 4 : 452. 1884 ; Cooke, Fl. Pres. Bombay 2 : 443. 1958 (Repr. ed.). 'Bukra'. (Fig. 41).

Undershrubs, 30 - 50 cm high, hairy. Leaves ovate, 2.3 - 4.0 × 1.2 - 2.6 cm, hairy above and on nerves beneath with jointed hairs. Flowers purple ; bracts ovate, ca 1.8 cm long ; calyx and corolla densely ciliate. Capsules oblong ca 0.2 cm long, glabrescent.

Fls. & Frts. : September.

Distrib. : Occasional along ghats ; flowering once in 8 years. Kas, Koyna, Nauja.

RHINACANTHUS Nees

Rhinacanthus nasutus (L.) Kurz in J. As. Soc. Beng. 39 : 79. 1870 ; Backer & Bakh. f. Fl. Java 2 : 585. 1965 ; Sant. in Univ. Bombay Bot. Mem. 2 : 92. 1952. *Justicia nasuta* L. Sp. Pl. 16. 1753. *R. communis* Nees in Wall. Pl. As. Rar. 3 : 109. 1832 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 541. 1885 ; Cooke, Fl. Pres. Bombay 2 : 494. 1958 (Repr. ed.). 'Gajkarni'.

Shrubs, 2 - 3 m high. Leaves elliptic-lanceolate, 5 - 17 × 1.5 - 7.0 cm, base and apex acute, puberulous above and on nerves beneath. Flowers in terminal panicles ; bracts and bracteoles ovate-lanceolate, glandular-pubescent. Capsules clavate, 1.5 - 2.0 cm long, pubescent. Seeds tuberculate, black.

Fls. & Frts. : October - January.

Illus. : Wight, Ic. t. 464. 1843 (*R. communis*) ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 539. 1982.

Distrib. : Rare in partially shady areas, leafless when flowering. Mahabaleshwar, Bole 1885, Cooke, Dalzell & Gibson, Ralph, Woodrow (Cooke, *op. cit.*), Soman 156274.

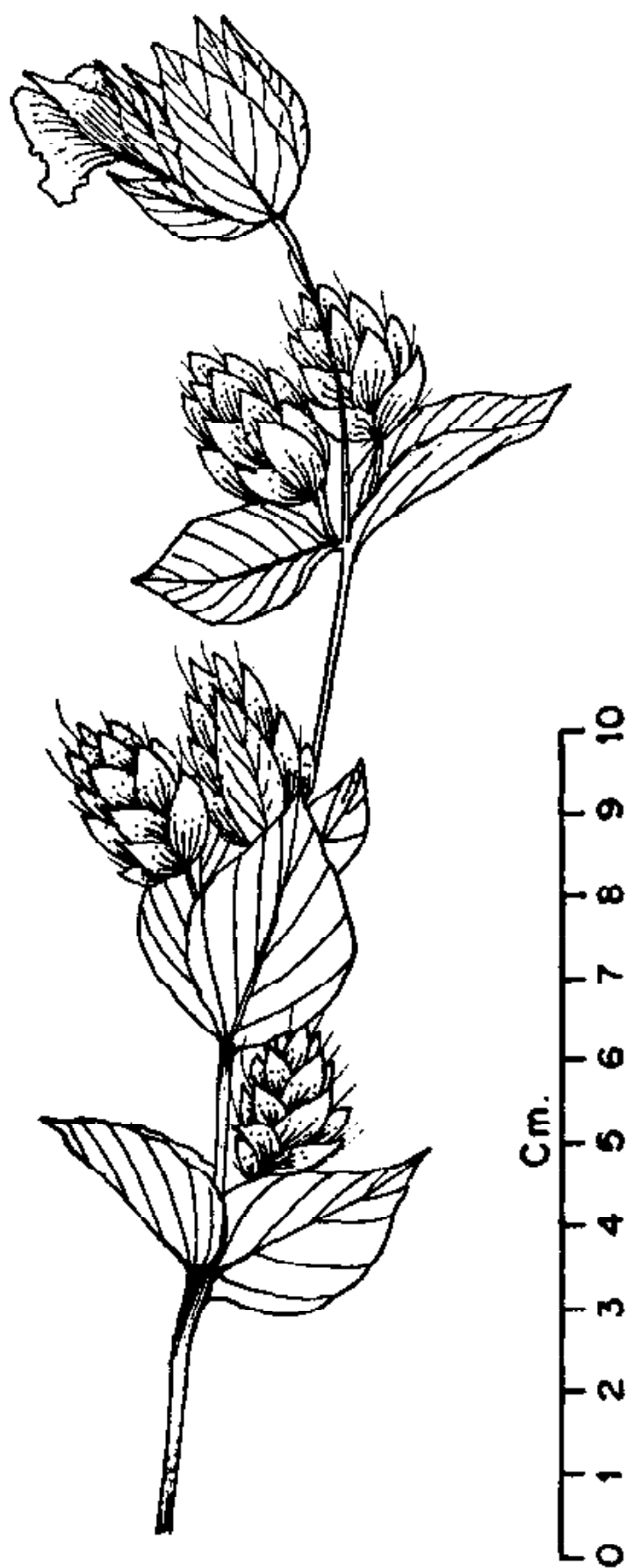


Fig. 41. *Pleocaulus ritchiei* (C.B.Cl.) Bremck.

ROSTELLULARIA Reichb.

- | | | |
|---|-----|----------------------|
| 1. Erect herbs ; leaves elliptic-lanceolate; bracts and bracteoles elliptic, subacute | ... | <i>R. japonica</i> |
| 1. Diffuse herbs ; leaves ovate-elliptic ; bracts and bracteoles linear, acute | ... | <i>R. procumbens</i> |

Rostellularia japonica (Thunb.) Ellis in Bull. Bot. Surv. India 22 : 196. 1982. *Justicia japonica* Thunb. Fl. Jap. 20. 1784. *J. simplex* D. Don, Prodr. 118. 1825 non *R. simplex* Wight 1850 ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 539. 1885 ; Cooke, Fl. Pres. Bombay 2 : 490. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 89. 1952. (Fig. 42).

Herbs, 10 - 40 cm high. Leaves 2 - 4 × 1.0 - 1.5 cm, scabrous above and on nerves beneath. Flowers in dense, 1 - 5 cm long axillary and terminal spikes ; bracts scarious and ciliate on margins with jointed hairs. Capsules oblong, ca 0.3 cm long. Seeds rugose.

Fls. & Frts. : August - November.

Distrib. : Common annual among grasses on rocky ground. Kas, Mahabaleshwar, Nauja, Tapola, Yavteshwar.

Notes : Bole & Almeida (1985) treat this as *R. mollissima* (Nees ex Wall.) Nees ex DC. Prodr. 11 : 373. 1847 based on *Rostellaria mollissima* Nees in Wall. Pl. As. Rar. 3 : 101. 1832. However, Thunberg's name antedates this.

R. procumbens (L.) Nees in Wall. Pl. As. Rar. 3 : 101. 1832. *Justicia procumbens* L. Sp. Pl. 15. 1753 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 539. 1885 ; Cooke, Fl. Pres. Bombay 2 : 491. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 90. 1952.

Herbs, ca 30 cm high ; stems quadrangular, hairy. Leaves 2.0 - 3.5 × 0.8 - 2.0 cm, base and apex acute. Flowers in 2.5 - 4.0 cm long spikes ; bracts and bracteoles hairy, margins scarious ; calyx lobes linear, margin scarious, ciliate ; corolla : upper lip obscurely notched, lower suborbicular, shortly 3-lobed. Capsules oblong, 0.3-0.4 cm long. Seeds finely tuberculate.

Fls. & Frts. : August - November.

Illus. : Sant. op. cit. f. facing page 90.

Distrib. : Common along hill slopes. Lingmala, Mahabaleshwar, Panchgani.

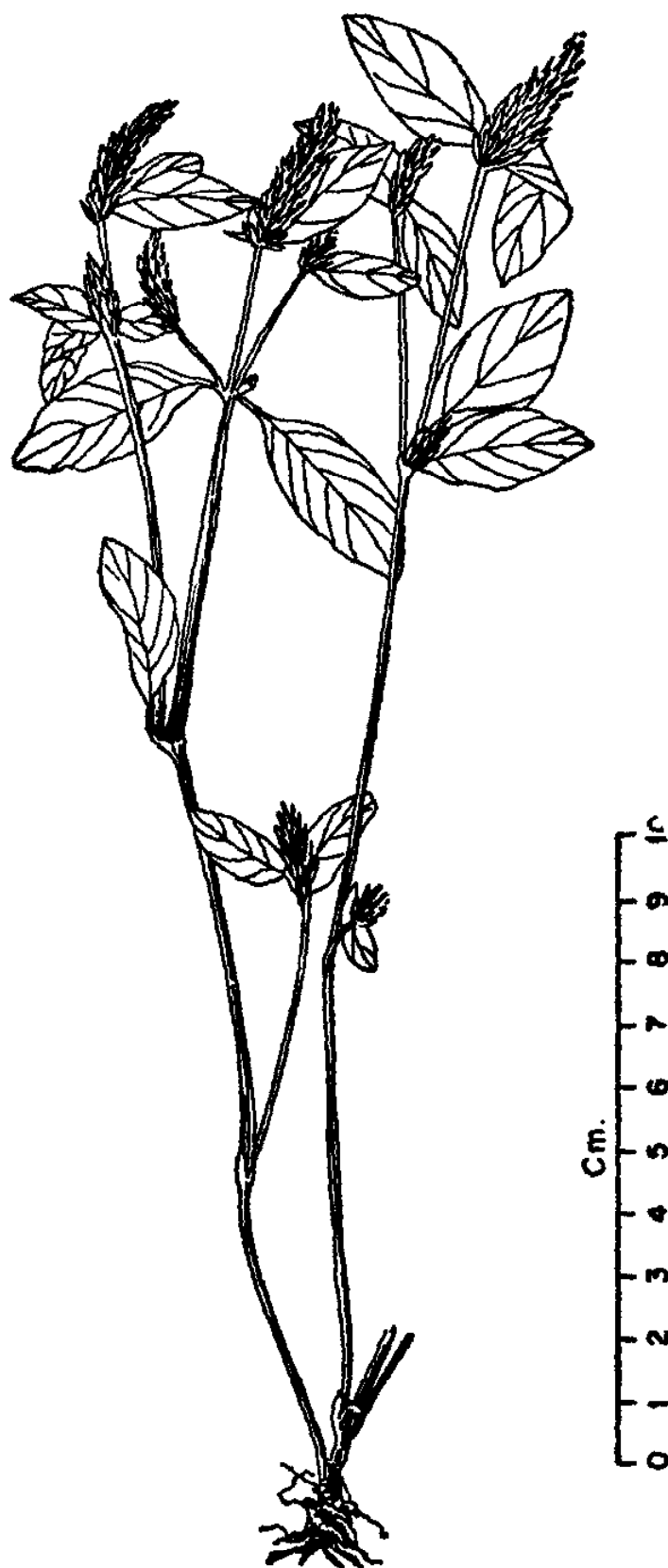


Fig. 42. *Rostellularia japonica* (Thunb.) Ellis

RUNGIA Nees

- | | | |
|---|-----|---------------------|
| 1. Bracts dimorphic ; upper lip of corolla entire | --- | <i>R. pectinata</i> |
| 1 Bracts monomorphic ; upper lip of corolla notched : | | |
| 2. Erect herbs, densely hairy ; capsules obovoid | .. | <i>R. elegans</i> |
| 2. Decumbent herbs, rooting at nodes, puberulous ; capsules ovoid | ... | <i>R. repens</i> |

Rungia elegans Dalz. in Dalz. & Gibs. Bombay Fl. 196. 1861 ; C.B. Cl. in Hook. f. Fl. Brit. India 21 : 549. 1885 ; Cooke, Fl. Pres. Bombay 2 : 480. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 78. 1952.

Herbs, 15 - 25 cm high. Leaves sessile, elliptic-lanceolate, 2 - 7 × 0.7 - 2.5 cm. Flowers blue in sessile, 2 - 7 cm long spikes ; bracts broadly elliptic, cuspidate, ca 0.9 × 0.5 cm, hairy, margins scarious ; bracteoles linear-lanceolate, scarious. Capsules ca 0.3 cm long.

Fls. & Frts. : February - November.

Distrib. : Common along ghats. Panchgani, Phaltan.

R. pectinata (L.) Nees in DC. Prodr. 11 : 469. 1847 ; Sant. in Univ. Bombay Bot. Mem. 2 : 77. 1952. *Justicia pectinata* L. in Torner, Cent. Pl. 3. 1756. *R. parviflora* Nees var. *pectinata* (L.) C.B. Cl. in Hook. f. Fl. Brit. India 4 : 550. 1885 ; Cooke, Fl. Pres. Bombay 2 : 478. 1958 (Repr. ed.).

Herbs, ca 20 cm high ; branches diffuse, pubescent. Leaves elliptic-lanceolate, 2 - 5 × 1.0 - 2.5 cm, sparsely hairy. Flowers blue in axillary and terminal, ca 2.5 cm long spikes ; barren bracts lanceolate, cuspidate, ca 0.4 cm long, pubescent ; fertile bracts orbicular, cuspidate, ca 0.8 cm long, margins scarious ; corolla : upper lip ovate, smaller than lower 3-lobed. Capsules ovoid, compressed, 2 - 4 seeded.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 1547. 1850.

Distrib. : Common, growing in all types of habitats. Dicholi, Karanjewadi, Koyna, Mahabaleshwar, Nauja, Old Mahabaleshwar, Panchgani, Parli, Pirachi wadi, Shirshingi, Tapola.

R. repens (L.) Nees in Wall. Pl. As. Rar. 3 : 110. 1832 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 549. 1885 ; Cooke, Fl. Pres. Bombay 2 : 480. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 78. 1952. *Justicia repens* L. Sp. Pl. 15. 1753. 'Ghatipitappra'.

Herbs, 20 - 30 cm high. Leaves subsessile, oblong-lanceolate, 2.5 - 5.0 × 1.0 - 2.0 cm. Flowers white, blue or pink in terminal spikes,

bracteate ; calyx deeply divided, puberulous ; corolla : upper lip oblong, emarginate, lower 3-lobed. Capsules *ca* 0.5 cm long, pubescent.

Fls. & Frts. : November - January.

Illus. : Wight, Ic. t. 465. 1841.

Notes : Included on the authority of Cooke (*op. cit.*) who reported it from Panchgani.

SUPUSHPA Suryan.

Supushpa scrobiculata (Dalz. ex C.B. Cl.) Suryan. in Koninkl. Nederl. Akad. Wet. C. 73 : 428. 1970. *Strobilanthes scrobiculatus* Dalz. ex C.B. Cl. in Hook. f. Fl. Brit. India 4 : 445. 1884 ; Cooke, Fl. Pres. Bombay 2 : 446. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 49. 1952.

Undershrubs, *ca* 1 m high. Leaves elliptic-lanceolate, 4 - 11 × 1.6 - 3.5 cm. Flowers in subsessile glandular hairy spikes in the axils of fallen leaves ; bracts purple, glandular hairy ; corolla tube hairy within. Capsules fusiform, acute.

Fls. & Frts. : November.

Illus. : Suryan. *op. cit.*

Distrib. : Common at Mahabaleshwar, grows in large patches in ravines, leafless when flowering. Flowering at intervals of 16 years (Suryan. *op. cit.*), Mahabaleshwar.

THELEPAEPALE Bremek.

Thelepaepale ixiocephale (Bth.) Bremek. in Verh. Nederl. Akad. Wet. 2, 40 : 188. 1944 ; Sant. in Univ. Bombay Bot. Mem. 2 : 48. 1952. *Strobilanthes ixiocephalus* Bth. in Flora 32 : 557. 1849 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 444. 1884 ; Cooke, Fl. Pres. Bombay 2 : 448. 1958 (Repr. ed.).

Shrubs, 1 - 2 m high ; branches pubescent when young. Leaves elliptic-lanceolate, 4 - 11 × 1.5 - 4.0 cm, base tapering, apex acuminate, margins crenate, hairy. Bracts ovate, acuminate ; bracteoles narrowly spatulate, viscous-hairy ; calyx accrescent in fruiting ; corolla lobes ovate-oblong, pubescent without. Capsules obovoid, *ca* 1 cm long.

Fls. & Frts. : November - March.

Illus : Wight, Ic. t. 1523. 1849 (*S. neesiana*). Bedd. Ic. 47, t. 203. 1874.

Distrib. : Common along forest edges in shady areas. Bamnoli, Koyna, Mahabaleshwar, Old Mahabaleshwar, Panchgani.

CULTIVATED SPECIES

Adhatoda zeylanica Medic. Hist. & Commentat. Acad. Elect. Sci. Theod.-Palat. 6 : 393. 1790 ; Ramamoorthy in Saldanha & Nicolson, Fl. Hassan Dist. 540. 1976. *Justicia adhatoda* L. Sp. Pl. 15. 1753. *A. vasica* Nees Wall. Pl. As. Rar. 3 : 103. 1832 ; Sant. in Univ. Bombay Bot. Mem. 2 : 92. 1952 ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 540. 1884 ; Cooke, Fl. Pres. Bombay 2 : 493. 1958 (Repr. ed.). '*Adulsa*'.

Shrubs, foetid smelling. Leaves elliptic-lanceolate, 8 17×4 8 cm. Flowers creamish-white in terminal spikes ; bracts elliptic, longer than calyx. Capsules clavate, pubescent.

Fls. & Frts. : September - April.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 519. 1982.

Distrib. : Common in cultivation as a hedge plant. Ambeghar, Jadholi, Koyna, Mahavashi, Panchgani.

Notes : Leaves and roots used in cough, chronic bronchitis and asthma.

VERBENACEAE

1. Climbers :

2. Corolla 5 - 6-lobed ; bracts enlarged enclosing fruits ... SYMPHOREMA

2. Corolla 2-lipped ; bracts not as above --- PREMNA

1. Herbs, shrubs or trees :

3. Leaves 3-foliolate ... VITEX

3. Leaves simple :

4. Stems prickly ... LANTANA

4. Stems not prickly :

5. Herbs :

6. Calyx tubular, ribbed ; fruits with 2-seeded pyrenes ... PRIYA

- | | | |
|--|-----|--------------|
| 6. Calyx cupular, not ribbed; fruits with 1-seeded pyrenes | ... | PHYLA |
| 5. Shrubs or trees : | | |
| 7. Corolla 4 - 6-lobed : | | |
| 8. Flowers in axillary cymes | ... | CALLICARPA |
| 8. Flowers in axillary and terminal panicles | ... | TECTONA |
| 7. Corolla 2-lipped : | | |
| 9. Trees ; stamens included | ... | GMELENA |
| 9. Shrubs ; stamens exserted | ... | CLERODENDRUM |

CALLICARPA L.

Callicarpa tomentosa (L.) Murr. Syst. Veg. ed. 13. 130. 1774 ; Sant. in Rec. Bot. Surv. India 16(1) : 212. 1967 (3rd Rev. ed.). *Tomex tomentosa* L. Sp. Pl. 117. 1753. *C. lanata* L. Mant. 331. 1771 ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 567. 1884 ; Cooke, Fl. Pres. Bombay 2 : 502. 1958 (Repr. ed.).

Shrubs or small trees, 4-6 m high ; stems stellately tomentose. Leaves ovate-elliptic, 11 - 25 × 6 - 8 cm, margins entire or toothed, hairy on nerves above, tomentose beneath. Flowers purple, bracts linear ; calyx obscurely 4-lobed ; corolla lobes oblong. Drupes globose, ca 0.3 cm across, scarlet.

Fls. & Frts. : April - September.

Illus. : Wight, Ic. t. 1480. 1849 (*C. wallichiana* Walp. Rep. 4 : 125. 1845).

Distrib. : Common in scrub forests along ghats. Karanjewadi, Kumbharli ghat, Mahabaleshwar, Mahabaleshwar-Pratapgad, Nauja, Tadoshi.

CLERODENDRUM L.

- | | | |
|---|-----|--------------------|
| 1. Leaves ovate, hairy ; calyx accrescent in fruit | ... | <i>C. viscosum</i> |
| 1. Leaves oblong-elliptic, glabrous ; calyx not accrescent in fruit | ... | <i>C. serratum</i> |

Clerodendrum serratum (L.) Moon, Cat. 46. 1824 ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 592. 1885 ; Cooke, Fl. Pres. Bombay 2 : 512. 1958 (Repr. ed.). *Volkameria serrata* L. Mant. 90. 1771. 'Bharangi'.

Shrubs, 1 - 2 m high ; stems quadrangular. Leaves 8 - 15 × 4 - 6 cm, margins coarsely serrate. Flowers pale blue in pubescent, dichotomous cymes ; calyx cupular ; lobes short, triangular, ciliolate. Drupes obovoid, 4-lobed.

Fls. & Frts. : July - November.

Illus. : Wight, Ic. t. 1472. 1849.

Distrib. : Common near forest clearings. Ambeghar, Koyna, Lingmala, Mahabaleshwar, Panchgani, Pasarni ghat, Shirshingi, Tapola, Yavteshwar.

Clerodendrum viscosum Vent. Jard. Malm. 1 : t. 25. 1803 ; Sant. in Rec. Bot. Surv. India 16(1) : 214. 1967 (3rd Rev. ed.). *C. infortunatum* auct. non L. 1753 ; Wight, Ic. t. 1471. 1849 ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 594. 1885 ; Cooke, Fl. Pres. Bombay 2 : 513. 1958 (Repr. ed.).

Stems 1 - 2 m high, pubescent ; branchlets quadrangular. Leaves 15 - 22 × 12 - 18 cm, base cordate, apex acuminate. Flowers white in terminal panicles ; bracts leafy ; calyx lobes broadly ovate, acute, silky-pubescent ; corolla tube densely pubescent, lobes oblong, spreading. Drupes globose, 0.5 - 0.8 cm across, black when ripe.

Fls. & Frts. : July - November.

Illus. : Wight, *op. cit.*

Distrib. : Common near forest edges, and along roadsides in shady places. Ambeghar, Jadholi, Khambli, Chorghe ghat, Koyna, Shirshingi, Tapola.

CULTIVATED SPECIES

C. philippinum Schauer in DC. Prodr. 11 : 667. 1847 ; Howard & Powell in Taxon 17 : 54. 1968 ; Moldenke in Dassanayake & Fosberg, Rev. Handb. Fl. Ceylon 4 : 469. 1983. ('*Clerodendron*'). *C. fragrans* Willd. Enum. Hort. Berol. 659. 1809 ; C.B.Cl. in Hook. f. Fl. Brit. India. 4 : 589. 1885 ; Cooke, Fl. Pres. Bombay 2 : 514. 1958 (Repr. ed.).

Shrubs, ca 1.5 m high ; young branches pubescent. Leaves broadly ovate, 8 - 13 × 6 - 9 cm, base cordate, apex shortly acuminate, pubescent on the nerves. Flowers white with a pinkish tinge in terminal, corymbose cymes.

Fls. : April - December.

Distrib. : Native of China ; cultivated in gardens for fragrant flowers. Also found as an escape. Koyna, Kumbharli ghat, Panchgani.

GMELINA L.

Gmelina arborea Roxb. Pl. Cor. 3 : 42, t. 246. 1815 & Fl. Ind. (Carey ed.) 3. 84. 1832 ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 581. 1885 ; Cooke, Fl. Pres. Bombay 2 : 504. 1958 (Repr. ed.). '*Shivan*'.

Trees, *ca* 9 m high. Leaves broadly ovate, 4 8 × 2.5 8.0 cm, base cordate, apex acuminate, tomentose. Flowers brownish in paniculate cymes ; calyx and corolla densely hairy. Drupes 1 2 cm long, orange-yellow when ripe.

Fls. & Frts. : April.

Illus. : Wight, Ic. t. 1470. 1849 ; Bedd. Fl. Sylv. t. 253, 1872.

Distrib. : Rare in deciduous forests. Ambeghar. *Kochhar* 154769.

LANTANA L.

Lantana camara L. var. **aculeata** (L.) Moldenke in Torreyia 34 : 9. 1934 ; Sant. in Rec. Bot. Surv. India 16(1) : 211. 1967. (3rd Rev. ed.). *L. aculeata* L. Sp. Pl. 627. 1753. *L. camara non* L. 1753 : C.B.Cl. in Hook. f. Fl. Brit. India 4 : 562. 1885 ; Cooke, Fl. Pres. Bombay 2 : 498. 1958 (Repr. ed.). '*Ghaneri*'.

Shrubs, 2 - 3 m high with strong, disagreeable smell. Leaves ovate, 3 - 8 × 2 - 5 cm, rugose. Flowers orange, pink or white in pedunculate spikes ; bracts lanceolate, longer than calyx, hairy. Drupes globose, purplish-black, *ca* 0.5 cm across.

Fls. & Frts. : Throughout the year.

Distrib. : Introduced as an ornamental plant from Tropical America, now growing wild. It forms dense, impenetrable thickets on hills. Koyna, Mahabaleshwar, Panchgani, Parli, Yavteshwar.

CULTIVATED SPECIES

L. montevidensis Brig. in Ann. Cons. Jard. Bot. Geneve 7-8 : 301. 1898 ; Bole & Almeida in J. Bombay nat. Hist. Soc. 82 : 81. 1985.

Shrubs. Leaves ovate, coarsely toothed. Flowers pink in long, pedunculate heads.

Fls. : November.

Distrib. : Cultivated as an ornamental plant at Bhilar estate near Mahabaleshwar.

PHYLA Lour.

Phyla nodiflora (L.) Greene in Pittonia 4 : 46. 1899 ; Sant. in Rec. Bot. Surv. India 16(1) : 211. 1967 (3rd Rev. ed.). *Verbena nodiflora* L. Sp. Pl. 20. 1753. *Lippia nodiflora* (L.) A. Rich. in Mich. Fl. Bor-Amer. 2 : 15. 1803 ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 563. 1885 ; Cooke, Fl. Pres. Bombay 2 : 499. 1958 (Repr. ed.).

Stems quadrangular, ribbed, rooting at nodes. Leaves subsessile, 1.0-1.5 × 0.5-0.7 cm, base cuneate, margins serrate, hairy. Flowers pinkish white in axillary heads, bracteate. Fruits globose, enclosed in slightly enlarged calyx.

Fls. & Frts. : July.

Illus. : Wight, Ic. t. 1463. 1849 (*L. nodiflora*).

Distrib. : Rare in moist situations. Mahuli, 165746.

PREMNA L.

Premna coriacea C.B.Cl. in Hook. f. Fl. Brit. India 4 : 573. 1885 ; Cooke, Fl. Pres. Bombay 2 : 506. 1958 (Repr. ed.). '*Chambari*'.

Leaves elliptic-ovate, rounded at base, 16-20 × 10.0-11.5 cm. Flowers white in terminal, paniculate cymes, pubescent ; calyx truncate, membranous ; corolla lobes oblong, obtuse. Drupes ovoid, ca 1.3 cm long, purplish-black.

Fls. & Frts. : December.

Distrib. : Rare along ghats, found in association with *Stephania japonica*. Wada below Mahabaleshwar, 166566.

PRIVA Adanson

Priva cordifolia (L.f.) Druce, Bot. Exch. Club Soc. Brit. Isles 4 : 641. 1917 ; Matthew & Rani in Matthew, Fl. Tamilnadu Carnatic 3 : 1230. 1983. *Buchnera cordifolia* L. f. Suppl. Pl. 287. 1781. *P. leptostachya* A.L. Juss. in Ann. Mus. Natl. Hist. Paris 7 : 70. 1806 ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 565. 1885 ; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 22. 1897 ; Cooke, Fl. Pres. Bombay 2 : 502. 1958 (Repr. ed.).

Stems quadrangular, 30-50 cm high, hairy at nodes. Leaves ovate-elliptic, hairy, margins crenate-serrate. Flowers white in lax, spicate racemes. Fruits obovate-oblong, enclosed in accrescent calyx, echinate on back.

Fls. & Frts. : December January.

Illus. : Roxb. Pl. Cor. 2 : 25, t. 146. 1798. (*Streptium asperum*).

Distrib. : Included on Birdwood's report from Mahabaleshwar.

SYMPHOREMA Roxb.

Symphorema involucratum Roxb. Pl. Cor. 2 : 46, t. 186. 1798 & Fl. Ind. (Carey ed.) 2 : 262. 1832 ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 599. 1885 ; Cooke, Fl. Pres. Bombay 2 : 515. 1958 (Repr. ed.).

Stems slender. Leaves ovate-elliptic, 4 7×2.5 4.5 cm, glabrous above, pubescent beneath. Flowers white in capitate cymes, bracts oblong ; calyx obovate, lobes triangular-oblong ; corolla lobes linear-oblong. Fruits subglobose, ca 0.5 cm across.

Fls. & Frts. : April.

Illus. : Wight, Ic. t. 362. 1840.

Distrib. : Rare climber, leaves appear after flowering. Kumbharli ghat, M.P. Nayar 154168.

TECTONA L. f.

Tectona grandis L. f. Suppl. 151. 1718 ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 570. 1885 ; Cooke, Fl. Pres. Bombay 2 : 503. 1958 (Repr. ed.). 'Sagwan'.

Trees, 10-20 m high, branches quadrangular, pubescent. Leaves elliptic-ovate, 20 - 50×15 35 cm, coriaceous. Panicles 30-50 cm long ; flowers creamish ; bracts lanceolate ; calyx campanulate, tomentose ; corolla lobes spreading, subequal. Drupes subglobose, enclosed in enlarged calyx.

Fls. & Frts. : September.

Illus. : Roxb. Pl. Cor. t. 6. 1795 ; Bedd. Fl. Sylv. t. 250. 1872.

Distrib. : Major component of deciduous forests, grows abundantly along hill slopes. Koyna, Pandavgad.

VITEX L.

- 1 Shrubs ; leaflets white-tomentose beneath ... *V. negundo*
1. Trees ; leaflets yellowish-tomentose or puberulous on the nerves beneath :
2. Common petiole winged ; flowers in subsessile, terminal paniculate cymes ... *V. altissima*
var. *alata*
2. Common petiole not winged ; flowers in pedunculate cymes ... *V. leucoxylon*

Vitex altissima L. f. var. *alata* (Willd.) Trim. Fl. Ceyl. 3 : 358. 1895 ; Cooke, Fl. Pres. Bombay 2 : 510. 1958 (Repr. ed.). *V. alata* Willd. in Ges. Naturf. Freunde Berlin Neue Schrift. 4 : 203. 1803 : C.B.Cl. in Hook. f. Fl. Brit. India 4 : 585. 1885.

Trees, 15 - 20 m high. Leaflets sessile, lanceolate, 6 - 13 × 2.0 - 4.5 cm, glabrous above, puberulous beneath ; common petiole 2.5-3.5 cm long. Flowers white with a bluish tinge, cymes dense, fulvous-pubescent. Drupes globose, purple when ripe.

Fls. & Frts. : May - January.

Illus. : Wight, Ic. t. 1466. 1849.

Distrib. : Rare along hill slopes. Limbgaon, Satara, Cooke s.n.

V. leucoxylon L.f. Suppl. 293. 1781 ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 587. 1885 ; Cooke, Fl. Pres. Bombay 2 : 510. 1958 (Repr. ed.). 'Sheras'.

Trees, 10-12 m high. Leaflets oblong, 5 - 10 × 2.0 - 3.5 cm. Flowers white, fragrant, cymes lax. Drupes ovoid, ca 0.5 cm across, dark purple when ripe.

Fls. & Frts. : February - April.

Illus. : Wight, Ic. t. 1467. 1849 [*Wallrothia leucoxylon* (L.f.) Roth, Nov. Pl. Sp. 319. 1821].

Distrib. : Rare, along water courses. Koyna valley, Cooke (*op. cit.*) ; Limbgaon, Woodrow (*op. cit.*)

V. negundo L. Sp. Pl. 638. 1753 ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 583. 1885 ; Cooke, Fl. Pres. Bombay 2 : 508. 1958 (Repr. ed.). 'Nirgudi'.

Shrubs, 2-3 m high ; branches quadrangular, tomentose when young. Leaflets lanceolate, 4 - 10 × 1.5 - 3.0 cm, margins entire. Flowers

bluish-purple in 15-30 cm long paniculate cymes; bracts lanceolate; calyx white-tomentose, teeth 5, triangular. Drupe globose, ca 0.3 cm across, black when ripe.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 519. 1842.

Distrib. : Common along river banks and villages. Kas, Kamathadi, Limbgaon, Mahabaleshwar, Mahabaleshwar-Pratapgad, Nauja, Old Mahabaleshwar, Shangaon, Tapola.

Notes : Leaves used to relieve head-ache.

var. *incisa* (Lam.) C.B.Cl. in Hook. f. Fl. Brit. India 4: 584. 1885.
V. incisa Lam. Dict. 2: 611. 1788 & Bot. Mag. t. 364. 1797.

Differs from the typical variety in serrate margined leaflets.

Distrib. : Common near villages. Dicholi, Mahabaleshwar, Parli.

CULTIVATED SPECIES

Duranta erecta L. Sp. Pl. 637. 1753; Bromei in Kew Bull. 39: 803. 1984. *D. repens* L. *op. cit.*; Sant. in Rec. Bot. Surv. India 16(1): 215. 1967 (3rd Rev. ed.); Bole & Almeida in J. Bombay nat. Hist. Soc. 82: 81. 1985. *D. plumieri* Jacq. Select. Stirp. Am. 186, t. 176. 1763; C.B.Cl. in Hook. f. Fl. Brit. India 4: 560. 1885; Cooke, Fl. Pres. Bombay 2: 518. 1958 (Repr. ed.).

Shrubs, 1-3 m high; stems quadrangular. Leaves ovate, acute, 1.5 - 6.0 × 0.5 - 4.5 cm, margins dentate. Flowers blue in axillary and terminal racemes. Drupes globose, orange when ripe.

Fls. & Frts. : Throughout the year.

Distrib. : Common hedge plant. Koyna, Mahabaleshwar, Medha, Panchgani, Yavteshwar.

LAMIACEAE (LABIATAE)

1. Calyx 2-lipped :

2. Fertile stamens 2 ... SALVIA

2. Fertile stamens 4 :

3. Stamens erect or spreading; anther cells free :

4. Calyx lip entire; upper lip with a scaly
appendage ... SCUTELLARIA

- | | | |
|--|-----|-------------------------|
| 4. Calyx lip dentate ; upper lip without appendage | ... | NEPETA |
| 3. Stamens declinate ; anther cells confluent : | | |
| 5. Lower lip of calyx truncate | ... | ANISOCHILUS |
| 5. Lower lip of calyx 2 - 4-lobed : | | |
| 6. Lower lip of corolla twice as long as upper lip | ... | PLECTRANTHUS |
| 6. Lower lip of corolla as long as upper lip : | | |
| 7. Lower lip of corolla flat ; strongly aromatic herbs | ... | OCIMUM |
| 7. Lower lip of corolla concave ; plants not aromatic | ... | ORTHOSIPHON |
| 1. Calyx tubular, 5 - 10-lobed : | | |
| 8. Calyx 8 - 10-lobed : | | |
| 9. Flowers orange ; calyx teeth spiny | ... | LEONOTIS |
| 9. Flowers white or creamish ; calyx teeth not spiny | ... | LEUCAS |
| 8. Calyx 5-lobed : | | |
| 10. Stamens declinate ; anther cells confluent : | | |
| 11. Leaves pinnatisect | ... | LAVANDULA |
| 11. Leaves entire | ... | PLECTRANTHUS |
| 10. Stamens erect or spreading ; anther cells free : | | |
| 12. Flowers unisexual | ... | COLEBROOKEA |
| 12. Flowers bisexual : | | |
| 13. Calyx 10 - 15-ribbed : | | |
| 14. Upper lip of corolla distinct | ... | MICROMERIA |
| 14. Upper lip of corolla obsolete | ... | TEUCRIUM |
| 13. Calyx not ribbed : | | |
| 15. Corolla lobes 4 ; stamens unequal, spreading | ... | POGOSTEMON |
| 15. Corolla lobes 5 ; stamens didynamous, ascending | ... | ANISOMELES |
| ANISOCHILUS Wall. ex Bth. | | |
| 1. Leaves opposite, petiolate ; upper lip of fruiting calyx concealing the mouth | ... | A. carnosus |
| 1. Leaves whorled, sessile ; upper lip of calyx not concealing the mouth | ... | A. verticillatus |

Anisochilus carnosus (L.f.) Wall. Pl. As. Rar. 2 : 18. 1831 ; Hook. f. Fl. Brit. India 4 : 627. 1885 ; Cooke, Fl. Pres. Bombay 2 : 532. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 58. 1940. *Lavandula carnosus* L. f. Suppl. Pl. 273. 1781.

Herbs, 25-30 cm high ; branches quadrangular, purplish tinged, pubescent. Leaves ovate, 1.8 2.5 × 1.2 2.3 cm, apex obtuse, margins crenate, pubescent. Flowers purple in terminal, 1-2 cm long spikes ; bracts ovate, acuminate, pubescent ; calyx accrescent, upper lip ovate-lanceolate, ciliolate ; corolla ca 0.6 cm long, pubescent without. Nutlets suborbicular, brown.

Fls. & Frts. : September.

Illus. : Wight, Ill. t. 176, f. 1. 1850 ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 561. 1982.

Distrib. : Rare annuals on exposed rocky slopes. Yavteshwar 165882.

A. verticillatus Hook. f. Fl. Brit. India 4 : 629. 1885 ; Cooke, Fl. Pres. Bombay 2 : 532. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 59. 1940.

Herbs, ca 1 m high ; stems quadrangular, grooved, villous. Leaves oblong-lanceolate, 4 - 8 × 1 - 2 cm, silky-villous. Flowers blue in ca 7 - 20 cm long spikes ; bracts ovate, acute, pubescent ; calyx cylindric, glandular-pubescent. Nuts suborbicular, brown.

Fls. & Frts. : October.

Distrib. : Rare along ghats. Mahabaleshwar, Cooke, (*op. cit.*) ; Nana 7611 (BLAT).

ANISOMELES R. Br.

- | | | |
|--|-----|--------------------|
| 1. Stems and leaves sparsely hairy ; flowers white in lax, pedunculate cymes | ... | <i>A. heyneana</i> |
| 1. Stems and leaves tomentose ; flowers purple in dense sessile cymes | ... | <i>A. indica</i> |

Anisomeles heyneana Bth. in Wall. Pl. As. Rar. 1 : 59. 1830 ; Hook. f. Fl. Brit. India 4 : 672. 1885 ; Cooke, Fl. Pres. Bombay 2 : 543. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 152. 1940.

Herbs, 1 - 2 m high. Leaves ovate-lanceolate, 2 - 3 × 0.5 1.5 cm, base attenuate, apex acuminate, margins crenate. Flowers in axillary and

terminal secund cymes, bracts linear, ca. 0.4 cm long ; calyx teeth reticulately veined with stiff hairs on nerves. Nutlets ovoid, ca 0.2 cm long.

Fls. & Frts. : October - February.

Distrib. : Aromatic herbs along grassy patches in forest undergrowth. Dicholi, Karanjewadi, Kelghar ghat, Kistrude, Kumbharli ghat, Lingmala, Machutar forest, Mahabaleshwar, Punoli.

Anisomeles indica O. Ktze. Rev. Gen. Pl. 2 : 512. 1891 ; Mukerjee in Rec. Bot. Surv. India 14 : 152. 1940. *Nepeta indica* L. Sp. Pl. 571. 1753. *A. ovata* R. Br. in Ait. Hort. Kew. ed. 2. 3 : 364. 1811 ; Hook. f. Fl. Brit. India 4 : 672. 1885 ; Cooke, Fl. Pres. Bombay 2 : 543. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay nat. Hist. Soc. 82 : 83. 1985. 'Gopali'.

Undershrubs, ca 2 m high. Leaves ovate, 3.5 - 9.0 × 2 - 5 cm, base rounded, apex acute. Bracts linear, hairy ; calyx teeth lanceolate, acute, hirsute. Nutlets ovoid, ca 0.2 cm long, blackish-brown.

Fls. & Frts. : August - February.

Illus. : Wight, Ic. t. 865. 1844.

Distrib. : Occasional along forest clearings. Mahabaleshwar.

COLEBROOKEA J.E. Sm.

Colebrookea oppositifolia J.E. Sm. Exot. Bot. 2 : 111, t. 115. 1805 ; Hook. f. Fl. Brit. India 4 : 642. 1885 ; Cooke, Fl. Pres. Bombay 2 : 541. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 84. 1940. 'Bhaman'.

Shrubs, 3-5 m high, pubescent. Leaves opposite or whorled, oblong-lanceolate, 3 - 11 × 1.0 - 5.5 cm long, margins crenate, pubescent. Flowers white in panicle, 3-6 cm long spikes ; bracts linear, pubescent ; calyx plumose with white hairs. Nutlets, ovoid, hairy at apex.

Fls. & Frts. : December - April.

Distrib. : Common near forest clearings and along roadsides. Kas, Kistrude, Koyna, Mahabaleshwar, Parli.

LAVANDULA L.

- | | | |
|--|-----|---------------------|
| 1. Stems pubescent ; leaves sessile ; bracts awned | ... | <i>L. bipinnata</i> |
| 1. Stems villous ; leaves petiolate ; bracts unawned | — | <i>L. gibsoni</i> |

Lavandula bipinnata O. Ktze. Rev. Gen. Pl. 521. 1891; Mukerjee in Rec. Bot. Surv. India 14 : 65. 1940. *L. burmanni* Bth. Lab. Gen. & Sp. 151. 1833; Hook. f. Fl. Brit. India 4 : 631. 1885; Cooke, Fl. Pres. Bombay 2 : 534. 1958 (Repr. ed.).

Herbs, ca 1 m high. Leaves 3-5 cm long; lobes linear, pubescent. Flowers in terminal spikes; bracts ovate, pubescent; corolla tube white, lobes blue. Nutlets oblong, ca 0.2 cm long.

Fls. & Frts. : August January.

Illus. : Wight, Ic. t. 1438. 1849 (*L. burmanni*).

Distrib. : Common in drier parts of the district. Dhawadi, Dhondam near Wai, Jarandeshwar, Mahabaleshwar, Panchgani ghat, Shirgaon ghat.

L. gibsoni Grah. Cat. Pl. Bombay 149. 1839; Hook. f. Fl. Brit. India 4 : 631. 1885; Cooke, Fl. Pres. Bombay 2 : 533. 1958 (Repr. ed.); Mukerjee in Rec. Bot. Surv. India 14(1) : 64. 1940.

Herbs, 30-40 cm high. Leaves 4-7 cm long; lobes oblong, obtuse, softly villous. Flowers blue in dense, cylindrical, 2.5-3.5 cm long spikes; bracts ovate, acuminate, ca 0.7 cm long, pubescent, ribbed. Nutlets ellipsoid, ca 0.3 cm long, black.

Fls. & Frts. : October November.

Illus. : Wight, Ic. t. 1439. 1849 (*L. lawii*).

Distrib. : Common along ghats. Mahabaleshwar, Panchgani, Pandavgad, Pirachi wadi, Satara.

LEONOTIS R. Br.

Leonotis nepetaefolia (L.) Ait. Hort. Kew. ed. 2. 409. 1811; Hook. f. Fl. Brit. India 4 : 691. 1885; Cooke, Fl. Pres. Bombay 2 : 555. 1958 (Repr. ed.); Mukerjee in Rec. Bot. Surv. India 14 : 185. 1940. *Phlomis nepetaefolia* L. Sp. Pl. 586. 1753. 'Dipmal'.

Herbs, 1.0 - 1.5 m high, pubescent. Leaves ovate, 2.5 - 9.5 × 1.5 - 5.0 cm, margins coarsely crenate, pubescent; petioles 1 - 7 cm long, narrowly winged above. Flowers in axillary, dense, globose whorls, 2.0 - 4.5 cm across; bracts ovate, acute, ca 1 cm long, strongly spinous-toothed; calyx tube ribbed, villous above, puberulous below; corolla: upper lip woolly. Nutlets oblong, 0.3 - 0.5 cm long.

Fls. & Frts. : December.

Illus. : Wight, Ic. t. 867. 1844.

Distrib. : Occasional near villages in waste places. Mahabaleshwar, Mhavashi.

LEUCAS R. Br.

1. Procumbent or straggling herbs :
 - 2 Flowers pedicellate in axillary pairs ... *L. biflora*
var. *procumbens*
 2. Flowers subsessile in terminal whorls ... *L. nutans*
1. Erect herbs or undershrubs :
 3. Calyx mouth oblique :
 - 4 Calyx ribbed and hispid in upper half .. *L. aspera*
 4. Calyx smooth throughout :
 - 5 Leaves linear-lanceolate ; flowers shortly pedicelled ... *L. indica*
 5. Leaves ovate-lanceolate ; flowers sessile ... *L. cephalotes*
 3. Calyx mouth straight :
 6. Leaves sessile, entire .. *L. longifolia*
 6. Leaves petioled, crenate or serrate :
 7. Calyx teeth erect ... *L. montana*
 7. Calyx teeth stellately spreading :
 8. Upper lip of corolla bearded with rufous-brown hairs ... *L. ciliata*
 8. Upper lip of corolla bearded with white hairs ... *L. stelligera*

Leucas aspera (Willd.) Link, Enum. Hort. Berol. 2 : 113. 1822 ; Hook. f. Fl. Brit. India 4 : 690. 1885 ; Cooke, Fl. Pres. Bombay 2 : 548. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 166. 1940. *Phlomis aspera* Willd. Enum. Pl. 2 : 612. 1809.

Herbs, 20-30 cm high. Leaves subsessile, verticillate, oblong-lanceolate, 1.5 - 4.0 cm long. Flowers sessile, white in terminal whorls. Nutlets oblong, brown.

Fls. & Frts. : September - October.

Illus. : Tad. & Venkatan. Ill. Handb. S. Ind. Weeds 344, f. 137. 1955 (Rev. ed.).

Distrib. : Occasional near cultivated fields. Mahabaleshwar.

L. biflora R. Br. var. *procumbens* (Desf.) Gamble, Fl. Pres. Madras 1151. 1924 [2 : 804. 1957 (Repr. ed.)]. *L. procumbens* Desf. in Mem. Mus. Paris 2 : 7, t. 3, f. 2. 1824 ; Hook. f. Fl. Brit. India 4 : 683. 1885 ; Cooke, Fl. Pres. Bombay 2 : 553. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 180. 1940. (Fig. 43).

Stems pubescent, hairs deflexed. Leaves elliptic, 2 - 3 × 1 - 2 cm, base rounded, apex obtuse, pubescent. Flowers white ; calyx ca 1 cm long, pubescent, reticulately veined, teeth lanceolate, subulate, ciliate ; corolla :

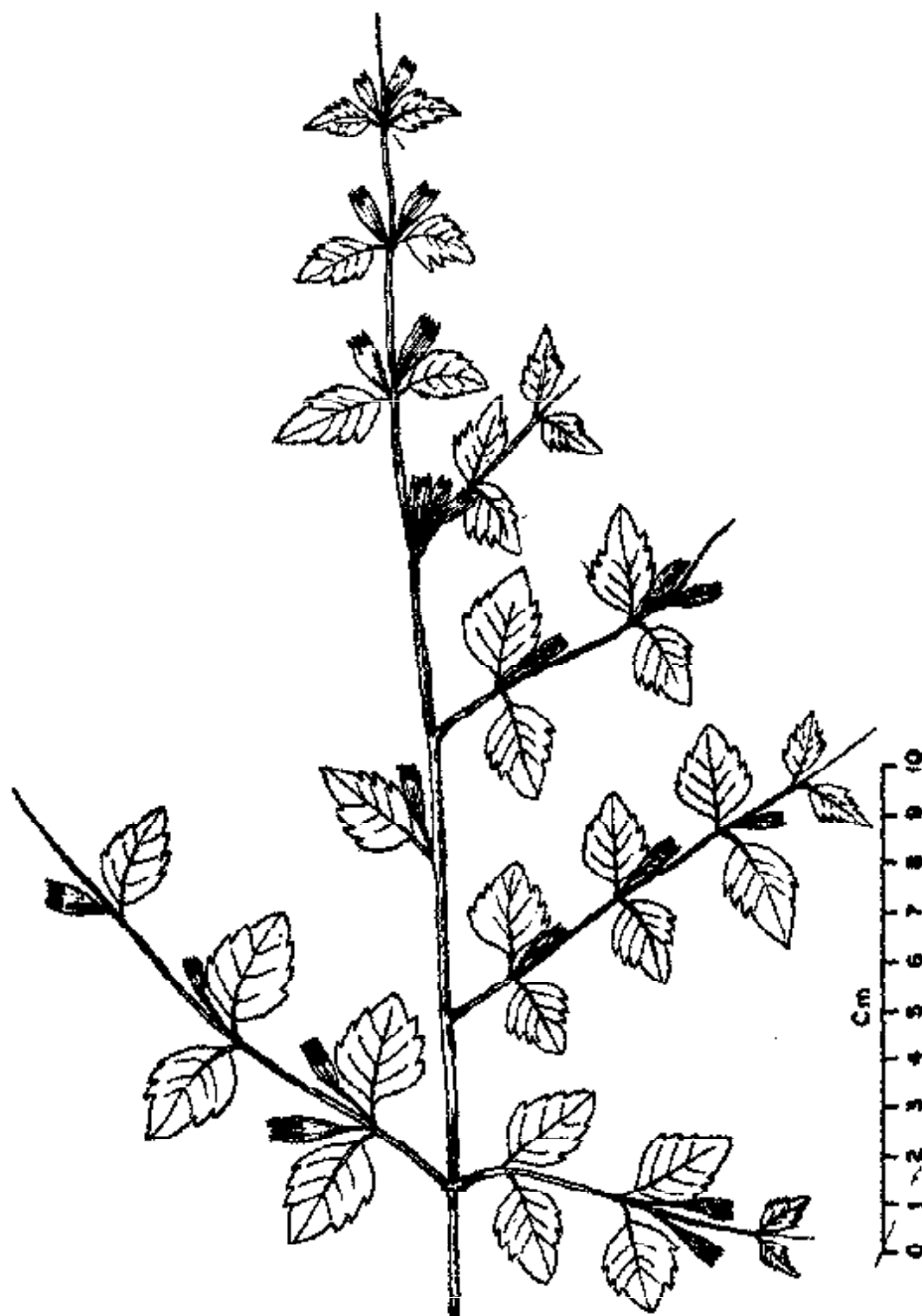


Fig. 43. *Leucas biflora* R.Br, var. *procumbens* (Desf.) Gamble

upper lip erect, concave, villous ; lower spreading, 3-fid. Nutlets 4, oblong, triquetrous.

Fls. & Frts. : July.

Distrib. : Rare in dry areas. Khatav, 165782.

Leucas cephalotes Spr. Syst. 2 : 743. 1825; Hook. f. Fl. Brit. India 4 : 689. 1885 ; Cooke, Fl. Pres. Bombay 2 : 549. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 168. 1940 ; Bole & Almeida in J. Bombay nat. Hist. Soc. 82 : 84. 1985.

Herbs, ca 1 m high, hairy. Leaves 3-5 cm long, base cuneate, apex acute, hairy. Flowers white in globose, terminal whorls ; bracts foliaceous ; calyx tube glabrous at base, hairy at apex ; corolla : upper lip woolly, lower twice the length of upper lip. Nutlets obovoid-oblong, brown.

Fls. & Frts. : October - November.

Illus. : Wight, Ic. t. 337. 1840.

Distrib. : Rare, included on Bole & Almeida's (*op. cit.*) report from Mahabaleshwar.

L. ciliata Bth. in Wall. Pl. As. Rar. 1 : 61. 1830 ; Hook. f. Fl. Brit. India 4 : 687. 1885 ; Cooke, Fl. Pres. Bombay 2 : 554. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 174. 1940.

Herbs, ca 1 m high. Leaves 4 11 × 1.5 - 4.5 cm hairy. Flowers white in axillary, distant whorls ; bracts linear, ca 1 cm long, hairy ; calyx truncate, 1.0 - 1.3 cm long, hairy without, teeth lanceolate, spinous pointed, ciliate ; corolla ca 2 cm long. Nutlets oblong, 0.2-0.4 cm long, brown.

Fls. & Frts. : October - May.

Distrib. : Common in semi-evergreen forests, along roadsides and on exposed lands. Koyna, Lingmala, Mahabaleshwar, Shirshingi.

L. indica (L.) R. Br. ex Vatke in Oest. Bot. 25 : 95. 1875 ; Matthew, Fl. Tamilnadu Carnatic 1 : 1262. Pl. 93J. 1983. *Leonurus indicus* L. Syst. Nat. ed. 10. 1101. 1760. *L. lavandulifolia* J.E. Sm. in Rees, Cyclop. 20. 1819 ; Mukerjee in Rec. Bot. Surv. India 14 : 167. 1940 ; Keng in Steenis, Fl. Males. 1, 8 : 338. 1978. *L. linifolia* Spr. Syst. 2 : 743. 1825 ; Hook. f. Fl. Brit. India 4 : 690. 1885 ; Cooke, Fl. Pres. Bombay 2 : 465. 1958 (Repr. ed.).

Herbs, 30 - 50 cm high, pubescent. Leaves 2.5 - 6.5 × 0.6 - 1.5 cm, finely puberulous, base tapering. Flowers white in axillary and terminal

leafy whorls ; bracts linear, spinescent, finely puberulous ; calyx tube contracted, teeth unequal ; corolla : upper lip oblong, white woolly. Nutlets oblong, *ca* 0.3 cm long, brown.

Fls. & Frts. : September - April.

Illus. : Matthew, *op. cit.*

Distrib. : Common near cultivated fields. Asani, Gojegaon, Mahabaleshwar, Morgiri, Vajegaon, Yavteshwar.

Leucas longifolia Bth. Lab. Gen. Sp. 733. 1835 ; Hook. f. Fl. Brit. India 4 : 684. 1885 ; Cooke, Fl. Pres. Bombay 2 : 551. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 170. 1940. (Fig. 44).

Herbs, 20-30 cm high, pubescent. Leaves 2-5 cm long, base attenuate, apex obtuse, pubescent. Flowers white in axillary whorls ; calyx *ca* 0.6 cm long, pubescent, teeth minute. Nutlets oblong, *ca* 0.3 cm long.

Fls. & Frts. : August - February.

Distrib. : Frequent along roadsides and on open hillocks. Karad, Phaltan, Rohine.

L. montana Spr. Syst. 2 : 742. 1825 ; Hook. f. Fl. Brit. India 4 : 682. 1885 ; Cooke, Fl. Pres. Bombay 2 : 552. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 182. 1940.

Herbs, *ca* 30 cm high, tomentose, hairs deflexed. Leaves ovate, 2.5 × 1 - 3 cm, base rounded, apex obtuse, tomentose. Flowers white in distant, many-flowered whorls ; calyx mouth silky villous without ; teeth triangular. Nutlets obovoid, minute.

Fls. : October - December.

Distrib. : Common along forest edges in scrub forests. Koyna, Mahabaleshwar, Panchgani.

L. nutans Spr. Syst. 2 : 743. 1825 ; Hook. f. Fl. Brit. India 4 : 688. 1885 ; Cooke, Fl. Pres. Bombay 2 : 550. 1958. (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 169. 1940.

Herbs, 7-11 cm high, sparsely hairy. Leaves sessile, lanceolate, 2.5 - 5.0 × 0.4 - 2.0 cm margins suberrate, pubescent. Flowers white ; bracts lanceolate, ciliate ; calyx *ca* 0.8 cm long, strongly ribbed above, hispid without, pubescent within. Nutlets narrowly oblong-ellipsoid, *ca* 0.2 cm long, brown.

Fls. & Frts. : April.

Distrib. : Rare annuals. Medha, 165636.

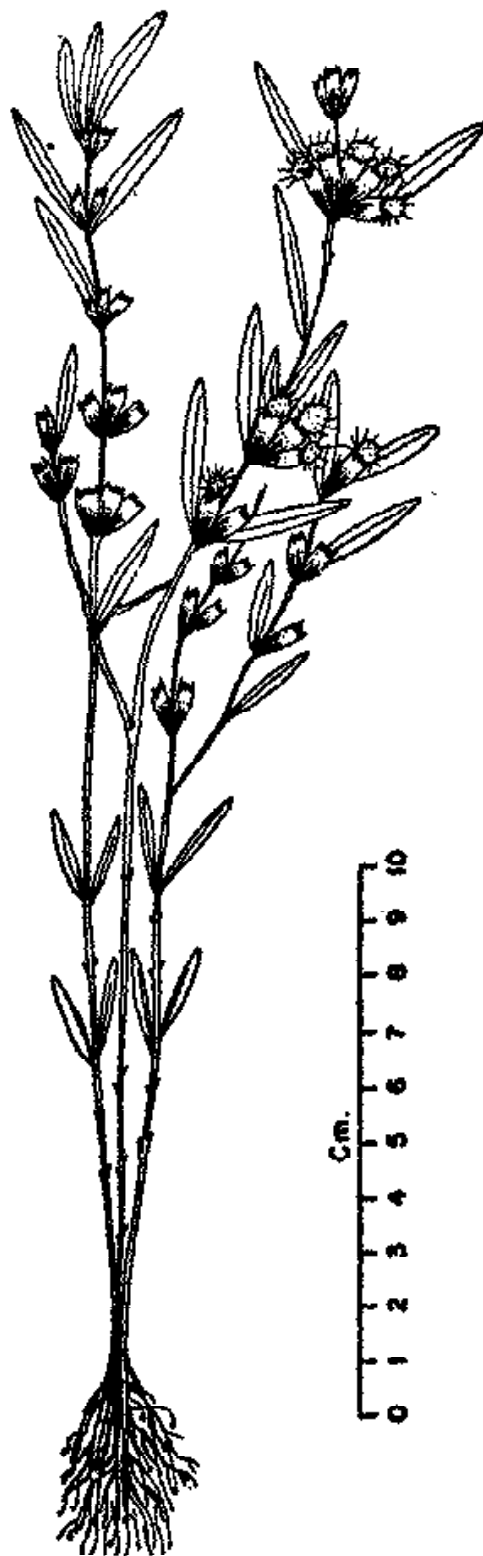


Fig. 44. *Leucas longifolia* Bth.

***Leucas stelligera* Wall.** Pl. As. Rar. 1 : 61. 1830 ; Hook. f. Fl. Brit. India 4 : 686. 1885 ; Cooke, Fl. Pres. Bombay 2 : 553. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 177. 1940. (Fig. 45).

Herbs, 30-70 cm high, villous. Leaves 4 - 8 × 0.7 - 1.5 cm, softly hairy. Flowers white, sessile, in axillary and terminal whorls ; bracts linear, densely ciliate, ca 1 cm long ; calyx tube 0.5 - 1.0 cm long, pubescent ; corolla ca 1 cm long. Nutlets 0.2 - 0.4 cm long, shining.

Fls. & Frts. : November - April.

Distrib. : Common among grasses on plateaus, also along hill slopes. Bamnoli, Koyna, Lingmala, Mahabaleshwar, Mandhardevi, Old Mahabaleshwar Road, Panchgani, Shirshingi.

MICROMERIA Bth.

***Micromeria capitellata* Bth.** in DC. Prodr. 12 : 218. 1848 ; Hook. f. Fl. Brit. India 4 : 649. 1885 ; Cooke, Fl. Pres. Bombay. 2 : 542. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 97. 1940.

Herbs, 30-50 cm high. Leaves ovate, 1 - 3 × 1.5 - 2.0 cm, margins crenate, pubescent. Flowers pale blue in lax, axillary spikes ; bracts linear-lanceolate ; calyx glandular hairy. Nutlets ellipsoid, minute, brown.

Fls. & Frts. : April.

Distrib. : Common along wet river banks. Mahabaleshwar.

NEPETA L.

***Nepeta hindustana* (Heyne ex Roth) Haines var. *woodrowii* (T. Cooke) Sant.** Fl. Purandhar 110. 1958. *N. ruderalis* Buch.-Ham. ex Hook. f. var. *woodrowii* T. Cooke, Fl. Pres. Bombay 2 : 473. 1906 [2 : 556. 1958 (Repr. ed.)].

Herbs, 10-30 cm long, hairy. Leaves ovate, ca 1.5 × 1.0 cm, margins crenate, hairy. Flowers blue in axillary, pedunculate cymes ; bracts linear-lanceolate, acute ; calyx upper lip 3 lobed ; lobes triangular, aristate ; lower lip with 2 short, subulate lobes. Nutlets ellipsoid, brown.

Fl. & Frts. : November - December.

Distrib. : Occasional near forest clearings. Panchgani ghat.



Fig. 45. *Leucas stelligera* Wall.

OCIMUM L.

Ocimum americanum L. Cent. Pl. 1 : 15. 1755 ; Backer & Bakh. f. Fl. Java 2 : 640. 1965 ; Keng in Gard. Bull. Singapore 24 : 126. 1969. *O. canum* Sims in Bot. Mag. 51 : 182, t. 2452. 1823 ; Hook. f. Fl. Brit. India 4 : 607. 1885 ; Cooke, Fl. Pres. Bombay 2 : 521. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 17. 1940. '*Ran-tulshi*'.

Herbs, 20-50 cm high, branches striate, pubescent when young. Leaves elliptic-ovate, 1.5-2.6 × 1-2 cm, acute at both ends, margins shallowly serrate, gland-dotted. Flowers white in spiciform, 6-11 cm long racemes ; calyx deflexed, upper lip sub-orbicular, flat, reticulately veined, ciliate, lower lip with 4 lanceolate teeth. Nutlets 4, ellipsoid, black.

Fls. & Frts. : July - September.

Illus. : Maheshwari, Ill. Fl. Delhi f. 174. 1966.

Distrib. : Common in waste lands, also cultivated in gardens because of its medicinal value. Dhebewadi, Mahuli.

CULTIVATED SPECIES

O. basilicum L. Sp. Pl. 597. 1753 ; Hook. f. Fl. Brit. India 4 : 608. 1885 ; Cooke, Fl. Pres. Bombay 2 : 523. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 18. 1940. '*Tulsi*'.

Herbs, ca 1 m high, hispid. Leaves ovate or elliptic-lanceolate, 4.5-10.5 × 1.5-3.5 cm. Flowers white in dense, whorled, 5-17 cm long racemes. Nutlets ellipsoid, brown, pitted.

Fls. & Frts. : August - October.

Distrib. : Cultivated ; considered to be a sacred plant. Chaphal, Koyna, Mahabaleshwar, Pandavgad.

O. gratissimum L. Sp. Pl. 1197. 1753 ; Hook. f. Fl. Brit. India 4 : 608. 1885 ; Cooke, Fl. Pres. Bombay 2 : 522. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 29. 1940. '*Ram-tulshi*'.

Shrubs, 1-2 m high. Leaves elliptic-lanceolate, 4-6 × 1.5-2.0 cm, coarsely serrate, gland-dotted. Flowers greenish in terminal, 5-20 cm long racemes. Nutlets subglobose, brown, rugose.

Fls. & Frts. : July - October.

Distrib. : Cultivated for its medicinal value. Mahabaleshwar.

O. sanctum L. Sp. Pl. Mant. 1 : 85. 1767 ; Hook. f. Fl. Brit. India 4 : 609. 1885 ; Cooke, Fl. Pres. Bombay 2 : 521. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 19. 1940.

Herbs, *ca* 1 cm high ; hairy with a purple tinge. Leaves elliptic-oblong, 1 - 2 × 0.5 - 0.8 cm. Flowers in 2 - 8 cm long racemes ; calyx *ca* 0.4 cm long, accrescent, pubescent ; lower lip longer than upper, 2 lateral teeth short, straight, 2 central teeth awned, curved, projecting beyond the upper lip. Nutlets ellipsoid, brownish.

Fls. & Frts. : July - February.

Distrib. : Commonly cultivated as a sacred plant, also found wild in waste lands. Koyna, Mahabaleshwar, Mahuli, Vardhangad.

ORTHOSIPHON Bth.

- | | | |
|--|-----|-----------------------|
| 1. Corolla tube as long as the calyx ; nutlets smooth | ... | <i>O. pallidus</i> |
| 1. Corolla tube longer than the calyx ; nutlets minutely tuberculate | ... | <i>O. thymiflorus</i> |

Orthosiphon pallidus Royle ex Bth. in Hook. Bot. Misc. 3 : 370. 1833 ; Hook. f. Fl. Brit. India 4 : 613. 1885 ; Cooke, Fl. Pres. Bombay 2 : 523. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 23. 1940.

Herbs, 15 - 40 cm high ; branches diffuse from woody rootstock. Leaves ovate, 1.0 - 1.5 × 0.5 - 1.0 cm, margins crenate, gland-dotted. Flowers purplish-white in lax racemes ; bracts 1.5 cm long, ciliate. Nutlets subglobose, yellowish-brown.

Fls. & Frts. : September - October.

Illus. : Maheshwari, Ill. Fl. Delhi. f. 175. 1966.

Distrib. : Occasional perennial along ghats. Mahabaleshwar, Shirgaon ghat

O. thymiflorus (Roth) Sleesen in Reinwardtia 5 : 42. 1959. *Ocimum thymiflorum* Roth, Nov. Pl. Sp. 269. 1821. *Orthosiphon tomentosus* Bth. var. *glabrata* Hook. f. Fl. Brit. India 4 : 614. 1885 ; Cooke, Fl. Pres. Bombay 2 : 524. 1958 (Repr. ed.). *O. glabratus* Bth. in Wall. Pl. As. Rar. 2 : 14. 1831 ; Mukerjee in Rec. Bot. Surv. India 14 : 24. 1940.

Herbs, *ca* 50 cm high. Leaves ovate, 5.5 - 8.0 × 2.5 - 3.5 cm, base cuneate, apex acute. Flowers white in 8-12 cm long terminal racemes ; bracts ovate, acute, *ca* 0.6 cm long. Nutlets ellipsoid, brown.

Fls. & Frts. : August.

Distrib. : Rare, near forest margins in deciduous forests. Kumbharli ghat.

PLECTRANTHUS L'Herit.

- | | | |
|---|-----|---------------------|
| 1. Calyx 2-lipped | ... | <i>P. mollis</i> |
| 1. Calyx subequally 5-lobed : | | |
| 2. Leaves sparsely hairy, with minute red glands beneath , flowers white | .. | <i>P. stocksii</i> |
| 2. Leaves pubescent above, tomentose beneath ; glands absent ; flowers blue | ... | <i>P. japonicus</i> |

Plectranthus japonicus (Burm. f.) Koidz in Bot. Mag. Tokyo 43 : 386. 1929 ; Raiz. in Indian Forester 92 : 320 : 1966. *Scutellaria japonica* Burm. f. Fl. Ind. 130. 1768. *P. coetsa* Buch.-Ham. ex D. Don, Fl. Nepal. 117. 1825 ; Cooke, Fl. Pres. Bombay 2 : 521. 1958 (Repr. ed.) ; Hook. f. Fl. Brit. India 4 : 619. 1885 ; Mukerjee in Rec. Bot. Surv. India 14 : 44. 1940.

Herbs, 1-2 m high ; stems quadrangular, reddish tinged, pubescent. Leaves ovate, 2 8×1.3 4.0 cm, margins dentate. Flowers in axillary and terminal cymes ; calyx ca 0.3 cm long, pubescent. 10-ribbed ; corolla ca 0.7 cm long, pubescent without. Nutlets ellipsoid, yellow.

Fls. & Frts. : November - December.

Illus. : Wight, Ic. t. 1430. 1849 (*P. macraei* Bth.).

Distrib. : Common in forest fringes and in open situations. Mahabaleshwar, Gureghar Nursery, Panchgani.

P. mollis (Ait.) Spr. Syst. 2 : 690. 1825 ; Sant. in Rec. Bot. Surv. India 16(1) : 215. 1967 (3rd Rev. ed.). *Ocimum molle* Ait. Hort. Kew. 2 : 322. 1789. *P. incanus* Link, Hort. Berol. 2 : 120. 1822 ; Hook. f. Fl. Brit. India 4 : 621. 1885 ; Cooke, Fl. Pres. Bombay 2 : 529. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 47. 1940. 'Lal-aghada'. (Fig. 46).

Herbs, 25-40 cm high, pubescent. Leaves broadly ovate, 3 5×2.5 - 5.0 cm, margins crenate sparsely pubescent on nerves. Flowers bluish, in 7-9 cm long racemes ; bracts ovate, ca 0.3 cm long ; calyx accrescent ; corolla ca 0.8 cm long, lower lip boat-shaped ; upper rounded. Nutlets oblong, ca 0.3 cm long, brown with dark spots.

Fls. & Frts. : August - November.

Distrib. : Common weed near villages in waste places. Koyna, Mahabaleshwar, Satara-Pune Road, Wai, Umankanchan, Yavteshwar.

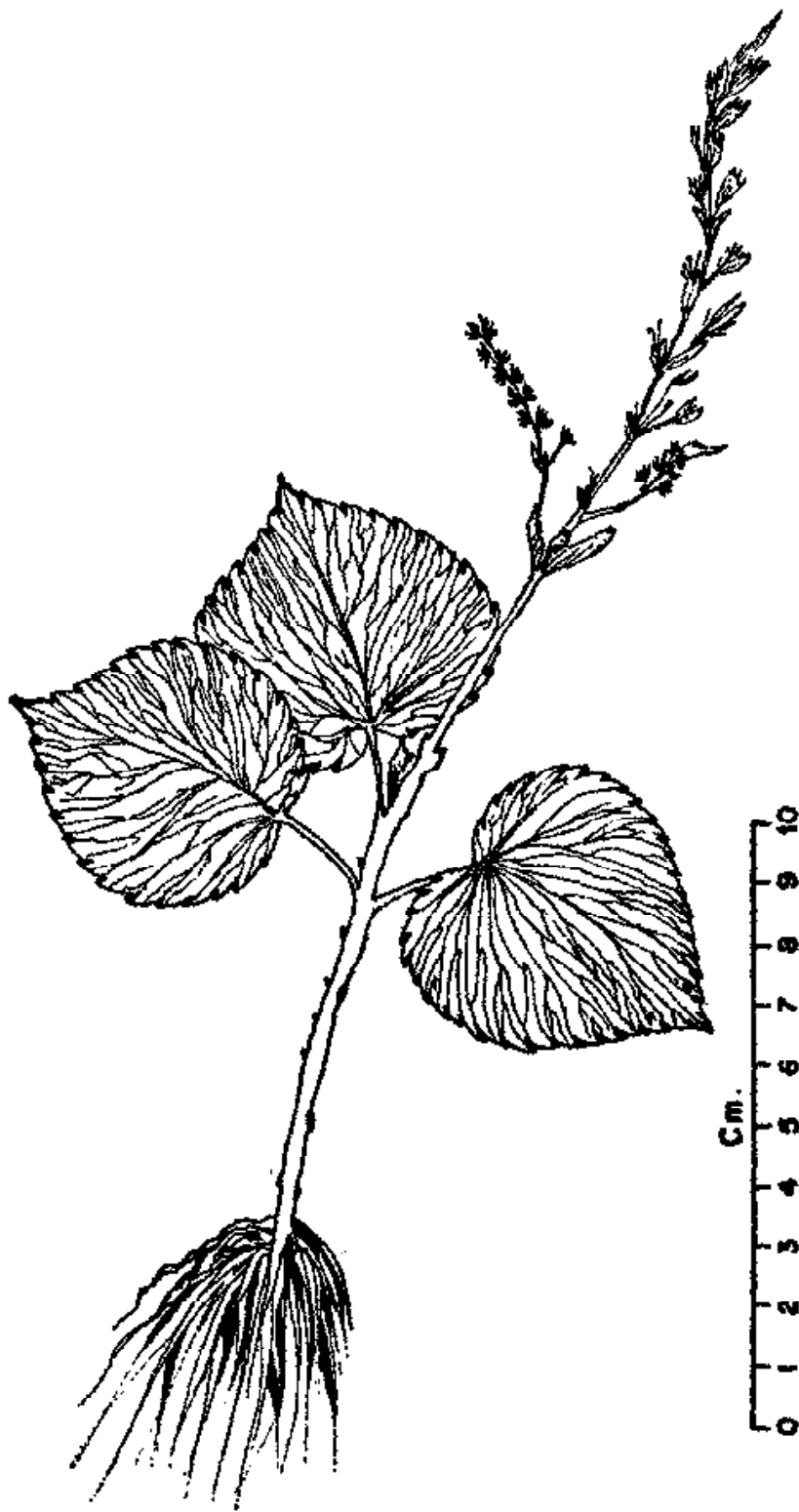


Fig. 46. *Plectranthus mollis* (Ait.) Spr.

Plectranthus stocksii Hook. f. Fl. Brit. India 4 : 618. 1885 ; Cooke, Fl. Pres. Bombay 2 : 528. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 43. 1940.

Herbs, ca 1 m high. Leaves ovate, 2.5-7.5 × 1.5-4.0 cm, base rounded, apex acute, margins coarsely serrate. Flowers in branched, paniculate cymes ; bracts ovate, acute, foliaceous ; calyx enlarged in fruits, covered with minute red glands. Nutlets ellipsoid, yellowish-brown.

Fls. & Frts. : October - December.

Distrib. : Common in forest undergrowth. Lingmala, Machutar forest, Mahabaleshwar, Panchgani Plateau, Shirshingi.

POGOSTEMON Desf.

1. Leaves sessile, verticillate :

2. Herbs ca 30 cm high ; bracts linear, persistent ... *P. deccanensis*

2. Herbs, 30-100 cm high ; bracts lanceolate, appear filiform after breaking off blade ... *P. erectum*

1. Leaves petioled, opposite :

3. Corolla obscurely 2-lipped :

4. Bracts ovate, imbricate, concealing calyx ... *P. benghalensis*

4. Bracts lanceolate, not imbricate, not concealing calyx ... *P. purpurascens*

3. Corolla subequally 4-lobed :

5. Stems silky-tomentose ; leaves rugose ; corolla tube included ... *P. myosuroides*

5. Stems bristly ; leaves not rugose ; corolla tube exerted :

6. Stems and leaves densely bristly ; base of leaves acute ; calyx teeth minute ... *P. salicifolius*

6. Stems and leaves sparsely bristly ; base of leaves rounded ; calyx teeth equalling the tube ... *P. auricularius*

Pogostemon auricularius (L.) Hassk. in Tijdsch. Nat. Geschied 10 : 127, 1883 ; El-Gazzar & Watson in Taxon 16 : 186. 1967 ; Press in Bull. Brit. Mus. nat. Hist. 10 : 71. 1982. *Mentha auricularia* L. Mant. Pl. 81. 1767. *Dysophylla auricularia* (L.) Bl. Bijdr. 826. 1825 ; Graham, Cat. Pl. Bombay 150. 1839 ; Hook. f. Fl. Brit. India 4 : 638. 1885 ; Cooke, Fl.

Pres. Bombay 2 : 538. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 79. 1940.

Herbs, 30-50 cm high. Leaves shortly elliptic-oblong, 2.5 - 5.0 × 1.0 - 2.5 cm, hairy. Flowers pale violet in spicate racemes. Nutlets broadly ellipsoid, smooth.

Illus. : Wight, Ic. t. 1445. 1850 (*D. auricularia*).

Notes : Included on Graham's report from Mahabaleshwar (*op. cit.*). However, according to Cooke, Graham might have mistaken *D. salicifolia* Dalz. for this taxon as he had not seen specimen from the erstwhile Bombay Presidency and there are no specimen of this species at *BSI* or *BLAT*.

Pogostemon benghalensis (Burm. f.) O. Ktze. Rev. Gen. Pl. 2 : 529. 1891 ; Press in Bull. Brit. Mus. nat. Hist. 10 : 71. 1982. *Origanum benghalense* Burm. f. Fl. Ind. 128, t. 38, f. 3. 1768. *P. plectranthoides* Desf. Ann. Mus. Paris 2 : 155. 1803 ; Hook. f. Fl. Brit. India 4 : 632. 1885 ; Cooke, Fl. Pres. Bombay 2 : 536. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 69. 1940. *P. parviflorus* Bth. in Wall. Pl. As. Rar. 1 : 31. 1830 ; Hook. f. *op. cit.* ; Cooke, *op. cit.* ; Mukerjee, *op. cit.* 68. 'Pangli'.

Shrubs, 1-2 m high, young branches dark-purple, tomentose. Leaves ovate, 3 - 6 × 1.2 - 3.0 cm, base cuneate or rounded, glabrous above, velvety beneath. Flowers purple in villous, terminal and axillary paniculate spikes ; calyx teeth lanceolate, acute, ciliate, unequal, tube glandular-pubescent with purple tinge. Nutlets minute, broadly ellipsoid, shining brown.

Fls. & Frts. : November - April.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 574. 1982.

Distrib. : Common in forest outskirts and in waste places. Karanjewadi, Koyna, Mahabaleshwar, Nauja, Panchgani, Shirshingi, Vasota.

P. deccanensis (Panigr.) Press in Bull. Brit. Mus. nat. Hist. 10 : 73. 1982. *Eusteralis deccanensis* Panigr. in Phytologia 32 : 475. 1978. *Dysophylla tomentosa* Dalz. in Hook. J. Bot. 2 : 337. 1850 ; Hook. f. Fl. Brit. India 4 : 641. 1885. *Dysophylla stellata* Bth. var. *tomentosa* T. Cooke, Fl. Pres. Bombay 458. 1906. [2 : 540. 1958 (Repr. ed.)] ; Mukerjee in Rec. Bot. Surv. India 14 : 81. 1940. (Fig. 47).

Herbs, stems pubescent with long hairs. Leaves linear, 0.5-1.5 cm long, margins revolute. Flowers pink in dense 1-4 cm long spikes ; filaments exserted, bearded with purple hairs. Nutlets ellipsoid, minute.

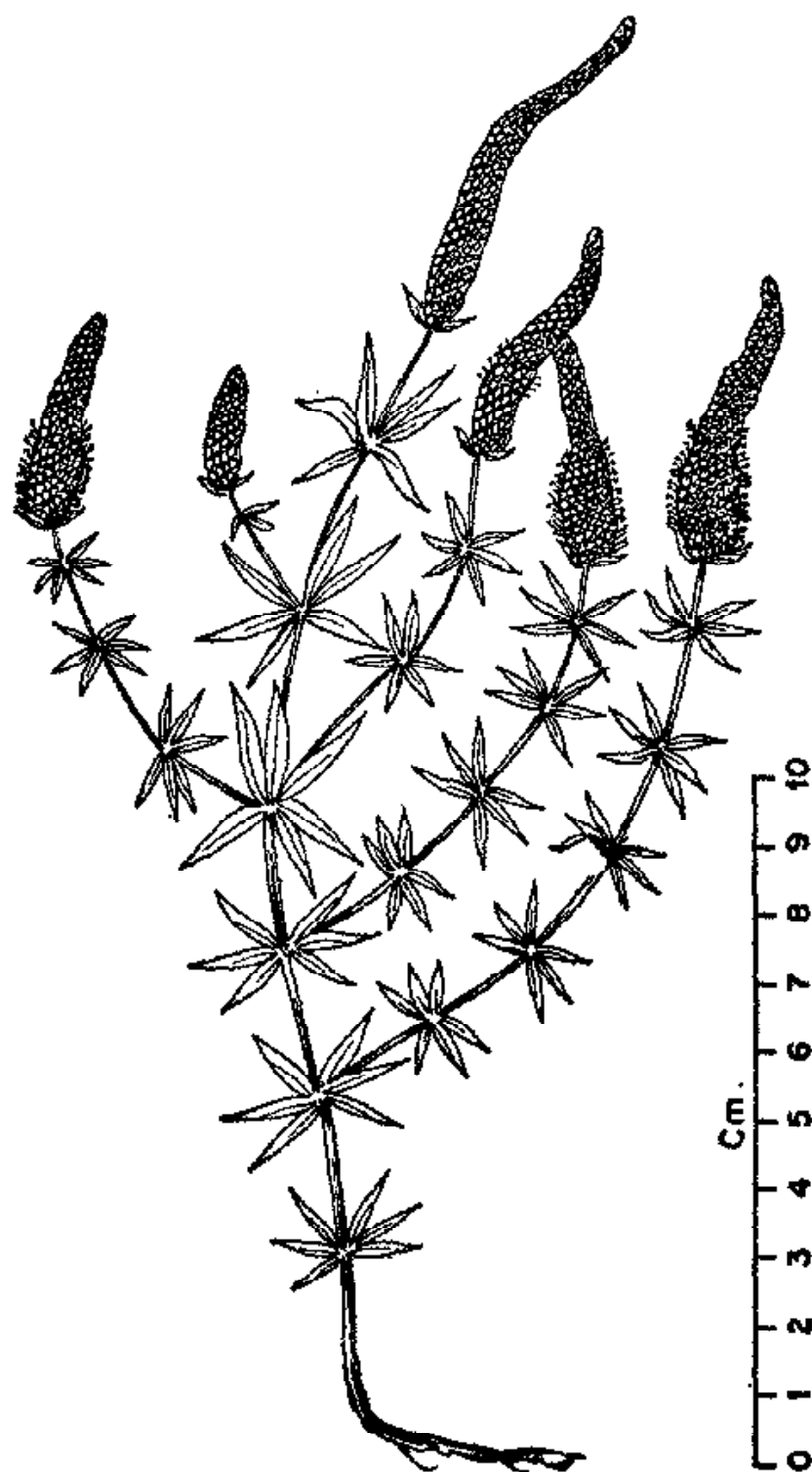


Fig. 47. *Pogostemon deccanensis* (Panigr.) Press

Fls. : October - January.

Distrib. : Common near watercourses in large patches. Gadoli, Jadholi, Kas, Lingmala, Mahabaleshwar, Nauja, Old Mahabaleshwar road, Panchgani, Shirshingi.

Pogostemon erectum (Dalz.) O. Ktze. Rev. Gen. Pl. 530. 1891 ; Press in Bull. Brit. Mus. nat. Hist. 10 : 73. 1982. *Dysophylla erecta* Dalz. in Hook. Kew. J. 2 : 337. 1850 ; Hook. f. Fl. Brit. India 4 : 641. 1885. *D. gracilis* Dalz. *op. cit. non* ; *Pogostemon gracilis* Hassk. 1843 ; Hook. f. *op. cit.* *D. stellata* Bth. var. *gracilis* (Dalz.) T. Cooke, Fl. Pres. Bombay 458. 1906 [2 : 540. 1950 (Repr. ed.)] ; Mukerjee in Rec. Bot. Surv. India 14 : 81. 1940.

Herbs, pubescent. Leaves 5-20 in a whorl, 0.5-1.0 cm long. Flowers pink in 2-5 cm long spikes, villous ; calyx densely hairy. Nutlets ellipsoid, minute, yellowish-brown.

Fls. & Frts. : November - January.

Distrib. : Included on Cooke's report from Mahabaleshwar.

P. myosuroides (Bth.) O. Ktze. Rev. Gen. Pl. 2 : 53. 1891 ; Press in Bull. Brit. Mus. nat. Hist. 10 : 73. 1982. *Dysophylla myosuroides* Bth. in Wall. Pl. As. Rar. 1 : 30. 1830 ; Hook. f. Fl. Brit. India 4 : 638. 1885 ; Cooke, Fl. Pres. Bombay 2 : 538 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 78. 1940.

Herbs, 20 - 40 cm high. Leaves elliptic-oblong, 2 - 4 × 0.3 - 1.0 cm. Flowers red in tomentose, 2.5-10.0 cm long spikes ; bracts linear-oblong, ciliate. Nutlets ellipsoid, compressed.

Fls. & Frts. : January.

Distrib. : Rare in moist situations among grasses. Mahabaleshwar, Cooke, s.n., Dalzell & Gibson, Woodrow (Cooke, *op. cit.*).

P. purpurascens Dalz. in Hook. Bot. Kew. Gard. Misc. 2 : 337. 1850 ; Hook. f. Fl. Brit. India 4 : 632. 1885 ; Cooke, Fl. Pres. Bombay 2 : 537. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 71. 1940 ; Press in Bull. Brit. Mus. 10 : 73. 1982. (Fig. 48).

Herbs, ca 1 m high ; branches furrowed, hairy. Leaves ovate, 2.5 - 13.0 × 1.5 - 8.0 cm, softly hairy. Flowers purplish-white in many flowered spikes ; bracts ca 0.5 cm long, pubescent ; calyx tube ca 0.7 cm long, pubescent, teeth revolute, ciliate. Nutlets ovoid, minute, black when ripe.

Fls. & Frts. : September - April.

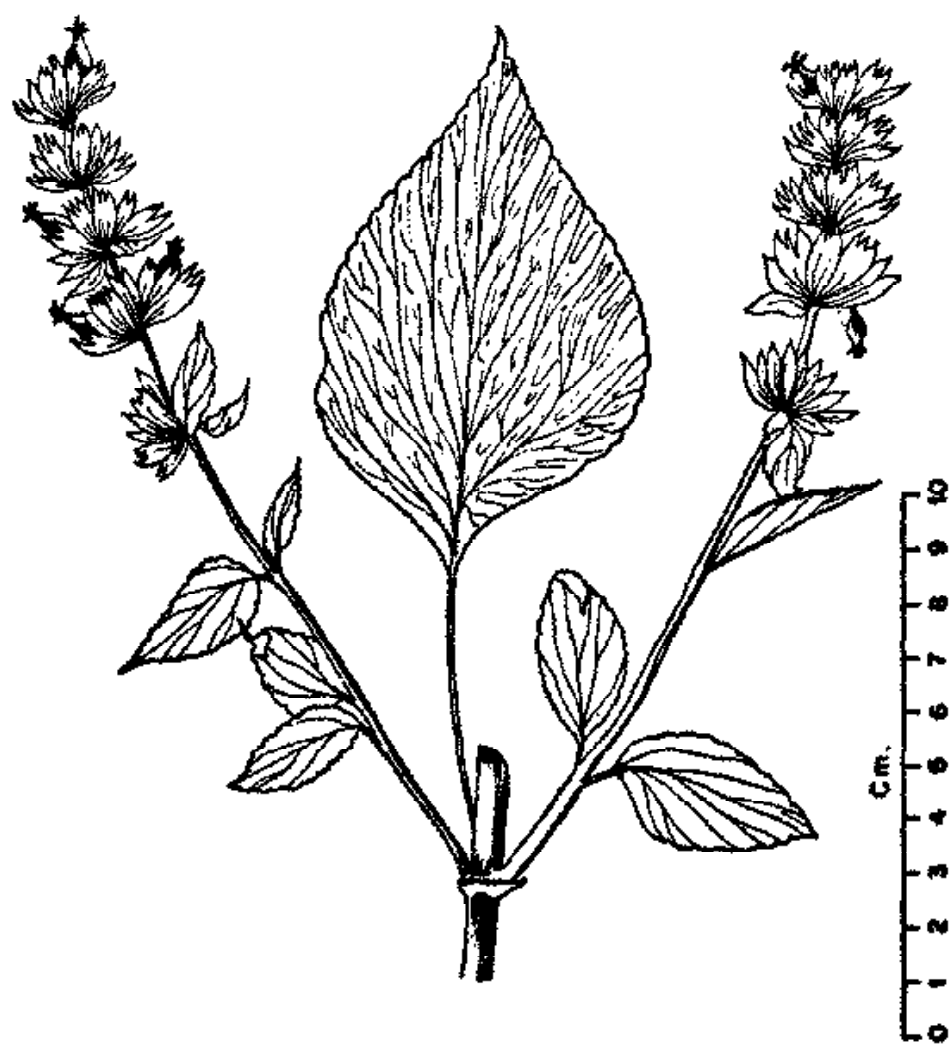


Fig. 48. *Pogostemon purpurascens* Dalz.

Distrib. : Common along the hill slopes in shady places. Jangli Jaigad, Nauja, Sanbur.

Pogostemon salicifolius (Dalz. ex Hook. f.) O. Ktze. Rev. Gen. Pl. 1891 ; Press in Bull. Brit. Mus. nat. Hist. 10 : 73. 1982. *Dysophylla salicifolia* Dalz. ex Hook. f. Fl. Brit. India 4 : 638. 1885 ; Cooke, Fl. Pres. Bombay 2 : 539. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 79. 1940.

Herbs, 30-50 cm high ; stems with a reddish tinge. Leaves lanceolate, 3 - 5 × 0.5 - 1.0 cm. Flowers purple in dense, 2-8 cm long spikes, villous ; bracts lanceolate, hairy. Nutlets ellipsoid, minute.

Fls. & Frts. : January - February.

Illus. : Wight, Ic. t. 1445. 1849 (*D. salicifolia*).

Distrib. : Common along water courses. Jangli Jaigad, Mahabaleshwar.

SALVIA L.

Salvia plebeia R. Br. Prodr. 501. 1810 ; Hook. f. Fl. Brit. India 4 : 655. 1885 ; Cooke, Fl. Pres. Bombay 2 : 557. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 111. 1940.

Herbs, 15-20 cm high ; branches hoary-pubescent. Leaves oblong-lanceolate, 2 - 5 × 0.7 - 2.5 cm, base tapering into petiole, hairy. Flowers white or purple in dense, 3 - 8 cm long spicate racemes ; bracts linear-spathulate ; calyx accrescent in fruiting. Nutlets ovoid, ca 1.5 cm long, brown.

Fls. & Frts. : November - April.

Distrib. : Common annuals along river banks. Koyna, Mahabaleshwar, Nauja, Taldeo.

CULTIVATED SPECIES

S. coccinea Buch'hoz ex Etl. *Salvia* 23. 1777 ; Hook. f. Fl. Brit. India 4 : 656. 1885 ; Cooke, Fl. Pres. Bombay 2 : 558. 1958 (Repr. ed.).

Herbs, ca 1 m high. Leaves ovate-cordate, crenate-serrate, puberulous. Flowers scarlet, in terminal whorls.

Fls. : August.

Distrib. : Native of Tropical America ; Occasionally cultivated in gardens as an ornamental plant. Panchgani.

Salvia leucantha Cav. Ic. & Descr. 1 : 16, t. 24. 1791 ; Hook. f. in Curtis, Bot. Mag. t. 4318. 1847 ; L. Cramer in Dassanayake & Fosberg, Rev. Handb. Fl. Ceylon 3 : 167. 1981.

Herbs, hispid. Leaves oblong-lanceolate, 2 10 × 0.5 2.0 cm, puberulous above, white-tomentose beneath. Flowers violet in terminal, tomentose spikes.

Fls. : September.

Distrib. : Cultivated in gardens as an ornamental plant. Panchgani.

SCUTELLARIA L.

Scutellaria discolor Coleb. in Wall. Pl. As. Rar. 1 : 66. 1830 ; Hook. f. Fl. Brit. India 4 : 667. 1885 ; Cooke, Fl. Pres. Bombay 2 : 545. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 146. 1940.

Herbs, ca 1 m high ; branches ascending, pubescent. Leaves elliptic, 3.5 - 12.0 × 2.0 7.5 cm, base rounded, apex obtuse, pubescent. Flowers pale-blue in racemes. Nutlets subglobose, scabrid.

Fls. & Frts. : September November.

Notes : Included on the authority of Birdwood and Graham (Cooke, *op. cit.*) who reported it from Mahabaleshwar.

TEUCRIUM L.

Teucrium tomentosum Heyne ex Bth. in Wall. Pl. As. Rar. 1 : 58. 1830 ; Hook. f. Fl. Brit. India 4 : 700. 1885 ; Mukerjee in Rec. Bot. Surv. India 14 : 220. 1940.

Herbs, ca 1 m high, pubescent. Leaves ovate, 4 - 6 × 3.5 - 5.0 cm, hairy. Flowers white in ca 5 cm long panicles ; bracts lanceolate, hairy ; calyx glabrous above, hairy at base. Nutlets ca 0.2 cm long, brown.

Fls. & Frts. : October.

Distrib. : Rare along hill slopes. Mahabaleshwar, S.G. Torne s n.

CULTIVATED SPECIES

Hyptis suaveolens (L.) Poit. in Am. Mus. Natl. Hist. Nat. 7 : 472, t. 29. f. 2. 1806 ; Hook. f. Fl. Brit. India 4 : 630. 1885 ; Cooke, Fl. Pres.

Bombay 2 : 560. 1958 (Repr. ed.) ; Mukerjee in Rec. Bot. Surv. India 14 : 63. 1940. *Ballota suaveolens* L. Syst. ed. 10. 1100. 1859.

Herbs, ca 1 m high with a strong smell. Leaves ovate-cordate, strigose. Flowers blue in secund, axillary or terminal umbels ; calyx glandular-hairy. Nutlets 2, ovoid, blackish-brown.

Fls. & Frts. : February.

Distrib. : Cultivated as an ornamental plant, also found as an escape in waste lands and along road sides. Koyna, Mahabaleshwar.

Mentha spicata L. Sp. Pl. 576. 1753. *M. viridis* L. Sp. Pl. ed. 2. 804. 1763 ; Hook. f. Fl. Brit. India 4 : 647. 1885 ; Cooke, Fl. Pres. Bombay 2 : 559. 1958 (Repr. ed.). 'Pudina'.

Herbs. Leaves subsessile, ovate-lanceolate, serrate. Flowers purple.

Distrib. : Cultivated for edible leaves. Mahabaleshwar.

PLANTAGINACEAE

PLANTAGO L.

Plantago major L. Sp. Pl. 112. 1753 ; Hook. f. Fl. Brit. India 4 : 705. 1885 ; Cooke, Fl. Pres. Bombay 2 : 560. 1958 (Repr. ed.) ; Pilger in Engl. & Prantl. Pflanzenr. 102. 56. 1937. 'Isabgol'.

Herbs, scapigerous with stout rootstock. Leaves radical, oblong, 8 - 11 × 5.0 - 7.5 cm, base tapering into ca 12 cm long petioles. Flowers greenish in 5-9 cm long spikes ; sepals 4, oblong, margins scarious ; petals lanceolate, acute. Capsules ovoid, ca 0.4 cm long, membranous. Seeds 8, brownish-black, rugulose.

Fls. & Frts. : July - September.

Distrib. : Rare along river banks. Seeds used as laxative. Khatav, Mahabaleshwar.

NYCTAGINACEAE

- | | | |
|---|-----|-------------|
| 1. Opposite pair of leaves subequal, sparsely hairy beneath ;
flowers pedicellate ; stamens exserted | ... | COMMICARPUS |
| 1. Opposite pair of leaves unequal, white-tomentose beneath ;
flowers sessile ; stamens included | ... | BOERHAVIA |

BOERHAVIA L.

Boerhavia diffusa L. Sp. Pl. 3. 1753 ; Cooke, Fl. Pres. Bombay 2 : 563. 1958 (Repr. ed.) ; Stemmerik in Steenis, Fl. Males. 1, 6 : 455. 1964 ; Mukerjee in J. Econ. Tax. Bot. 5 : 582. 1984. *B. repens* L. *op. cit.* ; Hook. f. Fl. Brit. India 4 : 709. 1885.

Herbs, prostrate ; stems glandular-hairy, base woody. Leaves ovate-oblong or suborbicular, 1-4 cm long. Flowers pink in axillary and terminal umbels ; perianth lobes glandular-hairy with vertical streaks without. Fruits clavate, ca 0.3 cm long, 5-ribbed.

Fls. & Frts. : April - October.

Illus. : Wight, Ic. t. 874. 1844 [*B. procumbens* Roxb. Fl. Ind. (Carey & Wall. ed.) 1 : 146. 1820)].

Distrib. : Common weed in gardens and near cultivated fields. Rasati, Satara, Shingapur.

COMMICARPUS Standley

Commicarpus chinensis (L.) Heimerl in Engl. & Prantl, Pflanzenfam. ed. 2. 16 C : 117. f. 2G. 1934 ; Meikle in Notes R.B.G. Edinb. 36 : 243. 1978. *Valeriana chinensis* L. Sp. Pl. 33. 1753. *B. repanda* Willd. Sp. Pl. 1 : 22. 1797 ; Hook. f. Fl. Brit. India 4 : 709. 1885 ; Cooke, Fl. Pres. Bombay 2 : 564. 1958 (Repr. ed.). *Boerhavia chinensis* (L.) Aschers. & Schweinf. Beitr. Fl. Aeth. 1 : 167. 1867 ; Stemmerik in Steenis, Fl. Males 1, 6 : 455. 1964. '*Punarnava*'.

Herbs, diffuse, 1-2 m long. Leaves deltoid-ovate, 2 - 5 × 1.5 - 4.0 cm. Flowers pink in lax umbels on slender peduncles ; perianth funnel-shaped. Fruits clavate, ca 0.5 cm long, faintly ribbed.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 1766. 1851 (*B. repanda*) ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 579. 1982.

Distrib. : Common weed in drier parts of the district. Chaphal, Girvi, Pirachi wadi, Satara Road Station, Vardhangad.

CULTIVATED SPECIES

Mirabalis jalapa L. Sp. Pl. 177. 1753 ; Stemmerik in Steenis, Fl. Males. 1, 6 : 451. 1964 ; Cooke, Fl. Pres. Bombay 2 : 567. 1958 (Repr. ed.). '*Gul-abbas*', '*Gul-bakshi*'.

Herbs, ca 1 m high. Leaves ovate-lanceolate in unequal pairs. Flowers red, white or variegated in dense corymbs. Fruits globose, ribbed, black.

Fls. & Frts. : August - November.

Distrib. : Cultivated as an ornamental plant, also found as an escape in waste places. Koyna.

AMARANTHACEAE

1. Leaves alternate (in *Aerva sanguinolenta* leaves both alternate and opposite) :
 2. Flowers unisexual :
 3. Staminodes present ... AERVA
 3. Staminodes absent ... AMARANTHUS
 2. Flowers bi-sexual or polygamous :
 4. Staminodes present ... AERVA
 4. Staminodes absent :
 5. Utricles many seeded ... CELOSIA
 5. Utricles 1-seeded :
 6. Leaves linear-lanceolate, pubescent ... ALLMANIA
 6. Leaves ovate, glabrous ... DIGERA
1. Leaves opposite :
 7. Flowers 1-3 perfect, surrounded by imperfect flowers modified into hooked bristles ... PUPALIA
 7. All flowers perfect :
 8. Prostrate herbs ; anthers 1-celled ... ALTERNANTHERA
 8. Erect herbs or straggling undershrubs ; anthers 2-celled :
 9. Perianth, bracts and bracteoles spinescent ; staminodes 5 ... ACHYRANTHES
 9. Perianth, bracts and bracteoles not spinescent ; staminodes absent ... GOMPHRENA

ACHYRANTHES L.

Achyranthes aspera L. Sp. Pl. 204. 1753 ; Hook. f. Fl. Brit. India 4 ; 730. 1885 ; Cooke, Fl. Pres. Bombay 2 : 580. 1958 (Repr. ed.).
'Aghada'.

KEY TO THE VARIETIES

1. Leaves thick, hairy above, tomentose beneath ; rachis stout ... var. *aspera*
1. Leaves membranous, glabrous or pubescent, rachis slender ... var. *porphyristachya*

var. *aspera*

Herbs, ca 1 m high ; stems quadrangular, striate. Leaves elliptic, 3 - 10 × 2 - 4 cm. Flowers greenish with pink apex in axillary and terminal, 5 - 20 cm long spikes ; bracts and bracteoles ovate, acuminate ; perianth lobes lanceolate, margins white, membranous ; stamens 5, alternate with truncate, fimbriate, staminodes. Utricles oblong-ovoid, ca 0.2 cm long.

Fls. & Frts. : April - November.

Illus. : Wight, Ic. t. 1777. 1852 ; Tad. & Venkatan. Handb. S. Ind. Weeds 266, f. 111. 1932.

Distrib. : Common in waste lands in drier parts. Dhebewadi, Jadholi, Koyna, Mahabaleshwar, Morgiri.

var. *porphyristachya* (Wall. ex Moq.) Hook. f. *op. cit.* *A. porphyristachya* Wall. ex Moq. in DC. Prodr. 13(2) : 314. 1849.

Herbs, 1.0-1.5 m high. Leaves elliptic, ca 12 × 6 cm. Flowers greenish-white in terminal spikes. Utricles oblong.

Fls. & Frts. : October - November.

Illus. : Maheshwari, Ill. Fl. Delhi, f. 183. 1966.

Distrib. : Occasional weed. Mahabaleshwar.

AERVA Forssk.

1. Straggling undershrubs ; leaves alternate and opposite ... *A. sanguinolenta*
1. Erect herbs ; leaves alternate :
2. Leaves linear-oblong, acute ; flowers unisexual ... *A. javanica*
2. Leaves obovate, obtuse ; flowers bisexual ... *A. lanata*

Aerva javanica (Burm. f.) Juss. ex Schult. Syst. Veg. ed. 15. 5 : 565. 1819 ; Hook. f. Fl. Brit. India 4 : 727. 1885 ; Cooke, Fl. Pres. Bombay 2 : 577. 1958 (Repr. ed.) ; Townsend in Dassanayake & Fosberg, Rev.

Handb. Fl. Ceylon 1 : 31. 1980. *Iresine persica* Burm. f. Fl. Ind. 217, t. 65, f. 1. 1768.

Herbs, 30-50 cm high, pubescent. Leaves sessile, 2 5×0.5 - 1.0 cm. Flowers in tomentose spikes ; bracteoles ovate, acute, hyaline ; perianth lobes elliptic-oblong, woolly on back. Utricles broadly ovoid. Seeds lenticular, black, shining.

Fls. & Frts. : February.

Illus. : Wight, Ic. t. 876. 1845.

Distrib. : Common in waste lands. Jangli Jaigad.

Aerva lanata (L.) Juss. ex Schult. Syst. Veg. ed. 15. 5 : 564. 1819 ; Hook. f. Fl. Brit. India 4 : 728. 1885 ; Cooke, Fl. Pres. Bombay 2 : 578. 1958 (Repr. ed.) ; Townsend in Dassanayake & Fosberg, Rev. Handb. Fl. Ceylon 1 : 32. 1980. *Achyranthes lanata* L. Sp. Pl. 204. 1753.

Herbs, 1-2 m high ; branches tomentose. Leaves 2 4×1 3 cm, base cuneate, apex apiculate, pubescent above, tomentose beneath. Flowers axillary spikes ; bracteoles broadly ovate, apiculate ; perianth lobes 5, oblong, obtuse, silky-hairy on the back, outer 2 lobes mucronate. Utricles ovoid. Seeds black.

Fls. & Frts. : September.

Illus. : Wight, Ic. t. 1776. 1852 (*A. floribunda*) ; Tad. & Venkatan. Handb. S. Ind. Weeds 272, t. 113. 1932.

Distrib. : Occasional along roadsides. Wai.

A. sanguinolenta (L.) Bl. Bijdr. 547. 1825 ; Baker in Steenis, Fl. Males. 1, 4 : 85. 1949. *Achyranthes sanguinolenta* L. Sp. Pl. ed. 2. 194. 1762. *A. scandens* Wall. ex Moq. in DC. Prodr. 13 : 302. 1849 ; Hook. f. Fl. Brit. India 4 : 727. 1885 ; Cooke, Fl. Pres. Bombay 2 : 577. 1958 (Repr. ed.).

Branches terete, striate, pubescent. Leaves elliptic-lanceolate, 2.5 - 6.0×1.0 - 2.5 cm, pubescent. Flowers in solitary or paired spikes ; perianth lanceolate, acute, tomentose on back. Utricles broadly ovate, acute.

Fls. & Frts. : November - December.

Illus. : Wight, Ic. t. 724. 1840 (*A. scandens*).

Distrib. : Common as forest undergrowth. Kumbharli ghat, Mahabaleshwar.

ALLMANIA R. Br. ex Wight

Allmania nodiflora (L.) R.Br. ex Wight var. **aspera** (Wight) Hook. f. Fl. Brit. India 4 : 717. 1885 ; Cooke, Fl. Pres. Bombay 2 : 571. 1958 (Repr. ed.) ; Chavan *et al.* in M.V.M. Patrika 8 : 12. 1973.

Herbs, 20-40 cm high ; branches angular, hairy. Leaves 2-5. 0.5-1.5 cm. Flowers in axillary and terminal heads ; bracteoles awned. Capsules subglobose, membranous.

Fls. & Frts. : September.

Illus. : Wight, Ic. t. 1772. 1852 (*Chamissoea aspera*).

Notes : Included on the authority of Chavan *et al.* (*op. cit.*) who reported it from Kas, near Satara.

ALTERNANTHERA Forssk.

Alternanthera sessilis (L.) DC. Cat. Hort. Monsp. 4 : 77. 1813 ; Hook. f. Fl. Brit. India 4 : 731. 1885 ; Backer in Steenis, Fl. Males. 1, 4 : 92. 1949. *Gomphrena sessilis* L. Sp. Pl. 225. 1753. *A. triandra* Lam. Encycl. 1 : 95. 1783 ; Cooke, Fl. Pres. Bombay 2 : 584. 1958 (Repr. ed.).

Branches with a purple tinge. Leaves sessile, 2.5-5.0 × 0.7-1.0 cm, base cuneate, apex acute or obtuse. Flowers sessile, white, shining ; bracteoles small, ovate ; perianth lobes 5, ovate, acute, 1-nerved. Utricles compressed, 0.1-0.2 cm long.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 727. 1843.

Distrib. : Common near cultivated fields, along roadsides and in waste places. Bhosgaon, Ghotil, Kumbharli ghat, Koyna, Mahabaleshwar, Old Mahabaleshwar, Vardhangad.

AMARANTHUS L.

- | | | |
|---------------------------------|-----|--------------------|
| 1. Plants armed | ... | <i>A. spinosus</i> |
| 1. Plants unarmed : | | |
| 2. Fruits suborbicular, rugose | ... | <i>A. viridis</i> |
| 2. Fruits broadly ovate, smooth | ... | <i>A. lividus</i> |

Amaranthus lividus L. Sp. Pl. 990. 1753 ; Townsend in Dassanayake & Fosberg, Rev. Handb. Fl. Ceylon 1 : 18. 1980. *A. oleraceus* L. Sp. Pl.

ed. 2. 1403. 1763. *A. blitum* var. *oleracea* (L.) Hook. f. Fl. Brit. India 4 : 721. 1885 ; Cooke, Fl. Pres. Bombay 2 : 575. 1958 (Repr. ed.). '*Tandulsa*'.

Herbs, ca 1 m high, branches grooved. Leaves ovate, 1.3 - 3.0 × 0.8 - 1.5 cm. Flowers greenish in axillary clusters and terminal spikes ; perianth lobes oblong, obtuse. Capsules ovate. Seeds lenticular, black, shining.

Fls. & Frts. : April.

Distrib. : Weed in waste lands. Also cultivated as a vegetable. Mahabaleshwar-Mahad Road.

Amaranthus spinosus L. Sp. Pl. 991. 1753 ; Hook. f. Fl. Brit. India 4 : 718. 1885 ; Cooke, Fl. Pres. Bombay 2 : 573. 1958. (Repr. ed.). '*Katemath*'.

Herbs, ca 1 m high, spines axillary, long, straight. Leaves lanceolate, 2.5 - 5.5 × 1.0 - 2.5 cm, base cuneate, apex acute. Flowers greenish-white in dense axillary clusters ; bracteoles 2, linear, bristle-pointed ; male flowers : perianth lobes ovate, subequal, outer 2 shortly awned ; female flowers : perianth lobes oblong, apiculate. Capsules orbicular, circumscissile. Seeds shining black.

Fls. & Frts. : March October.

Illus. : Wight, Ic. t. 513. 1841 ; Tad & Venkatan. Handb. S. Ind. Weeds 360, f. 144. 1932.

Distrib. : Common in waste places, gardens and near cultivated fields. Karad, Morgiri.

A. viridis L. Sp. Pl. ed. 2. 1405. 1753 ; Hook. f. Fl. Brit. India 4 : 720. 1885 ; Cooke, Fl. Pres. Bombay 2 : 575. 1958 (Repr. ed.).

Herbs, 30-70 cm high. Leaves deltoid-ovate, 1.3 - 3.0 × 7 - 2 cm, base truncate, apex acute. Flowers green in axillary and terminal 2-5 cm long spikes ; bracteoles 2, ovate-oblong, keeled ; perianth lobes ovate-oblong, keeled. Capsules ca 0.2 cm long, apiculate.

Fls. & Frts. : July - September.

Illus. : Wight, Ic. t. 717. 1840 [*A. fasciatus* Roxb. Fl. Ind. (Carey ed.)] 3 : 609. 1832.

Distrib. : Common in waste places. Khatav, Wai.

CULTIVATED SPECIES

Amaranthus cruentus L. Syst. Nat. ed. 10. 1269. 1759 ; Duke in Ann. Mo. Bot. Gard. 48 : 15. 1961. *A. paniculatus* L. Sp. Pl. ed. 2. 1406. 1763 ; Hook. f. Fl. Brit. India 4 : 718. 1885 ; Cooke, Fl. Pres. Bombay 2 : 573. 1958 (Repr. ed.). *A. hybridus* L. ssp. *cruentus* (L.) Thell. var. *paniculatus* (L.) Thell. in Asch. & Gr. Syn. 5 : 247. 1914 ; Backer in Steenis, Fl. Males. 1, 4 : 79. 1949. 'Rajgira'.

Herbs, 1.0-1.5 m high. Leaves ovate-lanceolate, 3 8×1 5 cm. Flowers pinkish in dense, 2-15 cm long spikes ; perianth lobes oblong-lanceolate, awned. Capsules ovoid.

Fls. & Frts. : February - September.

Illus. : Wight, Ic. t. 720. 1843 [(*A. frumentaceus* Buch.-Ham. in Roxb. Fl. Ind. (Carey ed.) 3 : 609. 1832)].

Distrib. : Cultivated for its grain, rarely found as an escape. Koyna, Mahabaleshwar.

A. tricolor L. Sp. Pl. 989. 1753 ; Backer in Steenis, Fl. Males. 1, 4 : 77. 1949. *A. gangeticus* L. Syst. Nat. ed. 10. 1268. 1759 ; Hook. f. Fl. Brit. India 4 : 719. 1885 ; Cooke, Fl. Pres. Bombay 2 : 574. 1958 (Repr. ed.).

Herbs, ca 1 m high ; stems grooved with a purple tinge. Leaves ovate-rhomboid, base decurrent into petiole. Flowers in axillary fascicles and terminal spikes ; perianth lobes oblong-obovate, awned. Utricles ovoid, rugose.

Fls. & Frts. : November - April.

Illus. : Wight, Ic. t. 715. 1840 [(*A. oleraceus* Roxb. Fl. Ind. (Carey ed.) 3 : 605. 1832)].

Distrib. : Cultivated in gardens, rarely found as an escape. Mahabaleshwar.

CELOSIA L.

Celosia argentea L. Sp. Pl. 205. 1753 ; Hook. f. Fl. Brit. India 4 : 714. 1885 ; Cooke, Fl. Pres. Bombay 2 : 570. 1958 (Repr. ed.) ; Townsend in Dassanayake & Fosberg, Rev. Handb. Fl. Ceylon 1 : 3. 1980. 'Kurdu'.

Herbs, 30-50 cm high. Leaves linear-lanceolate or ovate, 2 8×1.0 - 2.5 cm, base tapering into petiole. Flowers pinkish-white in dense, cylindric, 6-12 cm long spikes ; bracteoles linear-lanceolate ; perianth lobes lanceolate, margins scarious. Capsules ellipsoid, ca 0.3 cm long. Seeds sub-reniform, black, shining.

Fls. & Frts. : February - November.

Illus. : Wight, Ic. t. 1767. 1852.

Distrib. : Common weed in gardens, along roadsides and in cultivated fields. Dicholi, Gojegaon, Karanjewadi, Lingmala, Mahabaleshwar, Nauja, Panchgani ghat, Phaltan, Wai.

DIGERA Forsk.

Digera muricata (L.) Mart. Beitr. Amarant. 77. 1825 & in Nov. Act. Acad. Caes. Leop.-Car. 13 : 285. 1826 ; Baker in Steenis, Fl. Males. 1, 4 : 80. 1949. *Achyranthes muricata* L. Sp. Pl. ed. 2. 295. 1762. *D. arvensis* Forsk. Fl. Aeg.-Arab. 65. 1775 ; Hook. f. Fl. Brit. India 4 : 717. 1885 ; Cooke, Fl. Pres. Bombay 2 : 572. 1958 (Repr. ed.).

Herbs, 15-50 cm high ; stems angular, striate. Leaves 2.5 - 6.0 × 2 - 5 cm, base truncate, apex acute or emarginate, margin reddish. Flowers pink in 8-15 cm long racemes ; bracts and bracteoles ovate-lanceolate, acute ; perianth lobes ovate-oblong, connate below. Nutlets globose, compressed, ca 0.2 cm across.

Fls. & Frts. : February - July.

Illus. : Wight, Ic. t. 732. 1843. *Desmochaeta muricata* (L.) DC. Cat. Pl. Hort. Monsp. 103. 1813 ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 587. 1982.

Distrib. : Weed in cultivated fields. Phaltan.

GOMPHRENA L.

Gomphrena celosioides Mart. Beitr. Amarant. 93. 1825 & in Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 13 : 301. 1826 ; Backer in Steenis, Fl. Males. 1, 4 : 96. 1949.

Herbs, 25 - 40 cm high ; branches ascending, pubescent. Leaves elliptic, 1.5 - 3.0 × 0.7 - 1.0 cm. Flowers in terminal spikes ; perianth lobes lanceolate, keeled, pilose. Utricles ca 0.2 cm long.

Fls. & Frts. : July - December.

Illus. : Tad. & Venkatan. Handb. S. Ind. Weeds 378, f. 152. 1932 ; Maheshwari, Ill. Fl. Delhi f. 179. 1966.

Distrib. : Frequent near cultivated fields. Dhom dam, Wai, Koyna.

CULTIVATED SPECIES

Gomphrena globosa L. Sp. Pl. 224. 1753 ; Backer in Steenis, Fl. Males. 1, 4 : 95. 1949 ; Hook. f. Fl. Brit. India 4 : 732. 1885 ; Cooke, Fl. Pres. Bombay 2 : 584. 1958 (Repr. ed.).

Herbs, ca 50 cm high, pubescent. Leaves sessile, elliptic, 2.5 - 6.0 × 0.6 - 2.0 cm. Flowers yellowish-white in axillary and terminal heads. Utricles oblong-ovoid.

Fls. & Frts. : September.

Illus. : Wight, Ic. t. 1784. 1852.

Distrib. : Cultivated in gardens as an ornamental plant, also found as an escape. Mahuli, Wai.

PUPALIA A.L. Juss.

Pupalia lappacea (L.) A.L. Juss. in Ann. Mus. Hist. Nat. Paris 2 : 132. 1803 ; Hook. f. Fl. Brit. India 4 : 728. 1885 ; Cooke, Fl. Pres. Bombay 2 : 583. 1958 (Repr. ed.) ; Townsend in Dassanayake & Fosberg, Rev. Handb. Fl. Ceylon 1 : 29. 1980.

Herbs, 30-50 cm high, branches tomentose. Leaves ovate or elliptic, 4 - 7 × 2.0 - 3.5 cm, base attenuate, apex acute, margins ciliate, tomentose when young. Flowers purplish-green in dense, 2-12 cm long spikes ; bracts ovate-lanceolate ; perianth lobes lanceolate, woolly. Capsules globose, ca 0.3 cm across.

Fls. & Frts. : December.

Illus. : Maheshwari, Ill. Fl. Delhi f. 184. 1960 ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 591. 1982.

Distrib. : Rare in scrub forests. Chaphal, 166629.

CULTIVATED SPECIES

Telanthra ficoides Moq. in DC. Prodr. 13 : 363. 1849 ; Cooke, Fl. Pres. Bombay 2 : 584. 1958 (Repr. ed.).

Herbs. Leaves sessile, elliptic, 2.5 - 4.5 × 0.7 - 1.3 cm, puberulous. Flowers white in ca 5 cm long, shortly pedunculate spikes.

Fls. : September.

Distrib. : Cultivated in gardens for its crimson coloured leaves. Wai.

CHENOPODIACEAE

CHENOPODIUM L.

Chenopodium ambrosioides L. Sp. Pl. 219. 1753 ; Hook. f. Fl. Brit. India 5 : 4. 1886 ; Backer in Steenis, Fl. Males. 1, 4 : 101. 1949 ; Cooke, Fl. Pres. Bombay 2 : 587. 1958 (Repr. ed.).

Herbs, *ca* 50 cm high, aromatic. Leaves oblong-lanceolate, 2-6 × 0.5-1.0 cm, base decurrent into short petiole. Flowers greenish in axillary clusters. Utricles globose, *ca* 1 cm across. Seeds orbicular, shining, black.

Fls. & Frts. : September - November.

Illus. : Wight, Ic. t. 1786. 1852.

Distrib. : Common annuals in waste places or along roadsides. Koyna, Panchgani.

CULTIVATED SPECIES

C. album L. Sp. Pl. 219. 1753 ; Hook. f. Fl. Brit. India 5 : 3. 1886 ; Cooke, Fl. Pres. Bombay 2 : 586. 1958 (Repr. ed.) ; Backer in Steenis, Fl. Males. 1, 4 : 102. 1949. '*Chakvat*'.

Herbs, *ca* 60 cm high. Leaves oblong or deltoid, *ca* 4 cm long, entire or toothed. Flowers green in axillary and terminal spikes. Utricle membranous, enclosed in perianth. Seeds orbicular, brownish-black.

Fls. & Frts. : April - May.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 594. 1982.

Distrib. : Cultivated as a vegetable, also found as an escape in waste places. Mahabaleshwar, Taldeo.

POLYGONACEAE

POLYGONUM L.

- | | | |
|--|-----|---------------------|
| 1. Flowers axillary, solitary | ... | <i>P. plebeium</i> |
| | | var. <i>indica</i> |
| 1. Inflorescence capitate or spicate racemes : | | |
| 2. Inflorescence capitate : | | |
| 3. Heads subtended by involucre bract | ... | <i>P. nepalense</i> |
| 3. Heads not subtended by involucre bract : | | |

- 4. Styles 3 ; nutlets trigonous ... *P. chinense*
var. *ovalifolia*
- 4. Styles 2 ; nutlets orbicular ... *P. pedunculare*
var. *angustissima*
- 2. Inflorescence spicate racemes :
- 5. Whole plants glandular ... *P. hydropiper*
var. *glandulosissima*
- 5. Plants eglandular :
- 6. Styles 3 :
- 7. Stems erect, strigose ... *P. barbatum*
- 7. Stems prostrate, glabrous ... *P. salicifolium*
- 6. Styles 2 :
- 8. Bracts and stipules glabrous ... *P. glabrum*
- 8. Bracts and stipules ciliate :
- 9. Leaves sessile ; nutlets orbicular ... *P. minus*
- 9. Leaves shortly petioled ; nutlets ovoid ... *P. mite*

Polygonum barbatum L. Sp. Pl. 362. 1753 ; Hook. f. Fl. Brit. India 5 : 37. 1886 ; Puri & Mahajan in Bull. Bot. Surv. India 2 : 131. 1960 ; *Persicaria barbata* (L.) Hara, Fl. East. Himal. 70. 1966 ; Maiti & Sikdar in Indian J. For. 8 : 191. 1985.

Herbs, ca 1 m high. Leaves lanceolate or linear-lanceolate, 6 - 10 × 1 - 2 cm, hairy on midrib beneath ; stipules 1-2 cm long. Flowers white in slender racemes ; stamens 5. Nutlets ca 0.2 cm long.

Fls. & Frts. : August - November.

Illus. : Wight, Ic. t. 1798. 1852.

Distrib. : Rare along water courses. Mahabaleshwar, Birdwood (Puri & Mahajan *op. cit.*), Bole 1070 (BLAT).

P. chinense L. var. *ovalifolia* Meissn. in Wall. Pl. As. Rar. 3 : 60. 1832 ; Hook. f. Fl. Brit. India 5 : 45. 1886 ; Cooke, Fl. Pres. Bombay 3 : 8. 1958 (Repr. ed.). *Persicaria chinensis* (L.) H. Gross. var. *ovalifolia* (Meissn.) Hara, Fl. East. Himal. 71. 1966.

Stems scandent, cylindric, young branches reddish. Leaves elliptic-ovate, 5 - 11 × 2.0 - 5.8 cm, glabrous above, hairy on nerves beneath, margins crenulate ; petioles auricled at base ; stipules lanceolate, 1-3 cm long. Flowers white ; peduncles glandular-hairy ; stamens 8. Nutlets ca 0.4 cm long, black.

Fls. & Frts. : September - December.

Illus. : Wight, Ic. t. 1806. 1852.

Distrib. : Common at forest edges in semi-evergreen forests. Jadholi, Kelghar ghat, Koyna, Kumbharli ghat, Lingmala, Machutar forest, Mahabaleshwar, Nauja, Panchgani, Shirshingi.

Polygonum glabrum Willd. Sp. Pl. 2 : 447. 1799 ; Hook. f. Fl. Brit. India 5 : 34. 1886 ; Cooke, Fl. Pres. Bombay 3 : 5. 1958 (Repr. ed.). *Persicaria glabra* (Willd.) Gomez de la Maza in Ann. Inst. Segunda Enseñ. Habana 2 : 278. 1896 ; Hara, Enum. Fl. Pl. Nepal 3 : 176. 1982.

Herbs, 1-2 m high ; stems reddish-brown. Leaves lanceolate, 10 - 22 × 0.4 - 1.6 cm, base tapering into petiole, apex acuminate ; stipules tubular, 2 - 3 cm long. Flowers pink in 5-10 cm long racemes ; bracts oblong, margins scarious ; perianth lobes oblong ; stamens 6. Nutlets ca 0.3 cm long.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 1797. 1852.

Distrib. : Common along river beds. Bamnoli, Chaphal, Koyna, Mahabaleshwar, Mahuli, Vajegaon.

P. hydropiper L. var. *glandulosissima* Gage in Rec. Bot. Surv. India 2 : 401. 1903 ; Cooke, Fl. Pres. Bombay 3 : 7. 1958 (Repr. ed.). (Fig. 49).

Herbs, 30-50 cm high. Leaves shortly petioled ; oblong-lanceolate, 5.0 - 9.5 × 0.6 - 1.5 cm ; stipules membranous, connate. Flowers pink ; bracts and bracteoles membranous ; stamens 8 ; styles 3, connate at base. Nutlets trigonous.

Fls. & Frts. : September.

Distrib. : Rare annuals along water courses. Koyna, Kochhar 158469 ; Sanbur 166426.

P. minus Huds. Fl. Angl. 148. 1762 ; Meissn. in DC. Prodr. 14 : 111. 1856 ; Hook. f. Fl. Brit. India 5 : 36. 1886.

Herbs, erect or creeping. Leaves oblong-lanceolate, ca 5.0 × 2.2 cm, apex subacute, puberulous on nerves beneath ; stipules tubular, truncate at apex, sparsely strigose, ciliate. Flowers minute in 1.0-2.5 cm long racemes ; perianth 4-5 lobed ; stamens 8, alternate with glands.

Fls. & Frts. : May - December.

Illus. : Wight, Ic. t. 1800. 1852.

Distrib. : Common along stream beds. Dicholi, Mahabaleshwar, Panchgani.

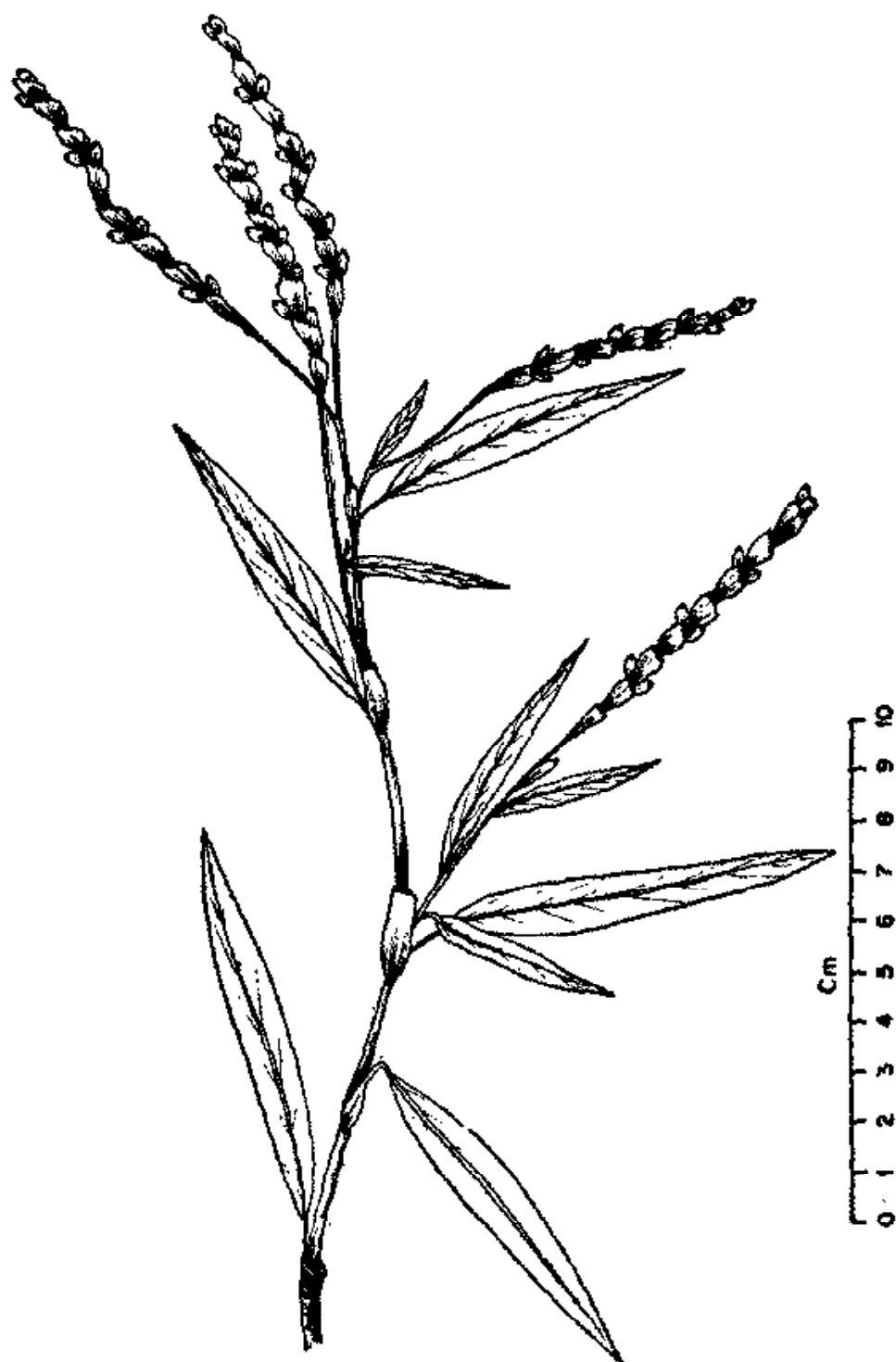


Fig. 49. *Polygonum hydropteryx* L. var. *glandulosissima* Gage

Polygonum mite Schrank, Fl. Baier. 1 : 668. 1789 ; Cooke, Fl. Pres. Bombay 3 : 7. 1958 (Repr. ed.).

Herbs, *ca* 50 cm high ; branches reddish, grooved. Leaves linear-oblong, 2.5-6.0 × 0.5-1.0 cm, hairy on nerves, margins ciliolate ; stipules *ca* 1 cm long, ciliate. Flowers pink in axillary 2-3 cm long racemes ; bracts *ca* 0.2 cm long, ciliate ; perianth lobes ovate-oblong. Nutlets *ca* 0.2 cm long, black.

Distrib. : According to Cooke (*op. cit.*) it is introduced from Europe along with other imported grains. Mahabaleshwar.

P. nepalense Meissn. Monogr. Polyg. 84, t. 7, f. 2. 1826. *P. alatum* Buch.-Ham. ex Spr. Syst. Veg. 154. 1827 ; Hook. f. Fl. Brit. India 5 : 41. 1886 ; Cooke, Fl. Pres. Bombay 3 : 8. 1958 (Repr. ed.). *Persicaria nepalensis* (Meissn.) Gross in Bot. Jahrb, Syst. 49 : 277. 1913,

Herbs, prostrate, 20-35 cm long. Leaves deltoid-ovate, 1.5-2.7 × 1.0-1.8 cm, base truncate, apex acute or subobtusely ; petioles winged. Flowers pinkish-white, in pedunculate heads ; bracts ovate, membranous ; stamens 6 ; styles 2. Nuts broadly ovoid, *ca* 0.2 cm long, pitted.

Fls. & Frts. : September - October.

Illus. : Wight, Ic. t. 1804. 1852.

Distrib. : Frequent near cultivated fields. Lingmala, Mahabaleshwar.

P. pedunculare Wall. ex Meissn. var. *angustissima* Hook. f. Fl. Brit. India 5 : 48. 1886 ; Cooke, Fl. Pres. Bombay 3 : 9. 1958 (Repr. ed.).

Herbs, 20-45 cm high ; branches striate, prickly on angles. Leaves linear-lanceolate, 4-10 × 0.7-1.4 cm ; stipules *ca* 2 cm long. Flowers white with a pink tinge ; stamens 5, alternate with 5 scales. Nutlets *ca* 0.2 cm across.

Fls. & Frts. : October - December.

Illus. : Wight, Ic. t. 1802 A. 1852.

Distrib. : Common annuals in marshy places. Mahabaleshwar.

P. plebeium R. Br. var. *indica* (Heyne ex Roth) Hook. f. Fl. Brit. India 5 : 27. 1886 ; Cooke, Fl. Pres. Bombay 3 : 5. 1958 (Repr. ed.). *P. indicum* Heyne ex Roth, Nov. Sp. Pl. 208. 1821.

Stems prostrate with woody rootstock. Leaves sessile, oblong or linear, 0.5-1.8 × 0.2-0.5 cm, base attenuate, apex obtuse, apiculate ;

stipules tubular, margins scarious. Flowers pink. Nuts trigonous, ca 0.4 cm long.

Fls. & Frts. : April December.

Illus. : Wight, Ic. t. 1808. 1852 (*P. indicum*).

Distrib. : Common near cultivated fields and along river beds ; shows great variation according to ecological conditions. Junkti, Kas, Koyna, Lingmala, Mahabaleshwar, Old Mahabaleshwar, Punoli, Shirshingi.

Polygonum salicifolium Willd. Enum. Hort. Berol. 428. 1809; Maiti & Sikdar in Indian J. For. 8 : 189. 1985. *P. serrulatum* Lag. Gen. & Sp. Pl. 14. 1816 ; Hook. f. Fl. Brit. India 5 : 38. 1886 ; Cooke, Fl. Pres. Bombay 3 : 7. 1958 (Repr. ed.).

Herbs, ca 1 m long. Leaves subsessile, linear, 7-12 × 1.0 - 1.5 cm, base rounded, sparsely hairy, margins ciliate ; stipules truncate, strigose. Flowers white in paniculate racemes. Nutlets trigonous, ca 0.2 cm long, shining.

Fls. & Frts. : March.

Notes : Rare, known only by Birdwood and Cooke's report from Mahabaleshwar (Cooke, *op. cit.*).

CULTIVATED SPECIES

Homalocladium platycladum (F. v. Muell) Bailey, Man. Cult. Pl. 351. 1949 ; Naik in Indian Forester 95 : 416. 1969. *Polygonum platycladum* F. v. Muell in Bot. Mag. t. 5282. 1863. *Muehlenbeckia platyclados* (F. v. Muell) Meissn. in Bot. Zeit. 23 : 313. 1865 ; Cooke, Fl. Pres. Bombay 3 : 11. 1958 (Repr. ed.).

Undershrubs, 50-70 cm high ; phylloclades striate, 1-2 cm broad. Leaves lanceolate, 2.0-3.5 × 0.5 - 1.0 cm, chartaceous. Flowers white in lateral fascicles.

Fls. : April June.

Distrib. : Rarely grown in gardens. Tapola, Kochhar 154363.

Rumex dentatus L. Mant. 2 : 226. 1771 ; Hook. f. Fl. Brit. India 5 : 59. 1886 ; Cooke, Fl. Pres. Bombay 3 : 10. 1958 (Repr. ed.).

Herbs, ca 1 m high ; branches red, grooved. Leaves oblong, 5 - 15 × 1.5 - 2.0 cm. Flowers greenish in lax whorls. Nuts trigonous.

Fls. & Frts. : January.

Distrib. : Cultivated in gardens as an ornamental plant. Lingmala, Mahabaleshwar.

PODOSTEMACEAE

- | | | |
|--|-----|-------------|
| 1. Perianth 3-lobed | ... | DALZELLIA |
| 1. Perianth absent : | | |
| 2. Roots crustaceous, rarely ribbon-like | ... | ZEYLANDIUM |
| 2. Roots filiform | ... | POLYPLEURUM |

DALZELLIA Wight

Dalzellia zeylanica (Gardn.) Wight var. *konkanica* (Willis) Janardhanan in Bull. Bot. Surv. India 24 : 207. 1983. *Lawia zeylanica* (Gardn.) Tul. *emend* Willis var. *konkanica* Willis in Ann. Roy. Bot. Gard. Perad. 1 : 216. 1902 ; Cooke, Fl. Pres. Bombay 3 : 13. 1958 (Repr. ed.). *Terniola zeylanica* Tul. var. *konkanica* (Willis) Sant. in Rec. Bot. Surv. India 16 : 256. 1953 ; Subram. Aq. Ang. 46. 1962.

Thallus 15-25 cm across. Leaves many in rosettes on the upper surface, green or red with a white midrib in the centre. Flowers brownish, solitary, terminal. Capsules obovoid, light brown.

Fls. & Frts. September - January.

Distrib. : Rare on wet rocks, endemic to Western ghats. Warra ghat between Wai & Wather station, Raoji (Cooke, *op. cit.*).

POLYPLEURUM (Tul.) Warming

Polypleurum stylosum (Wight) Hall in Kew Bull. 26 : 131. 1971 ; Nagendran & Arekal in Bull. Bot. Surv. India 23 : 232. 1981. *Dicraea stylosa* Wight, Ic. t. 1917, f. 2. 1852 ; Subram. Aq. Ang. 47, f. 31. 1962. *Podostemon stylosus* Bth. in Bth. & Hook. f. Gen. Pl. 3 : 112. 1880 ; Hook. f. Fl. Brit. India 5 : 64. 1886.

Thallus fleshy, ribbon like, ca 6 cm long. Leaves distichously imbricate. Flowers emerging from funnel-shaped spathe ; stamens 2 ; stigmas 2. Capsules ellipsoid, ca 0.4 cm long, 6-ribbed, brown.

Fls. & Frts. : November.

Illus. : Wight, *op. cit.* ; Subram. *op. cit.*

Distrib. : Rare, submerged herbs. Thallus partly appressed to rocks. Mahabaleshwar-Pratapgad, *Bhide* 1213A.

ZEYLANIDIUM (Tul.) Engl.

Zeylanidium lichenoides (Kurz) Engl. Pflanzenfam. 189 : 62. 1930 ; Subram. Aq. Ang. 49. 1962 ; Nagendran & Arekal in Bull. Bot. Surv. India 23 : 231. 1981. *Hydrobryum lichenoides* Kurz in J. Asiat. Soc. Beng. 42 : 103. 1873 ; Cooke, Fl. Pres. Bombay 3 : 14. 1958 (Repr. ed.). *Pedostemon microcarpus* Wedd. in DC. Prodr. 17 : 76. 1873 ; Hook. f. Fl. Brit. India 5 : 66. 1886.

Thallus pinnately lobed. Leaves spatulate, *ca* 2 cm long. Capsules ovoid, *ca* 0.2 cm long, 8-ribbed.

Fls. & Frts. : September - October.

Distrib. : Small herbs along streams, rocks. Thallus completely appressed to rocks. Mahabaleshwar-Pratapgad, *Bhide* 1213B.

ARISTOLOCHIACEAE

ARISTOLOCHIA L.

- | | | |
|---|---|-----------------------|
| 1. Prostrate herbs ; flowers purple, solitary | — | <i>A. bracteolata</i> |
| 1. Climbing shrubs ; flowers greenish-yellow in racemes | — | <i>A. tagala</i> |

Aristolochia bracteolata Lam. Encycl. 1 : 258. 1783 ; Matthew, Fl. Tamilnadu Carnatic 3 : 1344. 1983. *A. bracteata* Retz. Obs. Bot. 5 : 29. 1789 ; Hook. f. Fl. Brit. India 5 : 75. 1886 ; Cooke, Fl. Pres. Bombay 3 : 16. 1958 (Repr. ed.).

Stems 30-50 cm long. Leaves broadly ovate or reniform, 3.5 - 5.0 × 3.0 - 5.5 cm, base cordate, apex obtuse ; petioles 2-3 cm long. Bracts sessile, orbicular ; perianth tube cylindrical, inflated below, constricted into long neck with 2 lips, hairy within. Capsules oblong, *ca* 2 cm long, 12 ribbed.

Fls. & Frts. : July.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 601. 1982.

Distrib. : Rare, near cultivated fields. Phaltan, 165820.

Aristolochia tagala Cham. in *Linnaea* 7 : 207, t. 5, f. 3. 1832; Cooke, *Fl. Pres. Bombay* 3 : 17. 1958 (Repr. ed.). *A. acuminata* Roxb. *Fl. Ind.* (Carey ed.) 3 : 489. 1832; Dalz. & Gibs. *Bombay Fl.* 224. 1861. *A. roxburghiana* Klotzsch in *Monatsber. Deutsch. Akad. Wiss. Berlin* 596. 1859; Hook. f. *Fl. Brit. India* 5 : 75. 1886.

Stems grooved. Leaves ovate-oblong, 10-20 × 5.0-8.5 cm, base cordate, apex acuminate. Bracts lanceolate; perianth tube curved, globose at base, limp linear, villous. Capsules oblong-ellipsoid, rugulose.

Illus. : Wight, *Ic. t.* 771. 1844 (*A. acuminata*).

Notes : Included on the authority of Dalzell & Gibson who reported it from Parghat below Mahabaleshwar (Cooke, *op. cit.*).

PIPERACEAE

- | | | |
|--|-----|-----------|
| 1. Herbs ; leaves coriaceous ; flowers bisexual | ... | PEPEROMIA |
| 1. Stout, woody climbers ; flowers unisexual or polygamous | ... | PIPER |

PEPEROMIA Ruiz et Pavon

Peperomia wightiana Miq. in *Hook. Lond. J. Bot.* 5 : 548. 1846; Hook. f. *Fl. Brit. India* 5 : 98. 1886; Cooke, *Fl. Pres. Bombay* 3 : 21. 1958 (Repr. ed.).

Herbs, 5-10 cm long. Leaves elliptic or obovate, 1-2 × 0.7-1.5 cm, base cuneate, apex acute, 3-nerved. Flowers in lax, pedunculate spikes, longer than calyx; perianth absent; stamens 2; stigma penicillate. Berries globose, rugulose.

Fls. & Frts. : July - October.

Illus. : Wight, *Ic. t.* 1924. 1853.

Distrib. : Occasional in semi-evergreen forests. Koyna Valley, Mahabaleshwar.

PIPER L.

- | | | |
|---|-----|--------------------------|
| 1. Stems grey-hirsute ; leaves subcordate at base | ... | <i>P. hookeri</i> |
| 1. Stems glabrous ; leaves rounded or acute at base : | | |
| 2. Leaves 3-ribbed at base with another pair a little higher up ; spikes fleshy | ... | <i>P. trichostachyon</i> |
| 2. Leaves 5-9-ribbed, 2-3 pairs basal, the rest higher up ; spikes slender | ... | <i>P. nigrum</i> |

Piper hookeri Miq. in Hook. Lond. J. Bot. 4 : 437. 1845 ; Hook. f. Fl. Brit. India 5 : 88. 1886 ; Cooke, Fl. Pres. Bombay 3 : 19. 1958 (Repr. ed.). (Fig. 50).

Leaves ovate or oblong-lanceolate, 5 - 10 × 2.5 - 5.0 cm, glabrous above, hairy beneath. Male flowers in slender, 5-10 cm long spikes ; bracts orbicular ; perianth absent ; stamens 2 ; female spikes 7-15 cm long. Fruits globose, ca 0.3 cm across.

Fls. & Frts. : April - September.

Distrib. : Common on tree trunks in semi-evergreen forests. Mahabaleshwar.

P. nigrum L. Sp. Pl. 28. 1753 ; Hook. f. Fl. Brit. India 5 : 90. 1886 ; Cooke, Fl. Pres. Bombay 3 : 19. 1958 (Repr. ed.). '*Kala-Mira*'.

Stems terete, nodes swollen. Leaves broadly ovate, 6 - 16 × 2.5 - 7.0 cm. Spikes 6-12 cm long ; flowers subtended by bracts forming a short cup. Fruits globose, ca 0.8 cm across, red when ripe.

Fls. & Frts. : April - September.

Illus. : Wight, Ic. t. 1935. 1853. [*P. trioicum* Roxb. Fl. Ind. (Carey & Wall. ed.) 1 : 151. 1820].

Distrib. : Common component of semi-evergreen forests. Ambeghar, Karanjewadi, Koyna, Mahabaleshwar, Nauja, Shirshingi.

P. trichostachyon (Miq.) C. DC. in DC. Prodr. 16 : 242. 1869 ; Hook. f. Fl. Brit. India 5 : 80. 1886 ; Cooke, Fl. Pres. Bombay 3 : 19. 1958 (Repr. ed.).

Leaves elliptic-lanceolate, 7 - 15 × 2.5 - 6.5 cm. Spikes 5-12 cm long ; bracts orbicular, hairy within. Berries globose, ca 0.7 cm across, yellow when ripe.

Fls. & Frts. : April - September.

Illus. : Wight, Ic. t. 1944. 1953.

Distrib. : Common on tree trunks. Jadholi, Jangli Jaigad, Koyna, Mahabaleshwar, Panchgani, Nauja, Wada below Mahabaleshwar.

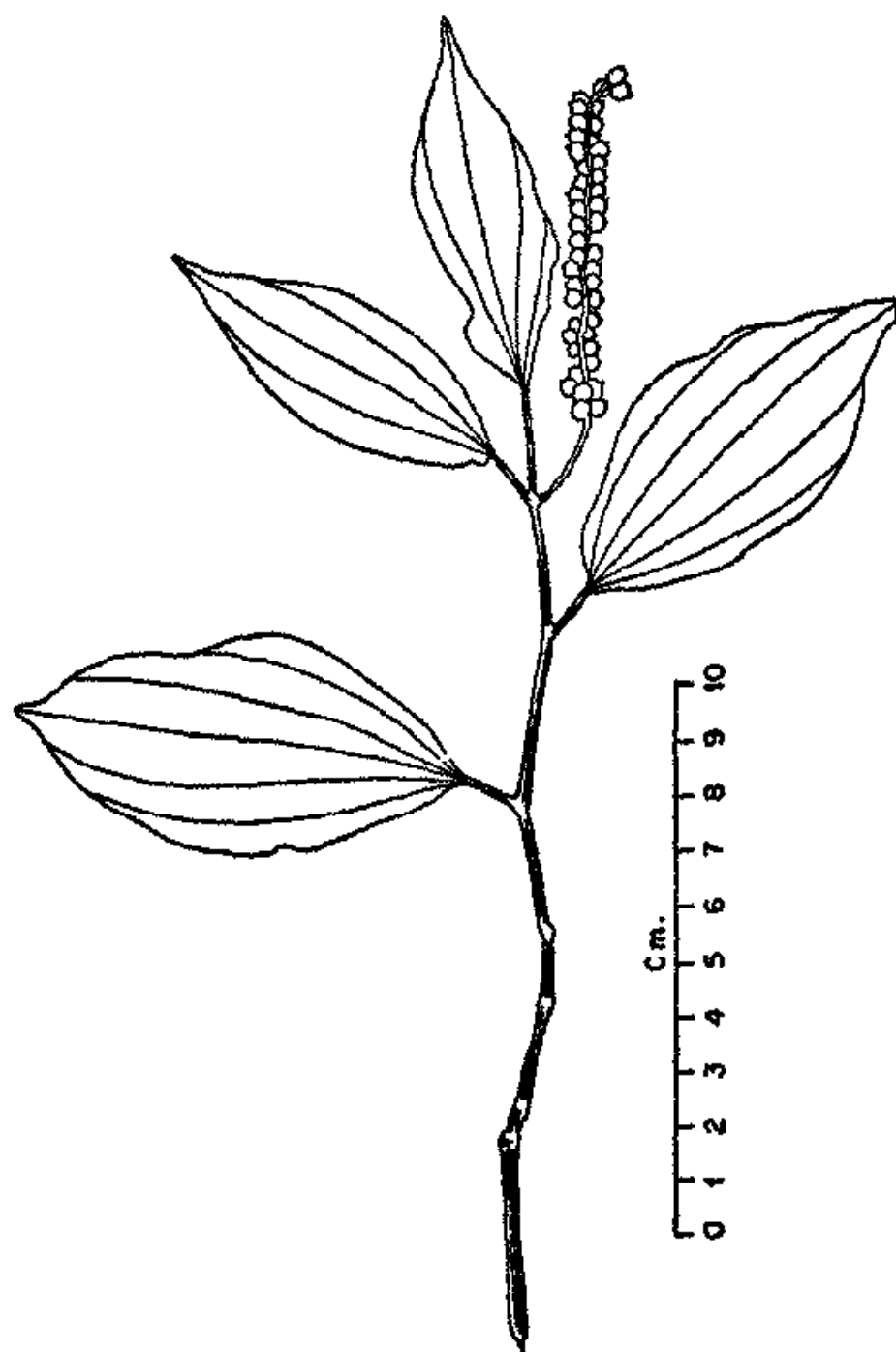


Fig. 50. *Piper hookeri* Miq.

MYRISTICACEAE

MYRISTICA Gronovius

Myristica dactyloides Gaertn Fruct. 1 : 195, t. 41, f. 2a-d. 1788 ; Saldanha & Nicolson, Fl. Hassan Dist. 42. 1976. *M. beddomei* King in Ann. Roy. Bot. Gard. Calcutta 3 : 291, t. 118, f. 1-8. 1891 ; Cooke, Fl. Pres. Bombay 3 : 23. 1958 (Repr. ed.). *M. laurifolia* Bedd. Fl. Sylv. t. 267. 1872 ; Hook. f. Fl. Brit. India 5 : 103. 1886. 'Jayphal'.

Trees, 15-20 m high. Leaves elliptic or oblong-lanceolate, 15-21 × 7-8 cm, coriaceous, base rounded, apex acute. Flowers cream coloured ; male in pedunculate cymes ; perianth ovoid, rusty-tomentose ; female in subsessile fascicles ; perianth urceolate. Drupes subglobose, 4-5 × 3 cm, yellow-tomentose.

Fls. & Frts. : April - September.

Illus. : Bedd. *op. cit.*

Distrib. : Rare in semi-evergreen forests. Jangli Jaigad, Kochhar 154763 ; Nauja, Kochhar 154231.

LAURACEAE

1. Leaves 3-nerved :

2. Leaves opposite or subopposite ; flowers bisexual in paniculate cymes	...	CINNAMOMUM
---	-----	------------

2. Leaves crowded at apex ; flowers unisexual in axillary fascicles	...	NEOLITSEA
--	-----	-----------

1. Leaves penninerved :

3. Leaves whorled ; flowers sessile	...	ACTINODAPHNE
-------------------------------------	-----	--------------

3. Leaves alternate or sub opposite ; flowers pedicellate :

4. Flowers unisexual	...	LITSEA
----------------------	-----	--------

4. Flowers usually bisexual, rarely polygamous	...	BEILSCHMIEDIA
--	-----	---------------

ACTINODAPHNE Nees

Actinodaphne angustifolia Nees in Wall. Pl. As. Rar. 3 : 31. 1832 ; Sant. in Rec. Bot. Surv. India 16(1) : 205. 1967. (3rd Rev. ed.). *A. hookeri* Meissn. in DC. Prodr. 15 : 218. 1864 ; Hook. f. Fl. Brit. India 5 : 149. 1886 ; Cooke, Fl. Pres. Bombay 3 : 31. 1958 (Repr. ed.). 'Pisa'.

Trees, 5-8 m high. Leaves elliptic-lanceolate, $9 - 12 \times 3 - 4$ cm, coriaceous, glabrous above, tomentose beneath. Flowers unisexual, yellowish; perianth tomentose, accrescent in fruiting; male flowers: stamens 9, reduced to strap shaped staminodes in female flowers; filaments with 3 reniform glands at the base. Berries ellipsoid, 0.5-1.0 cm long, red when ripe.

Fls. & Frts. : October - June.

Illus. : Wight, Ic. t. 1841. 1852.

Distrib. : Major component of semi-evergreen forests, found in association with *Memecylon umbellatum*, *Olea dioica* etc. Kas, Jangli Jaigad, Koyna, Mahabaleshwar, Nauja, Panchgani-Mahabaleshwar.

BEILSCHMIEDIA Nees

Beilschmiedia dalzellii (Meissn.) Kosterm. in Reinwardtia 6 : 282. 1962. *B. sagifolia* var. *dalzellii* Meissn. in DC. Prodr. 15 : 64. 1864; Hook. f. Fl. Brit. India 5 : 122. 1886; Cooke, Fl. Pres. Bombay 3 : 27. 1958 (Repr. ed.).

Trees, ca 20 m high. Leaves elliptic-lanceolate, $5 - 10 \times 2.0 - 4.5$ cm. Flowers brownish in short axillary panicles, pubescent; perianth lobes 6, biseriate, oblong; stamens 9, filaments with stipitate glands; staminodes 3, cordate. Fruits ovoid, ca 1 cm long.

Fls. & Frts. : November.

Illus. : Talbot For. Fl. Bombay Pres. & Sind 2 : 387, f. 462. 1911.

Distrib. : Rare in semi-evergreen forests. Mahabaleshwar, T.S.N. Rao 416 (BLAT).

CINNAMOMUM Bl.

- | | | |
|---|-----|-----------------------|
| 1. Leaves opposite, elliptic-oblong | ... | <i>C. macrocarpum</i> |
| 1. Leaves subopposite, ovate-lanceolate | ... | <i>C. zeylanicum</i> |

Cinnamomum macrocarpum Hook. f. Fl. Brit. India 5 : 133. 1886; Cooke, Fl. Pres. Bombay 3 : 28. 1958 (Repr. ed.).

Trees, 10-15 m high. Leaves $12 - 15 \times 4.5 - 5.0$ cm. Flowers creamish in axillary panicles; perianth tube short; lobes oblong-obovate, subequal. Berries globose-oblong, seated on accrescent perianth.

Fls. & Frts. : March - April.

Illus. : Wight, Ic. t. 130. 1839 (*C. iners*).

Distrib. : Frequent in semi-evergreen forests. Nauja, Vasota.

Cinnamomum zeylanicum Bl. Bijdr. 568. 1825 ; Hook. f. Fl. Brit. India 5 : 131. 1886 ; Cooke, Fl. Pres. Bombay 3 : 28. 1958 (Repr. ed.). 'Dalchini'.

Trees, 7 - 9 m high. Leaves 5 - 17 × 3 - 6 cm, coriaceous. Flowers cream coloured in lax, pubescent panicles ; perianth lobes oblong, obtuse, pubescent without ; stamens 6 ; stigma 3-lobed. Fruits ovoid or oblong, shortly apiculate, ca 1 cm long.

Fls. & Frts. : November - March.

Illus. : Wight, Ic. t. 123 & 134. 1839.

Distrib. : Common in semi-evergreen forests. Karanjewadi, Research Nursery, Koyna, Mahabaleshwar.

CULTIVATED SPECIES

C. camphora (L.) J.S. Presl, Prir. Rostlin. 2 : 47, t. 8. 1825 ; Hook. f. Fl. Brit. India 5 : 134. 1886. *Laurus camphora* L. Sp. Pl. 369. 1753.

Trees, ca 10 m high. Leaves alternate or sub-opposite, ovate, acuminate, 4 - 7 × 2 - 4 cm, 5 - 7 nerved. Flowers creamish in paniculate cymes.

Fls. & Frts. : November.

Distrib. : Native of Japan ; occasionally cultivated as an ornamental plant in gardens. Mahabaleshwar.

LITSEA Lam.

- | | | |
|---|-----|-----------------------|
| 1. Perianth segments obscure or absent | ... | <i>L. deccanensis</i> |
| 1. Perianth segments well developed : | | |
| 2. Perianth segments deciduous ; stamens 6 | ... | <i>L. fuscata</i> |
| 2. Perianth segments persistent ; stamens 12 : | | |
| 3. Leaves glaucous beneath ; filaments glabrous | ... | <i>L. stockii</i> |
| 3. Leaves rusty-tomentose beneath ; filaments hairy | ... | <i>L. wightiana</i> |

Litsea deccanensis Gamble, Fl. Pres. Madras 1235. 1925 [2 : 864. 1957 (Repr. ed.)] ; Kosterm. in Reinwardtia 7 : 502. 1969. *L. tomentosa* Heyne ex Hook. f. Fl. Brit. India 5 : 157. 1886 ; Cooke, Fl. Pres. Bombay 3 : 32. 1958 (Repr. ed.). 'Chikna'.

Trees, 5-10 m high ; young branches tomentose. Leaves elliptic-lanceolate or obovate, 5-20 × 2.5-8.0 cm, glabrous above, tomentose beneath when young. Flowers yellowish in axillary umbels ; bracts orbicular, tomentose. Berries globose, ca 1 cm across, black when ripe.

Fls. & Frts. : October - December.

Illus. : Wight, Ic. t. 1834. 1852 (*Tetranthera tomentosa* Roxb. ex Wall. ex Wight, Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 609. 1982).

Distrib. : Frequent near forest edges in semi-evergreen forests. Mahabaleshwar, Rotunda ghat below Mahabaleshwar.

L. fuscata Thw. Enum. Fl. Zeyl. 258. 1861 ; Hook. f. Fl. Brit. India 5 : 178. 1886.

Trees, ca 6 m high ; young branches rusty-tomentose. Leaves elliptic, 7-10 × 2.5-5.0 cm, glabrous above, silky beneath. Perianth funnel-shaped, villous. Fruits globose.

Notes : Rare in the district, represented by a single collection from Mahabaleshwar by Cooke deposited at *BLAT*.

L. stocksii Hook. f. Fl. Brit. India 5 : 176. 1886 ; Cooke, Fl. Pres. Bombay 3 : 33. 1958 (Repr. ed.). (Fig. 51).

Trees, 6-9 m high. Leaves elliptic-oblong, obtuse or acute, 6-16 × 3.0-6.5 cm. Flowers creamish in axillary, 6-8 flowered heads ; bracts concave, pubescent ; perianth lobes oblong, tomentose, accrescent in fruiting. Fruits ellipsoid, ca 1 cm long.

Fls. & Frts. : April - October.

Distrib. : Common component of evergreen forests. Mahabaleshwar, Nauja, Shirshingi.

L. wightiana (Nees) Bth. & Hook. f. Gen. Pl. 3 : 162. 1880 ; Hook. f. Fl. Brit. India. 5 : 177. 1886 ; Puri & Mahajan in Bull. Bot. Surv. India 2 : 131. 1960 ; Cooke, Fl. Pres. Bombay 3 : 33. 1958 (Repr. ed.). *Cylicodaphne wightiana* Nees in Wall. Pl. As. Rar. 2 : 68. 1829.

Trees, ca 8 m high. Leaves elliptic-lanceolate, 7-15 × 2.5-6.0 cm, glabrous above. Flowers creamish in axillary, 3-7 cm long racemes ;

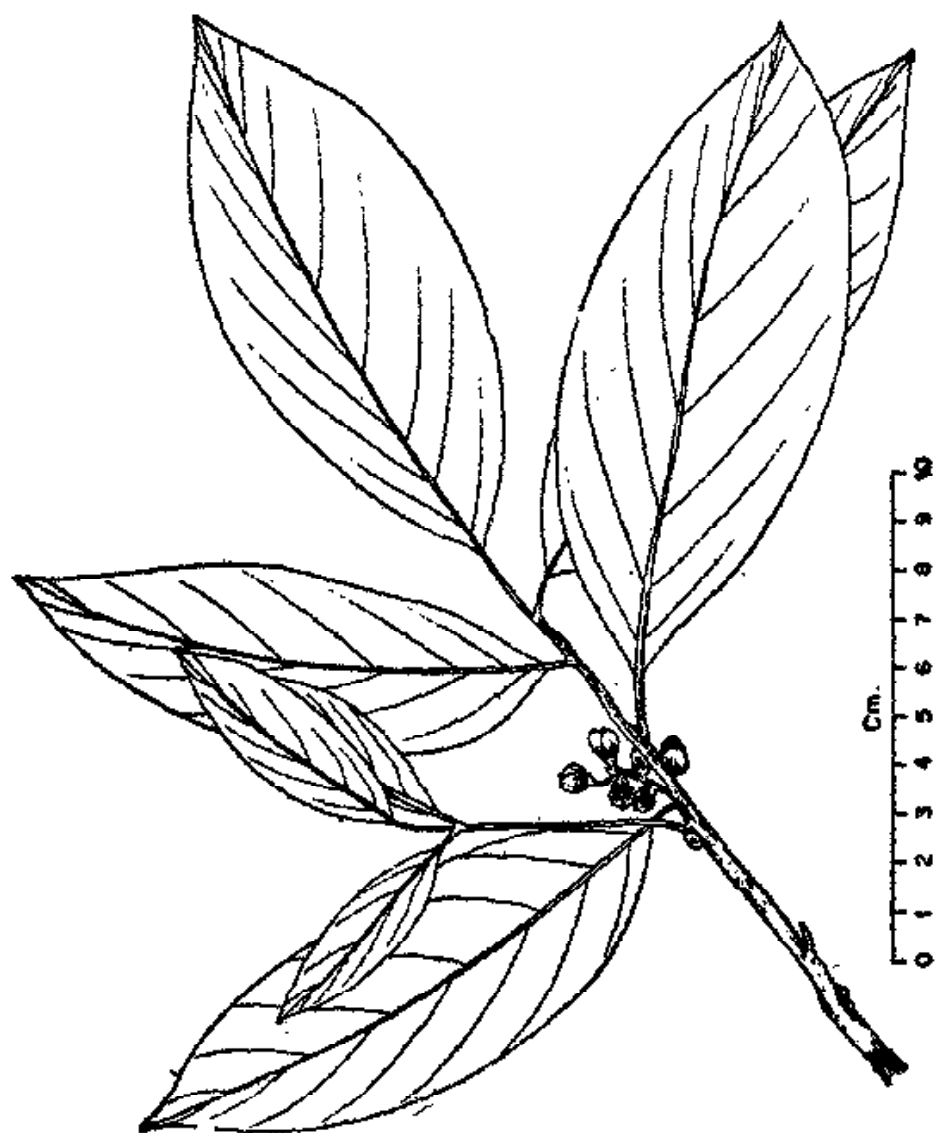


Fig. 51 *Litsea stockii* Hook. f.

bracts coriaceous ; perianth silky-tomentose. Fruits ellipsoid, 1-2 cm long.

Fls. & Frts. : August November.

Illus. : Wight, Ic. t. 1833. 1852 (*C. wightiana*).

Distrib. : Rare in evergreen forest. Mahabaleshwar, Birdwood (Puri & Mahajan *op. cit.*) ; Cooke, s.n. (*BLAT*).

NEOLITSEA (Bth.) Merr. (*nom. cons.*).

Neolitsea zeylanica (Nees) Merr. in Philip. J. Sci. 1, Suppl. 56. 1906 ; Gamble, Fl. Pres. Madras 2 : 867. 1957 (Repr. ed.). *Litsea zeylanica* Nees, Cinnamom. Disput. 58. 1823 ; Hook f. Fl. Brit. India 5 : 178. 1886 (*p.p.*) ; Cooke, Fl. Pres. Bombay 3 : 34. 1958 (Repr. ed.). '*Chirchira*'.

Trees, *ca* 15 m high. Leaves subopposite, elliptic-lanceolate, 5 - 10 × 2.5 - 4.5 cm, 3-nerved. Flowers sessile, perianth lobes oblong, deciduous ; bracts concave, deciduous ; male flowers ; stamens 6 in 3 whorls ; female flowers : ovary ovoid, stigma irregularly lobed ; staminodes 6. Drupes ellipsoid, *ca* 1 cm long, black when ripe.

Fls. & Frts. : December April.

Illus. : Wight, Ic. t. 1844. 1852 (*L. zeylanica*).

Distrib. : Common in semi-evergreen forests. Jangli Jaigad, Mahabaleshwar.

THYMELAEACEAE

GNIDIA L.

Gnidia glauca (Fresen) Gilg. in Bot. Jahrb. Syst. 19 : 265. 1894 ; Saldanha & Nicolson, Fl. Hassan Dist. 275, f. 51. 1976. *Lasiosiphon glaucus* Fresen, Flora 21 : 603. 1838. *L. eriocephalus* (Graham) Decne. in Jacq. Voy. Bot. 148. 1844 ; Hook. f. Fl. Brit. India 5 : 197. 1886 ; Cooke, Fl. Pres. Bombay 3 : 36. 1958 (Repr. ed.). '*Rametha*'.

Shrubs, 2-3 m high. Leaves subsessile, crowded at apex, lanceolate, 3 - 6 × 1.0 - 2.5 cm, base and apex acute. Flowers yellow in terminal heads ; bracts elliptic, silky, deciduous perianth tube cylindric, densely silky-villous ; lobes 5, alternate with 5 scales ; stamens 10, biseriate. Fruits ellipsoid-oblong, *ca* 1 cm long.

Fls. & Frts. : December May.

Illus. : Wight, Ic. t. 1859. 1852

Distrib. : Common in open situations. Bark used as a fish-poison and to tie-up bundles. Kistrude, Koyna, Kumbharli ghat, Mahabaleshwar, Mahabaleshwar-Pratapgad, Panchgani, Parli, Shirgaon ghat, Shirshingi.

ELAEAGNACEAE

ELAEAGNUS L.

Elaeagnus conferta Roxb. Fl. Ind. (Carey & Wall. ed.) 1 : 460. 1820 ; Sant. in Rec. Bot. Surv. India 16(1) : 233. 1967 (3rd Rev. ed.). *E. latifolia* non L. 1753 p.p. ; Cooke, Fl. Pres. Bombay 3 : 37. 1958 (Repr. ed.). 'Ambgul'.

Shrubs, scandent. Leaves broadly elliptic, 4.0 - 6.5 × 2.0 - 3.8 cm, base truncate or subacute, apex acute, green with small, white, scales above, silvery-white beneath. Flowers creamish in axillary clusters ; perianth lobes ovate, spreading ; stamens adnate to the perianth. Nuts obovoid, ca 1 cm long.

Fls. & Frts. : November - February.

Illus. : Wight, Ic. t. 1856. 1852 (*E. latifolia*).

Distrib. : Common near forest clearings. Bamnoli, Gureghar, Jadholi, Jangli Jaigad, Karanjewadi, Kumbharli ghat, Lingmala, Mahabaleshwar, Nauja, Old Mahabaleshwar, Punoli, Satara.

LORANTHACEAE

- | | | |
|--|-----|-------------|
| 1. Leafless parasites (except <i>V. monoicum</i>) ; flowers unisexual | ... | VISCUM |
| 1. Leafy parasites ; flowers bisexual : | | |
| 2. Bracts campanulate forming large involucre | ... | TOLYPANTHUS |
| 2. Bracts not as above : | | |
| 3. Leaves alternate | ... | TAXILLUS |
| 3. Leaves opposite or whorled | | |

4. Flowers sessile in axillary fascicles :

- | | | |
|----------------------|-----|-------------|
| 5 Bracteoles present | ... | MACROSOLEN |
| 5 Bracteoles absent | ... | HELICANTHER |

4. Flowers in racemes :

- | | | |
|--|-----|--------------|
| 6. Corolla 5-lobed | ... | DENDROPHTHOE |
| 6. Corolla 4-lobed : | | |
| 7. Leaves and inflorescences tomentose | ... | SCURRULA |
| 7. Leaves and inflorescences glabrous | .. | HELIXANTHERA |

DENDROPHTHOE Mart.

- | | | |
|---|-----|-------------------|
| 1. Branches terete ; bracteoles absent ; corolla inflated above the middle | ... | <i>D. falcata</i> |
| 1. Young branches 3-angled ; bracteoles present ; corolla uniformly cylindric | .. | <i>D. trigona</i> |

Dendrophthoe falcata (L.f.) Etting. in Denkschr. Akad. Wiss. Math.-Nat. Cl. 32 : 52, 53, 58, t. 13, f. 14. 1872 ; Danser in Bull. Jard. Bot. Buitenz. 3, 11 : 403. 1931 & 14 : 96. 1936 ; Sant. in Rec. Bot. Surv. India 16(1) : 234. 1967 (3rd Rev. ed.). *Loranthus falcatus* L. f. Suppl. 211. 1781. *L. longiflorus* Desr. in Lam. Encycl. 3 : 598. 1789 ; Hook. f. Fl. Brit. India 5 : 214. 1886 ; Cooke, Fl. Pres. Bombay 3 : 42. 1958 (Repr. ed.). 'Bandgul'.

Shrubs, bushy. Leaves oblong-lanceolate, 7 - 15 × 3 - 6 cm, coriaceous. Flowers scarlet in axillary, solitary or paired racemes ; bracts small, concave ; calyx tube cylindric, limb minutely toothed ; corolla tube curved, split at the back, hairy within, lobes linear, reflexed, green ; stamens exerted. Berries oblong.

Fls. & Frts. : July - April.

Illus. : Wight, Ic. t. 302. 1840 ; Maheshwari, Ill. Fl. Delhi f. 190. 1966.

Distrib. : Common in deciduous forests on *Acacia chundra*, *Flacourtia indica* and *Mangifera indica*. Asani, Kas, Nauja, Shamgaon, Tapola, Vajegaon.

D. trigona (Wight & Arn.) Danser ex Sant. in Rec. Bot. Surv. India 16(1) : 263. 1953. *Loranthus trigonus* Wight & Arn. Prodr. 286. 1834 ;

Hook. f. Fl. Brit. India 5 : 219. 1886 ; Cooke, Fl. Pres. Bombay 3 : 43. 1958 (Repr. ed.).

Large shrubs. Leaves broadly elliptic, 7 10×5-7 cm, thick, coriaceous. Flowers in short, lateral racemes ; corolla tube pink below, green above, lobes linear, red. Berries ellipsoid, red.

Fls. & Frts. : November February.

Distrib. : Rare, woody parasite. Mahabaleshwar, *Santapau* 12538-39, 12566 (*BLAT*).

HELICANTHES Danser

Helicanthes elasticus (Desr.) Danser in Verh. K. Akad. Wet. Amsterdam (Sect. 2), 29(6) : 55. 1933 ; Sant. in Rec. Bot. Surv. India 16(1) : 235. 1967 (3rd Rev. ed.). *Loranthus elasticus* Desr. in Lam. Encycl. 3 : 599. 1789 ; Hook. f. Fl. Brit. India 5 : 216. 1886 ; Cooke, Fl. Pres. Bombay 3 : 41. 1958 (Repr. ed.).

Shrubs, dichotomously branched, swollen at nodes. Leaves sessile, obovate-elliptic, 2.5 9.0×1.5 4.5 cm. Flowers greenish-white ; bract broadly ovate ; calyx red, truncate at apex ; corolla lobes linear, longer than the tube ; stamens 5, filaments red ; styles long, red. Berries subglobose, pink when ripe.

Fls. & Frts. : October - January.

Illus. : Wight, Ic. t. 343. 1840 (*L. elasticus*).

Distrib. : Common parasite on *Memecylon umbellatum* and *Syzygium cumini*. Koyna, Machutar Forest, Mahabaleshwar, on way to Pratapgad.

HELIXANTHERA Lour.

Helixanthera obtusata (Schult.) Danser in Bull. Jard. Bot. Buitenz. 3, 10 : 317. 1929 ; Sant. in Rec. Bot. Surv. India 16(1) : 236. 1967 (3rd Rev. ed.). *Loranthus obtusatus* Schult. Syst. 7 : 1650. 1830 ; Hook. f. Fl. Brit. India 5 : 205. 1886 ; Cooke, Fl. Pres. Bombay 3 : 39. 1958 (Repr. ed.). (Fig. 52).

Shrubs, stout. Leaves broadly elliptic, 6 13×2.5 9.0 cm. Flowers red in axillary, 5-10 cm long racemes ; bract concave, red ; calyx tube constricted at apex ; teeth minute ; corolla lobes oblong, obtuse, splitting along the margins. Fruits ovoid, ca 0.4 cm long, finely tuberculate.

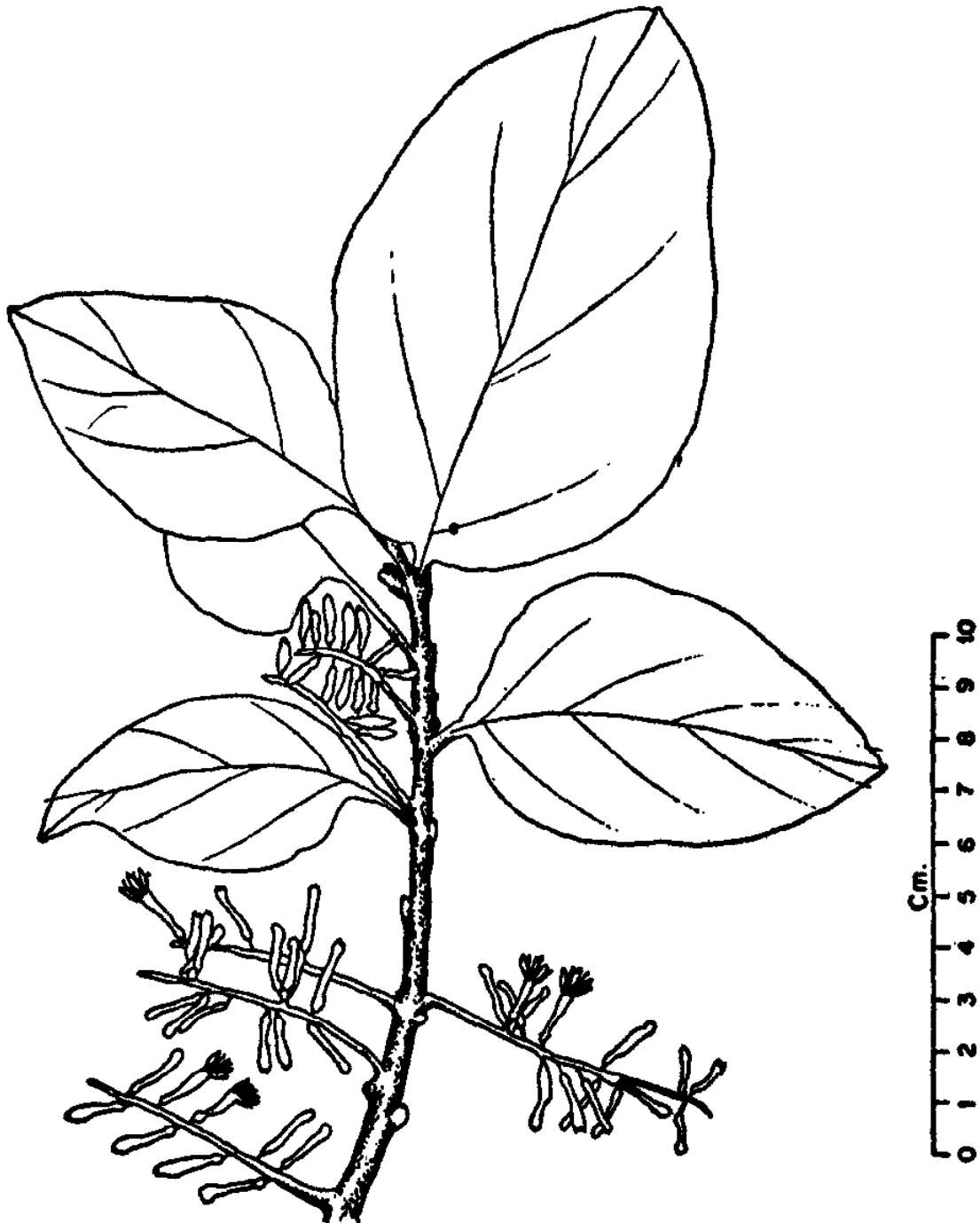


Fig. 52. *Helixanthera obtusata* (Schult.) Danser

Fls. & Frts. : April - October.

Distrib. : Common in deciduous forests. Bhikauli Forest, Gureghar, Lingmala, Mahabaleshwar, Rotunda ghat, Mahabaleshwar.

MACROSOLEN BL.

Macrosolen capitellatus (Wight & Arn.) Danser in *Blumea* 4 : 36. 1936 ; Sant. in *Rec. Bot. Surv. India* 16(1) : 236. 1967 (3rd Rev. ed.). *Loranthus capitellatus* Wight & Arn. *Prodr.* 382. 1834 ; Hook. f. *Fl. Brit. India* 5 : 221. 1886 ; Cooke, *Fl. Pres. Bombay* 3 : 44. 1958 (Repr. ed.).

Shrubs. Leaves elliptic-lanceolate, 5-8 × 2.5-4.5 cm, base decurrent into short petiole, keeled on back. Bracts and bracteoles broadly ovate, apiculate ; corolla tube pink below, creamish above, lobes linear-oblong, spathulate, purplish. Berries ellipsoid, black, shining.

Fls. & Frts. : April - August.

Illus. : Wight, *Ic. t.* 304. 1840 (*L. capitellatus*).

Distrib. : Common on *Acacia* spp., *Flacourtia indica* and *Mangifera indica*. Gureghar, Lingmala, Mahabaleshwar, Panchgani-Mahabaleshwar, Basati, Tapola.

SCURRULA L.

Scurrula philippensis (Cham. & Schl.) G. Don, *Gen. Syst.* 3 : 442. 1834 ; Danser in *Bull. Jard. Bot. Buitenz.* 3, 10 : 352. 1929 ; Sant. in *Rec. Bot. Surv. India* 16(1) : 210. 1967 (Rev. ed.). *Loranthus philippensis* Cham. & Schl. in *Linnaea* 3 : 204. 1828 ; Sant. *op. cit.* 236. 1967 (3rd Rev. ed.). *L. scurrula* Hook. f. *Fl. Brit. India* 5 : 208. 1886 ; Cooke, *Fl. Pres. Bombay* 3 : 40. 1958 (Repr. ed.) *p.p.*

Branchlets tomentose. Leaves broadly elliptic, 5-9 × 4-6 cm, base rounded, apex obtuse, glabrous above. Flowers greenish-yellow in short pedunculate, axillary racemes ; bracts ovate ; corolla 1-2 cm long, lobes elliptic, acute. Berries pyriform, ca 1 cm long, tomentose.

Fls. & Frts. : October - February.

Distrib. : Common parasite in deciduous forests on *Bridelia retusa*. Dicholi, Karanjewadi, Mahabaleshwar, Panchgani, Rohine, Shirshingi, Wada below Mahabaleshwar.

TAXILLUS van Tiegh.

Taxillus cuneatus (Heyne ex Roth) Danser in Bull. Jard. Bot. Buitenz. 3, 10 : 354. 1929 ; Sant. in Rec. Bot. Surv. India 16(1) : 237. 1967 (3rd Rev. ed.). *Loranthus cuneatus* Heyne ex Roth, Nov. Pl. Sp. 193. 1821 ; Hook. f. Fl. Brit. India 5 : 215. 1886 ; Cooke, Fl. Pres. Bombay 3 : 42. 1958 (Repr. ed.). (Fig. 53).

Leaves obovate, 1.2 - 3.2 × 0.5 - 1.4 cm, 3-nerved. Flowers 3-5 together, shortly pedicellate ; bracts ovate, oblique ; corolla ca 2.5 cm long, greenish-yellow outside, orange inside, tube ribbed, split down half way ; stamens exerted, filaments scarlet-red ; styles exerted beyond the stamens, green. Berries oblong, red when ripe.

Fls. & Frts. : May - February.

Distrib. : Common throughout the district along ghats. Kistrude, Mahabaleshwar, Pasarni ghat, Shirgaon ghat, Yavteshwar.

TOLYPANTHUS Bl.

Tolypanthus lagenifer (Wight) Van Tiegh in Bull. Soc. Bot. France 42 : 249. 1895 ("*lageniferus*") ; Danser in Bull. Jard. Bot. Buitenz. 3, 10 : 355. 1895 & in Verh. K. Akad. Wet. Amsterdam 29(6) : 127. 1933 ; Sant. in Rec. Bot. Surv. India 16(1) : 237. 1967 (3rd Rev. ed.). *Loranthus lageniferus* Wight, Ic. t. 306. 1840 ; Hook. f. Fl. Brit. India 5 : 218. 1886 ; Cooke, Fl. Pres. Bombay 3 : 44. 1958 (Repr. ed.).

Shrubs. Leaves opposite or alternate, elliptic or suborbicular, 5 - 10 × 2.0 - 8.5 cm, base cordate, apex obtuse. Flowers sessile or shortly pedicelled in fascicles from old branches ; calyx minute, tomentose ; corolla tube red above, green below, limb green, lobes linear-oblong, subacute. Fruits ovate-oblong, ca 1 cm long, orange when ripe.

Fls. & Frts. : August.

Illus. : Wight, *op. cit.*

Distrib. : Frequent in deciduous forests. Mahabaleshwar.

VISCUM L.

- | | | |
|------------------------|-----|-----------------------|
| 1. Branches leafy | ... | <i>V. monoicum</i> |
| 1. Branches leafless : | | |
| 2. Branches flat | ... | <i>V. articulatum</i> |
| 2. Branches 4-angled | ... | <i>V. angulatum</i> |

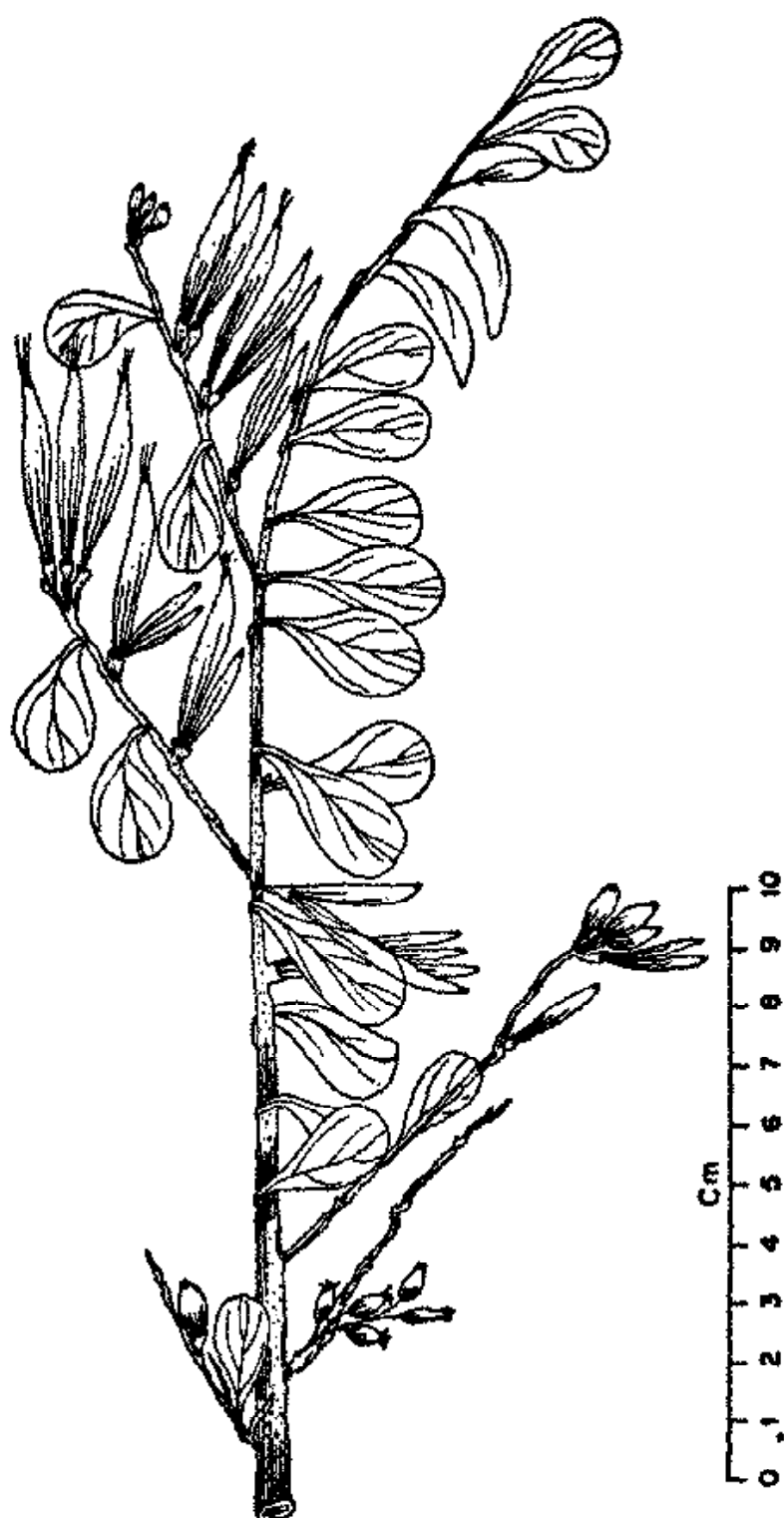


Fig 53. *Taxillus cuneatus* (Heyne ex Roth) Danser

Viscum angulatum Heyne ex DC. Prodr. 4 : 283. 1830 ; Hook. f. Fl. Brit. India 5 : 225. 1886 ; Cooke, Fl. Pres. Bombay 3 : 47. 1958 (Repr. ed.) ; Danser in Blumea 4 : 292. 1941 ; Sant. in Rec. Bot. Surv. India 16(1) : 238. 1967 (3rd Rev. ed.). '*Jalundar*'.

Shrubs. Flowers sessile, minute, yellowish-green, whorled at nodes ; bracts and bracteoles small, connate ; perianth lobes ovate, deciduous. Berries minute, globose.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 1017. 1845.

Distrib. : Common in semi-evergreen forests on *Ligustrum perrottetii* and *Olea dioica*. Kas, Koyna, Koyna Valley, Mahabaleshwar, Machutar forest, Mahabaleshwar, Mahabaleshwar-Pratapgad.

V. articulatum Burm. f. Fl. Ind. 311. 1768 ; Hook. f. Fl. Brit. India 5 : 226. 1886 ; Cooke, Fl. Pres. Bombay 3 : 47. 1958 (Repr. ed.) ; Danser in Blumea 4 : 280. 1941.

Shrubs, dichotomously branched ; internodes 2-5 cm long. Flowers minute, 1-6 together at nodes ; bracts cup-shaped ; perianth lobes triangular, deciduous. Berries globose.

Fls. & Frts. : December - July.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 2 : 423, f. 482. 1911.

Distrib. : Rare along hill slopes. Rohine, *Kochhar* 158095.

V. monoicum DC. Prodr. 4 : 278. 1830 ; Hook. f. Fl. Brit. India 5 : 224. 1886 ; Cooke, Fl. Pres. Bombay 5 : 46. 1958 (Repr. ed.) ; Danser in Blumea 4 : 305. 1941 ; Sant. in Rec. Bot. Surv. India 16(1) : 239. 1967 (3rd Rev. ed.).

Shrubs ; branches pendulous, terete, striate. Leaves ovate-lanceolate, falcate 2.5 8.0 × 1.0 3.5 cm, margins entire or irregularly crenate. Flowers greenish in sessile, axillary fascicles ; perianth lobes triangular, deciduous. Berries oblong, green with white longitudinal lines.

Fls. & Frts. : September.

Distrib. : Rare in semi-evergreen forests. Mahabaleshwar, *Santapau* 12543-49 (*BALT*).

SANTALACEAE

- | | | |
|--|-----|----------|
| 1. Shrubs ; leaves alternate ; flowers unisexual | ... | OSYRIS |
| 1. Trees ; leaves opposite ; flowers bisexual | . . | SANTALUM |

OSYRIS L.

Osyris quadripartita Salz. ex Decne. in Ann. Sci. Nat. 2, 6 : 65. 1836 ; Gandhi in Saldanha & Nicolson, Fl. Hassan Dist. 302. 1976. *O. wightiana* Wall. ex Wight, Ic. t. 1853. 1852. *O. arborea* Wall. ex A. DC. in DC. Prodr. 14 : 633. 1857 ; Hook. f. Fl. Brit. India 5 : 232. 1886 ; Cooke, Fl. Pres. Bombay 3 : 50. 1958 (Repr. ed.).

Shrubs, 2-3 m high ; young branches triangluar. Leaves subsessile oblanceolate, 1 - 4 × 0.5 - 1.8 cm, base acute, apex mucronate. Flowers yellowish-green ; male flowers in umbels ; perianth lobes 3, ovate ; stamens 3 ; female flowers 1-3 together ; perianth obovate ; staminodes 3. Drupes subglobose, ca 1 cm across.

Fls. & Frts. : Throughout the year.

Illus. : Wight, *op. cit.*

Distrib. : Common on open hills and at forest edges. Jangli Jaigad, Karanjewadi, Kistrude, Lingmala, Mahabaleshwar, Mahabaleshwar-Pratapgad, Nath hills, Shirala, Panchgani-Mahabaleshwar, Tapola ghat.

SANTALUM L.

Santalum album L. Sp. Pl. 349. 1753 ; Hook. f. Fl. Brit. India 5 : 231. 1886 ; Cooke, Fl. Pres. Bombay 3 : 49. 1958 (Repr. ed.). '*Chandan*'.

Trees, 9-10 m high. Leaves elliptic-lanceolate, 4.5 - 6.5 × 1.8 - 2.8 cm, base rounded, apex acute. Flowers brownish-purple in axillary paniculate cymes ; perianth lobes triangular ; stamens exerted, alternate with 4 scales. Drupes globose, ca 1 cm across, purplish black when ripe.

Fls. & Frts. : July.

Illus. : Bedd. Fl. Sylv. t. 256. 1872.

Distrib. : Occasional in deciduous forests ; also cultivated in forest gardens. Koyna.

BALANOPHORACEAE

BALANOPHORA J.R. & J.G.A. Forst.

- | | | |
|--|-----|--------------------|
| 1. Male flowers pedicellate ; perianth white | ... | <i>B. fungosa</i> |
| | | <i>ssp. indica</i> |
| 1. Male flowers sessile ; perianth yellowish-brown | .. | <i>B. elkinsi</i> |

Balanophora elkinsi Blatt. in J. Bombay nat. Hist. Soc. 33 : 309, pl. 1. 1929.

Rootstock tuberous, light brown, warted. Male peduncles *ca* 5.5 cm long ; heads *ca* 2.5 cm across ; bracts ovate-oblong or strap shaped, yellow with purple tip ; female flowers covered with small, clavate, brown bodies, *ca* 5 cm across.

Fls. & Frts. : January.

Illus. : Blatt. *op. cit.*

Distrib. : Found in dense thicket, parasitic on *Syzygium cumini*. Lingmala.

B. fungosa Forst. & Forst. f. Char. Gen. Pl. 100, t. 50. 1776 *ssp. indica* (Arn.) B. Hansen, Dansk. Bot. Ark. 28 : 100. 1972 ; Matthew, Fl. Tamilnadu Carnatic 2 : 1383. 1983. *Langsdorffia indica* Arn. in Ann. Nat. Hist. 2 : 37. 1838. *B. indica* (Arn.) Wall. ex Griff in Trans. Linn. Soc. London 20 : 95. 1846 ; Hook. f. Fl. Brit. India 5 : 237. 1886 ; Cooke, Fl. Pres. Bombay 3 : 52. 1958 (Repr. ed.).

Herbs, 10-15 cm high ; rhizomes tuberous, branched, pale brown, warted. Male flowers in ovoid-oblong heads with ovate-oblong yellow or orange scales ; perianth lobes linear, reflexed ; female flowers in purplish-brown, globose heads ; perianth absent. Fruits minute.

Fls. & Frts. : October - December.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 623. 1982.

Distrib. : Leafless root parasite. Kas, Mahabaleshwar.

EUPHORBIACEAE

- | | | |
|---|-----|-----------|
| 1. Flowers enclosed in cup-shaped involucre | ... | EUPHORBIA |
| 1. Flowers not enclosed in cup-shaped involucre : | | |
| 2. Plants with stinging hairs | ... | TRAGIA |

2. Plants without stinging hairs :

3. Trees :

4. Flowers solitary or in axillary clusters :

5. Leaves distichous, linear ; fruits fleshy with bony cocci ... **EMBLICA**

5. Leaves alternate, elliptic-lanceolate or obovate ; fruits without bony cocci :

6. Stamens 11, 2-seriate ... **DIMORPHOCALYX**

6. Stamens 3-5, 1-seriate :

7. Sepals and petals 5 each ; stamens 5 ... **BRIDELIA**

7. Perianth lobes 6 ; stamens 3 ... **GLOCHIDION**

4. Flowers in spikes or racemes :

8. Leaves peltate ... **MACARANGA**

8. Leaves other than peltate :

9. Stamens opposite to perianth lobes **BRIDELIA**

9. Stamens alternate with perianth lobes :

10. Plants dioecious ; perianth 4-lobed ... **MALLOTUS**

10. Plants monoecious ; perianth 2-lobed ... **SAPIUM**

3. Herbs or shrubs :

11. Flowers solitary or in axillary fascicles :

12. Plants dioecious ... **SECURINEGA**

12. Plants monoecious :

13. Petals present ... **ACTEPHILA**

13. Petals absent :

14. Perianth connate into turbinate tube ... **BREYNIA**

14. Perianth free or shortly connate at base :

15. Stamens 3 ... **PHYLLANTHUS**

15. Stamens 5 ... **KIRGANELIA**

11. Flowers in spikes or racemes :

16. Flowers in spikes :

17. Plants dioecious ; stamens numerous ;
styles 3 ... **HOMONOIA**

17. Plants monoecious ; stamens usually 8,
rarely numerous ; styles 6-12 — **ACALYPHA**

16. Flowers in racemes or panicles :

18. Plants monoecious :

19. Herbs with stellate tomentum or
scales :

20. Whole plant stellate-tomentose ;
leaves obscurely 3-lobed ... **CHROZOPHORA**

20. Branchlets and leaves with
easily detachable scales ; leaves
entire ... **CROTON**

19. Shrubs, without tomentum or
scales ... **BLACHIA**

ACALYPHA L.

1. Bracts enclosing the capsules ; capsules hispid :

2. Leaves sparsely hairy ; bracts 3-lobed ... ***A. brachystachya***

2. Leaves glabrous ; bracts truncate ... ***A. indica***

1. Bracts not enclosing the capsules ; capsules glabrous ... ***A. malabarica***

***Acalypha brachystachya* Hornem. Hort. bot. Hafn. 909. 1815 ; Hook. f. Fl. Brit. India 5 : 416. 1887 ; Cooke, Fl. Pres. Bombay 3 : 108. 1958 (Repr. ed.).**

Herbs, ca 30 cm high. Leaves alternate, ovate, 2.5 - 6.0 × 1.5 - 2.5 cm, margins crenate-serrate. Flowers green in axillary spikes ; male flowers at apex, female at base ; bracts 0.5-0.8 cm long, glandular-hairy. Capsules globose, ca 0.3 cm across.

***Fls. & Frts.* : August.**

***Illus.* : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 624. 1982.**

***Distrib.* : Rare along hills in shady places. Panchagni, Cooke s.n.**

***Acalypha indica* L.** Sp. Pl. 1003. 1753 ; Hook. f. Fl. Brit. India 5 : 416. 1887 ; Cooke, Fl. Pres. Bombay 3 : 108. 1958 (Repr. ed.). 'Khokali'.

Herbs, 15-30 cm high. Leaves ovate, 2-3 × 1.2-1.5 cm, base rounded or attenuate, apex acute, margins crenate-serrate ; petioles longer than leaf-blade. Male flowers at apex ; female flowers 2-3 in axils of large, toothed bracts. Capsules ovoid, brown.

Fls. & Frts. : July.

Illus. : Wight, Ic. t. 877. 1844.

Distrib. : Occasional in moist places along river banks. Gondavale, Koyna.

***A. malabarica* Muell.-Arg.** in Linnaea 34 : 42. 1865 ; Hook. f. Fl. Brit. India 5 : 416. 1887 ; Cooke, Fl. Pres. Bombay 3 : 109. 1958 (Repr. ed.).

Herbs, 15-20 cm high, pubescent. Leaves ovate, 2.0-2.8 × 1.2-1.8 cm, margins subserrate, hairy ; petioles 1.0-2.3 cm long. Flowers in axillary *ca* 1 cm long spikes ; male flowers terminal ; female in lower half ; bracts of female flowers *ca* 0.4 cm across, toothed with gland tipped hairs. Seeds ellipsoid, *ca* 0.2 cm long.

Fls. & Frts. : March.

Distrib. : Rare along hill slopes. Wai, Mahajan 6843.

ACTEPHILA Bl.

***Actephila excelsa* (Dalz.) Muell.-Arg.** in Linnaea 32 : 78. 1863 & in DC. Prodr. 15(2) : 222. 1866 ; Hook. f. Fl. Brit. India 5 : 282. 1887 ; Cooke, Fl. Pres. Bombay 3 : 71. 1958 (Repr. ed.) ; Airy Shaw in Kew Bull. 26 : 209. 1972. *Anomospermum excelsum* Dalz. in Hook. J. Bot. & Kew Gard. Misc. 3 : 228. 1851.

Shrubs, 2-3 m high. Leaves 7-9 × 4.5-6.0 cm, coriaceous ; stipules small, spiny, acuminate. Male flowers shortly pedicelled ; sepals broadly ovate, obtuse ; petals obovate, cuneate ; female flowers on long pedicels ; styles 3, bifid. Capsules globose, *ca* 1 cm across.

Fls. & Frts. : August - September.

Illus. : Wight, Ic. t. 1910. 1852 (*A. neilgherrensis*).

Distrib. : Occasional along ghats. Mahabaleshwar, Chibber s.n.

BLACHIA Baill.

Blachia denudata Bth. in J. Linn. Soc. 17 : 226. 1880 ; Hook. f. Fl. Brit. India 5 : 403. 1887 ; Cooke, Fl. Pres. Bombay 3 : 100. 1958 (Repr. ed.)

Shrubs, ca 1 m high. Leaves oblong-lanceolate, 3-11 × 2-4 cm. Male flowers : at the apex of racemes ; sepals concave, ca 0.2 cm long ; petals hyaline, minute ; stamens many ; female flowers : at the base of racemes ; sepals ovate-lanceolate, deciduous ; styles 3, bifid. Capsules ellipsoid to subglobose, 3-lobed.

Fls. & Frts. : February.

Distrib. : Rare along ghats in semi-evergreen forests. Kumbharli ghat, Kochhar 154315, 158217.

BREYNIA J.R. & J.G.A. Forst.

Breynia retusa (Dennst.) Alst. in Ann. Roy. Bot. Gard. Peradeniya 11 : 204. 1829 ; Saldanha & Nicolson, Fl. Hassan Dist. 333. 1976. *Phyllanthus retusa* Dennst. Schluess. Hort. Malab. 24. 1818. *B. patens* (Roxb.) Rolfe in J. Bot. 20 : 359. 1882 ; Hook. f. Fl. Brit. India 5 : 329. 1887 ; Cooke, Fl. Pres. Bombay 3 : 69. 1958 (Repr. ed.). 'Kangli'.

Shrubs, 2-3 m high. Leaves broadly elliptic, 1-4 × 0.7 - 2.4 cm, base rounded or subacute, apex obtuse. Flowers greenish-yellow ; perianth lobes 6, accrescent in fruiting ; male flowers at apex ; female at base ; styles 3. Capsules globose, ca 1 cm across, orange-red when ripe.

Fls. & Frts. : June - August.

Illus. : Wight, Ic. t. 1897. 1852 (*Melanthesa turbinata*) ; Wight, op. cit. t. 1898, f. 2 (*M. obliqua*).

Distrib. : Common in deciduous forests along hill slopes. Koyna, Kusapur, Research Nursery, Koyna, Salve, Tapola ghat.

BRIDELIA Willd.

- | | | |
|--|-----|--------------------|
| 1. Flowers in axillary clusters | ... | <i>B. squamosa</i> |
| 1. Flowers in axillary and terminal spikes | ... | <i>B. retusa</i> |

Bridelia retusa (L.) Spr. Syst. Veg. 3 : 48. 1826 ; Hook. f. Fl. Brit. India 5 : 268. 1887 ; Cooke, Fl. Pres. Bombay 3 : 68. 1958 *p.p.* (Repr. ed.); in J. Bombay nat. Hist. Soc. 50 : 308. 1952. *Cluytia retusa* L. Sp. Pl. 1042. 1753.

Trees, 5-6 m high. Leaves elliptic, 4.5-11.0 × 2-4 cm, base rounded, apex subacute, margins slightly crenulate or entire, glabrous above, tomentose beneath. Flowers shortly pedicellate ; male flowers : sepals 5, greenish, with a reddish tinge ; petals 5, obovate ; stamens 5, spreading ; female flowers : sepals and petals sparsely hairy. Drupes fleshy with persistent calyx.

Fls. & Frts. : September - April.

Illus. : Bedd. Fl. Sylv. t. 260. 1872.

Distrib. : Common. Jangli Jaigad, Karanjewadi, Kistrude, Koyna, Morgiri, Nauja, Shirshingi, Pirachi Wadi, Shamgaon ghat, Umarkanchan, Vasota.

B. squamosa (Lam.) Gehrm. in Engl. Bot. Jahrb. 41, Beibl. 95 : 30. 1908 ; Sant. in J. Bombay nat. Hist. Soc. 50 : 308. 1952. *B. retusa* sensu Cooke, Fl. Pres. Bombay 3 : 68. 1958 *p.p.* (Repr. ed.) *non*. Spr. 1826 ; Hook. f. Fl. Brit. India 5 : 268. 1887. *Cluytia squamosa* Lam. Encycl. 5 : 54. 1790. 'Aasana'.

Trees, 5-6 m high. Leaves lanceolate, 10.5-12.0 × 3.7-5.0 cm, margins crenulate. Flowers sessile, greenish-yellow ; sepals triangular-ovate ; petals obovate-spathulate. Drupes globose, ca 1 cm across.

Fls. & Frts. : September - May.

Distrib. : Common. Gureghar, Jadhali, Karanjewadi, Kelghar ghat, Koyna, Kusapur, Lingmala, Mahabaleshwar, Nauja, Panchgani, Shirshingi.

CHROZOPHORA A.H.L. Juss.

- | | | |
|--|-----|---------------------|
| 1. Stems stellately-hairy ; periant triangular | ... | <i>C. rottleri</i> |
| 1. Stems woolly-tomentose ; perianth linear | ... | <i>C. prostrata</i> |

Chrozophora prostrata Dalz. in Dalz. & Gibs. Bombay Fl. 233. 1861 ; Hook. f. Fl. Brit. India 5 : 410. 1887 ; Cooke, Fl. Pres. Bombay 3 : 105. 1958 (Repr. ed.) ; Balakr. in Bull. Bot. Surv. India 15 : 6. 1973.

Herbs, *ca* 40 cm long. Leaves ovate-orbicular, *ca* 2.5 × 2.0 cm, base cordate. Male flowers : crowded in upper part, stamens 15, 2-seriate ; female flowers : sessile, solitary, at base of racemes ; bracts linear, hairy. Capsules globose, *ca* 0.5 cm across.

Fls. & Frts. : January - June.

Distrib. : Occasional in waste lands. Mahabaleshwar.

Chrozophora rottleri (Geis.) A. Juss. ex Spr. Syst. Veg. 3 : 850. 1826; Balakr. in Bull. Bot. Surv. India 15 : 4. 1973. *Croton rottleri* Geis. *Crot.* Mon. 54. 1807. *C. tinctoria* sensu Hook. f. Fl. Brit. India 5 : 408. 1887 *non* A. Juss. 1824. *C. plicata* Voigt, Hort. Sub. Calc. 156. 1846 *non* A. Juss. 1824 ; Cooke, Fl. Pres. Bombay 3 : 104. 1958 (Repr. ed.).

Stems *ca* 70 cm high. Leaves ovate or orbicular, 3.5 - 8.0 × 1.5 - 8.0 cm, base cordate or acute, apex obtuse, stellately-hairy. Flowers yellow in bracteate racemes. Capsules 3-lobed, densely stellate-hairy.

Fls. & Frts. : April - June.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 630. 1982.

Distrib. : Common weed near cultivated fields. Medha, Rasati.

CROTON L.

- | | | |
|---|-----|-------------------------|
| 1. Herbs ; leaves ovate-lanceolate ; capsules with white scales | ... | <i>C. bonplandianus</i> |
| 1. Shrubs ; leaves elliptic-lanceolate ; capsules with reddish scales | ... | <i>C. zeylanicus</i> |

Croton bonplandianus Baill. in Adansonia 4 : 339. 1864 ; Croizat in J. Bombay nat. Hist. Soc. 41 : 573. 1940 ('*bonplandianum*').

Herbs, 50-70 cm high, covered with deciduous white scales. Leaves 3.0 - 4.5 × 1.0 - 3.5 cm, base and apex acute, margins serrate. Male flowers : sepals 5, ovate ; petals 5, yellow, oblong ; stamens many, inserted on a hairy receptacle ; female flowers : sepals as in male ; petals absent. Disk in the form of red glands ; styles 3. Capsules 3 valved.

Fls. & Frts. : April - July.

Distrib. : Occasional in waste places. Karad, Pingli.

Croton zeylanicus Muell.-Arg. in *Linnaea* 34 : 107. 1865 & in DC. Prodr. 15(2) : 581. 1866 ; Balakr. in Bull. Bot. Surv. India 3 : 39. 1961. *C. reticulatus* Heyne ex Muell.-Arg. in DC. Prodr. 15(2) : 580. 1866 non Willd. 1805 ; Hook. f. Fl. Brit. India 5 : 386. 1887 ; Cooke, Fl. Pres. Bombay 3 : 96. 1958 (Repr. ed.). 'Pandri'.

Shrubs, 2 - 3 m high. Leaves 6 11×2.2 - 4.0 cm, glabrous above, silvery-white beneath. Male flowers : perianth 2-seriate, shortly connate at base ; female flowers : perianth 1-seriate, accrescent in fruiting ; styles 3-lobed. Capsules oblong, ca 1.2 cm long.

Fls. & Frts. : February September.

Illus. : Bedd. Ic. Pl. Ind. Or. t. 233. 1872.

Distrib. : Rare along hill slopes. Nauja, Kochhar 154228, 158400.

DIMORPHOCALYX Thw.

Dimorphocalyx lawianus (Muell.-Arg) Hook. f. Fl. Brit. India 5 : 404. 1887 ; Cooke, Fl. Pres. Bombay 3 : 101. 1958 (Repr. ed.). *Trigonostemon lawianus* Muell.-Arg. in *Linnaea* 34 : 212. 1865 *p.p.* & in DC. Prodr. 15(2) : 1105. 1866. *p.p.*

Trees, ca 12 m high. Leaves 8 15×3.5 6.5 cm. Male flowers shortly pedicellate, solitary ; female flowers : 2-3 together on long pedicels ; sepals oblong-lanceolate, deeply divided, ca 0.7 cm long, reaching ca 1.8 cm in fruiting ; styles 2-fid. Capsules globose, ca 1 cm across, 3-lobed, hairy.

Fls. & Frts. : November February.

Illus. : Bedd Fl. Sylv. t 273. 1872.

Distrib. : Occasional. Jadholi, way to Jangli Jaigad, Nauja.

EMBLICA Gaertn.

Embllica officinalis Gaern. Fruct. 2 : 122, t. 108. 1790. *Phyllanthus emblica* L. Sp. Pl. 982. 1753 ; Hook. f. Fl. Brit. India 5 : 289. 1887 ; Cooke, Fl. Pres. Bombay 3 : 81. 1958 (Repr. ed.). 'Avala'.

Trees, 7-10 m high, bark greenish, rough. Leaves subsessile, ca 1.2×0.3 cm ; stipules ovate, acute. Flowers greenish-yellow, sessile or shortly pedicelled ; perianth lobes oblong, obtuse ; stamens 3 ; styles connate below, 2-fid at apex. Berries globose, green with a pinkish tinge.

Fls. & Frts. : April September.

Illus. : Wight, Ic. t. 1896. 1852 ; Bedd. Fl. Sylv. t. 258. 1872.

Distrib. : Frequent along hill slopes, also cultivated in gardens. Gureghar, Karanjewadi, Kelghar ghat, Shirshingi.

EUPHORBIA L.

1. Stems not well developed above ground ; leaves all radical *E. paraghaniensis*
1. Stems well developed above ground ; leaves radical and cauline :
 2. Perennial shrubs or small trees :
 3. Branches winged ; leaves ca 1 cm long *E. antiquorum*
 3. Branches not winged ; leaves 10-15 cm long *E. nerifolia*
 2. Slender annual herbs :
 4. Leaves alternate below, opposite above :
 5. Stems geniculate *E. gaudichaudii*
 5. Stems not geniculate *E. leuta*
 4. Leaves all opposite :
 6. Gland of involucre with a minute limb *E. thymifolia*
 6. Gland of involucre with a distinct petaloid limb :
 7. Floral leaves distichously imbricate, concealing involucre :
 8. Stems prostrate ; limb of glands laciniate *E. laciniata*
 8. Stems erect ; limb of glands entire *E. pyconostegia*
 7. Floral leaves not as above :
 9. Stipules fimbriate ; cocci not winged *E. indica*
 9. Stipules entire ; cocci winged *E. notoptera*

***Euphorbia antiquorum* L. Sp. Pl. 450. 1753 ; Hook. f. Fl. Brit. India 5 : 255. 1887 ; Cooke, Fl. Pres. Bombay 3 : 57. 1958 (Repr. ed.) ; Sant.**

in Bull. Bot. Soc. Beng. 8 : 7. 1954 ; Chavan, *et al.* in M.V.M. Patrika 8 : 13. 1973.

Trees, 5 - 8 m high ; branches thick, fleshy, with small divaricate spines. Leaves subsessile, obovate-oblong, deciduous. Flowers in small, pedunculate cymes. Capsules globose, *ca* 1 cm across.

Fls. & Frts. : April.

Illus. : Wight, Ic. t. 897. 1844.

Distrib. : Rare in semi-evergreen forests along ghats. Kas, Chavan *et al.* (*op. cit.*), Taldeo, Kochhar 153045, 154739.

Euphorbia gaudichaudii Boiss. Cent. Euph. 7. 1860 & in DC. Prodr. 15(2) : 25. 1862 ; Airy Shaw in Kew Bull. Addl. ser. 8 : 84. 1980. *E. hirta* L. Sp. Pl. 454. 1753 ; Sant. in Bull. Bot. Soc. Beng. 8 : 15. 1954. *E. pilulifera* non L. 1753 ; Hook. f. Fl. Brit. India 5 : 250. 1887 ; Cooke, Fl. Pres. Bombay 3 : 64. 1958 (Repr. ed.). *E. geniculata* Orteg. Nov. Pl. deser. dec. 18. 1797 ; Hook. f. *op. cit.* 239 ; Cooke, *op. cit.* 66 ; Sant. *op. cit.* 5. (Fig, 54).

Herbs, *ca* 1 m high. Leaves oblanceolate, 5.0 8.5×1 - 2 cm. Involucre surrounded with thick glands at mouth, each gland with a white petaloid limb ; styles 3. Capsules of 3, 2-valved cocci.

Fls. & Frts. : April - July.

Distrib. : Weed in waste land and along roadsides. Dhebewadi, Dhom dam near Wai, Khatav, Koyna, Koyna-Karad road, Medha, Phaltan, Rasati, Satara road station.

E. indica Lam. Encycl. 2 : 423. 1786 ; Raju & P.N. Rao in Ind. J. Bot. 2 : 202. 1979. *E. hypericifolia* auct. pl. non L. Sp. Pl. 454. 1753 ; Hook. f. Fl. Brit. India 5 : 249. 1887. *E. hypericifolia* var. *parviflora* Hook. f. *op. cit.* 250 ; Cooke, Fl. Pres. Bombay 3 : 63. 1958 (Repr. ed.). *E. parviflora* auct. non L. 1759 ; Sant. in Bull. Bot. Soc. Beng. 8 : 13. 1954.

Herbs, 15-25 cm high. Leaves elliptic-oblong, *ca* 2 cm long, obtuse, serrulate ; stipules deciduous. Involucres in axillary and terminal, pedunculate, many flowered cymes ; bracts subulate ; petaloid limb white, *ca* 0.5 mm long. Capsules subglobose, hairy, styles 2-fid.

Fls. & Frts. : April.

Illus. : Raju & P.N. Rao, *op. cit.*

Distrib. : Occasional near cultivated fields. Medha, Taldeo.

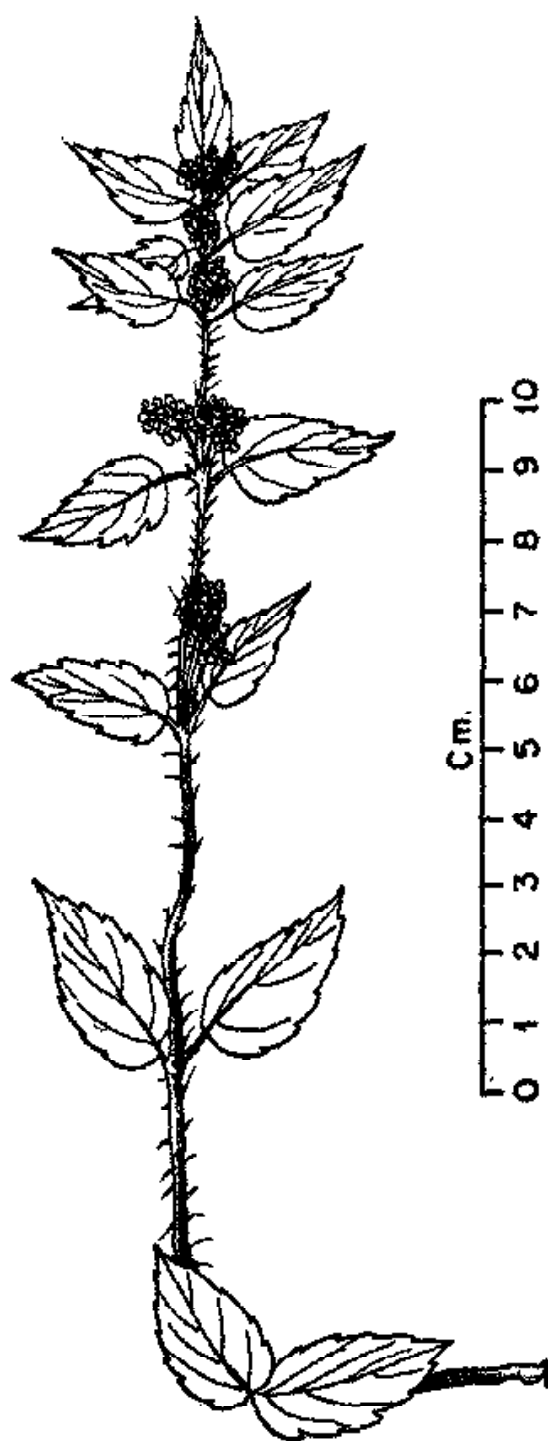


Fig. 54. *Euphorbia gaudichaudii* Boiss.

Euphorbia laciniata Panigr. in Kew Bull. 30 : 531. 1975. *E. fimbriata* Heyne ex Roth, Nov. Pl. Sp. 227. 1821 *non* Scop. 1788 ; Sant. in Bull. Bot. Soc. Beng. 8 : 12. 1954. *E. cristata* sensu Hook. f. Fl. Brit. India 5 : 247. 1887 *non* Heyne 1821.

Herbs, hispid. Leaves sessile, oblong, 1 2×0.7 1.0 cm, base unequal, apex obtuse, margins serrate, hairy. Involucre solitary, axillary ; gland of involucre with 4 limbs. Capsules sparsely hairy. Seeds brown, transversely furrowed.

Fls. & Frts. : August.

Distrib. : Rare in scrub forests. Shirgaon ghat, 169040.

E. laeta Heyne ex Roth, Nov. Pl. Sp. 230. 1821 ; Rau in Bull. Bot. Surv. India 19 (Suppl.) : 71. 1969. *E. rothiana* Spr. Syst. 96. 1826 ; Hook. f. Fl. Brit. India 5 : 263. 1887 ; Cooke, Fl. Pres. Bombay 3 : 59. 1958 (Repr. ed.) ; Sant. in Bull. Bot. Soc. Beng 8 : 9. 1954.

Herbs, 30-50 cm high, latex milky ; stems with a reddish tinge, densely leafy. Leaves sessile, lanceolate. 4 8×1.0 - 1.3 cm. Involucres solitary ; glands with 2, acute, curved horns. Capsules ca 0.5 cm across.

Fls. & Frts. : September - May.

Illus. : Wight, Ic. t. 1864. 1852 (*E. rothiana*).

Distrib. : Common along rocky slopes in semi-evergreen forests. Gureghar, Kas, Mahabaleshwar, Nauja, old Mahabaleshwar, Shirshingi.

E. nerifolia L. Sp. Pl. 451. 1753 ; Hook. f. Fl. Brit. India 5 : 255. 1887 ; Cooke, Fl. Pres. Bombay 3 : 59. 1958 (Repr. ed.) ; Sant. in Bull. Bot. Soc. Beng. 8 : 7. 1954. *E. ligularia* Roxb. Fl. Ind. (Carey ed.) 2 : 465. 1832.

Shrubs, 3-5 m high; branches 5-angled ; stipular spines divaricate arising from spirally arranged tubercles. Involucres in dichotomous cymes ; involucre lobes rounded, fimbriate ; glands oblong. Capsules ca 0.4 cm across, 3-lobed.

Fls. & Frts. : March April.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 2 : 432, t. 485. 1911. (*E. ligularia*).

Distrib. : Occasional along hill slopes in drier parts. Mahabaleshwar, Acland (BLAT), Cooke, s.n.

Euphorbia notoptera Boiss. in DC. Prodr. 15(2) : 26. 1862 ; Hook. f. Fl. Brit. India 5 : 247. 1887 ; Cooke, Fl. Pres. Bombay 3 : 61. 1958 (Repr. ed.) ; Sant. in Bull. Bot. Soc. Beng. 8 : 13. 1954.

Herbs, *ca* 30 cm high. Leaves sessile, oblong, 1 - 3 × 0.8 - 1.2 cm, base subcordate, unequal, apex obtuse, mucronate. Involucres solitary, or 2-3 together ; bracts leafy, 1.5-2.0 cm long ; limbs of gland white, rounded. Capsules globose, *ca* 0.3 cm across.

Fls. & Frts. : August.

Distrib. : Rare, near cultivated fields. Panchgani-Mahabaleshwar, A.S. Rao 77921.

E. panchganiensis Blatt. & McC. in J. Asiat. Soc. Beng. n.s. 26 : 353. 1930 ; Sant. in Bull. Bot. Soc. Beng. 8 : 4. 1954.

Herbs, 5-8 cm long, succulent, with a pinkish tinge. Leaves lanceolate, oblong or oblanceolate, margins wavy. Flowers in peduncled dichotomously branched cymes ; bracts 2, purple, lanceolate. Involucre *ca* 0.5 cm across, purple. Capsules *ca* 0.5 cm across. Seeds 3, globose, *ca* 0.3 cm across.

Fls. & Frts. : April.

Distrib. : Common in grasslands. Mahabaleshwar, Panchgani.

E. pycnostegia Boiss. Cent. Euphorb. 9 : 1860 ; Hook. f. Fl. Brit. India 5 : 246. 1887 ; Cooke, Fl. Pres. Bombay 3 : 60. 1958 (Repr. ed.) ; Sant. in Bull. Bot. Soc. Beng. 8 : 11. 1954.

var. **pycnostegia**

Herbs, 20-45 cm high. Cauline leaves sessile, oblong, 1 - 2 × 0.7 - 1.3 cm, apex obtuse, mucronate ; floral leaves broadly ovate, cordate, *ca* 1 cm long ; stipules minute, fimbriate. Involucres *ca* 0.5 cm long, hairy within ; lobes fimbriate. Capsules subglobose, hairy. Seeds 4-angled.

Fls. & Frts. September - October.

Distrib. : Occasional. Mahabaleshwar, Birdwood (Cooke, *op. cit.*) ; Shirshingi, Kochhar 157722.

var. **zornioides** (Boiss.) Sant. in Bull. Bot. Soc. Beng. 8 : 11. 1954. *E. zornioides* Boiss. in DC. Prodr. 15(2) : 19. 1862 ; Hook. f. *op. cit.* ; Cooke, *op. cit.*

Differs from the type variety only in glabrous capsules and obtusely angled seeds.

Distrib. : Occasional along hill slopes. Mahabaleshwar, Pandavgad.

Euphorbia thymifolia L. Sp. Pl. 454. 1753 ; Hook. f. Fl. Brit. India 5 : 252. 1887 ; Cooke, Fl. Pres. Bombay 3 : 64. 1958 (Repr. ed.) ; Sant. in Bull. Bot. Soc. Beng. 8 : 16. 1954.

Herbs, 30 - 50 cm long, hispid. Leaves oblong, *ca* 0.3×0.5 cm long, base and apex rounded, glabrous above, sparsely pubescent beneath ; stipules fimbriate. Involucres solitary or 2-3 together ; glands minute, red. Capsules minute, pubescent. Seeds transversely furrowed.

Fls. & Frts. : April - December.

Distrib. : Common annual in moist places. Chaphal, Dhom dam, Dhebewadi, Koyna.

GLOCHIDION J.R. & J.G.A. Forst.

Glochidion ellipticum Wight, Ic. t. 1906. 1852 ; Hook. f. Fl. Brit. India 5 : 321. 1887 ; Cooke, Fl. Pres. Bombay 3 : 75. 1958 (Repr. ed.) ; Rani in Matthew, Fl. Tamilnadu Carnatic 3 : 1445, Pl. 108th. 1983. *G. hohenackeri* Bedd. Fl. Sylv. 193. 1873 ; Hook. f. *op. cit.* 314 ; Cooke, *op. cit.* 'Bhoma'.

Trees, 7-9 m high. Leaves elliptic-lanceolate, 2.8 - 6.5×1.0 - 4.2 cm, base acute, apex acuminate ; stipules minute, triangular, acute. Flowers greenish-yellow in axillary clusters ; male flowers : pedicellate ; female flowers : sessile ; perianth lobes 6, oblong, pubescent without. Capsules sessile, globose, *ca* 1 cm across, 4-lobed.

Fls. & Frts. : September - May.

Illus. : Wight, *op. cit.* ; Talbot, For. Fl. Bombay Pres. & Sind 2 : 446, f. 493. 1911 ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 640. 1982.

Distrib. : Common in semi-evergreen forests on exposed ghat areas. Dhokewadi, Jadholi, Karanjewadi, Kas, Khambil, Chorghe ghat, Koyna, Lingmala, Mahabaleshwar, Nauja, Rohine, Shirshingi, Tapola, Vasota.

In *BLAT* some specimens have been found with the name *Glochidion lanceolarium* Voigt. Hook. f. (1887) has given the distribution data as North-West India and from Nepal eastwards to Assam. Dalzell (1861) has recorded this species from 'Ghauts' of erstwhile Bombay Presidency, with local name as 'Bhoma'. However Cooke had refuted this and established that the species in question was only *G. hohenackeri*. So far *G. lanceolarium* has not been collected from this area.

HOMONOIA Lour.

Homonoia riparia Lour. Fl. Cochinch. 637. 1790 ; Hook. f. Fl. Brit. India 5 : 455. 1887 ; Cooke, Fl. Pres. Bombay 3 : 118. 1958 (Repr. ed). '*Sherna*'.

Shrubs, ca 1 m high. Leaves linear-lanceolate, 11-15 × 1.0 - 1.5 cm, base acute or rounded, glabrous above, clothed with minute scales beneath ; stipules linear-lanceolate. Male flowers : perianth 3-lobed, elliptic, acute ; female flowers : perianth 5-lobed, ovate ; styles 3, shortly connate at base, spreading. Capsules globose of 3, smooth, 2-valved cocci. Seeds rounded on the back, slightly angular on the inner face, yellowish-brown.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 1868. 1852 (*Adella nerifolia* Roth, Nov. Pl. Sp. 375. 1821).

Distrib. : Common along river banks on sandy soil. Asani, Ghotil, Koyna Valley, Mahabaleshwar, Vajegaon.

KIRGANELIA A.L. Juss.

Kirganella reticulata (Poir.) Baill. Etude Euphorb. 614. 1858. *Phyllanthus reticulatus* Poir. in Lam. Encycl. 5 : 298. 1804 ; Hook. f. Fl. Brit. India 5 : 288. 1887 ; Cooke, Fl. Pres. Bombay 3 : 81. 1958 (Repr. ed.).

Shrubs, scandent. Leaves oblong-elliptic, 1 - 3 × 1.0 - 1.7 cm, base acute or rounded ; stipules ovate, acute, bristle-tipped. Flowers axillary ; male flowers in fascicles ; female flowers solitary. Berries globose, purple, ca 0.3 cm across.

Fls. & Frts. : July - September.

Illus. : Wight, Ic. t. 1899. 1852 (*Anisonema multiflora*).

Distrib. : Common on hill slopes and along roadsides. Dhom dam near Wai, Karad, Koyna, Pimpodshi, Satara Road, Yavteshwar.

MACARANGA Thou.

Macaranga peltata (Roxb.) Muell.-Arg. in DC. Prodr. 15 : 1010. 1866 ; Ramamoorthy in Saldanha & Nicolson, Fl. Hassan Dist. 343. 1976. *Osyris peltata* Roxb. Fl. Ind. (Carey ed.) 3 : 855. 1832. *M. tomentosa* Wight, Ic. t. 1949, f. 1. 1852 ; Hook. f. Fl. Brit. India 5 : 448. 1887 ; Cooke, Fl. Pres. Bombay 3 : 117. 1958 (Repr. ed.).

Trees, 6-8 m high. Leaves deltoid-ovate, cuspidate, 7 - 25 × 7 - 19 cm ; petioles 3-11 cm long. Flowers small in axillary, tomentose panicles ; bracts broader than long ; sepals 3, concave ; petals absent. Capsules globose, hairy.

Fls. & Frts. : February.

Illus. : Wight, Ic. t. 817. 1844 (*Mappa peltata* Roxb. *op. cit.*).

Distrib. : Common along ghats. Ambeghar, Karanjewadi, Nauja.

MALLOTUS Lour.

- | | |
|--|--------------------------|
| 1. Shrubs ; leaves opposite ; capsules echinate, prominently yellow glandular | <i>M. stenanthus</i> |
| 1. Trees ; leaves alternate ; capsules conspicuously red glandular, not echinate | <i>M. philippinensis</i> |

Mallotus philippinensis (Lam.) Muell.-Arg. in *Linnaea* 34 : 196. 1865 ; Hook. f. *Fl. Brit. India* 5 : 442. 1887 ; Cooke, *Fl. Pres. Bombay* 3 : 113. 1958 (Repr. ed.). *Croton philippense* Lam. *Encycl.* 2 : 206. 1786.

Trees, 9-12 m high, young branches tomentose. Leaves ovate-lanceolate, 5 18 × 2 6 cm, glabrous above, pubescent and with red glands beneath ; petioles 2-5 cm long, tomentose. Flowers in terminal panicles ; perianth lobes ovate-lanceolate ; stamens numerous ; styles 3. Capsules ca 1 cm across, 3-valved. Seeds globose, black.

Fls. & Frts. : November - February.

Illus. : Bedd. *Fl. Sylv.* t. 289. 1873.

Distrib. : Common in semi-evergreen forests. Karanjewadi, Koyna, Kumbharli ghat, Mahabaleshwar, Mahabaleshwar-Pratapgad.

M. stenanthus Muell.-Arg. in *Linnaea* 34 : 191. 1865 ; Hook. f. *Fl. Brit. India* 5 : 437. 1887 ; Cooke, *Fl. Pres. Bombay* 3 : 114. 1958 (Repr. ed.).

Shrubs, 1.5-3.0 cm high. Leaves lanceolate, 5 - 15 × 2 6 cm, margins sinuate-toothed. Flowers in 2-4 cm long racemes ; perianth lobes lanceolate, covered with yellowish glands. Capsules ca 1 cm across. Seeds globose, ca 0.4 cm across.

Fls. & Frts. : July - November.

Distrib. : Common in semievergreen forests. Jangli Jaigad, Kistrude, Nauja.

PHYLLANTHUS L.

- | | | |
|--|----------------------------|---------------------------|
| 1. Stems angular ; seeds ribbed on back | ... | <i>P. asperulatus</i> |
| 1. Stems terete ; seeds not ribbed : | | |
| 2. Shrubs ; leaves linear-oblong ; stipules subulate | ... | <i>P. lawii</i> |
| 2. Herbs ; leaves obovate, cuneate ; stipules lanceolate | pellate,
... lanceolate | <i>P. maderaspatensis</i> |

Phyllanthus asperulatus Hutch. in Kew Bull. 1920 : 27. 1920 ; Webster in J. Arnold Arbor. 37 : 14. 1956 ; Chavan *et al.* in M.V.M. Patrika 8 : 13. 1973. *P. niruri auct. non* L. 1753 ; Hook. f. Fl. Brit. India 5 : 298. 1887 ; Cooke, Fl. Pres. Bombay 3 : 84. 1958 (Repr. ed.).

Herbs, 30-50 cm high ; branchlets trigonous or subterete, scabrid on the angles. Leaves oblong, *ca* 1.0×0.4 cm. Male flowers : in axillary clusters ; perianth segments 5, ovate-elliptic ; female flowers : solitary ; perianth segments 5-6, spatulate. Capsules globose, *ca* 0.3 cm across.

Fls. & Frts. : July October.

Distrib. : Infrequent along roadsides or in waste places. Kas, Koyna.

P. lawii Grah. Cat. Pl. Bombay 181. 1839 ; Hook. f. Fl. Brit. India 5 : 290. 1887 ; Cooke, Fl. Pres. Bombay 3 : 82. 1958 (Repr. ed.).

Shrubs, *ca* 1.5 m high. Leaves overlapping, 0.5×0.2 cm, base rounded, apex mucronate. Male flowers in fascicles ; perianth lobes 6, oblong, obtuse ; female flowers : solitary, axillary ; styles 3. Capsules globose, *ca* 0.4 cm across.

Fls. & Frts. : April.

Distrib. : Rare along river banks in moist situations. Koyna, Kochhar 154747, 154783A.

P. maderaspatensis L. Sp. Pl. 982. 1753 ; Hook. f. Fl. Brit. India 5 : 292. 1887 ; Cooke, Fl. Pres. Bombay 3 : 82. 1958 (Repr. ed.).

Herbs, *ca* 1 m high. Leaves 0.5 - 2.5 × 0.3 - 1.5 cm, base tapering into short petiole. Male flowers : subsessile in clusters ; female flowers : solitary ; perianth lobes 6, greenish, obovate, obtuse ; styles 3, 2-lobed. Capsules depressed-globose, 3-lobed.

Fls. & Frts. : September - April.

Illus. : Wight, Ic. t. 1895. 1852.

Distrib. : Rare near cultivated fields. Phaltan, Wai.

SAPIUM P. Br.

Sapium insigne var. *malabaricum* (Wight) Hook. f. Fl. Brit. India 5 : 472. 1888. *Falconeria malabarica* Wight, Ic. t. 1866. 1852. *S. insigne* Trim. Syst. Cat. Ceyl. Pl. 83. 1885 ; Cooke, Fl. Pres. Bombay 3 : 121. 1958 (Repr. ed.).

Trees, *ca* 3 m high. Leaves elliptic or oblong-lanceolate, 10 - 21 × 3.5 - 8.0 cm, base acute, apex acuminate, margins crenate-serrate. Male flowers : sessile ; perianth orbicular ; stamens 2 ; female flowers : shortly pedicelled, perianth ovate, acuminate. Capsules ovoid, irregularly dehiscent.

Fls. & Frts. : December - February.

Illus. : Wight, *op. cit.*

Distrib. : Rare in deciduous forests, leafless when flowering. Mahabaleshwar, *Soman* 158121 ; *Shirshingi*, *Kochhar* 158693.

SECURINEGA Commers. ex A. Juss.

- | | | |
|-------------------|-----|----------------------|
| 1. Plants armed | ... | <i>S. leucopyrus</i> |
| 1. Plants unarmed | ... | <i>S. virosa</i> |

Securinega leucopyrus (Willd.) Muell.-Arg. in DC. Prodr. 15 : 451. 1866 ; Airy Shaw in Kew Bull. 26 : 340. 1972. *Fluggea leucopyrus* Willd. Sp. Pl. 4 : 757. 1805 ; Hook. f. Fl. Brit. India 5 : 328. 1887 ; Cooke, Fl. Pres. Bombay 3 : 77. 1958 (Repr. ed.).

Shrubs, straggling, *ca* 1.5 m high. Leaves obovate, 1 - 3 × 0.7 - 2.0 cm, apex emarginate. Male flowers : perianth lobes 5, obovate-oblong ;

stamens 3-5, alternate with glands ; female flowers : perianth as in male ; styles 3. Drupes globose, ca 0.4 cm across, white when ripe.

Fls. & Frts. : June July.

Illus. : Wight, Ic. t. 1875. 1852.

Distrib. : Occasional near forest margins in shrub forests. Lingmala, Tapola.

Securinea virosa (Roxb. ex Willd.) Baill. in *Adansonia* 6 : 334. 1866; Airy Shaw in *Kew Bull.* 26 : 340. 1972. *Phyllanthus virosus* Roxb. ex Willd. *Sp. Pl.* 4 : 578. 1805. *Fluggea microcarpa* Bl. *Bijdr.* 580 1825 ; Hook. f. *Fl. Brit. India* 5 : 328. 1887 ; Cooke, *Fl. Pres. Bombay* 3 : 77. 1958 (Repr. ed.).

Shrubs, ca 5 cm high. Leaves elliptic to obovate, 1.4 - 2.8 × 1.2 - 1.7 cm, base acute, apex obtuse. Male flowers : numerous on slender pedicels ; perianth lobes 5, obovate-oblong, concave ; stamens 5 ; female flowers : perianth as in male ; styles 3, each 2-lobed. Drupes globose, ca 0.7 cm across.

Fls. & Frts. : May - June.

Illus. : Matthew, Ill. *Fl. Tamilnadu Carnatic* 2 : t. 655. 1982.

Distrib. : Common along ghats, in deciduous and semi-evergreen forests. Koyna, Kumbharli ghat, Mahabaleshwar-Panchgani Road.

TRAGIA 'L.

- | | | |
|---|-----|-----------------------|
| 1. Leaves palmately 3-lobed | ... | <i>T. plukenetii</i> |
| 1. Leaves entire : | | |
| 2. Fruiting calyx lobes narrowly oblong, strigose | ... | <i>T. hispida</i> |
| 2. Fruiting calyx lobes broadly ovate, glabrous on surfaces, margins strigose | ... | <i>T. muelleriana</i> |

Tragia hispida Willd. *Sp. Pl.* 4 : 323. 1805 ; Gamble, *Fl. Pres. Madras* 1332. 1925 [2 : 932. 1957, (Repr. ed.)]. (Fig. 55).

Climbers. Leaves oblong or ovate, base cordate, apex acuminate, 3.5 - 7.0 × 1 - 3 cm, margins serrate. Flowers in leaf-opposed, 3-7 cm long racemes ; bracts lanceolate, acute ; male flowers at apex of racemes : perianth globose-ovoid ; stamens 3 ; female flowers : perianth lobes 6, accrescent in fruiting ; styles 3, connate at base. Capsules 3-valved, hispid.

Fls. & Frts. : November - April.

Distrib. : Frequent in semi-evergreen forests. Jadholi, Mahabaleshwar, Nauja, Mahabaleshwar-Pratapgad, Shirshingi.

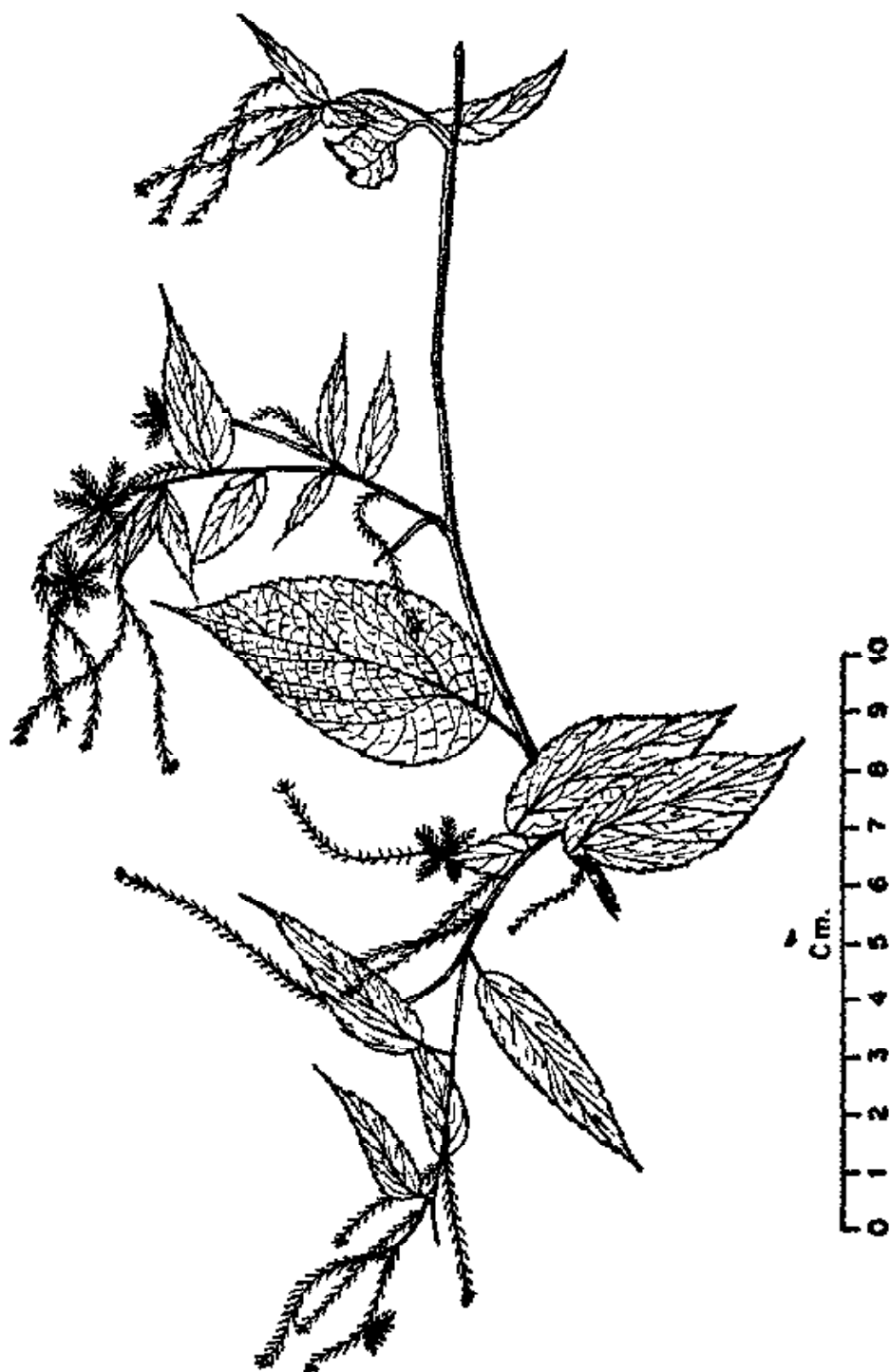


Fig. 55. *Tragia hispida* Willd.

Tragia muelleriana var. *unicolor* (Muell.-Arg.) Pax & Hoffm. in Pfreich. 68 : 81. 1935 ; Sant. in Rec. Bot. Surv. India 16(1) : 251. 1967 (3rd Rev. ed.). *T. miqueliana* var. *unicolor* Muell.-Arg. in DC. Prodr. 15 : 843. 1866. *T. involucrata* T. Cooke, Fl. Pres. Bombay 2 : 621. 1908 [3 : 119. 1958 p.p. (Repr. ed.)].

Climbers. Leaves ovate-cordate, 2.5-8.0 × 2.0-6.5 cm, apex acuminate, hairy. Flowers in terminal and leaf-opposed racemes ; male flowers : perianth lobes 3, elliptic-orbicular ; stamens 3 ; pistillodes 3-lobed ; female flowers : perianth lobes 6, ovate, accrescent in fruit ; styles 3, revolute. Capsules 0.5-0.8 cm across, 3-lobed.

Fls. & Frts. : September- November.

Distrib. : Frequent in semi-evergreen forests. Jadholi, Karanjewadi, Lingmala, Mahabaleshwar, old Mahabaleshwar road.

T. plukenetii A. Radcliffe-Smith in Kew Bull. 37 : 688. 1983. *Croton hastatus* L. Sp. Pl. 1005. 1753. *T. cannabina* L. f. Suppl. 415. 1781 ; Cooke, Fl. Pres. Bombay 3 : 120. 1958 (Repr. ed.). *T. involucrata* L. var. *cannabina* (L.f.) Muell.-Arg. in DC. Prodr. 25 : 944. 1866 ; Hook. f. Fl. Brit. India 5 : 465. 1887.

Climbers. Leaves ca 8 cm long. Racemes 2-4 cm long ; bracts lanceolate, acute ; male flowers : perianth lobes 3, glabrous ; stamens 3 ; female flowers : perianth lobes 6, hispid ; styles 3, spreading. Capsules globose, hispid.

Fls. & Frts. : September.

Distrib. : Rare in wasteland. Wai, Mahajan 6840.

Notes : Linnaeus has described this as *Croton hastatus* and *C. urens* (*op. cit.*). Linnaeus fil. while transferring them to *Tragia*, instead of adopting any one of the epithets, chosen to give a different epithet, which consequently has become a superfluous and so illegitimate name. Subsequently both the epithets *hastata* and *urens* have been used and so Radcliffe-Smith (*op. cit.*) has provided a new name. Incidentally, the epithet commemorates Leonard Plukenet upon whose plates in 'Phytographia' (1691-2), Linnaeus based his concept of two conspecific *Crotons*, which in turn were based on the specimens of Richard Sambach in Plukenet's Herbarium, incorporated into the Sloane Herbarium at the BM (NH) (Radcliffe-Smith, *op. cit.*).

CULTIVATED SPECIES

Jatropha curcas L. Sp. Pl. 1006. 1753 ; Hook. f. Fl. Brit. India 5 : 383. 1887 ; Cooke, Fl. Pres. Bombay 3 : 95. 1958 (Repr. ed.).

Shrubs or small trees, *ca* 2 m high. Leaves cordate, palmately 3-lobed. Flowers greenish-yellow in axillary and terminal cymes. Capsules subglobose, *ca* 0.5 cm across.

Fls. & Frts. : June - July.

Distrib. : Cultivated in gardens as an ornamental plant. Mahuli, Vajegaon.

Pedilanthus tithymaloides (L.) Poir. in Ann. Mus. Hist. Nat. Paris 19 : 390, t. 19. 1812 ; Hook. f. Fl. Brit. India 5 : 239. 1886 ; Cooke, Fl. Pres. Bombay 3 : 124. 1958 (Repr. ed.). *Euphorbia tithymaloides* L. Sp. Pl. 453. 1753.

Shrubs, *ca* 1 m high, succulent ; branches zig-zag. Leaves distichous, fleshy, ovate, deciduous. Involucres terminal ; bracts scarlet.

Fls. : July.

Distrib. : Planted as hedge plant in gardens. Satara road station.

Ricinus communis L. Sp. Pl. 1007. 1753 ; Hook. f. Fl. Brit. India 5 : 457. 1887 ; Cooke, Fl. Pres. Bombay 3 : 125. 1958 (Repr. ed.). '*Erand*'.

Shrubs or small trees, 3 - 4 m high. Leaves palmately 7 - 8 lobed, margins irregularly serrate. Flowers in terminal, sub-paniculate racemes ; male flowers crowded at apex ; female flowers at base of racemes. Capsules of 3, 2-valved cocci, subglobose, echinate.

Fls. & Frts. : January - July.

Distrib. : Cultivated throughout the district for oil. Khatav, Mahabaleshwar, Nauja, Parli.

ULMACEAE

- | | | |
|---|-----|---------------|
| 1. Flowers polygamous ; perianth lobes imbricate | ... | CELTIS |
| 1. Flowers unisexual ; perianth lobes induplicate-valvate | ... | TERMA |

CELTIS L.

Celtis timorensis Spanoghe in *Linnaea* 15 : 343. 1841 ; Soep. in Steenis, Fl. Males. 1, 8 : 65. 1977 ; Matthew & Rani in Matthew, Fl. Tamilnadu Carnatic 3 : 1503. 1983. *C. cinnamomea* Lindl. ex Planch. in Ann. Sci. Nat. Bot. 3, 10 : 303. 1848 ; Hook. f. Fl. Brit. India 5 : 482. 1888 ; Cooke, Fl. Pres. Bombay 3 : 128. 1958 (Repr. ed.).

Trees, 15 - 20 m high. Leaves ovate, 6 - 9 × 3.0 - 4.5 cm, base rounded, apex acuminate, margins crenate-serrate, 3-nerved. Flowers greenish in paniculate cymes ; male at base, bisexual at apex ; perianth lobes 5, elliptic-oblong, obtuse. Drupes ovoid, ca 0.5 cm long, beaked.

Fls. & Frts. : April - June.

Distrib. : Rare in semi-evergreen forests. Forest Nursery, Koyna, Kochhar 153111.

TREMA Lour.

Trema orientalis (L.) Bl. Mus. Bot. 2 : 61. 1856 ; Hook. f. Fl. Brit. India 5 : 484. 1888 ; Cooke, Fl. Pres. Bombay 3 : 129. 1958 (Repr. ed.). *Celtis orientalis* L. Sp. Pl. 1044. 1753. 'Gol'.

Trees, 4 - 8 m high. Leaves ovate, 7.5 - 17.0 × 1.5 - 3.0 cm, base unequally cordate, apex acuminate, margins serrulate, whitish beneath. Flowers unisexual in axillary, pubescent cymes. Drupes ovoid, ca 0.5 cm long, orange yellow when young, blackish when ripe.

Fls. & Frts. : April - August.

Illus. : Wight, Ic. t. 602 & 603. 1842. (*C. orientalis*) ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 673. 1982.

Distrib. : Frequent near forest clearings. Khambil Chorghe ghat, Koyna, Nauja, Panchgani ghat, Rohine.

URTICACEAE

1. Plants with stinging hairs :

2. Stems and leaves sparsely hairy ; stipules cordate ... GIRARDINIA

2. Stems and leaves densely hairy ; stipules lanceolate ... LAPORTEA

1. Plants without stinging hairs :

3. Plants armed ... BOEHMERIA

3. Plants unarmed :

- | | | |
|--|-----|-------------|
| 4. Leaves opposite | ... | LECANTHUS |
| 4. Leaves alternate : | | |
| 5. Shrubs ; flowers in dichotomous cymes | ... | DEBREGEASIA |
| 5. Herbs ; flowers in axillary clusters | ... | FOUZOLZIA |

BOEHMERIA Jacq.

Boehmeria macrophylla Hornem. Hort. Reg. Bot. Hafn. 2 : 890. 1815 *non* D. Don, 1825 ; Frus & Marais in Kew Bull. 37 : 163. 1982. *B. platyphylla* Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 60. 1825 ; Hook. f. Fl. Brit. India 5 : 578. 1888. *B. scabrella* (Roxb.) Gaud. in Bot. Freyc. Voy. 500. 1826 ; Cooke, Fl. Pres. Bombay 3 : 135. 1958 (Repr. ed.).

Shrubs, 1.0 - 1.5 m high. Leaves broadly ovate, 9 - 17 × 4 - 10 cm, base cordate or rounded, apex acuminate. Spikes 10 - 15 cm long ; male flowers : perianth lobes 4, ovate, acuminate ; stamens 4 ; pistillodes clavate ; female flowers : perianth flask-shaped ; styles filiform ; achenes ellipsoid, hairy at apex.

Fls. & Frts. : April - October.

Illus. : Wight, Ic. t. 691. 1843 (*B. scabrella*).

Distrib. : Common along river banks. Khambil Chorghe ghat, Koyna, Koyna valley, below Mahabaleshwar, Nanal, Shirshingi.

DEBREGEASIA Gaud.

Debregeasia longifolia (Burm. f.) Wedd. in DC. Prodr. 16 : 235. 1869 ; Sant. in Rec. Bot. Surv. India 16(1) : 255. 1967 (3rd Rev. ed.). *Urtica longifolia* Burm. f. Fl. Ind. 197. 1768. *D. velutina* Gaud. B. Bonite Voy. t. 90. 1842-43 ; Hook. f. Fl. Brit. India 5 : 590. 1888 ; Cooke, Fl. Pres. Bombay 3 : 139. 1958 (Repr. ed.).

Shrubs, 3 - 4 m high. Leaves oblong-lanceolate, 5 - 17 × 1.5 - 4.0 cm, rough above, white-tomentose beneath, 3-nerved. Flowers in lateral cymes, pubescent ; perianth obovoid, minutely toothed. Achenes yellow.

Fls. & Frts. : November - January.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 664. 1982.

Distrib. : Infrequent along ghats. Mahabaleshwar.

GIRARDINIA Gaud.

Girardinia zeylanica Decne. in Jacquem. Bot. Voy. 152. 1844 ; Cooke, Fl. Pres. Bombay 3 : 132. 1958 (Repr. ed.). *G. heterophylla* var. *zeylanica* Hook. f. Fl. Brit. India 5 : 551. 1888. *Urtica heterophylla* Willd. Sp. Pl. 4 : 362. 1805.

Herbs, 1 - 2 m high. Leaves ovate, 6 - 9 × 5 - 7 cm, entire or 3-lobed, margins coarsely serrate, pubescent. Male flowers at the base of racemes ; perianth lobes elliptic, obtuse ; stamens 4 - 5, female flowers at the apex of racemes ; perianth tubular, 3-lobed. Achenes obliquely ovate, compressed.

Fls. & Frts. : October - January.

Illus. : Wight, Ic. t. 687. 1843 (*U. heterophylla*).

Distrib. : Common in waste places. Jadhali, Lingmala, Mahabaleshwar, old Mahabaleshwar.

LAPORTEA Gaud.

Laportea interrupta (L.) Chew. in Gard. Bull. Straits. Settlement. 21 : 200. 1965 & 25 : 145. 1969 ; Matthew & Rani in Matthew, Fl. Tamilnadu Carnatic 3 : 1491. 1983. *Urtica interrupta* L. Sp. Pl. 985. 1753. *Fleurya interrupta* (L.) Gaud. in Freyc. Voy. Bot. 497, t. 8. 1826 ; Hook. f. Fl. Brit. India 5 : 548. 1888 ; Cooke, Fl. Pres. Bombay 3 : 131. 1958 (Repr. ed.).

Herbs, 30 - 60 cm high. Leaves ovate, 4 - 8 × 2 - 5 cm, margins crenate, serrate, hairy, stipules ca 0.5 cm long, 2-lobed. Flowers in 5 - 12 cm long racemes ; male flowers : perianth lobes 4, concave ; stamens 4 ; female flowers : perianth cup-shaped ; styles linear, curved. Achenes oblong, ca 0.15 cm long, compressed.

Fls. & Frts. : August - September.

Illus. : Wight, Ic. t. 1975. 1853 (*F. interrupta*).

Distrib. : Occasional near cultivated fields. Nanal, Shirshingi.

LECANTHUS Wedd.

Lecanthus peduncularis (Royle) Wedd. in DC. Prodr. 16 : 164. 1869 ; Sant. in Rec. Bot. Surv. India 16(1) : 254. 1967 (3rd Rev. ed.). *Procris peduncularis* Wall. ex Royle, Illus. Bot. Himal. t. 83, f. 2. 1836.

L. wightii Wedd. in Ann. Sci. Nat. Bot. 4, 1 : 187. 1854; Hook. f. Fl. Brit. India 5 : 559. 1888 ; Cooke, Fl. Pres. Bombay 3 : 133. 1958 (Repr. ed.).

Herbs, 10 - 13 cm high. Leaves ovate, 1.5 - 4.0 × 1.0 - 2.5 cm, base and apex acute, margins serrate, hairy. Flowers white ; male flowers : perianth lobes 4 - 5 ; stamens 4 - 5 ; female flowers : perianth 3-lobed, unequal, one lobe hooded at apex. Achenes narrowly oblong, red.

Fls. & Frts. : July - October.

Illus. : Wight, Ic. t. 1985. 1853 (*Elatostema ovatum*).

Distrib. : Common on moist rocks or tree trunks. Dicholi, Koyna, Lingmala, Mahabaleshwar, Panchgani, Shirshingi.

POUZOLZIA Gaud.

1. Leaves 5-nerved ; perianth 4-lobed ... *P. zeylanica*

1. Leaves 3-nerved ; perianth 5-lobed :

2. Stems terminating into bracteate spike ... *P. pentandra*

2. Stems not as above ... *P. bennettiana*

Pouzolzia bennettiana Wight, Ic. 6 : 10, t. 1978. 1853 ; Hook. f. Fl. Brit. India 5 : 585. 1888 ; Cooke, Fl. Pres. Bombay 3 : 138. 1958 (Repr. ed.).

Herbs, ca 1 m high. Leaves elliptic or lanceolate, base cordate or rounded, apex acute, hairy. Male flowers : perianth lobes 5 with a transverse dorsal ridge ; stamens 5 ; female flowers : perianth tubular, ribbed, accrescent in fruiting ; styles filiform. Achenes black.

Fls. & Frts. : October.

Illus. : Wight, *op. cit.*

Distrib. : Rare along ghats. Panchgani ghat.

P. pentandra (Roxb.) Benn. Pl. Java. Rar. 64, t. 14. 1838 ; Hook. f. Fl. Brit. India 5 : 583. 1888 ; Cooke, Fl. Pres. Bombay 3 : 137. 1958 (Repr. ed.). *Urtica pentandra* Roxb. Fl. Ind. (Carey ed.) 3 : 583. 1832.

Herbs, 20 - 45 cm high with a reddish tinge. Leaves sessile, lanceolate-oblong, margins ciliolate. Male flowers : perianth lobes 5, ciliate ; stamens 5 ; female flowers : perianth tubular. Achenes with 2 lateral, membranous wings.

Fls. & Frts. : October - November.

Illus. : Wight, Ic. t. 2096. 1853.

Distrib. : Infrequent near water courses. Morgiri, Panchgani.

Ponzolzia zeylanica (L.) Benn. & R. Br. Pl. Java. Rar. 67. 1838 ; Sant. in Rec. Bot. Surv. India 16(1) : 255. 1967 (3rd Rev. ed.). *Parietaria zeylanica* L. Sp. Pl. 1952. 1753. *P. indica* (L.) Gaud. in Freyc. Voy. Bot. 503. 1826 ; Hook f. Fl. Brit. India 5 : 1888 ; Cooke, Fl. Pres. Bombay 3 : 137. 1958 (Repr. ed.).

Herbs ; stems erect or prostrate, 15 - 30 cm long. Leaves ovate-elliptic, 1.7 - 2.5 × 0.7 - 1.0 cm, hairy. Flowers white with greenish tinge ; male flowers : perianth lobes 4, concave ; stamens 4 ; female flowers : perianth tubular, 2-lobed, ribbed in fruiting. Achenes broadly ovoid, white.

Fls. & Frts. : August - September.

Illus. : Wight, Ic. t. 1980. 1853 (*P. indica*).

Distrib. : Frequent as forest undergrowth or along hill slopes. Dicholi, Koyna, Kumbharli ghat, Mahabaleshwar.

CULTIVATED SPECIES

Pilea microphylla (L.) Liebm. in Vidensk. Selsk. Skr. 5 : 296. 1851 ; Hook. f. Fl. Brit. India 5 : 551. 1888 ; Cooke, Fl. Pres. Bombay 3 : 160. 1958 (Repr. ed.). *P. muscosa* L. Syst. Nat. ed. 10. 1308. 1759.

Small, procumbent herbs with transparent stems. Leaves sessile, spatulate, ca 0.5 × 0.3 cm. Flowers small, unisexual in axillary cymes. Achenes ellipsoid, brown.

Fls. & Frts. : January - February.

Distrib. : Cultivated in gardens as a hedge plant. Koyna.

MORACEAE

1. Flowers enclosed within receptacle	...	FICUS
1. Flowers not enclosed within receptacle	...	ARTOCARPUS

ARTOCARPUS J.R. & J.G.A. Forst.

Artocarpus heterophyllus Lam. Encycl. 3 : 210. 1789 ; Jarrett in J. Arnold Arbor. 40 : 334. 1959. *A. integrifolius non* L. f. 1781 ; Hook. f. Fl. Brit. India 5 : 541. 1888. '*Phanas*'.

Trees, 8 - 10 m high. Leaves oblong-elliptic, 10 - 18 × 6 - 7 cm, coriaceous, base acute or rounded, apex subacute ; petioles stout, 2 - 3 cm long. Flowers unisexual in heads ; male heads : perianth cupular, 2-lobed ; stamen 1 ; female heads : perianth tubular, protruding ; stigma spatulate. Fruits oblong-globose, 5 - 20 cm, echinate.

Fls. & Frts. : April - June.

Distrib. : Rare in evergreen forests, usually cultivated in gardens for edible fruits. Kusapur, Mahabaleshwar.

FICUS L.

- | | | |
|---|-----|----------------------|
| 1. Leaves opposite | ... | <i>F. hispida</i> |
| 1. Leaves alternate : | | |
| 2. Shrubs ; leaves scabrid above | ... | <i>F. exasperata</i> |
| 2. Trees ; leaves glabrous : | | |
| 3. Receptacles sessile : | | |
| 4. Receptacles in fascicles in axils of fallen leaves ; basal bracts 2-fid | ... | <i>F. tsjahela</i> |
| 4. Receptacles in axillary pairs ; basal bracts entire : | | |
| 5. Petioles upto 4.5 cm long ; leaf apex acuminate ; receptacles purple when ripe | ... | <i>F. amplissima</i> |
| 5. Petioles not more than 1.5 cm long ; leaf apex obtuse ; receptacles orange-red when ripe | ... | <i>F. microcarpa</i> |
| 3. Receptacles peduncled : | | |
| 6. Receptacles on leafless branches | ... | <i>F. racemosa</i> |
| 6. Receptacles in axillary pairs on leafy branches : | | |
| 7. Receptacles without basal bracts | ... | <i>F. nervosa</i> |
| 7. Receptacles with 3 basal bracts : | | |

- 8 Leaf apex caudate; receptacles purple
with greenish dots when ripe ... *F. arnottiana*
8. Leaf apex, obtusely acuminate; receptacles
white with red dots when ripe ... *F. virens*

Ficus amplissima J.E. Sm. in Rees, Cyclop. 14: n. 68. 1810; Corner in Dassanayake & Fosberg, Rev. Handb. Fl. Ceylon 3: 242. 1981. *F. tsiela* Roxb. ex Buch.-Ham. in Trans. Linn. Soc. London 15: 149. 1826; Hook. f. Fl. Brit. India 5: 515. 1888; Cooke, Fl. Pres. Bombay 3: 150. 1958 (Repr. ed.).

Trees, 10-12 m high. Leaves elliptic-lanceolate, 5 17×2.5 7.5 cm, base rounded or shortly cuneate. Receptacles 0.5 1.0 cm across; basal bracts 3, ovate, margins scarious.

Fls. & Frts. : September - February.

Illus. : Wight, Ic. t. 668. 1843.

Distrib. : Occasional along ghat slopes in semi-evergreen and deciduous forests. Dhokewadi, Karanjewadi, Tadoshi.

F. arnottiana (Miq.) Miq. in Ann. Bot. Lugd. Bat. 3: 287. 1867; Hook. f. Fl. Brit. India 5: 513. 1888; Cooke, Fl. Pres. Bombay 3: 149. 1958 (Repr. ed.); King in Ann. Roy. Bot. Gard. Calcutta 1: 56, f. 68A & 84V. 1897. 'Pair'.

Trees, 9 12 m high. Leaves ovate-cordate, 10 - 14×8 - 12 cm, subcoriaceous; petioles 6 12 cm long; stipules ovate-lanceolate, caducous. Receptacles ca 1 cm across; bracts brown, membranous.

Fls. & Frts. : February.

Illus. : King, *op. cit.*

Distrib. : Occasional in deciduous forests. Ambeghar, Koyna.

F. exasperata Vahl, Enum. Pl. 2: 197, 402. 1806; Corner in Gard. Bull. Singapore 21: 74. 1965. *F. asperrima* Roxb. Fl. Ind. (Carey ed.) 3: 554. 1832; Hook. f. Fl. Brit. India 5: 522. 1888; Cooke, Fl. Pres. Bombay 3: 153. 1958 (Repr. ed.).

Shrubs, ca 5 m high. Leaves elliptic-oblong or obovate, 3 - 12×2 - 7 cm; petioles ca 2 cm long. Receptacles solitary, ca 1.3 cm across, pubescent; tracts absent; peduncles 0.5 - 0.8 cm long.

Fls. & Frts. : April - June.

Illus. : Wight, Ic. t. 633. 1843.

Distrib. : Frequent along ghats in deciduous forests, rarely found in plains. Fitzgerald ghat, below Mahabaleshwar, Koyna, Mahabaleshwar.

Ficus hispida L. f. Suppl. 442. 1781 ; Hook. f. Fl. Brit. India 5 : 522. 1888 ; Cooke, Fl. Pres. Bombay 3 : 154. 1958 (Repr. ed.). 'Kalambar'.

Trees, ca 6 m high. hispid. Leaves oblong, 9 - 20 × 4.5 - 8.5 cm, scabrid above, hispid beneath ; petioles 1.5 - 4.0 cm long ; stipules ovate-lanceolate, pubescent. Receptacles 1 - 2 cm across, pubescent, yellow when ripe.

Fls. & Frts. : September - April.

Illus. : Wight, Ic. t. 638. 1843.

Distrib. : Frequent in deciduous forests. Junkti, Nauja, Shirshingi.

F. microcarpa L. f. Suppl. 442. 1781 ; Corner in Gard. Bull. Singapore 17 : 397. 1960 & 21 : 22. 1965. *F. retusa* auct. non L. 1767 ; King in Ann. Roy. Bot. Gard. Calcutta 1 : 50, f. 62 & 84 f. 1887 ; Hook. f. Fl. Brit. India 5 : 511. 1888 ; Cooke, Fl. Pres. Bombay 3 : 146. 1958 (Repr. ed.). 'Nandruk'.

Trees, 12 - 15 m high. Leaves elliptic or obovate, 4.0 - 6.5 × 3.0 - 4.8 cm ; stipules lanceolate, 1.0 - 1.5 cm long. Receptacles ca 0.7 cm across.

Fls. & Frts. : November.

Illus. : King, op. cit.

Distrib. : Rare in deciduous forests. Panchgani, Santapau 5 (BLAT) ; Satara, Patwardhan 9700.

F. nervosa Heyne ex Roth in R. & S. Syst. Veg. 1 : 513. 1817 ; Hook. f. Fl. Brit. India 5 : 512. 1888 ; Cooke, Fl. Pres. Bombay 3 : 147. 1958 (Repr. ed.) ; Corner in Gard Bull. Singapore 21 : 31. 1965.

Trees, 10 - 12 m high. Leaves elliptic, 6 - 10 × 2.0 - 4.4 cm, base cuneate or rounded, apex acuminate ; petioles 3 - 4 cm long. Receptacles 0.8 - 1.0 cm across, white-tomentose.

Fls. & Frts. : April.

Illus. : Wight, Ic. t. 660. 1843 [*F. angustifolia* Roxb. Fl. Ind. (Carey ed.) 3 : 554. 1832].

Distrib. : Rare in evergreen forests. Kusapur, Kochhar 154389.

Ficus racemosa L. Sp. Pl. 1060. 1753; Corner in Gard. Bull. Singapore 21 : 34. 1965. *F. glomerata* Roxb. Pl. Cor. 2 : 13, f. 123. 1798; Hook. f. Fl. Brit. India 5 : 535. 1888; Cooke, Fl. Pres. Bombay 3 : 154. 1958 (Repr. ed.). 'Umbar'.

Trees, 12 - 18 m high. Leaves elliptic-lanceolate, 5 - 11 × 3 - 6 cm, base cuneate, apex subacute; petioles 2 - 4 cm long; stipules ovate-lanceolate, 1.2 - 2.0 cm long, scarious. Receptacles 1 - 3 cm across, pubescent, red when ripe.

Fls. & Frts. : Throughout the year.

Illus. : Roxb. *op. cit.* ; Wight, Ic. t. 1967. 1853.

Distrib. : Common in semi-evergreen and deciduous forests, also planted near temples. Jadholi, Lingmala, Mahabaleshwar, old Mahabaleshwar, Shirshingi, Vajegaon.

F. tsjahela Burm. f. Fl. Ind. 227. 1768 ('*tjakela*'); King in Ann. Roy. Bot. Gard. Calcutta 1 : 57, t. 70. 1887; Hook. f. Fl. Brit. India 5 : 514. 1888; Cooke, Fl. Pres. Bombay 3 : 150. 1958 (Repr. ed.); Corner in Gard. Bull. Singapore 21 : 7. 1965.

Trees, 9 - 15 m high. Leaves ovate-oblong or lanceolate, 7 - 20 × 3.5 - 10.5 cm; petioles 1 - 9 cm long. Receptacles ca 0.5 cm across.

Fls. & Frts. : April.

Illus. : King, *op. cit.*

Distrib. : Occasional along ghats in deciduous forests. Koyna, Vasota.

F. virens Ait. Hort. Kew. 3 : 451. 1789; Corner in Gard. Bull. Singapore 17 : 376. 1959 & 21 : 9. 1965. *F. infectoria non* Willd. 1798; Hook. f. Fl. Brit. India 5 : 515. 1888; Cooke, Fl. Pres. Bombay 3 : 151. 1958 (Repr. ed.).

Trees, 9 - 12 m high. Leaves ovate-lanceolate, 7 - 17 × 2.5 - 8.0 cm; petioles 2 - 10 cm long. Receptacles, 1.0 - 1.5 cm across; peduncles 0.5 - 0.8 cm long.

Fls. & Frts. : November - May.

Illus. : Wight, Ic. t. 665. 1843 (*F. infectoria*).

Distrib. : Infrequent on lower hill slopes, sometimes planted along roadsides. Mahabaleshwar.

CULTIVATED SPECIES

Ficus benghalensis L. Sp. Pl. 1059. 1753 ; King in Ann. Roy. Bot. Gard. Calcutta 1 : 18, t. 13. 1887 ; Hook. f. Fl. Brit. India 5 : 499. 1888 ; Cooke, Fl. Pres. Bombay 3 : 45. 1958 (Repr. ed.). '*Banyan*'.

Trees, ca 15 m high. Leaves elliptic-ovate, glabrous above, puberulous beneath. Receptacles sessile, 1 - 2, axillary, red when ripe.

Fls. & Frts. : April - June.

Illus. : Wight, Ic. t. 1989. 1853 [*Urostigma benghalense* (L.) Gasp. Nov. Gen. Fic. 7. 1844.].

Distrib. : Planted along roadsides and near temples. Asani, Tapola.

F. carica L. Sp. Pl. 1059. 1753 ; Cooke, Fl. Pres. Bombay 3 : 155. 1958 (Repr. ed.). '*Anjir*'

Moderate sized trees. Leaves cordate, 8 - 13 × 9 - 17 cm, hispid ; petioles 7 - 8 cm long. Receptacles 3 - 5 cm across, pubescent.

Fls. & Frts. : November.

Distrib. : Under cultivation for edible fruits. Mahabaleshwar.

F. religiosa L. Sp. Pl. 1059, 1753, King in Ann. Roy. Bot. Gard. Calcutta 1 : 55, t. 67A & 84 U. 1887 ; Hook. f. Fl. Brit. India 5 : 513. 1888 ; Cooke, Fl. Pres. Bombay 3 : 149. 1958 (Repr. ed.). '*Pimple*'.

Trees, 10 - 15 m high. Leaves broadly ovate, 7.5 - 12.5 × 5 - 11 cm. Receptacles in axillary pairs, purple when ripe.

Fls. & Frts. : May - July.

Distrib. : Occasionally planted near temples. Koyna.

Morus alba L. Sp. Pl. 986. 1753 ; Hook. f. Fl. Brit. India 5. 492. 1888 ; Cooke, Fl. Pres. Bombay 3 : 159. 1958 (Repr. ed.). '*Tuti*'.

Trees, 9-12 m high. Leaves ovate, acute, membranous. Spikes short, ovoid, peduncled, red when ripe.

Fls. & Frts. : July - February.

Distrib. : Deciduous trees, cultivated in gardens for edible fruits and leaves used to feed silkworm. Khatav, 165781; Mahabaleshwar, *Mahajan* s.n.

CASUARINACEAE

Casuarina equisetifolia Forst. & Forst. f. Char. Gen. Pl. 104, t. 53. 1776; Hook. f. Fl. Brit. India 5 : 598. 1888; Cooke, Fl. Pres. Bombay 3 : 161. 1958 (Repr. ed.). '*Suru*'.

Trees, 15 - 20 m high. Leaves alternate, scaly. Male spikes terete, terminal; female spikes ovoid, axillary, shortly pedicellate; bracts and bracteoles woody, persistent. Fruits oblong, ca 1 cm long; achenes winged.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic t. 681. 1982.

Distrib. : Evergreen tree, planted near villages, along roadsides. Koyna.

SALICACEAE

SALIX L.

Salix tetrasperma Roxb. Pl. Cor. 1 : 66, t. 97. 1795; Hook. f. Fl. Brit. India 5 : 626. 1888; Cooke, Fl. Pres. Bombay 3 : 162. 1958 (Repr. ed.). '*Walunj*'.

Trees, 6 - 10 m high. Leaves lanceolate, 4.0 - 5.5 × 0.8 - 1.3 cm, base acute or rounded, apex acuminate, margins serrulate, glaucous beneath; stipules ovate, acute, deciduous. Flowers golden yellow in dense, 10 - 16 cm long catkins; bracts ovate, hairy; perianth absent; male flowers : sessile; stamens 5 - 10; female flowers : pedicelled; styles 2; ovary fusiform. Capsules ca 0.5 cm long, 2-valved.

Fls. & Frts. : October - November.

Illus. : Roxb. *op. cit.*; Wight, Ic. t. 1954. 1853.

Distrib. : Frequent along river banks. Karad, Mahabaleshwar, Panchgani.

HYDROCHARITACEAE

- | | | |
|------------------------|-----|-------------|
| 1. Caulescent herbs | ... | HYDRILLA |
| 1. Acaulescent herbs : | | |
| 2. Perianth 1-seriate | ... | VALLISNERIA |
| 2. Perianth 2-seriate | ... | BLYXA |

BLYXA Noronha ex Thou.

- | | | |
|---|-----|------------------------|
| 1. Flowers unisexual | ... | <i>B. octandra</i> |
| 1. Flowers bisexual : | | |
| 2. Seeds distinctly echinate, tailed at both ends | ... | <i>B. echinosperma</i> |
| 2. Seeds obscurely echinate, not tailed | ... | <i>B. aubertii</i> |

Blyxa aubertii A. Rich. in Mem. Cl. Sci. Math. Inst. Natl. France 12(2) : 77, t. 4. 1812 ; Hartog in Steenis, Fl. Males. 1, 5 : 390, t. 5. 1957 ; Subram. Aq. Ang. 59. 1962. *B. ceylanica* Hook. f. Fl. Brit. India 5 : 661. 1888.

Leaves linear, 15 - 30 × 0.5 - 1.0 cm, margins hyaline, outer perianth lobes oblong ; inner linear ; stamens 3. Capsules cylindrical, 4 - 6 cm long. Seeds elliptic, ca 1.5 cm long.

Fls. & Frts. : December - January.

Distrib. : Rare in stagnant water. Mahabaleshwar, Soman 166000.

B. echinosperma (C.B.Cl.) Hook. f. Fl. Brit. India 5 : 661. 1888 ; Cooke, Fl. Pres. Bombay 3 : 172. 1958 (Repr. ed.) ; Subram. Aq. Ang. 59. 1962. *Hydrotrophus echinospermum* C.B.Cl. in J. Linn. Soc. 14 : 8, t. 1. 1875.

Leaves narrowly linear, 15 - 100 cm, margins entire or minutely denticulate. Scapes filiform, ca 1 m long ; flowers white ; outer perianth lobes spirally twisted. Capsules cylindrical, 5 - 7 cm long, ribbed.

Fls. & Frts. : July - October.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 684. 1982.

Distrib. : Rare, fresh water herbs, included on Cooke's (*op. cit.*) report from Mahabaleshwar.

Blyxa octandra (Roxb.) Planch. ex Thw. Enum. Pl. Zeyl. 332. 1864 ; Hartog in Steenis, Fl. Males. 1, 5 : 392. 1957. *Vallisneria octandra* Roxb. Pl. Cor. t. 165. 1802 & Fl. Ind. (Carey ed.) 3 : 752. 1832. *B. roxburghii* A. Rich. in Mem. Cl. Sci. Math. Inst. Natl. France 77, t. 5. 1812 ; Hook. f. Fl. Brit. India 5 : 660. 1888 ; Cooke, Fl. Pres. Bombay 3 : 172. 1958 (Repr. ed.) ; Subram. Aq. Ang. 60. 1962.

Leaves radical, linear; 20 - 30 cm long. Male flowers : scapes longer than leaves ; stamens 8 ; female flowers : scapes shorter and thicker than in male ; stigmas 3, filiform. Capsules linear, finely ribbed. Seeds tubercled.

Fls. & Frts. : December - February.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 684 & 977a. 1982.

Distrib. : Tufted annuals, growing in large patches. Mahabaleshwar.

HYDRILLA L.C. Rich.

Hydrilla verticillata (L.f.) Royle, Ill. Bot. Himal. f. 376. 1839 ; Hook. f. Fl. Brit. India 5 : 659. 1888 ; Cooke, Fl. Pres. Bombay 3 : 170. 1958 (Repr. ed.) ; Hartog in Steenis, Fl. Males. 1, 5 : 385. t. 1-3. 1957 ; Subram. Aq. Ang. 55. 1962. *Serpicula verticillata* L.f. Suppl. 416. 1781.

Stems, ca 30 cm high, rooting at nodes. Leaves sessile, 4 - 6 in a whorl, linear-oblong, 0.5 2.0×0.2 - 0.4 cm. Male flowers : shortly pedicelled ; perianth lobes ovate-oblong ; stamens 3 ; female flowers : sessile ; perianth lobes linear ; stigmas fimbriate. Fruits subterete, smooth or muricate.

Fls. & Frts. : November - December.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 686. 1982.

Distrib. : Rare, fresh water herbs in large patches. Koyna, Kochhar 158521.

VALLISNERIA L.

Vallisneria spiralis L. Sp. Pl. 1015. 1753 ; Hook. f. Fl. Brit. India 5 : 660. 1888 ; Cooke, Fl. Pres. Bombay 3 : 171. 1958 (Repr. ed.) ; Subram. Aq. Ang. 57, f. 39. 1962.

Tufted herbs. Leaves radical, narrowly linear, 24 - 30×1.0 - 1.5 cm, translucent, margins entire or serrulate towards apex. Male flowers minute, numerous on shortly pedunculate spathe ; female flowers solitary on long, spiral scapes. Fruits linear, included in the spathe.

Fls. & Frts. : April May.

Illus. : Subram. *op. cit.*

Distrib. : Rare. Rooting at the bottom of tanks or pools. Koyna, Kochhar 158461.

BURMANNIACEAE

BURMANNIA L.

Burmannia coelestis D. Don, Prodr. Fl. Nepal. 44. 1825 ; Hook. f. Fl. Brit. India 5 : 665. 1888 ; Jonker in Steenis, Fl. Males. 1, 4 : 17. 1948. *B. coelestis* var. *pusilla* (Miers) Trim. Handb. Fl. Ceylon 4 : 138. 1898 ; Cooke, Fl. Pres. Bombay 3 : 174. 1958 (Repr. ed.).

Herbs, 10-15 cm high, slender. Leaves scaly. Flowers purple, solitary, terminal ; perianth 6-lobed ; outer 3 lobes tubular, winged ; inner lobes connate at base ; stamens 3 ; stigmas 3, funnel-shaped. Capsules 3-winged.

Fls. & Frts. : October. - November.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 690. 1982.

Distrib. : Frequent in moist places along hill slopes. Mahabaleshwar. Pratapgad Fort.

ORCHIDACEAE

1. Terrestrials :

2. Lip spurred :

3. Leafless during flowering ... **EULOPHIA**

3. Leafy during flowering :

4. Spur serotiform or conical ... **PERISTYLUS**

4. Spur cylindric :

5. Flowers more than 5 cm across ; lip fimbriate ... **PECTEILIS**

5. Flowers upto 3 cm across ; lip not fimbriate ... **HABENARIA**

2. Lip not spurred :

- | | | |
|--|-----|--------------|
| 6. Leaves solitary, appear after flowering ; pollinia 2, granular | ... | NERVILIA |
| 6. Leaves more than 2, leafy at flowering ; pollinia 4, waxy | ... | MALAXIS |
| 1. Epiphytes : | | |
| 7. Leaves thick ; equitant, distichous | ... | OBIRONIA |
| 7. Leaves not as above : | | |
| 8. Lip spurred : | | |
| 9. Pollinia 8 | ... | THUNIA |
| 9. Pollinia 2-4 : | | |
| 10. Column prolonged into a foot | ... | AERIDES |
| 10. Column not prolonged into a foot | ... | VANDA |
| 8. Lip not spurred : | | |
| 11. Pollinia 8 : | | |
| 12. Pseudobulbs discoid ; sepals connate at base | ... | POREPAX |
| 12. Pseudobulbs ovoid or oblong ; sepals free | ... | ERIA |
| 11. Pollinia 2-4 : | | |
| 13. Pseudobulbs with a single node | ... | EULBOPHYLLUM |
| 13. Pseudobulbs with more than two nodes : | | |
| 14. Leaves and flowers usually solitary, rarely flowers in pairs | ... | FLICKINGERIA |
| 14. Leaves more than one ; flowers in fascicles, racemes or spikes : | | |
| 15. Leaves terete ; flowers in spikes | ... | LUSIA |
| 15. Leaves flat ; flowers in fascicles or racemes | ... | DENDROBIUM |

AERIDES Lour.

- | | | |
|---------------------------------|-----|-----------------------|
| 1. Spur equalling the lip : | | |
| 2. Midlobe of lip linear-oblong | ... | <i>A. ringens</i> |
| 2. Midlobe of lip semicircular | ... | <i>A. dalzelliana</i> |

1. Spur about half as long as lip :

3. Sepals obovate ; midlobe of lip quadrate-oblong ... *A. maculosum*

3. Sepals oblong, obtuse ; midlobe of lip triangular ... *A. crispum*

Aerides crispum Lindl. Gen. Sp. Orch. Pl. 239. 1833 ; Hook. f. Fl. Brit. India 6 : 45. 1890 ; Cooke, Fl. Pres. Bombay 3 : 203. 1958 (Repr. ed.) ; Sant. & Kap. Orch. Bombay 122. 1966.

Herbs, 10-15 cm high. Leaves oblong, 11-15 × 1.5-3.5 cm. Flowers pink, ca 1.8 cm across ; bracts triangular-ovate, 0.4 × 0.3 cm ; sepals oblique, ca 1 cm long, minutely denticulate ; petals obovate, acute, ca 1.5 cm long, spreading ; lip oblong, 3-lobed, ca 2 cm long. Capsules elliptic, 2-3 cm long.

Fls. & Frts. : May - July.

Illus. Wight, Ic. t. 1677. 1851 (*A. lindleyana*).

Distrib. : Common at higher altitudes (ca 800 m). Kas, Koyna, Lingmala, Mahabaleshwar, Panchgani, Vasota.

A. dalzelliana (Sant.) Garay in Bot. Mus. Leaflet. Harvard Univ. 23 : 158. 1972. *Sarcochilus dalzelliana* Sant. in Kew Bull. 1949 : 498. 1949. *Micropera viridiflora* Dalz. in Hook. J. Bot. 3 : 282. 1851. *Saccolabium viridiflorum* (Dalz.) Lindl. in J. Linn. Soc. 3 : 36. 1858 ; Hook. f. Fl. Brit. India 6 : 63. 1890. *Gastrochilus viridiflorus* (Dalz.) O. Ktze. Rev. Gen. Pl. 2 : 662. 1891 ; Bennet in J. Bombay nat. Hist. Soc. 67 : 359. 1970. *Sarcochilus viridiflorus* T. Cooke, Fl. Pres. Bombay 2 : 697. 1907 [3 : 201. 1958 (Repr. ed.)] *non* Hook. f. 1890. *Gastrochilus dalzellianus* (Sant.) Sant. & Kap. in J. Bombay nat. Hist. Soc. 59 : 842, Pl. 52A. 1963. *Smithsonia viridiflora* (Dalz.) Saldanha *ibid.* 75. 1974. *Loxoma viridiflora* (Dalz.) Pradhan, Ind. Orch. 2 : 522. 1979.

Herbs, ca 10 cm high. Leaves elliptic-lanceolate, unequal, 2.0-5.5 × 1.0-1.5 cm. Flowers greenish-white in terminal umbellate racemes ; bracts ovate, ca 0.3 cm long ; sepals and petals obovate, rounded, 0.5-0.7 cm long ; lip white with pink streaks. Capsules fusi-form, purplish-brown, ribbed.

Fls. & Frts. : May - March.

Illus. : Sant. & Kap. *op. cit.*

Distrib. : Commonly epiphytic on *Ficus* spp. Dhokewadi, Koyna, Mahabaleshwar, Pratapgad road.

Aerides maculosum Lindl. in Bot. Reg. t. 58. 1845 ; Hook. f. Fl. Brit. India 6 : 45. 1890 ; Cooke, Fl. Pres. Bombay 3 : 203. 1958 (Repr. ed.) ; Sant. & Kap. Orch. Bombay 120, Pl. 30. 1966.

Herbs, ca 5 cm high. Leaves oblong, 7-10 × 0.7-1.7 cm, coriaceous, channelled. Flowers in terminal racemes pedicels ca 1.5 cm long ; bracts ovate, acute ; sepals subequal, ca 1.7 cm long ; petals oblong, ca 1 cm long. Capsules obovoid, 2-4 cm long.

Fls. & Frts. : May-July.

Illus. : Sant. & Kap. op. cit. ; Wight, Ic. t. 1674 & 75. 1851 (*Saccolabium speciosum*).

Distrib. : Common in deciduous forests. Kelghar ghat, Koyna, Mahabaleshwar, Panchgani.

A. ringens (Lindl.) C.E.C. Fischer in Kew Bull. 1928 : 284. 1928 & in Gamble, Fl. Pres. Madras 1442. 1928 [3 : 1008. 1957 (Repr. ed.)] ; Sant. & Kap. Orch. Bombay 119, Pl. 29. 1966. *Saccolabium ringens* Lindl. Gen. Sp. Orchid. Pl. 221. 1833. *A. radicata* A. Rich. in Ann. Sci. Nat. Bot. 2, 15 : 65. 1841 ; Hook. f. Fl. Brit. India 6 : 46. 1890 ; Cooke, Fl. Pres. Bombay 3 : 204. 1958 (Repr. ed.). *A. linearis* Hook. f. op. cit. 47.

Herbs, ca 10-15 cm high. Leaves linear-oblong, 5-21 × 0.3-0.7 cm, coriaceous, channelled. Racemes 5-20 cm long ; bracts triangular, acute, greenish at base, brown at apex ; sepals subequal, obtuse, 5-nerved, white with a purple tinge ; petals obovate ; lip white with purple streaks ; spur funnel-shaped, incurved, subclavate at apex. Capsules obovoid-oblong, ribbed.

Fls. & Frts. : March-July.

Illus. : Sant. & Kap. op. cit. ; Wight, Ic. t. 1678. 1851 (*Saccolabium paniculatum*).

Distrib. : Rare in Western Ghats. Mahabaleshwar, Woodrow (Sant. & Kap. op. cit.).

BULBOPHYLLUM Thou.

Bulbophyllum fimbriatum (Lindl.) Reichb. f. in Walp. Ann. 6 : 260. 1861 ; Saldanha in Saldanha & Nicolson, Fl. Hassan Dist. 814. 1976. *Cirrhopetalum fimbriatum* Lindl. in Bot. Reg. Misc. 72. 1839 ; Hook. f. Fl. Brit. India 5 : 774. 1890 ; Cooke, Fl. Pres. Bombay 3 : 188. 1958 (Repr. ed.) ; Sant. & Kap. Orch. Bombay 198, Pl. 48. 1966.

Pseudobulbs 1-2 cm long, yellow. Scapes 8-13 cm long. Flowers in terminal, umbellate racemes; bracts ovate-oblong, *ca* 0.3 cm long; dorsal sepals ovate, acuminate *ca* 0.4 cm long, fimbriate; lateral sepals oblong, *ca* 1.5 cm long; petals oblong, *ca* 0.3 cm long, fimbriate; lip *ca* 1 cm long, green, elliptic, obtuse. Capsules *ca* 1 cm long, green.

Fls. & Frts. : June-April.

Illus. : Sant. & Kap. *op. cit.* ; Wight, *lc.* t. 1655. 1851.

Distrib. : Frequent in open deciduous forests, leafless when flowering. Koyna valley, Koyna, Mahabaleshwar.

DENDROBIUM Swartz

1. Stems absent; leaves from pseudobulbs :

- | | | |
|---|-----|-----------------------|
| 2. Peduncles straight; bracts equalling pedicels; lip pink with deep purple veins | ... | <i>D. microbulbon</i> |
| 2. Peduncles zig-zag; bracts shorter than pedicels; lip creamish with pink veins | ... | <i>D. nanum</i> |

1. Stems elongated; leaves from nodes

3. Flowers in racemes :

- | | | |
|--|-----|----------------------|
| 4. Stems <i>ca</i> 1 m long, profusely branched; flowers <i>ca</i> 0.5 cm long | ... | <i>D. herbaceum</i> |
| 4. Stems upto 45 cm long, simple; flowers more than 1 cm long : | | |
| 5. Flowers creamish; bracts ovate | ... | <i>D. ovatum</i> |
| 5. Flowers pure white or with pinkish tinge; bracts lanceolate | ... | <i>D. barbatulum</i> |

3. Flowers in fascicles :

- | | | |
|--|-----|-------------------------|
| 6. Lip distinctly 3-lobed | ... | <i>D. aqueum</i> |
| 6. Lip obscurely 3-lobed : | | |
| 7. Flowers creamish; mentum half as long as or longer than dorsal sepal | ... | <i>D. macrostachyum</i> |
| 7. Flowers pure white with a pinkish tinge; mentum less than half the length of dorsal sepal | ... | <i>D. crepidatum</i> |

Dendrobium aqueum Lindl. Bot. Reg. 6 : t. 54. 1843 ; Hook. f. Fl. Brit. India 5 : 739. 1890 ; Cooke, Fl. Pres. Bombay 3 : 187. 1958 (Repr. ed.) ; Sant. & Kap. Orch. Bombay 99, Pl. 24. 1966.

Stems 20 - 45 cm high. Leaves distichous, oblong-elliptic, 6 - 10 × 2.0 - 4.5 cm. Flowers produced from the upper portion of nodes ; bracts imbricating membranous ; sepals ovate-triangular, 3-nerved ; petals obovate-oblong, apiculate ; lip rhomboid, deflexed. Capsules *ca* 3 cm long ; pedicels *ca* 2 cm long.

Fls. & Frts. : June - October.

Illus. : Sant. & Kap. *op. cit.* ; Wight, Ic. t. 1645. 1851 (*D. album*).

Distrib. : Rare in deciduous forests, common under cultivation. Mahabaleshwar, Sant. & Kap. (*op. cit.*), *Soman* 157208B.

D. barbatulum Lindl. Gen. Sp. Orch. Pl. 84. 1830; Hook. f. Fl. Brit. India 5 : 719. 1890 ; Cooke, Fl. Pres. Bombay 3 : 184. 1958 (Repr. ed.) ; Sant. & Kap. Orch. Bombay 93, Pl. 22. 1966.

Stems 10 - 25 cm high, leafless when flowering ; internodes *ca* 3.5 cm long, shining. Racemes 5 - 20 cm long ; bracts *ca* 0.4 cm long, scarious, 1-nerved ; sepals oblong-lanceolate, 1.3 - 1.6 cm long, 3-nerved ; petals obovate-lanceolate, *ca* 1.2 cm long ; spur *ca* 0.7 cm long, recurved. Capsules elliptic, 1.5 - 2.0 cm long.

Fls. & Frts. : January - July.

Illus. : Sant. & Kap. *op. cit.*

Distrib. : Common on *Terminalia* and *Syzygium* spp. Ambeghar, Karanjewadi, Forest nursery, Koyna, Lingmala, Mahabaleshwar, Bilar estate near Panchgani, Panchgani-Mahabaleshwar, Patan.

D. crepidatum Lindl. in Paxt. Fl. Gard. 1 : 63, f. 45. 1850-1851 ; Sant. & Kap. Orch. Bombay 101. 1966 ; Hook. f. Fl. Brit. India 5 : 740. 1890 ; Cooke, Fl. Pres. Bombay 3 : 185. 1958 (Repr. ed.).

Stems 8 - 15 cm long, greenish-yellow. Leaves oblong-lanceolate, 9 - 12 × 1.0 - 1.5 cm, membranous ; bracts minute, scarious ; sepals and petals oblong, 5-nerved ; lip oblong, *ca* 1.5 cm long. Capsules fusiform, *ca* 1.5 cm long.

Fls. & Frts. : March - April.

Distrib. : Common on *Memecylon umbellatum*. Koyna valley, Mahabaleshwar.

Dendrobium herbaceum Lindl. in Edw. Bot. Reg. 26 : 69. 1840 ; Hook. f. Fl. Brit. India 5 : 719. 1890 ; Cooke, Fl. Pres. Bombay 3 : 184. 1958 (Repr. ed.) ; Sant. & Kap. Orch. Bombay 82, Pl. 17. 1966.

Leaves sessile, linear-oblong, 8-10 × 0.6-0.8 cm, base sheathing. Flowers greenish-white ; pedicels *ca* 0.3 cm long ; sepals oblong-lanceolate, 0.5-0.7 cm ; petals linear-oblong, *ca* 0.5 × 0.2 cm. Capsules fusiform, tapering into a long pedicel, ribbed.

Fls. & Frts. : September - April.

Illus. : Sant. & Kap. *op. cit.* ; Wight, Ic. t. 1648. 1851 (*D. ramosissimum*).

Distrib. : Post-monsoon herbs, also under cultivation. Mahabaleshwar.

D. macrostachyum Lindl. Gen. Sp. Pl. 78. 1830 ; Hook. f. Fl. Brit. India 5 : 735. 1890 ; Cooke, Fl. Pres. Bombay 3 : 185. 1958 (Repr. ed.) ; Sant. & Kap. Orch. Bombay 96, Pl. 23. 1966 ; Jayaweera in Dassanayake & Fosberg, Rev. Handb. Fl. Ceylon 2 : 90, f. 41. 1981.

Stems pendulous, 30-45 cm long ; internodes 2.0-2.5 cm long. Leaves ovate-lanceolate, 2.0-6.5 × 0.5-1 cm, membranous. Bracts ovate, membranous, 1-nerved ; sepals and petals oblong-lanceolate, 5-nerved ; lip quadrangular, minutely fimbriate on margin. Capsules spindle shaped, *ca* 3 cm long, beaked.

Fls. & Frts. : May - December.

Illus. : Sant. & Kap. *op. cit.* ; Wight, Ic. t. 1647. 1851.

Distrib. : Rare, included on Cooke's (*op. cit.*) report from Koyna valley below Mahabaleshwar.

D. microbulbon A. Rich. in Ann. Sci. Nat. Bot. 2, 15 : 19, t. 8. 1841 ; Hook. f. Fl. Brit. India 5 : 716. 1890 ; Cooke, Fl. Pres. Bombay 3 : 183. 1958 (Repr. ed.) ; Sant. & Kap. Orch. Bombay 87, Pl. 19. 1966.

Pseudobulbs 1-2 cm long. Leaves linear or oblong-lanceolate, 2-10 × 0.3-1.5 cm. Racemes 2-10 cm long ; bracts ovate-lanceolate, scarious, 1-nerved ; dorsal sepals linear-lanceolate, *ca* 0.6 cm long ; lateral sepals falcately curved, spreading, *ca* 0.6 cm long ; petals oblanceolate, *ca* 0.7 cm long. Capsules ovoid, *ca* 1 cm long.

Fls. & Frts. : December - May.

Illus. : Sant. & Kap. *op. cit.*

Distrib. : Common in deciduous forests, leafless when flowering. Mahabaleshwar.

Dendrobium nanum Hook. f. in Hook. Ic. Pl. t. 1853. 1889 & Fl. Brit. India 5 : 717. 1890 ; Seid. in Matthew, Fl. Tamilnadu Carnatic 3 : 1587. 1983. *D. mabelae* Gammie in J. Bombay nat. Hist. Soc. 16 : 567. 1905 ; Sant. & Kap. Orch. Bombay 89, Pl. 20. 1966 ; Cooke, Fl. Pres. Bombay 3 : 183. 1958 (Repr. ed.).

Pseudobulbs 1 - 5 cm long. Leaves oblong-lanceolate, 4 - 7 × 0.4 - 1.0 cm, subcoriaceous. Racemes 4 - 10 cm long ; dorsal sepals oblong-lanceolate, white ; lateral sepals subfalcate ; petals white, spathulate ; lip obovate-suborbicular, fringed. Capsules ovoid, 2.0 - 2.5 cm long.

Fls. & Frts. : July - April.

Illus. : Sant. & Kap. *op. cit.*

Distrib. : Common along ghats at altitude ca 1200 m. Mahabaleshwar, Panchgani.

D. ovatum (Willd.) Kranzl. in Engl. Pflanzenr. 45 : 71. 1910, Sant. & Kap. Orch. Bombay 91, Pl. 21. 1966. *Cymbidium ovatum* Willd. Sp. Pl. 4 : 101. 1805 *D. chlorops* Lindl. in Bot. Reg. Misc. 44, 1844 ; Hook. f. Fl. Brit. India 5 : 719. 1890 ; Cooke, Fl. Pres. Bombay 3 : 184. 1958 (Repr. ed.).

Stems 30 - 45 cm high. Leaves elliptic-oblong, 5 - 10 × 1.2 - 3.0 cm, membranous, caducous. Racemes 5 - 15 cm long ; bracts ca 0.3 cm long, scarious ; sepals ovate-oblong, 3-nerved ; petals obovate-oblong, 5-nerved ; lip obscurely clawed at base. Capsules oblong-ovoid, purple, ribbed.

Fls. & Frts. : June - March.

Illus. : Sant. & Kap. *op. cit.* ; Wight, Ic. t. 910. 1845 (*D. barbatum*).

Distrib. : Included on Cooke's (*op. cit.*) report from Mahabaleshwar.

ERIA Lindl.

- | | | |
|--|-----|----------------------|
| 1. Leaves 2 ; flowers solitary | --- | <i>E. reticosa</i> |
| 1. Leaves more than 2 ; flowers in racemes : | | |
| 2. Pseudobulbs ovoid ; scapes shorter than leaves | ... | <i>E. mysorensis</i> |
| 2. Pseudobulbs discoid ; scapes longer than leaves : | | |
| 3. Leafless at flowering ; scapes zig-zag | ... | <i>E. exilis</i> |

3. Leafy at flowering ; scapes straight :

- | | | |
|---|-----|-----------------------|
| 4. Sepals and petals with capitate glands | ... | <i>E. dalzellii</i> |
| 4. Sepals and petals without glands | ... | <i>E. microchilos</i> |

Eria dalzellii (Hook. ex Dalz.) Lindl. in J. Linn. Soc. 3 : 47. 1859 ; Hook. f. Fl. Brit. India 5 : 789. 1890 ; Cooke, Fl. Pres. Bombay 3 : 193. 1958 (Repr. ed.) ; Sant. & Kap. Orch. Bombay 151, Pl. 35. 1966. *Dendrobium dalzellii* Hook. ex Dalz. in Hook. Kew J. Bot. 4 : 292. 1852.

Pseudobulbs *ca* 1.5 cm across. Leaves elliptic-oblongate, 2 - 6 × 0.3 - 1.0 cm, apex mucronate. Flowers yellow ; bracts lanceolate, greenish-yellow ; sepals and petals triangular-ovate, 3-nerved ; lip *ca* 5 cm long. Capsules elliptic, *ca* 0.5 cm long, yellow.

Fls. & Frts. : July - October.

Illus. : Sant. & Kap. *op. cit.*

Distrib. : Common on wet trunks of *Memecylon* spp. Dicholi, Koyna, Lingmala, Mahabaleshwar, Panchgani.

E. exilis Hook. f. Fl. Brit. India 5 : 788. 1890 & in Hook. Ic. Pl. t. 2074 A. 1891 ; Sant. & Kap. Orch. Bombay 150. 1966. *E. minima* Blatt. & McC. in J. Bombay nat. Hist. Soc. 35 : 274, f. 2. 1931.

Pseudobulbs 0.2 - 1.0 cm across in groups of 3. Leaves obovate-elliptic or oblong-obovate, *ca* 2.5 × 1.1 cm, minutely papillate. Flowers greenish-white, in 10 - 30 cm long racemes ; bracts ovate-cordate, hyaline ; sepals and petals oblong-lanceolate, 1-nerved ; lip oblong, olive-green. Capsules ovoid, *ca* 0.5 cm long, faintly ribbed.

Fls. & Frts. : October - May.

Illus. : Hook. f. *op. cit.*

Distrib. : Common, slender epiphytes. Mahabaleshwar.

E. microchilos (Dalz.) Lindl. in J. Linn. Soc. 3 : 47. 1858 ; Cooke, Fl. Pres. Bombay 3 : 194. 1958 (Repr. ed.) ; Sant. & Kap. Orch. Bombay 154, Pl. 36. 1966. *Dendrobium microchilos* Dalz. in Hook. J. Bot. Kew Gard. Misc. 3 : 345. 1851. *E. dalzellii* Hook. f. Fl. Brit. India 5 : 789. 1890 (*p.p.*) *non* Lindl. 1858.

Pseudobulbs *ca* 1 cm across. Leaves oblong-lanceolate, 3.2 - 7.0 × 0.3 - 1.0 cm, apex mucronate. Flowers white ; bracts lanceolate, acute ; sepals and petals lanceolate, 0.6 - 0.8 cm long ; lip oblong-lanceolate. Capsules *ca* 0.3 cm long.

Fls. & Frts. : July October.

Illus. : Sant. & Kap. *op. cit.*

Distrib. : Occasional ; conspicuous because of its secund racemes. Jadholi, Mahabaleshwar, Shirshingi.

Eria mysorensis Lindl. in J. Linn. Soc. 3 : 54. 1858 ; Hook. f. Fl. Brit. India 5 : 793. 1890 ; Cooke, Fl. Pres. Bombay 3 : 194. 1958 (Repr. ed.) ; Sant. & Kap. Orch. Bombay 149. 1966.

Pseudobulbs 2-3 cm long. Leaves oblong or elliptic-lanceolate, 5-10 × 1.0-1.5 cm, sparsely pubescent. Scapes 1-2 ; flowers white ; bracts ovate-lanceolate, reflexed ; sepals and petals linear-lanceolate, falcate, 3-nerved ; lip oblong, subcordate at base.

Fls. : July.

Illus. : Wight, Ic. t. 1634. 1851 (*E. polystachya*).

Distrib. : Frequent along ghats. Koyna, Mahabaleshwar.

E. reticosa Wight, Ic. t. 1637. 1851 ; Hook. f. Fl. Brit. India 5 : 787. 1890 ; Cooke, Fl. Pres. Bombay 3 : 193. 1958 (Repr. ed.) ; Sant. & Kap. Orch. Bombay 146, Pl. 34. 1966. *E. rupestris* Blatt. & McC. in J. Bombay nat. Hist. Soc. 35 : 270, f. 6. 1931.

Pseudobulbs 0.5-1.0 cm across. Leaves oblong, 3-7 × 0.8-1.3 cm, sheathing at base. Flowers white ; bracts broadly ovate, ca 0.7 cm long ; sepals oblong-lanceolate, ca 2 cm long ; petals oblong-lanceolate, ca 2.5 cm long ; lip obovate, ca 2 cm long. Capsules oblong, ca 0.8 cm long, ribbed.

Fls. & Frts. : June March.

Illus. : Wight, *op. cit.* ; Sant. & Kap. *op. cit.*

Distrib. : Kisrude, Koyna, Lingmala, Mahabaleshwar, Panchgani.

Notes. : Blatt. & McC. (*op. cit.*) distinguished *E. rupestris* from *E. reticosa* Wight on the basis of bilobed mentum and midlobe of lip oblong, obtuse, in the former against the entire mentum and ovate, acute midlobe of the lip in latter. However, in Wight Ic. mentum of *E. reticosa* is emarginate. Therefore, after critical study, Sant. & Kap. (*op. cit.*) have merged it under *reticosa*.

EULOPHIA R. Br. ex Lindl.

1. Column with a distinct foot ; spur purplish, obconical *E. nuda*
 1. Column without a foot ; spur reddish-brown, conical *E. ramentacea*

Eulophia nuda Lindl. Gen. Sp. Orch. Pl. 180. 1833; Hook. f. Fl. Brit. India 6 : 5. 1890 ; Cooke, Fl. Pres. Bombay 3 : 197. 1958 (Repr. ed.) ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 35 : 487. 1931 ; Sant. & Kap. Orch. Bombay 115. 1966.

Tubers globose, ca 0.5 cm across, brownish-green. Leaves oblong-lanceolate, 24 - 30 cm long. Flowers in lax ca 50 cm long racemes ; bracts lanceolate, yellowish green ; sepals lanceolate, acute, subequal, many nerved ; petals ovate-oblong, obtuse, pinkish-white ; lip pinkish purple, 3-lobed.

Fls. : June.

Illus. : Wight, Ic. t. 1690. 1851 (*Cyrtopera fusca*).

Distrib. : Included on Blatt. & McC.'s (*op. cit.*) report from Mahabaleshwar.

E. ramentacea Lindl. ex Wight, Ic. t. 1666. 1851 ; Sant. & Kap. Orch. Bombay 113, pl. 28. 1966. *E. pratensis* Lindl. in J. Linn. Soc. 3 : 25. 1858 ; Hook. f. Fl. Brit. India 6 : 4. 1890 ; Cooke, Fl. Pres. Bombay 3 : 197. 1958 (Repr. ed.).

Leaves oblong-lanceolate, 10 - 20 × 1 - 2 cm. Scapes 10 - 15 cm long ; flowers brownish in terminal racemes ; bracts oblong-lanceolate, ca 1.5 cm long ; sepals oblong, ca 1.6 cm long ; petals elliptic, ca 1.3 cm long ; lip ca 1.2 cm long, 3-lobed, lateral lobes longer than the middle ones ; spur short, incurved. Capsules obovate-oblong, on recurved pedicels.

Fls. & Frts. : December - March.

Illus. : Wight, *op. cit.* ; Sant. & Kap. *op. cit.*

Distrib. : Rare among grasses. Panchgani, Cooke s.n.

FLICKINGERIA Hawkes

Flickingeria macraei (Lindl.) Seid. in Dansk. Bot. Ark. 34 : 39. 1980, *Dendrobium macraei* Lindl. Gen. Sp. Orch. Pl. 75. 1830 ; Hook. f. Fl. Brit. India 5 : 714. 1890 ; Cooke, Fl. Pres. Bombay 3 : 182. 1958 (Repr. ed.) ; Sant. & Kap. Orch. Bombay 79, pl. 16. 1966.

Stems *ca* 1 cm long, branches, yellow, shining. Leaves oblong-elliptic, 6.5–12.0 × 1.5–2.2 cm, coriaceous. Flowers white with a pinkish tinge, axillary; bracts oblong-lanceolate; sepals ovate-oblong, 5-nerved; petals similar to sepals, 3-nerved; lip obovate. Capsules oblong, 3.5–5.0 cm long, yellow, ridged.

Fls. & Frts. : July–August.

Illus. : Sant. & Kap. *op. cit.*

Distrib. : Rare with creeping rhizomes. Koyna valley, Cooke, s.n. Mahabaleshwar, Cooke s.n.

HABENARIA Willd.

1. Leaves solitary ... *H. grandifloriformis*
1. Leaves more than one :
 2. Leaves 2, flat on ground ... *H. crassifolia*
 2. Leaves more than 2, not flat on ground (except in *H. plantaginea*) :
 3. Petals entire :
 4. Petals narrow-linear; lateral lobes of lip tailed ... *H. crinifera*
 4. Petals linear-oblong, ovate-oblong or spatulate; lateral lobes of lip not tailed :
 5. Flowers yellow ... *H. marginata*
 5. Flowers white :
 6. Leaves cauline; lateral lobes of lip narrower than midlobe ... *H. heyneana*
 6. Leaves radical; lateral lobes of lip broader than midlobe :
 7. Spur shorter than the ovary ... *H. panchganiensis*
 7. Spur twice as long as the ovary :
 8. Leaves flat on ground; ovary sessile or subsessile ... *H. plantaginea*
 8. Leaves not flat on ground; ovary distinctly pedicellate ... *H. longicorniculata*

3. Petals 2-partite :

9. Leaves clustered about the middle of the stem ;
flowers brownish-green ... *H. multicaudata*
9. Leaves not clustered about the middle of the
stem ; flowers pure white or with a greenish
tinge :
10. Leaves radical .. *H. rariflora*
10. Leaves cauline
11. Spur clavate, without a ligule in
mouth .. *H. gibsonii*
11. Spur subclavate or inflated, with a ligule
in mouth ... *H. digitata*

Habenaria crassifolia A. Rich. in Ann. Sci. Nat. 2, 15 : 72, f. 3c. 1841 ; Hook. f. Fl. Brit. India 6 : 151. 1890 (*excl. syn. H. brachyphylla* Reichb. f.) ; Cooke, Fl. Pres. Bombay 3 : 227. 1967 (Repr. ed.) ; Sant. & Kap. Orch. Bombay 6, pl. 23. 1966.

Herbs, 12 - 50 cm high. Tubers elliptic. Leaves broadly ovate, 6.0 - 8.5 × 3 - 8 cm. Racemes 6 - 15 cm long ; bracts ovate-lanceolate, 1 - 2 cm long ; flowers white, shortly pedicellate. Capsules ellipsoid, 1.2 - 1.5 cm long, strongly ribbed, beaked.

Fls. & Frts. : August - October.

Illus. : Sant. & Kap. *op. cit.* ; Wight, Ic. t. 1694. 1851 (*Platanthera brachyphylla* Lindl. Gen. Sp. Orchid. Pl. 203. 1835).

Distrib. : Common on grassy hill slopes. Koyna, Lingmala, Mahabaleshwar, Panchgani, Panchgani-Wai, Taldeo.

H. crinifera Lindl. Gen. Sp. Orch. Pl. 323. 1835 ; Hook. f. Fl. Brit. India 6 : 142. 1890 ; Cooke, Fl. Pres. Bombay 3 : 223. 1958 (Repr. ed.) ; Sant. & Kap. Orch. Bombay 26, pl. 4, f. 13 - 14. 1966.

Stems 10 - 30 cm high. Leaves oblong-elliptic, 5 - 10 × 1.5 - 3.0 cm. Scapes 7 - 10 cm long ; flowers white ; sepals obovate-oblong ; lip long clawed. Capsules fusiform, 1.5 - 2.5 cm long.

Fls. & Frts. : August.

Illus. : Sant. & Kap. *op. cit.* ; Wight, Ic. t. 926. 1845.

Distrib. : Rare herbs epiphytic on tree trunks. Koyna valley, Kapadia 2893-94 (BLAT).

Habenaria digitata Lindl. Gen. Sp. Orch. Pl. 307. 1835 ; Hook. f. Fl. Brit. India 6 : 134. 1890 ; Cooke, Fl. Pres. Bombay 3 : 220. 1958, *p.p.* (Repr. ed.) ; Sant. & Kap. Orch. Bombay 10, pl. 3, f. 7-8. 1966.

Herbs, 2-6 cm high ; tuber ovoid. Leaves ovate-elliptic, 6-9 × 2.5-3.5 cm. Bracts *ca* 3 cm long, longer than the flowers ; flowers green, shortly pedicellate in 4-10 cm long spikes. Capsules fusiform, *ca* 1.5 cm long, ribbed.

Fls. & Frts. : July - August.

Illus. : Wight, Ic. t. 1701. 1857 (*H. trinervia*) ; Sant. & Kap. *op. cit.*

Distrib. : Common, foul smelling after sunset. Koyna, Lingmala, Mahabaleshwar, Panchgani.

H. gibsonii Hook. f. Fl. Brit. India 6 : 135. 1890 ; Sant. & Kap. Orch. Bombay 12, pl. 2, f. 3-4. 1966. *H. digitata non* Lindl. 1835 ; Cooke, Fl. Pres. Bombay 3 : 220. 1958, *p.p.* (Repr. ed.).

KEY TO THE VARIETIES

- | | | |
|--|-----|----------------------|
| 1. Stems <i>ca</i> 30 cm high ; segments of lip filiform | ... | <i>var. foliosa</i> |
| 1. Stems 30 - 60 cm high ; segments of lip linear | ... | <i>var. gibsonii</i> |

var. gibsonii

Leaves elliptic-lanceolate, 5-9 × 2.0-3.2 cm. Flowers white in subsecund racemes ; bracts lanceolate, membranous, 2.0-2.5 cm long ; sepals ovate-lanceolate, 1-2 cm long, 3-nerved ; petals linear, *ca* 1 cm long, unequal ; spur 1.0-1.5 cm long. Capsules elliptic, shortly beaked.

Fls. & Frts. : July - September.

Illus. : Sant. & Kap. *op. cit.*

Distrib. : Rare along ghats in semi-evergreen forests. Mahabaleshwar-Mahad Road, Wadhwa 109642.

var. foliosa (A. Rich.) Sant. & Kap. in J. Bombay nat. Hist. Soc. 56. 194. 1959. *H. foliosa* A. Rich. in Ann. Sci. Nat. 2, 15 : 71, t. 3' 1841. *H. digitata* var. *foliosa* Hook. f. *op. cit.* ; Cooke, *op. cit.* *H. spencei* Blatt. & McC. J. Bombay nat. Hist. Soc. 35 : 17, t. 3. 1932.

Leaves elliptic-lanceolate, *ca* 3.5-5.0 × 1.5-2.5 cm. Flowers in dense racemes ; sepals ovate-oblong, 0.6-1.0 cm long ; petals linear, subequal. Capsules elliptic, shortly beaked.

Fls. & Frts. : July - September.

Illus. : Sant. & Kap. *op. cit.*

Distrib. : Common than the type variety, more slender with smaller flowers. Fitzgerald ghat, Mahabaleshwar.

Habenaria grandifloriformis Blatt. & McC. in J. Bombay nat. Hist. Soc. 36 : 17. 1932 *emend* Sant. & Kap. *ibid.* 56 : 195. 1959 & Orch. Bombay 17, pl. 1, f. 2. 1966. *H. grandiflora* Lindl. ex Dalz. & Gibs. Bombay Fl. 267. 1861; *non* Torr. ex Beck. 1823 ; Hook. f. Fl. Brit. India 6 : 136. 1890; Cooke, Fl. Pres. Bombay 3 : 221. 1958 (Repr. ed.).

Herbs, 15 - 25 cm high, tubers ellipsoid. Leaves flat on the ground, 3.5 - 6.5 × 2.8 - 4.0 cm. Scapes 4 - 10 cm long, flowers 1 - 3 ; bracts lanceolate, 2.0 - 2.5 cm long ; dorsal sepals ovate, *ca* 1 cm long ; lateral sepals oblong, *ca* 1.3 cm long ; lip 3-lobed, *ca* 2 cm long. Capsules 1 - 2 cm long, ribbed.

Fls. & Frts. : June - November.

Illus. : Sant. & Kap. *op. cit.*

Distrib. : Common along ghats. Koyna, Mahabaleshwar, Panchgani, Satara, Tapola.

H. heyneana Lindl. Gen. Sp. Orch. Pl. 320. 1835 ; Hook. f. Fl. Brit. India 6 : 148. 1890 ; Cooke, Fl. Pres. Bombay 3 : 225. 1958 (Repr. ed.) ; Sant. & Kap. Orch. Bombay 32, pl. 5, f. 15 16. 1966. *H. cerea* Blatt. & McC. in J. Bombay nat. Hist. Soc. 36 : 21, f. 6. 1932. *H. cerea* var. *polyantha* Blatt. & McC. *op. cit.* 22.

Herbs, 17 - 30 cm high, tubers oblong. Leaves distichous, oblong-lanceolate, 3 8 × 0.8 1.5 cm. Racemes 5 10 cm long ; bracts ovate-lanceolate, 1.5 - 2.2 cm ; sepals oblong-lanceolate ; petals ovate-oblong ; lip *ca* 1 cm long, clawed ; spur 0.6 - 1.0 cm long. Capsules *ca* 1 cm long.

Fls. & Frts. : August - September.

Illus. : Wight, Ic. t. 923. 1845 ; Sant. & Kap. *op. cit.*

Distrib. : Occasional in semi-evergreen forests. Mahabaleshwar, Old Mahabaleshwar Road, Panchgani.

H. longicorniculata Grah. Cat. Pl. Bombay 202. 1839 ; Sant. & Kap. Orch. Bombay 29, t. 1, f. 1. 1966. *H. longicalcarata* A. Rich. in Ann. Sci. Nat. Bot. 2, 15 : 71, t. 3 B. 1841 ; Hook. f. Fl. Brit. India 6 : 141. 1890 ; Cooke, Fl. Pres. Bombay 3 : 223. 1958 (Repr. ed.). *H. longicalcarata* var. *viridis* Blatt. & McC. in J. Bombay nat. Hist. Soc. 36 : 20. 1932.

Stems 20 - 45 cm high. Leaves oblong-elliptic, 7 - 9 × 2.3 - 3.5 cm. Flowers 2 - 3 together ; bracts oblong-lanceolate, 2 - 3 cm long ; sepals ovate-lanceolate ; petals spathulate ; lip 2.0 - 2.5 cm long, reflexed ; spur 7 - 11 cm long, subclavate at apex. Capsules 2.5 - 3.0 cm long.

Fls. & Frts. : July - October.

Illus. : Wight, Ic. t. 925. 1845 ; Sant. & Kap. *op. cit.*

Distrib. : Common on hill slopes among grasses. Kistrude, Koyna, Mahabaleshwar, Nauja.

Habenaria marginata Coleb. in Hook. Exot. Fl. 2, 17 : t. 136. 1824 ; Hook. f. Fl. Brit. India 6 : 150. 1890 ; Cooke, Fl. Pres. Bombay 3 : 226. 1958 (Repr. ed.) ; Sant. & Kap. Orch. Bombay 33, pl. 5, f. 17. 1966.

Herbs, 10 - 30 cm high. Leaves 3 - 6, sessile, elliptic-oblong, 5 - 9 × 1.5 - 3.0 cm, margin yellow. Spikes 2 - 8 cm long ; bracts ovate-lanceolate, ca 1 cm long ; sepals ovate-oblong, 5-nerved ; petals oblong-lanceolate ; spur stout, curved at apex. Capsules ca 1.2 cm long.

Fls. & Frts. : July - November.

Illus. : Sant. & Kap. *op. cit.*

Distrib. : Common monsoon herb among grasses. Kas, Koyna.

H. multicaudata Sedgw. in Rec. Bot. Surv. India 6 : 352. 1919 ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 36 : 16. 1932 ; Sant. & Kap. Orch. Bombay 14, pl. 6, f. 21. 1966 ; Nayar & Kochhar in J. Econ. Tax. Bot. 5 : 920. 1984.

Herbs, 30 - 60 cm high. Leaves elliptic-oblong, 5 - 10 × 2.0 - 3.5 cm, apex subacuminate. Racemes 10 - 15 cm long ; bracts lanceolate, acute, ca 1.5 cm long ; sepals ovate-oblong, unequal ; dorsal sepals hooded ; petals linear ; lip narrowly linear, 3-lobed ; spur curved, clavate at apex, ca 1 cm long.

Fls. : September.

Illus. : Sant. & Kap. *op. cit.*

Distrib. : Rare as undergrowth in dense forests. This is a distributional record for Maharashtra. It was reported from N. Kanara, Nilgiri hills and Anamalai hills previously. Bairoshi forest, Mahabaleshwar, Nayar 154890 ; Shirshingi, Kochhar 154102.

Habenaria panchganiensis Sant. & Kap. in J. Bombay nat. Hist. Soc. 54 : 478. 1957 & Orch. Bombay 27, pl. 6, f. 24. 1966. *H. variabilis* Blatt. & McC. in J. Bombay nat. Hist. Soc. 36 : 10, f. 4-5. 1932 non Ridl. 1886.

Herbs, 15-20 cm high. Leaves oblong-lanceolate, 4-8 × 1.0-2.5 cm. Flowers in lax, secund, 4-10 cm long racemes; bracts oblong, ca 1.5 cm long; dorsal sepals ovate, concave, ca 1 cm long; lateral sepals obliquely ovate-lanceolate, ca 1.5 cm long; petals obliquely ovate, ca 1.4 cm long; lip ovate, 1.8-2.2 cm long; spur ca 0.7 cm long, subclavate at apex. Capsules fusiform, ca 2.5 cm long, ribbed.

Fls. & Frts. : July - September.

Illus. : Blatt. & McC. *op. cit.* ; Sant. & Kap. *op. cit.*

Distrib. : Common; endemic to Western Ghats. Mahabaleshwar, Panchgani plateau, Panchgani-Wai.

H. plantaginea Lindl. Gen. Sp. Orch. Pl. 323. 1835; Hook. f. Fl. Brit. India 6 : 141. 1890; Cooke, Fl. Pres. Bombay 3 : 224. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 28, pl. 6, f. 25. 1966; Jayaweera in Dassanayake & Fosberg, Rev. Handb. Fl. Ceylon 2 : 355, f. 157. 1981.

Herbs, 10-30 cm high. Leaves oblong to oblong-lanceolate, 5.5-7.0 × 1.5-3.0 cm. Spikes 7-10 cm long; bracts ovate-lanceolate, ca 1.5 cm long; dorsal sepals ovate, acute, 0.5-1 cm long; lateral sepals falcately oblong; petals oblanceolate, ca 1 cm long; lip ovate-oblong; spur 2.0-2.5 cm long. Capsules ca 1.8 cm long.

Fls. & Frts. : September - November.

Illus. : Wight, Ic. t. 1710. 1851; Sant. & Kap. *op. cit.*

Distrib. : Common on exposed hill slopes. Koyna, Mahabaleshwar, Panchgani-Wai.

H. rariflora A. Rich. in Ann. Sci. Nat. Bot. 2, 15 : 70, f. 2D. 1841; Hook. f. Fl. Brit. India 6 : 136. 1890; Cooke, Fl. Pres. Bombay 3 : 221. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 15, pl. 3, f. 9-10. 1966. *H. rariflora* A. Rich. var. *latifolia* Blatt. & McC. in J. Bombay nat. Hist. Soc. 36 : 17. 1932.

Herbs, 5-20 cm high; tubers oblong, 1-2 cm long. Leaves elliptic-oblong, 3-6 × 1.0-1.5 cm. Scapes 1-2 flowered; bracts ovate-lanceolate, ca 2 cm long; sepals ovate, ca 1 cm long, 3-nerved; petals triangular, ca 0.5 cm long; spur ca 3.5 cm long, curved. Capsules 1.5-2.0 cm long.

Fls. & Frts. : July - November.

Illus. : Wight, Ic. t. 924. 1845 ; Sant. & Kap. *op. cit.*

Distrib. : Koyna, Panchgani, Wai, Pasarni ghat.

Notes : Blatt. & McC. (1932) described var. *latifolia* from Panchgani on the basis of ovate, acute leaves. However, Sant. & Kap. (*op. cit.*) have merged it with *rariflora* as this taxon shows variation in leaf size and shape.

LUISIA Gaud.

Luisia birchea Bl. Rumph. 4 : 50. 1849 ; Seid. in Matthew Fl. Tamilnadu Carnatic 3 : 1594. 1983. *L. tenuifolia* Hook. f. Fl. Brit. India 6 : 24. 1890 *non* (L.) Bl. 1849 ; Cooke, Fl. Pres. Bombay 3 : 205. 1958 (Repr. ed.).

Stems brownish-green. Leaves *ca* 25 cm long, apex caudate. Flowers *ca* 1.8 cm long ; bracts minute, woody ; sepals ovate-oblong, 0.8 - 1.2 cm long, keeled on back ; petals linear-oblong, *ca* 1.5 cm long, green above, purplish below ; lip obovate-oblong. Capsules fusiform, *ca* 0.3 cm long on curved pedicels.

Fls. & Frts. : March - April.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Rare along ghats at an alt. *ca* 1000 m. Koyna valley, Kapadia 2912-2915 (BLAT).

MALAXIS Soland. ex Swartz

Malaxis rheedii Swartz in Kongl. Vetensk. Acad. Nya Handl. 21 : 235. 1800 ; N.C. Nair & R. Ansari in Taxon 30 : 475. 1981. *Microstylis versicolor* Lindl. Gen. Sp. Orch. Pl. 21. 1830 *non* Wight, 1844-45 ; Cooke, Fl. Pres. Bombay 3 : 179. 1958 (Repr. ed.). *M. rheedii* (Swartz) Lindl. *op. cit.* p.p. ; Hook. f. Fl. Brit. India 5 : 690. 1890. *Malaxis versicolor* (Lindl.) Abeyw. in Ceylon J. Sci. Biol. Sci. 2 : 147. 1959 ; Sant. & Kap. in J. Bombay nat. Hist. Soc. 58 : 347. Pl. 33. 1961.

Herbs, *ca* 20 cm high. Leaves ovate-lanceolate, 5 - 14 × 3.5 - 5.0 cm, base sheathing. Racemes 7 - 15 cm long ; peduncles 4 - 7 cm long ; bracts lanceolate, *ca* 5 cm long ; dorsal sepals linear, *ca* 0.3 cm long ; lateral sepals ovate ; petals purple ; lip reniform, *ca* 0.3 cm across, pectinate. Capsules obovate, *ca* 1 cm long.

Fls. & Frts. : July - March.

Illus. : Sant. & Kap. *op. cit.*

Distrib. : Common ; slender, stoloniferous herbs in shady places along ghats. Jadholi, Koyna, Koyna valley, Lingmala, Machutar forest, Mahabaleshwar.

NERVILIA Comm. ex Gaud.

- | | | |
|--|-----|--------------------|
| 1. Leaves flat on the ground ; scapes 2-flowered | ... | <i>N. plicata</i> |
| 1. Leaves not flat on the ground, scapes many-flowered | ... | <i>N. aragoana</i> |

Nervilia aragoana Gaud. in Freyc. Voy. Bot. 422, t. 35. 1829 ; Sant. & Kap. Orch. Bombay 134. 1966. *Pogonia flabelliformis* Lindl. Gen. Sp. Orch. Pl. 415. 1840 ; Hook. f. Fl. Brit. India 6 : 121. 1890. *P. carinata* (Roxb.) Lindl. *op. cit.* 414 ; Hook. f. *op. cit.* ; Cooke, Fl. Pres. Bombay 3 : 211. 1958 (Repr. ed.).

Tubers subglobose, *ca* 1.5 cm across, white. Leaves broadly ovate-orbicular, 8 - 12 × 7 - 11 cm. Scapes 10 - 20 cm long ; flowers green ; bracts linear-lanceolate, curved, green with a purplish tinge ; sepals oblanceolate, acute ; petals narrower than sepals ; lip obovate, subacute, 3-lobed. Capsules *ca* 0.5 cm long, pendulous.

Fls. & Frts. : August - September.

Illus. : Wight, Ic. t. 1720. 1851 (*Pogonia carinata*).

Distrib. : Rarely found in open fields. Mhavashi, R.S. Raghavan 161754.

N. plicata (Andr.) Schltr. in Engl. Bot. Jahrb. 45 : 403. 1911. *Arethusa plicata* Andr. Bot. Rep. t. 321. 1802. *Pogonia plicata* (Andr.) Lindl. Gen. Sp. Orch. Pl. 415. 1840 ; Hook. f. Fl. Brit. India 6 : 119. 1890 ; Cooke, Fl. Pres. Bombay 3 : 211. 1958 (Repr. ed.). *N. discolor* (Bl.) Schltr. *op. cit.* ; Sant. & Kap. Orch. Bombay 131, pl. 32. 1966. *N. biflora* (Wight) Schltr. *op. cit.* ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 35 : 726. 1931.

Tubers 2 - 3 cm across. Leaves ovate-cordate, 6 - 10 cm across. Flowers purple ; pedicels 0.5 cm long ; sepals and petals oblong-lanceolate, *ca* 2 cm long, spreading ; lip obovate-oblong, *ca* 1.7 cm long, shallowly 3-lobed. Capsules fusiform, *ca* 1.5 cm long, ribbed, winged along the ribs.

Fls. & Frts. : May - June.

Illus. : Wight, *op. cit.* ; Sant. & Kap. *op. cit.*

Distrib. : Rare in humus. Forest Nursery, Koyna, *Kochhar* 153511.

OBERONIA Lindl.

1. Leaves linear-oblong ; petals narrowly linear

O. brunoniana

1. Leaves lanceolate ; petals obovate-spathulate

O. recurva

Oberonia brunoniana Wight, *lc. t.* 1622. 1851 ; Hook. f. *Fl. Brit. India* 5 : 681. 1890 ; Cooke, *Fl. Pres. Bombay* 3 : 178. 1958 (Repr. ed.) ; Sant. & Kap. in *J. Bombay nat. Hist. Soc.* 57 : 263. 1960 & *Orch. Bombay* 69, pl. 15 A'-B'. 1966.

Leaves 4 - 10 × 1.0 - 2.5 cm, purplish-brown ; scapes *ca* 5 cm long ; bracts foliaceous ; spikes 10 - 15 cm long ; flowers brown, subsessile ; bracts oblong-ovate ; sepals ovate, acute, 1-nerved ; lip quadrate-oblong, gland-dotted. Capsules ellipsoid, *ca* 0.5 cm long.

Fls. & Frts. : February - March.

Illus. : Wight, *op. cit.* ; Sant. & Kap. *op. cit.*

Distrib. : Infrequent, grows on *Mangifera indica* and *Artocarpus heterophyllus*. Mahabaleshwar.

O. recurva Lindl. in *Bot. Reg. Misc.* 8. 1839 ; Hook. f. *lc. Pl. t.* 1784 A. 1888 & *Fl. Brit. India* 5 : 680. 1890 ; Cooke, *Fl. Pres. Bombay* 3 : 178. 1958 (Repr. ed.) ; Sant. & Kap. *Orch. Bombay* 60. 1966.

Leaves 2.2 - 7.5 × 0.7 - 1.0 cm. Racemes 3 - 10 cm long ; flowers imbricate ; bracts lanceolate ; sepals triangular-ovate, gland dotted ; petals *ca* 0.5 cm long ; lip red, equalling petals. Capsules oblong, *ca* 0.3 cm long.

Fls. & Frts. : November - July.

Illus. : Hook. f. *op. cit.*

Distrib. : Common on *Ficus* spp. along ghats. Koyna, Lingmala road, Machutar forest, Mahabaleshwar, Pratapgad.

var. **lingmalensis** (Blatt. & McC.) Sant. & Kap. in *J. Bombay nat. Hist. Soc.* 57 : 257. 1960 & *Orch. Bombay* 64. 1966. *O. lingmalensis* Blatt. & McC. in *J. Bombay nat. Hist. Soc.* 35 : 255. 1931.

Differs from the type variety only in narrower leaves and long pedicelled flowers in verticels.

Distrib. : Rare. Kamalgad, Fernandez ; Lingmala, Blatter & Hall. P 168, Sedgwick 4626, 7755 (BLAT).

PECTEILIS Rafin.

Pecteilis gigantea (J.E.Sm.) Rafin. Fl. Tell. 2 : 38. 1837. *Orchis gigantea* J.E.Sm. Exot. Bot. 2 : 79, t. 100. 1805. *Habenaria susannae* auct. pl. non (L.) R. Br. 1810, p.p. *Platanthera susannae* auct. pl. non (L.) Lindl. 1835 ; Cooke, Fl. Pres. Bombay 3 : 217. 1958 (Repr. ed.) ; Sant. & Kap. Orch. Bombay 42, pl. 7. 1966.

Herbs, ca 1 m high. Leaves oblong-lanceolate, 6 12×3 4 cm. Flowers white with a greenish tinge, shortly pedicellate ; bracts oblong-lanceolate, ca 5.5 cm long ; dorsal sepals obovate, obtuse ; lateral sepals oblong, margins incurved ; lip 2.0 2.5 cm with linear segments ; spur ca 3 cm long. Capsules ellipsoid, 3.0 4.5 cm long, ribbed.

Fls. & Frts. : September - December.

Illus. : Wight, Ic. t. 920. 1845 ; Sant. & Kap. *op cit.*

Distrib. : Frequent on hill slopes near forest edges. Lingmala, Mahabaleshwar, Panchgani.

PERISTYLUS Bl.

- | | | |
|---|-----|--------------------|
| 1. Leaves sessile, sub-radical ; lip as long as sepals | ... | <i>P. densus</i> |
| 1. Leaves petiolate, clustered towards the middle of the stem ; lip shorter than sepals | ... | <i>P. stocksii</i> |

Peristylus densus (Lindl.) Sant. & Kap. Orch. Bombay 46, pl. 9 A-B. 1966. *Coeloglossum densum* Lindl. Gen. Sp. Orch. Pl. 302. 1835. *Habenaria stenostachya* (Lindl.) Bth. Fl. Hongk. 362. 1861 ; Hook. f. Fl. Brit. India 6 : 156. 1890. *P. stenostachyus* (Lindl.) Kranzl. Orchid. Gen. Sp. 1 : 502. 1898 ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 35 : 734. 1932. *P. xanthochlorus* Blatt. & McC. *op. cit.* 733.

Herbs, 15 - 30 cm high. Leaves lanceolate, 3 7×0.6 1.5 cm. Spikes 7 15 cm long ; flowers greenish-white ; bracts ovate-lanceolate, ca 0.5 cm long ; dorsal sepals ovate-oblong ; lateral sepals linear ; petals ovate-oblong. Capsules ca 1 cm long.

Fls. & Frts. : August - October.

Illus. : Sant. & Kap. *op. cit.* ; Wight, Ic. t. 1702. 1851 (*Habenaria peristyloides*).

Distrib. : Koyna, Lingmala, Mahabaleshwar, Panchgani.

Notes. : Blatt. & McC. (*op. cit.*) described *P. xanthochlorus* from Panchgani. According to Sant. & Kap. (*op. cit.*) it is an ecological variant of *P. densus*.

P. stocksii (Hook. f.) Kranzl. Orch. Gen. Sp. 1 : 513. 1898 ; Cooke, Fl. Pres. Bombay 3 : 215. 1958 (Repr. ed.) ; Sant. & Kap. Orch. Bombay 48, pl. 9 C-D. 1966. *Habenaria stocksii* Hook. f. Fl. Brit. India 6 : 158. 1890.

Slender herbs, 10 - 50 cm high ; tubers oblong-ellipsoid. Leaves 5 - 14 × 2 - 4 cm. Spikes 9 - 24 cm long ; flowers yellowish-green ; bracts scaly, ovate, acute ; sepals elliptic-oblong ; dorsal sepals hooded ; petals ovate-oblong, 1-nerved. Capsules ca 0.8 cm long.

Fls. & Frts. : July - October.

Illus. : Sant. & Kap. *op. cit.*

Distrib. : Common in forest undergrowth in semi-evergreen forests. Fitzgerald ghat, Mahabaleshwar.

PORPAX Lindl.

1. Leafless during flowering ; flowers solitary, deep red-brown ...

P. reticulata

1. Leafy during flowering ; flowers 2 - 3 together, dirty-brown ...

P. jerdoniana

Porpax jerdoniana (Wight) Rolfe in Orchid Rev. 16 : 18. 1908 ; Sant. & Kap. Orch. Bombay 158. 1966. *Lichenora jerdoniana* Wight, Ic. t. 1748. 1851. *P. lichenora* (Lindl.) Cooke, Fl. Pres. Bombay 3 : 192. 1958 (Repr. ed.). *Eria lichenora* Lindl. in J. Linn. Soc. 3 : 46. 1858 ; Hook. f. Fl. Brit. India 5 : 787. 1890.

Pseudobulbs ca 1 cm across. Leaves 2, broadly ovate-orbicular, 1 - 3 cm across. Flowers sessile, tomentose without ; bracts oblong-orbicular, translucent ; sepals obovate-oblong, 3-nerved ; petals linear-oblong ; lip yellowish-brown. Capsules ca 0.4 cm long, setulose.

Fls. & Frts. : June July.

Illus. : Wight, *op. cit.*

Distrib. : Rarely on tree trunks. Koyna valley, *Kapadia* 2917-2919 (BLAT).

P. reticulata Lindl. in Bot. Reg. misc. 31 : 66. 1845 ; Cooke, Fl. Pres. Bombay 3 : 192. 1958 (Repr. ed.) ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 35 : 268. 1931 ; Sant. & Kap. Orch. Bombay 157. 1966. *Eria reticulata* (Lindl.) Bth. & Hook. f. Gen. Pl. 3 : 509. 1883 ; Hook. f. Fl. Brit. India 5 : 786. 1890.

Pseudobulbs *ca* 1 cm across, whitish-green. Leaves obovate-spathulate, *ca* 5.0 - 1.5 cm. Scapes *ca* 0.5 cm long ; bracts orbicular, brown, gland dotted ; sepals triangular ; petals spathulate, 3 5 nerved. Capsules obovoid, *ca* 1 cm long.

Fls. & Frts. : June October.

Illus. : Wight, Ic. t. 1737. 1852 (*Aggeianthus marchantioides*).

Distrib. : Rare, slender herbs with pseudobulbs flat on tree trunks. Koyna valley, *Kapadia* 2916 (BLAT).

THUNIA Reichb. f.

Thunia venosa Rolfe in Orchid Rev. 13 : 206. 1905 ; Cooke, Fl. Pres. Bombay 3 : 195. 1958 (Repr. ed.) ; Sant. & Kap. Orch. Bombay 184, pl. 43. 1966. *Phajus albus* Hook. f. Fl. Brit. India 5 : 818. 1890 *p.p.*

Pendulous herbs, stems 30 - 40 cm high. Leaves elliptic-lanceolate, 7 - 17 × 1.8 - 3.0 cm, 3 - 7 nerved. Flowers pedicellate in dense, terminal racemes ; bracts ovate-oblong, *ca* 3 cm long ; sepals oblong-elliptic, 5-nerved ; petals similar to sepals ; lip fimbriate ; spur linear, 0.5 - 0.7 cm long. Capsules *ca* 2.5 cm long.

Fls. & Frts. : July - March.

Illus. : Sant. & Kap. *op. cit.*

Distrib. : Rare, on tree trunks. Mahabaleshwar, *Carstenson* (Sant. & Kap. *op. cit.*), *Fairbank & Birdwood* (Cooke, *op. cit.*), *Puri & Mahajan s.n.*

VANDA W. Jones ex R. Br.

Vanda testacea (Lindl.) Reichb. f. in Gard. Chron. 2 : 166. 1877 ; Sant. & Kap. Orch. Bombay 219. 1966. *Aerides testaceum* Lindl. Gen. Sp. Orch. Pl. 238. 1833. *V. parviflora* Lindl. in Bot. Reg. misc. 30 : 45. 1844 ; Hook. f. Fl. Brit. India 6 : 50. 1890 ; Cooke, Fl. Pres. Bombay 3 : 207. 1958 (Repr. ed.).

Stems 10 - 15 cm high. Leaves oblong to linear-oblong, channelled, 8 15×0.7 1.4 cm. Flowers yellow in terminal racemes ; pedicels *ca* 2.5 cm long ; sepals obovate ; petals spathulate-oblong. Capsules fusiform, *ca* 2.5 cm long.

Fls. & Frts. : May July.

Illus. : Wight, Ic. t. 1669. 1851 (*V. parviflora*).

Distrib. : Common epiphyte on *Syzygium* spp. Koyna, Mahabaleshwar.

ZINGIBERACEAE

- | | | |
|---|-----|-----------|
| 1. Staminodes usually absent, if present small, narrow | ... | ZINGIBER |
| 1. Staminodes large, petaloid : | | |
| 2. Connectives spurred at base | .. | CURCUMA |
| 2. Connectives not spurred at base : | | |
| 3. Corolla lobes equal, linear | ... | HEDYCHIUM |
| 3. Corolla lobes unequal, one large, ovate, two linear-oblong | ... | HITCHENIA |

CURCUMA L.

- | | | |
|--|-----|-------------------------|
| 1. Flowers on leafless scapes ; fertile bracts ovate, curved at apex, greenish | ... | <i>C. aromatica</i> |
| 1. Flowers on leafy scapes ; fertile bracts obovate-lanceolate, not curved, green with pink apex | ... | <i>C. pseudomontana</i> |

Curcuma aromatica Salisb. Parad. Lond. 20 : t. 96. 1807 ; Baker in Hook. f. Fl. Brit. India 6 : 210. 1890 ; Cooke, Fl. Pres. Bombay 3 : 236. 1958 (Repr. ed.). 'Ambe-halad', 'Ran-halad'.

Tubers globose, yellow, aromatic. Leaves elliptic-oblong, 15 30 × 3 - 7 cm, apex caudate-acuminate ; petioles longer than leaves. Flowers fragrant in 10 15 cm long spikes ; sterile bracts red, 5 7 cm long ; calyx irregularly 3-lobed ; corolla tube funnel shaped ; lobes oblong. Capsules globose, 3-valved.

Fls. & Frts. : May July.

Distrib. : Rare, in moist shady places. Kas, 165705.

Curcuma pseudomontana Grah. Cat. Pl. Bombay 210. 1839 ; Cooke, Fl. Pres. Bombay 3 : 236. 1958. *C. montana* Baker in Hook. f. Fl. Brit. India 6 : 214. 1890.

Tubers, subglobose, white without, yellow within. Leaves lanceolate or oblong, 15 50 × 5.5 - 15.0 cm. Flowers yellow in 5 10 cm long spikes ; sterile bracts oblong-lanceolate, lower purple, upper green with purple margin. Capsules subglobose. Seeds arillate.

Fls. & Frts. : June September.

Illus. : Sant. in J. Bombay nat. Hist. Soc. 51 : op. page 136, f. 2. 1952.

Distrib. : Common along ghats in shady localities. Forest Nursery, Koyna, Shirshingi.

HEDYCHIUM Koen.

Hedychium coronarium Koen. in Retz. Obs. Bot. 3 : 73. 1793; Hook. f. Fl. Brit. India 6 : 225. 1890 ; Cooke, Fl. Pres. Bombay 3 : 234. 1958 (Repr. ed.) ; Puri & Mahajan in Bull. Bot. Surv. India 2 : 134. 1960.

Herbs, 1.0 - 1.5 m high. Leaves sessile, lanceolate, 15 - 25 × 2.5 - 4.5 cm, sparsely hairy beneath. Flowers white in dense spikes ; bracts imbricate, ovate, obtuse ; calyx cylindric, 3-lobed ; corolla lobes reflexed ; staminodes oblong-lanceolate. Capsules oblong, orange within.

Fls. & Frts. : August - September.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 730 & 978 b. 1982.

Distrib. : Rare in evergreen forests. Mahabaleshwar, Birdwood (Cooke, op. cit.), Puri & Mahajan (op. cit.).

HITCHENIA Wall.

Hitchenia caulina (Grah.) Baker in Hook. f. Fl. Brit. India 6 : 224. 1890 ; Cooke, Fl. Pres. Bombay 3 : 233. 1958 (Repr. ed.). *Curcuma caulina* Grah. Cat. Pl. Bombay 210. 1839.

Stems 1.0 - 1.5 m high ; tubers ellipsoid. Leaves oblong-lanceolate, 17 - 23 × 2.0 - 5.5 cm. Flowers yellow in 10 - 15 cm long spikes ; bracts obovate, ca 3 cm long, pinkish ; calyx tubular, membranous ; stigma turbinate, ciliate at apex. Capsules oblong, coriaceous.

Fls. & Frts. : July - October.

Distrib. : Common annuals in moist, shady places. Jadholi, Lingmala, Machutar forest, Mahabaleshwar, Pandavagad, Yavteshwar.

ZINGIBER Boehm.

- | | | |
|---|-----|---------------------|
| 1. Leaves pubescent beneath ; capsules obovoid | ... | <i>Z. nees anum</i> |
| 1. Leaves glabrous beneath ; capsules ellipsoid | ... | <i>Z. zerumbet</i> |

Zingiber nees anum (Grah.) Ramamoorthy in Saldanha & Nicolson, Fl. Hassan Dist. 769. 1976. *Alpinia neesana* Grah. Cat. Pl. Bombay 207. 1839. *Z. macrostachyum* Dalz. in Hook. J. Bot. Kew Gard. Misc. 4 : 342. 1852 ; Baker in Hook. f. Fl. Brit. India 6 : 247. 1892 ; Cooke, Fl. Pres. Bombay 3 : 241. 1958 (Repr. ed.).

Herbs, ca 1 m high. Leaves lanceolate, 17 - 26 × 1.5 - 4.0 cm. Flowers in cylindric, 5 - 20 cm long spikes ; bracts obovate, acute, 2 - 3 cm long, red ; corolla greenish-white with yellow lip. Capsules ca 1 cm long.

Fls. & Frts. : July - September.

Distrib. : Frequent in shady places. Koyna, Mahabaleshwar.

Z. zerumbet (L.) Rosc. ex J.E. Sm. Exot. Bot. 2 : 105, t. 112. 1805 ; Baker in Hook. f. Fl. Brit. India 6 : 247. 1890 ; Cooke, Fl. Pres. Bombay 3 : 241. 1958 (Repr. ed.).

Herbs, 1 - 2 m high, rootstock large, aromatic. Leaves sessile, lanceolate, 15 - 25 × 2.5 - 3.5 cm. Flowers yellow in 6 - 10 cm long spikes ; bracts ovate-oblong or obovate, imbricate, green turning red in fruits ; corolla lobes ovate-lanceolate, acuminate. Seeds oblong, black.

Fls. & Frts. : July.

Illus. : Wight, Ic. t. 2003. 1853.

Distrib. : Rare in moist places. Koyna, *Kochhar* 160303.

CULTIVATED SPECIES

Alpinia calcarata (Haw.) Rosc. in Trans. Linn. Soc. London 8 : 347. 1807 ; Roxb. Fl. Ind. (Carey ed.) 1 : 69. 1832 ; Baker in Hook. f. Fl. Brit. India 6 : 254. 1892 ; Cooke, Fl. Pres. Bombay 3 : 245. 1958 (Repr. ed.). *Renealmia calcarata* Haw. in Andr. Bot. Rep. t. 421. 1804.

Herbs, ca 1.5 m high. Leaves distichous, lanceolate, acuminate. Flowers in terminal panicles ; corolla tube white, puberulous ; mouth variegated with red and yellow. Capsules globose, red.

Fls. & Frts. : December - April.

Illus. : Wight, Ic. t. 2028. 1853 ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 725. 1982.

Distrib. : Infrequent under cultivation. Koyna.

HAEMODORACEAE

OPHIPOGON Ker - Gawl.

Ophiopogon intermedius D. Don var. *pauciflora* Hook. f. Fl. Brit. India 6 : 269. 1892 ; Cooke, Fl. Pres. Bombay 3 : 252. 1958 (Repr. ed.).

Stems short, rootstock slender. Leaves radical, linear, 20 - 30 × 0.5 - 0.7 cm. Flowers white in 3 - 5 cm long racemes ; scapes 5 - 15 cm long ; perianth lobes 6, elliptic-oblong ; stamens 6. Berries subglobose, ca 0.4 cm across.

Fls. & Frts. : August - September.

Illus. : Wight, Ic. 2050. 1853 (*O. indicus*).

Distrib. : Common as forest undergrowth. Jadholi, Koyna, Mahabaleshwar.

HYPOXIDACEAE

1. Leaves oblong-lanceolate ; scapes clavate, hidden among leaf bases ...

CURCULIGO

1. Leaves linear ; scapes filiform, not hidden among leaf bases ...

HYPOXIS

CURCULIGO Gaertn.

Curculigo orchoides Gaertn. Fruct. & Sem. Pl. 1 : 63. f. 16. 1788 ; Hook. f. Fl. Brit. India 2 : 278. 1892 ; Cooke, Fl. Pres. Bombay 3 : 255. 1958 (Repr. ed.).

Herbs acaulescent. Leaves radical, 12 - 38 × 1 - 3 cm, plicate. Flowers yellow in racemes ; scapes *ca* 2.5 cm long ; perianth lobes 6, lanceolate ; stamens 6 ; stigmas 3, oblong. Berries 1.0 - 2.5 cm long.

Fls. & Frts. : June - October.

Illus. : Wight, Ic. t. 2043 A. 1853 (*C. malabarica*).

Distrib. : Frequent in moist places among grasses. Koyna, Kusapur, Mahabaleshwar, Pandavgad.

HYPOXIS L.

Hypoxis aurea Lour. Fl. Cochinch. 200. 1790 ; Hook. f. Fl. Brit. India 6 : 277. 1892 ; Cooke, Fl. Pres. Bombay 3 : 254. 1958 (Repr. ed.). (Fig. 56).

Herbs. Leaves 4 - 11 cm long, subcoriaceous. Flowers yellow, solitary ; scapes 4 - 6 cm long, hairy ; perianth lobes green, hairy on back ; stamens 6, adnate to the perianth lobes. Capsules oblong, *ca* 1 cm long.

Fls. & Frts. : July - September.

Distrib. : Common monsoon herb among grasses. Dicholi, Panchgani, Pandavgad, Tapola, Yavteshwar.

CULTIVATED SPECIES

Mollineria capitulata (Lour.). Herb. Amaryllid. 84. 1837. *Leucojum capitulatum* Lour. Fl. Cochinch. 199. 1790. *Curculigo recurvata* Dryand. in Ait. Hort. Kew. ed. 2. 2 : 253. 1811 ; Hook. f. Fl. Brit. India 6 : 278. 1892 ; Cooke, Fl. Pres. Bombay 3 : 255. 1958 (Repr. ed.).

Rhizomes elongate. Leaves large, lanceolate, plicate, *ca* 50 × 11 cm ; petioles *ca* 22 cm long. Flowers yellow in dense, hairy heads, *ca* 2.5 cm across.

Fls. : July.

Distrib. : Grown in gardens as an ornamental plant. Mahabaleshwar.

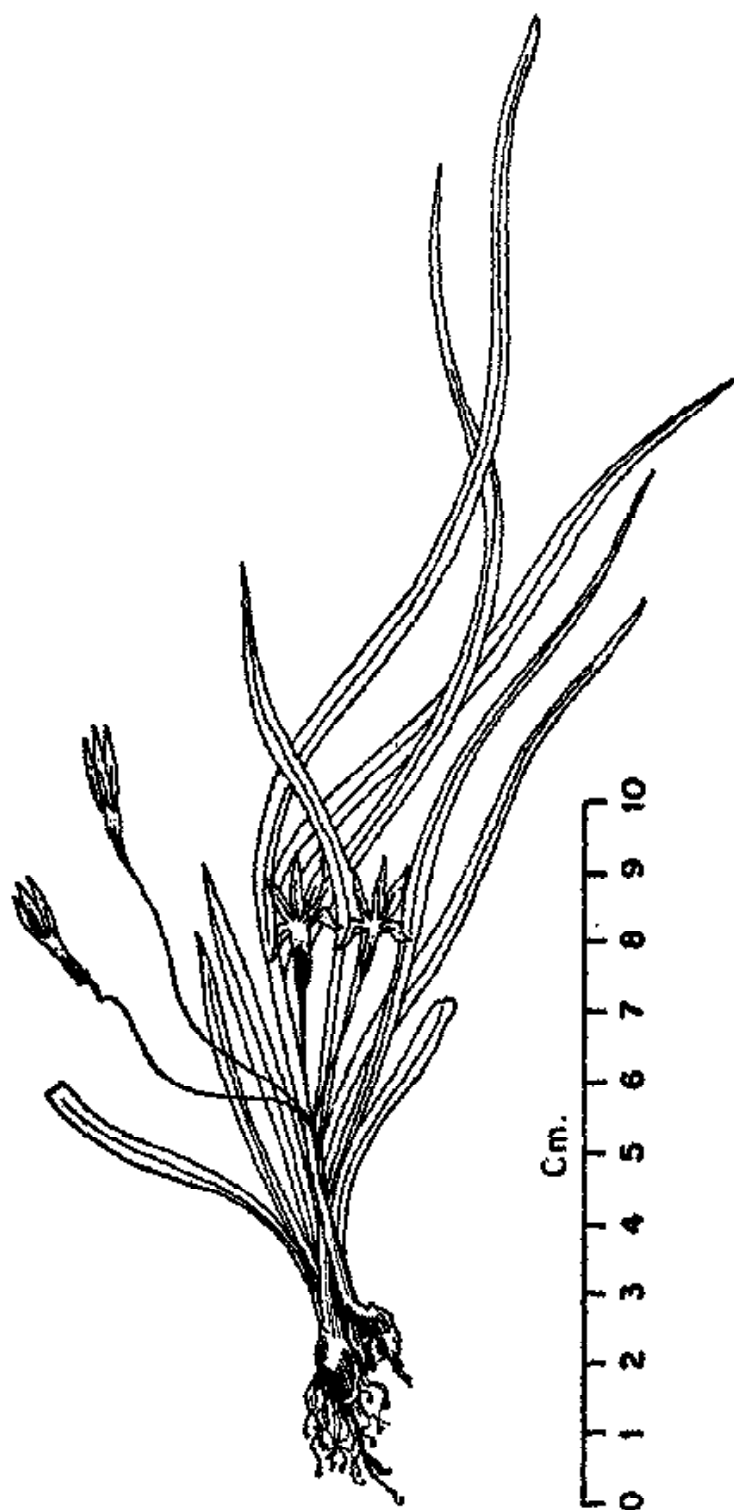


Fig. 56. *Hypoxis aurea* Lour.

AMARYLLIDACEAE

- | | | |
|--|-----|------------|
| 1. Filaments connected by basal membranous corona ;
capsules loculicidal | ... | PANCRATIUM |
| 1. Filaments not connected by basal corona ; capsules
dehiscing irregularly | ... | CRINUM |

CRINUM L.

- | | | |
|--|-----|----------------------|
| 1. Leaves channelled | ... | <i>C. defixum</i> |
| 1. Leaves flat : | | |
| 2. Perianth erect, salver-shaped : | | |
| 3. Leaves lanceolate ; perianth lobes linear | .. | <i>C. asiaticum</i> |
| 3. Leaves linear ; perianth lobes lanceolate | ... | <i>C. woodrowii</i> |
| 2. Perianth nodding, funnel-shaped : | | |
| 4. Neck ca 8 cm long ; leaves ensiform | ... | <i>C. eleonora</i> |
| 4. Neck indistinct ; leaves strap shaped | ... | <i>C. brachynema</i> |

***Crinum asiaticum* L.** Sp. Pl. 292. 1783 ; Hook. f. Fl. Brit. India 6 : 280. 1892 ; Cooke, Fl. Pres. Bombay 3 : 256. 1958 (Repr. ed.). *C. toxicarium* Roxb. Fl. Ind. (Carey ed.) 2 : 134. 1832.

Bulbs ca 5 cm across. Leaves ca 1 m long. Scapes 10 - 16 cm long ; flowers white, fragrant ; perianth tube 8 - 9 cm long ; lobes 6, equalling tube ; stamens 6, reddish. Capsules subglobose, 1 - 2 seeded.

Fls & Frts. : May - August.

Illus. : Wight, Ic. t. 2021-2022. 1853.

Distrib. : Occasional monsoon herb along hill slopes. Koyna.

***C. brachynema* Herb.** in Bot. Reg. Misc. 36. 1842 ; Hook. f. Fl. Brit. India 6 : 284. 1892 ; Cooke, Fl. Pres. Bombay 3 : 258. 1958 (Repr. ed.).

Bulbs ovoid, 5 - 7 cm across. Leaves developing after flowers. Scapes ca 30 cm long ; bracts lanceolate, greenish ; perianth tube greenish ; lobes 6, white, oblanceolate ; stamens 6. Capsules subglobose.

Fls. & Frts. : May.

Distrib. : According to Cooke (*op. cit.*) this species is common along hills in open situations. However, there is no collection of it after Cooke's report from Mahabaleshwar.

Crinum defixum Ker-Gawl. in J. Sci. & Arts (London) 3 : 105. 1817; Hook. f. Fl. Brit. India 6 : 281. 1892 ; Cooke, Fl. Pres. Bombay 3 : 257. 1958 (Repr. ed.).

Bulbs ovoid, 3–5 cm across. Leaves linear, *ca* 50.0 × 2.5 cm, coriaceous, scaberulous. Scapes 10–15 cm long ; flowers in umbels ; perianth tube 7–8 cm long, green ; lobes white, equalling tube ; filaments purple. Capsules subglobose, *ca* 2 cm across, shortly pedicelled.

Fls. & Frts. : May.

Distrib. : Rare along river banks. Punoli, Kochhar 158414.

C. eleonora Blatt. & McC. in J. Bombay nat. Hist. Soc. 32 : 733. 1928.

KEY TO THE FORMA

- | | | |
|---|-----|--------------------|
| 1. Perianth segments broadly lanceolate, white ; bracts green with purple tinge | ... | <i>f. eleonora</i> |
| 1. Perianth segments oblanceolate, deep purple on dorsal side ; bracts brownish purple tinged | ... | <i>f. purpurea</i> |

f. eleonora

Bulbs ovoid-spherical, *ca* 20 × 13 cm. Leaves *ca* 60 × 5 cm. Scapes cylindrical, slightly compressed, *ca* 50 cm long, green with purple tinge ; flowers white, fragrant ; bracts broadly lanceolate ; bracteoles linear ; perianth tube *ca* 6.5 cm long, 4-angled.

Fls. : April - May.

Distrib. : Found on open hill sides and along river banks. Represented by only type collection. Lingmala, Mahabaleshwar, McCann 7–10 (BLAT). Panchgani-Mahabaleshwar, McCann s.n.

f. purpurea Blatt. & McC. in J. Bombay nat. Hist. Soc. 32 : 734. 1928.

Notes : Collected by McCann from the same locality and in the same season as that of the type species.

Crinum woodrowii Baker in Bot. Mag. f. 7579. 1889 ; Cooke, Fl. Pres. Bombay 3 : 257. 1958 (Repr. ed.).

Bulbs globose, *ca* 10 cm across. Leaves 30×7.5 - 10.0 cm. Scapes *ca* 30 cm long, compressed ; flowers in umbels ; bracts ovate, acute, 4.0 - 4.5 cm long ; perianth tube cylindric, 7 - 9 cm long, greenish, lobes white ; filaments bright-red ; styles longer than stamens.

Fls. : May June.

Illus. : Baker, *op. cit.*

Distrib. : Included on Woodrow's (Cooke, *op. cit.*) report from Mahabaleshwar. It appears that he sent the bulbs of this plant to Kew as those of *Crinum brachynema*.

PANCRATIUM L.

1. Bulbs with a long neck :

2. Scapes stout, *ca* 10 cm long ... *P. donaldii*

2. Scapes slender, 15-30 cm long ... *P. parvum*

1. Bulbs without a neck ... *P. triflorum*

Pancratium donaldii Blatt. in J. Asiat. Soc. Beng. 26 : 350. 1930.

Bulbs globose, *ca* 4 cm across, brown, neck cylindric, *ca* 3 cm long. Leaves 2, lanceolate, acute, leathery. Flowers fragrant in umbels ; perianth tube *ca* 9 cm long, greenish ; lobes lanceolate, *ca* 3 cm long ; staminal cup trigonous with 6 longitudinal ribs ; styles filiform.

Fls. : June.

Distrib. : In grasslands on plateau, known only by type collection. Panchgani, *Donald Elkins* 758-761.

P. parvum Dalz. in Kew J. Bot. 2 : 144. 1850 ; Hook. f. Fl. Brit. India 6 : 286. 1892 ; Cooke, Fl. Pres. Bombay 3 : 260. 1958 (Repr. ed.).

Bulbs globose, *ca* 4 - 5 cm across. Leaves linear-lanceolate, 15 - 20×0.5 - 2.0 cm. Flowers white in terminal umbels ; perianth tube *ca* 5 cm long ; lobes 6, linear, *ca* 2.5 cm long ; staminal cup 12-toothed. Capsules ovoid.

Fls. & Frts. : June - July.

Distrib. : Rare. Mahabaleshwar, *Soman* 158149.

Pancratium triflorum Roxb. Fl. Ind. (Carey ed.) 2 : 137. 1832; Hook. f. Fl. Brit. India 6 : 285. 1892 ; Cooke, Fl. Pres. Bombay 3 : 259. 1958 (Repr. ed.).

Bulbs globose, 2.5 - 5.0 cm across. Leaves lanceolate, 20 - 45 × 1.5 - 2.5 cm. Spathes solitary, ovate ; perianth tube ca 2.5 cm long, dilated above.

Fls. : May - June.

Illus. : Wight, Ic. t. 2023. 1853.

Distrib. : Included on Woodrow's report from Mahabaleshwar, (Cooke, *op. cit.*).

AGAVACEAE

CULTIVATED SPECIES

Agave angustifolia Haw. Syn. Pl. Succ. 72. 1812 ; Matthew & Britto. in Matthew, Fl. Tamilnadu Carnatic 3 : 1630. 1983. *A. wightii* Drumm. & Prain in Agric. Ledg. 13 : 91. 1906 ; Cooke, Fl. Pres. Bombay 3 : 261. 1958 (Repr. ed.).

Fls. : January - June.

Notes : Included on the authority of Burkill who collected it from Satara Road station (Cooke, *op. cit.*). Native of W. Indies, planted for hedges.

A. cantula Roxb. Fl. Ind. (Carey ed.) 2 : 167. 1832 ; Cooke, Fl. Pres. Bombay 3 : 261. 1958 (Repr. ed.).

Undershrubs. Leaves ca 1 m long, margins prickly. Flowers in terminal umbels ; perianth lobes 6, constricted in the middle ; stamens 6, exerted.

Fls. : July - November.

Distrib. : Common as a hedge plant. Karanjewadi, Kas, Kelghar ghat, Mahabaleshwar, Satara.

DIOSCOREACEAE

DIOSCOREA L.

1. Stems prickly, pubescent when young ; leaves 3 foliolate ... *D. pentaphylla*
1. Stems not prickly, glabrous ; leaves simple :
 2. Leaves alternate ; capsules oblong ... *D. bulbifera*
 2. Leaves opposite or subopposite ; capsules suborbicular :
 3. Leaves rounded at base, 7 - 9-nerved ... *D. oppositifolia*
 3. Leaves cordate-hastate at base, 3 - 5-nerved ... *D. belophylla*

Dioscorea belophylla (Prain) Haines, For. Fl. Chota Nagpur 530. 1910 ; Sant. in J. Bombay nat. Hist. Soc. 49 : 634, pl. 2, f. 1. 1951. *D. nummularia* var. *belophylla* Prain, Bengal Pl. 2 : 1065, 1067. 1903 [802. 1963 (Repr. ed)]. *D. glabra* Hook. f. Fl. Brit. India 6 : 294. 1892 *p.p. non* Roxb. 1832.

Climbers. Leaves 4 - 9 × 1.8 - 3.0 cm. Male spikes 2 - 3 cm long on leafless branches ; bracts ovate, acute ; sepals and petals obovate, incurved ; stamens 6 ; female flowers in short, solitary spikes ; bracts deltoid ; sepals and petals ovate, thick. Capsules 1.5 - 2.0 cm long. Seeds winged.

Fls. & Frts. : August - November.

Illus. : Sant. *op. cit.*

Distrib. : Rare along hill slopes. Mahabaleshwar, *Santapau* 11817, 13161, 13256 (*BLAT*), *Soman* 157191.

Notes : Cooke had not reported this species from the erstwhile Bombay Presidency. *Santapau* (*op. cit.*) reported it from Khandala in Maharashtra. The present collection from Mahabaleshwar indicates that this species is available in W. Ghats of Maharashtra.

D. bulbifera L. Sp. Pl. 1033. 1753 ; Cooke, Fl. Pres. Bombay 3 : 265. 1958 (Repr. ed.) ; Sant. in J. Bombay nat. Hist. Soc. 49 : 628. 1951. *D. sativa non* L. 1753 ; Hook. f. Fl. Brit. India 6 : 295. 1892.

Climbers. Leaves broadly ovate-cordate, 5 - 8 × 4 - 8 cm, apex cuspidate, 7 - 10 nerved. Male flowers in 2 - 5 cm long pendulous spikes ; bracts ovate, acuminate ; perianth lobes 6, lanceolate ; stamens 6 ; female spikes 7 - 15 cm long ; perianth as in male ; staminodes 6.

Capsules $ca\ 2.6 \times 1.5$ cm, straw coloured. Seeds brown, winged at base.

Fls. & Frts. : September January.

Illus. : Wight, Ic. t. 878. 1844.

Distrib. : Common, stout climber in deciduous forests. Ambeghar, Chaphal, Dhamani, Kumbharli ghat, Mahabaleshwar, Nauja, Umarkanchan.

Dioscorea oppositifolia L. Sp. Pl. 1033. 1753 ; Hook. f. Fl. Brit. India 6 : 292. 1892 ; Cooke, Fl. Pres. Bombay 3 : 266. 1958 (Repr. ed.) ; Sant. in J. Bombay nat. Hist. Soc. 49 : 632. 1951.

Climbers. Leaves elliptic-oblong or suborbicular, $5 - 10 \times 3.5 - 4.5$ cm, coriaceous. Male spikes fascicled, 5 - 10 cm long ; bracts below the spikes lanceolate ; bracts below the flowers ovate, membranous ; perianth lobes ovate-suborbicular ; female flowers in solitary spikes. Capsules 0.7 - 1.1 cm across.

Fls. & Frts. : May January.

Illus. : Wight, Ic. t. 813. 1844.

Distrib. : Common in deciduous forests. Dhokewadi, Jadholi, Koyna, Panchgani, Pandavgad, Salve, Sanbur, Umarkanchan, Yavteshwar.

D. pentaphylla L. Sp. Pl. 1032. 1753 ; Hook. f. Fl. Brit. India 6 : 289. 1892 ; Cooke, Fl. Pres. Bombay 3 : 264. 1958 (Repr. ed.) ; Sant. in J. Bombay nat. Hist. Soc. 49 : 631. 1951.

Climbers, large. Leaflets variable, elliptic-lanceolate, ovate or obovate, $5 - 10 \times 2 - 6$ cm, apex cuspidate ; petioles $ca\ 11$ cm long, rusty-pubescent. Male flowers greenish-yellow in axillary panicles ; bracts suborbicular ; perianth lobes ovate, sparsely hairy ; perfect stamens 3 ; female spikes 10 - 25 cm long, rusty pubescent ; bracts broadly ovate. Capsules quadrately-oblong $ca\ 2.0 \times 1.5$ cm, winged.

Fls. & Frts. : July - December.

Illus. : Wight, Ic. t. 814. 1844.

Distrib. : Variable taxon in leaf shape and pubescence of male flowers. Common among forest undergrowth. Kas, Kelghar ghat, Khambil, Chorghe ghat, Lingmala, Mahabaleshwar, Morgiri, Shirshingi.

LILIACEAE

1. Climbers or stragglers :
 2. Leaves minute with cladodes in the axils ; flowers small in racemes ... ASPARAGUS
 2. Leaves well developed, cladodes absent ; flowers large, solitary ... GLORIOSA
1. Erect herbs :
 3. Leaves cauline :
 4. Rootstock a bulb ; flowers white ... DIPCAD1
 4. Rootstock a corm ; flowers purple ... IPHIGENIA
 3. Leaves radical :
 5. Rootstock a bulb :
 6. Flowers dirty-brown on leafless scapes ; capsules triquetrous ... DRIMIA
 6. Flowers purple on leafy scapes ; capsules globose ... SCILLA
 5. Rootstock short with tuberous roots :
 7. Leaves flat ; pedicels jointed ; capsules 3-winged ... CHLOROPHYTUM
 7. Leaves terete ; pedicels not jointed ; capsules not winged ... ASPHODELUS

ASPARAGUS L.

1. Branches angular ; cladodes subulate ... *A. racemosus*
1. Branches triquetrous ; cladodes linear, falcate ... *A. gonoclados*

Asparagus gonoclados Baker in J. Linn. Soc. 14 : 627. 1874 ; Hook. f. Fl. Brit. India 6 : 318. 1892 ; Cooke, Fl. Pres. Bombay 3 : 271. 1958 (Repr. ed.).

Stems terete ; cladodes 1.0 - 2.5 cm long, firm, spinous-tipped. Flowers white ; pedicels jointed above the middle ; bracts ovate ; perianth lobes linear-oblong, spreading. Berries globose.

Fls. & Frts. : June - January.

Notes : Rare, included on the basis of a specimen collected from Panchgani by Rukminibai deposited at *BLAT* (138).

Asparagus racemosus Willd. Sp. Pl. 2 : 152. 1799 ; Hook. f. Fl. Brit. India 6 : 316. 1892. *A. racemosus* var. *javanica* Baker in J. Linn. Soc. 14 : 624. 1874 ; Hook. f. *op. cit.* ; Cooke, Fl. Pres. Bombay 3 : 270. 1958 (Repr. ed.). '*Shatawari*'.

Stems terete, woody ; cladodes 1.0 - 2.5 cm long, slender, spinous-tipped. Flowers white, fragrant ; racemes 3 - 10 cm long ; bracts ovate, minute ; perianth lobes linear-oblong. Berries globose, ca 0.3 cm across, red when ripe.

Fls. & Frts. : July - September.

Illus. : Wight, Ic. t. 2056. 1853.

Distrib. : Common in forest edges, on tops of ghats. Kas, Koyna, Vasola, Mahabaleshwar.

ASPHODELUS L.

Asphodelus tenuifolius Cav. in Ann. Cienc. Nat. 3 : 46. t. 27. f. 2. 1801 ; Hook. f. Fl. Brit. India 6 : 332. 1892 ; Cooke, Fl. Pres. Bombay 3 : 279. 1958 (Repr. ed.).

Herbs, ca 25 cm high. Leaves 15 - 20 cm long. Flowers white in lax, ca 15 cm long racemes ; bracts ovate, acute, scarious ; perianth lobes oblong, obtuse ; styles filiform ; stigma subcapitate. Capsules globose, ca 0.3 cm across.

Fls. & Frts. : November - February.

Illus. : Wight, Ic. 2062. 1853 (*A. pauciflorus*).

Distrib. : Rare annuals near cultivated fields. Mahabaleshwar, Soman 157209.

CHLOROPHYTUM Ker-Gawl.

1. Flowers in dense racemes ; perianth lobes linear-lanceolate ;

2. Leaves oblanceolate, margins recurved ; scapes covered with scaly bracts forming a cone before flowering ...

C. glaucum

2. Leaves elliptic-lanceolate, margins not recurved ; bracts not forming a cone ...

C. glaucoides

1. Flowers in lax racemes ; perianth lobes oblong-lanceolate :

3. Perianth 3-nerved ; capsules trigonous ... *C. laxum*

3. Perianth 5-nerved ; capsules broader than long ... *C. nimmonii*

***Chlorophytum glaucoides* Blatt. in J. & Proc. Asiat. Soc. Beng. 26 : 361. 1930.**

Herbs, rootstock hard. Leaves 4 - 6, 30 - 65 cm long. Scapes 30 - 50 cm long, clothed with narrowly lanceolate sheaths ; racemes 15 - 20 cm long ; bracts lanceolate, *ca* 2.5 cm long ; perianth lobes *ca* 1 cm long, 5-nerved. Capsules triquetrous, *ca* 0.8 cm long, black.

Fls. & Frts. : August - October.

Distrib. : Common in moist rock crevices. Jadholi, Mahabaleshwar, Pandavgad, Yavteshwar.

C. glaucum Dalz. in Hook. Kew J. Bot. 2 : 142. 1850 ; Hook. f. Fl. Brit. India 6 : 334. 1892 ; Cooke, Fl. Pres. Bombay 3 : 280. 1958 (Repr. ed.) ; Panigr. in Kew. Bull. 30 : 564. 1975.

Herbs. Leaves 6 - 8, 30 - 40 × 20 - 50 cm. Scapes *ca* 60 cm long. Racemes 15 - 30 cm long ; flowers white ; perianth lobes *ca* 1 cm long, 5-nerved. Capsules globose. Seeds orbicular, *ca* 0.3 cm across, black.

Fls. & Frts. : October.

Notes : Rare in the district, represented by a single collection by Sedgwick (7619) from Mahabaleshwar, deposited at Kew (Panigr. *op. cit.*).

C. laxum R. Br. Prodr. 277. 1810 ; Hook. f. Fl. Brit. India 6 : 336. 1892 ; Cooke, Fl. Pres. Bombay 3 : 282. 1958 (Repr. ed.). *C. parviflorum* Dalz. in Hook. J. Bot. Kew Gard. Misc. 2 : 141. 1850.

Herbs. Leaves distichous, linear, 15 - 27 × 0.3 - 0.7 cm, apex recurved. Scapes 3.5 - 5.0 cm long ; racemes 5 - 20 cm long ; bracts ovate-lanceolate, scarious. Capsules 1.2 - 3.0 × 0.5 cm. Seeds angular, black.

Fls. & Frts. : July.

Illus. : Wight, Ic. t. 2039. 1853 [*Phalangium parviflorum* (Dalz.) Wight].

Distrib. : Occasional along ghats in moist places. Mahabaleshwar.

Chlorophytum nimmonii (Grah.) Dalz. in Hook. Kew J. Bot. 2 : 142. 1850 ; Dalz. & Gibs. Bombay Fl. 252. 1861 ; Panigr. in Kew Bull. 30 : 565. 1975. *Anthericum nimmonii* Grah. Cat. Pl. Bombay 220. 1839. *C. orchidastrum* sensu Baker in J. Linn. Soc. 15 : 325. 1876 *p.p. non* Lindl. 1824 ; Hook. f. Fl. Brit. India 6 : 336. 1892 ; Cooke, Fl. Pres. Bombay 3 : 282. 1958 (Repr. ed.).

Herbs, *ca* 1 m high. Leaves elliptic-lanceolate, 30-60 × 2-7 cm, membranous ; petioles winged. Panicles 30-50 cm long ; bracts ovate-lanceolate ; pedicels ascending. Capsules *ca* 0.5 cm across, lobed at apex.

Fls. & Frts. : July - August.

Illus. : Wight, Ic. 2038. 1853 (*Phalangium oligospermum*).

Notes : Rare, included on the basis of a single collection from Mahabaleshwar by Cooke, deposited at *BLAT*.

DIPCADI Medic.

1. Bracts shorter or as long as pedicels ... *D. maharashtrensis*

1. Bracts longer than pedicels :

2. Pedicels filiform ; bracts lanceolate ; seeds ellipsoid ... *D. montanum*

2. Pedicels stout ; bracts ovate ; seeds orbicular ... *D. ursulae*

Dipcadi maharashtrensis Deb & Dasgupta in J. Bombay nat. Hist. Soc. 72 : 822, pl. 1. 1975 and 75 : 62. 1978 & in Fasc. Fl. India 7 : 4, f. 3 - 4. 1981.

Bulbs globose, *ca* 2.5 cm across. Leaves 25 - 30 × 0.5 - 0.7 cm, plicate. Scapes *ca* 36 cm long ; flowers in terminal racemes ; perianth 2-seriate, outer lobes lanceolate, inner deltoid-lanceolate, 5-nerved. Capsules subglobose or obovoid. Seeds orbicular, compressed, obscurely winged, brownish-black.

Fls. & Frts. : September.

Illus. : Deb & Dasgupta, *op. cit.*

Distrib. : Panchgani, Rukminibai BR 933 (*BLAT*).

Notes : Differs from *D. ursulae* Blatt. in having shorter leaves than scape, lax racemes and coriaceous, subulate bracts.

Dipcadi montanum (Dalz.) Baker in J. Linn. Soc. 11 : 398. 1871 ; Hook. f. Fl. Brit. India 6 : 346. 1892 ; Cooke, Fl. Pres. Bombay 3 : 278. 1958 (Repr. ed.) ; Deb & Dasgupta in Fasc. Fl. India 7 : 6, f. 11 16. 1981.

Bulbs globose, *ca* 2.5 cm across. Leaves linear, 10 - 20 × 0.2 - 0.5 cm. Scapes 18 75 cm long ; racemes 6 10 flowered ; outer perianth lobes elliptic-oblong, inner tubular, apex recurved. Capsules obovoid, 3-lobed. Seeds 0.3 0.6 cm long, dull black.

Fls. & Frts. : July August.

Illus. : Deb & Dasgupta, *op. cit.*

Distrib. : Rare ephemeral monsoon herbs. Panchgani, *Rukminibai* 433, *Sedgwick* 7922 (*BLAT*).

D. ursulae Blatt. in J. Bombay nat. Hist. Soc. 32 : 735. 1928 ; Deb & Dasgupta in J. Bombay nat. Hist. Soc. 75 : 63, f. 7. 1978 & *Fasc. Fl. India* 7 : 10. 1981.

Bulbs globose or ovoid, *ca* 1 × 2 cm. Leaves 15 - 30 × 0.4 - 0.7 cm, plicate. Scapes 1 2, 15 20 cm long ; flowers in racemes, pedicels 0.5 - 0.7 cm long, bracts 0.1 0.25 cm long ; outer perianth lobes plicate, recurved at the middle, inner lobes shorter, recurved at tip, 5 - 7-nerved. Capsules obovoid. Seeds 0.5 0.6 cm.

Fls. & Frts. : June - August.

Illus. : Deb & Dasgupta, *op. cit.*

Distrib. : In grassland on plateau at higher elevation. Panchgani, *Blatter* P 74, *Chennveeraiah* 15756 (*BLAT*).

DRIMIA Jacq. ex Willd.

1. Flowers in dense racemes ; bracts persistent ; perianth lobes bearded at apex ...

D. polyantha

1. Flowers in lax racemes ; bracts deciduous ; perianth lobes not bearded at apex ...

D. indica

Drimia indica (Roxb.) Jessop in J.S. Afr. Bot. 43 : 272. 1977 ; Ansari & Raghavan in J. Bombay nat. Hist. Soc. 77 : 174. 1980. *Scilla indica* Roxb. Fl. Ind. (Carey ed.) 2 : 147. 1832. *Urginea indica* (Roxb.) Kunth, Enum. Pl. 4 : 333. 1843 ; Hook. f. Fl. Brit. India 6 : 374. 1892 ;

Cooke, Fl. Pres. Bombay 3 : 277. 1958 (Repr. ed.); Deb & Dasgupta in Fasc. Fl. India 7 : 17. 1981. '*Jangli Kanda*'.

Bulbs ovoid, 3 - 5 cm long. Leaves linear, 15 - 27 × 1.5 - 2.8 cm. Scapes 15 - 40 cm long; pedicels spreading; perianth lobes oblong to oblanceolate, 2 - 3-nerved. Capsules ca 0.5 cm long.

Fls. & Frts. : July.

Distrib. : Rare on plateaus in rocky areas. Kusapur, Kochhar 158601; Panchgani, Rukminibai 315 (BLAT).

Drimia polyantha (Blatt. & McC.) Ansari & Raghavan in J. Bombay nat. Hist. Soc. 77 : 174. 1980. *Urginea polyantha* Blatt. & McC. *ibid.* 32 : 735. 1928.; Deb & Dasgupta in Bull. Bot. Surv. India 16 : 122, f. 4. 1974.

Bulbs globose-ovoid, ca 5.0 × 4.5 cm; neck conical, ca 3.5 cm long. Scapes ca 60 cm long, greenish-purple. Racemes ca 25 cm long; flowers yellowish-green within with a broad brownish band without; perianth lobes oblong, 0.5 - 0.6 cm long. Capsules ca 1.0 × 0.6 cm. Seeds broadly ellipsoid, usually winged, shining black.

Fls. & Frts. : March - July.

Illus. : Deb & Dasgupta, *op. cit.*

Distrib. : Common in grasslands on plateaus. Panchgani.

Notes : Jessop (1977) while working on the Liliaceae of Africa concluded that *Urginea* Steinb. is not taxonomically distinct as the differences between *Drimia* and *Urginea* are based on perianth being reflexed or not, nature of perianth tube and colour of bulbs. However, these characters are variable and overlap in both genera. Deb & Dasgupta (1982) do not agree with this view and prefer to keep *Urginea* distinct. I am following Jessop's treatment as his argument is convincing.

GLORIOSA L.

Gloriosa superba L. Sp. Pl. 305. 1753; Hook. f. Fl. Brit. India 6 : 358. 1892; Cooke, Fl. Pres. Bombay 3 : 274. 1958 (Repr. ed.). '*Kal-lawi*'.

Climbers, herbaceous. Leaves alternate, sessile, ovate-lanceolate, 7.5 - 10.5 × 1.7 - 3.0 cm, apex ending in tendril. Flowers scarlet to crimson in upper part, yellow in lower; pedicels 5 - 10 cm long, tips deflexed; perianth lobes linear-lanceolate, 4 - 5 cm long, margin wavy. Capsules linear-oblong, coriaceous.

Fls. : August - September.

Illus. : Wight, Ic. t. 2047. 1853.

Distrib. : Common in forest outskirts. Deshmukhwadi, Koyna, Pandavgad, Tapola.

IPHIGENIA Kunth

- | | | |
|---|-----|--------------------|
| 1. Perianth lobes linear-subulate ; pedicels 1.0 - 2.5 cm long | ... | <i>I. indica</i> |
| 1. Perianth lobes elliptic or oblanceolate ; pedicels 1.0 - 5.5 cm long : | | |
| 2. Flowers white or with a purple tinge ; perianth lobes oblanceolate | ... | <i>I. pallida</i> |
| 2. Flowers bright pink ; perianth lobes broadly elliptic | ... | <i>I. stellata</i> |

Iphigenia indica (L.) A. Gray in Kunth, Enum. Pl. 4 : 213. 1843 ; Hook. f. Fl. Brit. India 6 : 357. 1892 ; Cooke, Fl. Pres. Bombay 3 : 275. 1958 (Repr. ed.). *Melanthium indicum* L. Mant. 226. 1771.

Herbs, 13 - 15 cm high ; corms subglobose-ovoid, 0.5 - 0.7 cm across. Leaves sessile, linear-lanceolate, 4 - 10 × 0.5 - 0.8 cm, base sheathing. Flowers 1 - 2 in axils ; perianth ca 0.8 cm long ; filaments dark purple ; styles 3. Capsules recurved at apex, 1.0 - 1.5 cm long, 3-valved. Seeds subglobose, brown.

Fls. & Frts. : July.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 744. 1982.

Distrib. : Occasional along grassy hill slopes. Kas, Koyna, Panchgani.

I. pallida Baker in J. Linn. Soc. 17 : 451. 1879 ; Hook. f. Fl. Brit. India 6 : 357. 1891 ; Cooke, Fl. Pres. Bombay 3 : 275. 1958 (Repr. ed.).

Herbs, 9 - 10 cm high ; corms ovoid, 1.3 × 0.7 cm. Leaves linear, 7 - 10 × 0.2 cm. Flowers 1 - 4 together ; bracts linear. Capsules oblong, 1.5 - 1.8 cm long. Seeds subglobose.

Fls. & Frts. : August.

Distrib. : Frequent in grassy localities in open areas. Mahabaleshwar, Shirgaon ghat.

Iphigenia stellata Blatt. in J. Bombay nat. Hist. Soc. 32 : 734. 1928
emend. Ansari & Rolla Rao in Bull. Bot. Surv. India 15 : 120, f. 1 7 b,
1976.

Herbs, *ca* 15 cm high ; corms ovate-subglobose. Leaves 4 - 6,
linear or linear-lanceolate, 8 - 14 × 0.4 - 1.0 cm. Flowers 2 - 4(-6) in ter-
minal racemes ; bracts leafy ; perianth lobes 0.6 - 1.0 cm, 7 - 9 nerved.
Capsules subglobose or obovate, 0.8 - 1.2 cm long. Seeds subglobose-
ovoid, brownish-black.

Fls. & Frts. : June - August.

Illus. : Ansari, *op. cit.*

Distrib. : Common monsoon herb on open plateaus in gravelly
soil. Gureghar, Koyna, Panchgani.

Notes : It is known to have the highest percentage of colchicine in
the Plant Kingdom (1.5 - 2.0%) (Ansari & R.S. Rao *op. cit.*).

SCILLA L.

Scilla hyacinthina (Roth) McBride in Contr. Gray Herb. 56 : 14.
1918 ; Deb & Dasgupta in Bull. Bot. Surv. India 17 : 46. 1975 & in Fasc.
Fl. India 7 : 14. 1981. *Ledebouria hyacinthina* Roth, Nov. Pl. Sp. 195.
1821. *S. indica* (Wight) Baker in Saund. Refug. Bot. 3 : 12. 1870 ; Hook.
f. Fl. Brit. India 6 : 348. 1892 ; Cooke, Fl. Pres. Bombay 3 : 276. 1958
(Repr. ed.).

Herbs, 15 - 17 cm high ; bulbs ovoid, *ca* 4 × 2 cm. Leaves oblong or
lanceolate, 4.5 - 6.5 × 1.0 - 2.5 cm. Scapes longer than leaves ; racemes
2 - 10 cm long ; bracts minute, scarious ; perianth lobes linear-oblong.
Capsules globose, membranous.

Fls. & Frts. : June.

Illus. : Wight, Ic. t. 2040. 1853 (*L. hyacinthina*).

Distrib. : Frequent along grassy hill slopes on rocky ground.
Lingmala, Mahabaleshwar, Panchgani.

CULTIVATED SPECIES

Allium cepa L. Sp. Pl. 300. 1753 ; Hook. f. Fl. Brit. India 6 : 337.
1892 ; Cooke, Fl. Pres. Bombay 3 : 284. 1958 (Repr. ed.). '*Kanda*'.

Cultivated throughout the district as a vegetable.

Aloe vera (L.) Burm. f. Fl. Ind. 83. 1768 ; Gandhi in Saldanha & Nicolson, Fl. Hassan Dist. 793. 1976. *A. perfoliata* var. *vera* L. Sp. Pl. 320. 1753. '*Korphadi*'.

Grown as a hedge plant, also used in native medicine to cure cough.

SMILACACEAE

SMILAX L.

Smilax zeylanica L. Sp. Pl. 1029. 1753 ; Hook. f. Fl. Brit. India 6 : 309. 1892 ; T. Koyama in Adv. Front. Pl. Sci. 4 : 50. 1963. *S. macrophylla* Roxb. Fl. Ind. (Carey ed.) 3 : 794. 1832 ; Hook. f. *op. cit.* 310 ; Cooke, Fl. Pres. Bombay 3 : 271. 1958 (Repr. ed.).

Climbers, armed with small, distant prickles. Leaves suborbicular, 5 - 10 × 2.5 - 9.0 cm, apex cuspidate. Flowers greenish in umbels ; bracts ovate, acute ; male flowers : perianth lobes linear, reflexed ; stamens slightly longer than the perianth ; female flowers : outer perianth lobes ovate-oblong, inner narrower ; stigmas 3, recurved. Berries globose, ca 1 cm across, red when ripe.

Fls. & Frts. : June - February.

Illus. : Wight, Ic. t. 809. 1844 (*S. ovalifolia* Roxb. *op. cit.*).

Distrib. : Abundant in scrub forests. Devghar, Dicholi, Gureghar, Jadholi, Koyna, Lingmala, Machutar forest, Mahabaleshwar, Morgiri, Nauja, Old Mahabaleshwar, Satara, Shirshingi, Umarkanchan.

COMMELINACEAE

1. Perfect stamens 6 :

2. Flowers in cymes ; petals united at base ... **CYANOTIS**

2. Flowers in panicles ; petals free : ... **FLOSCOPA**

1. Perfect stamens 3 :

3. Fruits indehiscent ... **POLLIA**

3. Fruits dehiscent, 2-3-valved :

4. Flowers in cymes ... **COMMELINA**

4. Flowers in fascicles or panicles ... **MURDANNIA**

COMMELINA L.

1. Spathes complicate :

2. Spathes 1 - 2 ; seeds reticulate ... *C. diffusa*

2. Spathes more than 2 ; seeds smooth ... *C. harskarlii*

1. Spathes cucullate or funnel shaped :

3. Cleistogamous flowers present ; capsules 5-seeded ... *C. benghalensis*

3. Cleistogamous flowers absent ; capsules 3-seeded :

4. Spathes sessile or subsessile ... *C. maculata*

4. Spathes distinctly peduncled :

5. Spathes truncate or cuneate at base, sparsely hairy ... *C. forsskalaai*

5. Spathes rhomboid at base, scabrid :

6. seeds oblong-ovoid, straw coloured ... *C. suffruticosa*

6. Seeds ellipsoid, ash coloured ... *C. paleata*

Commelina benghalensis L. Sp. Pl. 41. 1753 ; Hook. f. Fl. Brit. India 6 : 370. 1892 ; Cooke, Fl. Pres. Bombay 3 : 291. 1958 (Repr. ed.).

Herbs, ca 1 m long ; stems dichotomously branched. Leaves sessile or shortly petiolate, ovate-oblong, 1.5 - 5.0 × 0.7 - 2.5 cm, unequal at base, pubescent. Spathes 1 - 3 together, sessile or shortly peduncled ; flowers blue ; sepals oblong, pubescent ; petals oblong-orbicular. Capsules pyriform. Seeds oblong, pitted.

Fls. & Frts. : August - September.

Illus. : Wight, Ic. t. 2065. 1853 ; Maheshwari, Ill. Fl. Delhi f. 203. 1966.

Distrib. : Frequent perennial with cleistogamous flowers in moist places. Koyana.

C. diffusa Burm. f. Fl. Ind. t. 7, f. 2. 1768 ; Rolla Rao in Notes R.B.G. Edinb. 25 : 179. 1964. *C. nudiflora* auct. Pl. non L. 1753 ; Hook. f. Fl. Brit. India 6 : 369. 1892 ; Cooke, Fl. Pres. Bombay 3 : 290. 1958 (Repr. ed.).

Herbs, diffuse, 30 cm long, roots fibrous. Leaves sessile, lanceolate, 4.5 - 8.0 × 0.8 - 1.2 cm ; sheaths ca 2 cm long. Spathes ovate-lanceolate, base rounded or cordate ; flowers blue ; petals obovate-orbicular, clawed. Capsule oblong, coriaceous. Seeds 5, oblong, brown.

Fls. & Frts. : October - January.

Distrib. : Rare along water courses. Koyna, Kochhar 158610 ; Mahabaleshwar, R.S. Rao 62356.

Commelina forsskalaei Vahl, Enum. Pl. 2 : 172. 1806 ; Hook. f. Fl. Brit. India 6 : 371. 1892 ; Cooke, Fl. Pres. Bombay 3 : 292. 1958 (Repr. ed.).

Stems slender, diffuse, rooting at nodes. Leaves oblong, 2 - 4 × 0.5 - 1.0 cm, sparsely hairy, margins wavy ; sheaths ca 1 cm long, pubescent. Spathes broadly ovate, ca 0.7 × 1.2 cm ; sepals obovate ; petals blue, obovate, one with long claw ; filaments spirally twisted. Seeds orange-brown.

Fls. & Frts. : July - November.

Distrib. : Common in wet places near cultivated fields. Khatav, Koyna, Phaltan.

C. hasskarlii C.B.Cl. Comm. & Cyrt. Beng. 13, t. 3. 1874 ; Hook. f. Fl. Brit. India 6 : 370. 1892 ; Cooke, Fl. Pres. Bombay 3 : 291. 1958 (Repr. ed.).

Herbs, 20 - 30 cm high. Leaves sessile, lanceolate, 2.5 - 5.5 × 1.0 - 1.5 cm ; sheaths ca 1.5 cm long, striate. Spathes ovate-lanceolate, 1.5 - 2.5 cm long, hispid, base rounded ; cymes 2 - 4-flowered. Capsules quadrate, membranous.

Fls. & Frts. : April - August.

Distrib. : Common among grasses near cultivated fields and roadsides. Koyna, Medha, Taldeo.

C. maculata Edgew. in Trans. Linn. Soc. 20 : 89. 1846 ; Rolla Rao in Blumea 14 : 353. 1966. *C. obliqua* Buch.-Ham. ex D. Don, Prodr. Fl. Nepal 45. 1825 non Vahl, 1806 ; Hook. f. Fl. Brit. India 6 : 372. 1892 ; Cooke, Fl. Pres. Bombay 3 : 293. 1958 (Repr. ed.). *C. paludosa* Bl. Enum. Pl. Jav. 1 : 2. 1827 ; Rolla Rao & Kammathy in J. Bombay nat. Hist. Soc. 59 : 60, pl. 1, f. B. 1962. *C. paludosa* Bl. var. *viscida* (C.B.Cl.) Rolla Rao & Kammathy in Bull. Bot. Surv. India 3 : 168. 1961.

Stems prostrate, ca 1 cm long. Leaves variable, ovate, ovate-lanceolate or elliptic-lanceolate, 5 - 8 × 1.5 - 3.5 cm, scaberulous ; sheaths ca 1 cm long, hairy at apex. Spathes funnel-shaped, ca 1.5 cm long ; flowers blue. Capsules obovoid, ca 1 cm long. Seeds oblong, ca 0.4 cm long, puberulous, ash-coloured.

Fls. & Frts. : September - November.

Illus. : Wight, Ic. t. 2066. 1853 (*C. polyspatha*) ; Rolla Rao, *op. cit.*

Distrib. : Grows on hilly tracts. Mahabaleshwar.

Commelina paleata Hassk. in Miq. Pl. Jungh. 139. 1852 ; Hook. f. Fl. Brit. India 6 : 372. 1892 ; Cooke, Fl. Pres. Bombay 3 : 294. 1958 (Repr. ed.) ; Rolla Rao & Kammathy in J. Bombay nat. Hist. Soc. 59 : 61, pl. 1, f. c. 1962.

Stems prostrate, internodes long, arched. Leaves lanceolate, 4 - 10 × 1.0 - 2.5 cm, hairy above ; sheaths 1 - 2 cm long. Spathes 1.5 - 2.0 cm long ; flowers blue. Capsules 3-valved. Seeds ca 0.4 cm long, compressed.

Fls. & Frts. : August.

Illus. : Rolla Rao & Kammathy, *op. cit.*

Distrib. : Rare along ghats. Tapola, 166774.

C. suffruticosa Bl. Enum. Pl. Jav. 1 : 3. 1827 ; Hook. f. Fl. Brit. India 6 : 374. 1892 ; Rolla Rao & Kammathy in J. Bombay nat. Hist. Soc. 59 : 65, t. 3. 1962.

Herbs, ca 1 m high. Leaves lanceolate, 7 - 20 × 1.0 - 3.5 cm, scabrid. Spathes ca 1 cm long, longer than peduncles ; flowers blue. Seeds puberulous.

Fls. & Frts. : September.

Illus. : Rolla Rao & Kammathy, *op. cit.*

Distrib. : Rare in moist localities in deciduous forests. Koyna, Kochhar 158671.

CYANOTIS D. Don

1. Annuals ; roots fibrous :

2. Diffuse, white woolly herbs ; leaves linear-lanceolate ; seeds oblong ... *C. fasciculata*

2. Creeping, glabrous herbs ; leaves ovate-oblong ; seeds trigonous ... *C. cristata*

1. Perennials ; roots tuberous :

3. Corolla lobes obovate-suborbicular ; filaments and styles spirally twisted ... *C. concanensis*

3. Corolla lobes ovate, subacute ; filaments and styles not spirally twisted ... *C. tuberosa*

Cyanotis concanensis Hassk. Comm. Ind. 114. 1870 ; Rolla Rao in Blumea 14 : 348. 1966. *C. stocksii* Hassk. op. cit. 118. 1870. *C. sahyadrica* Blatt. in J. Bombay nat. Hist. Soc. 33 : 77. 1928 ; Rolla Rao in Notes R.B.G. Edinb. 25 : 189. 1965.

Herbs, ca 30 cm high. Radical leaves linear-lanceolate, ca 20×3 cm, densely hairy beneath ; cauline leaves ensiform, ca 7.0×1.6 cm, base amplexicaul, densely hairy beneath. Bracts ovate-lanceolate, as long as or longer than cymes ; bracteoles falcately ovate, imbricate ; corolla tube whitish, lobes blue. Capsules ellipsoid or obovoid, ca 0.4 cm long, hairy at apex. Seeds ovoid, truncate at base, rugose.

Fls. & Frts. : July - November.

Distrib. : Rare in grasslands. Panchgani, Frenchman p-38 (BLAT).

C. cristata (L.) D. Don, Prodr. Fl. Nepal. 46. 1825 ; Hook. f. Fl. Brit. India 6 : 385. 1892 ; Cooke, Fl. Pres. Bombay 3 : 304. 1958 (Repr. ed.). *Tradescantia cristata* L. Sp. Pl. 42. 1753.

Stems slender, 15 - 25 cm long. Leaves 3 - 6×0.6 - 1.0 cm ; sheaths ca 0.7 cm long, hirsute. Flowers purple ; bracts ovate-lanceolate, longer than cymes, ciliate ; bracteoles ovate, ciliate. Capsules oblong, 3-valved ; seeds 3, black, pitted.

Fls. & Frts. : September - October.

Illus. : Wight, Ic. t. 2082. 1853.

Distrib. : Common in open situations in plains and along hill slopes. Found in association with *Cyanotis fasciculata* and *Murdannia semiteres*. Jadholi, Koyna, Mahabaleshwar, Sanbur, Tapola.

C. fasciculata (Heyne ex Roth) J.A. & J.H. Schult. Syst. 7(2) : 1152. 1830 ; Hook. f. Fl. Brit. India 6 : 387. 1892 ; Cooke, Fl. Pres. Bombay 3 : 303. 1958 (Repr. ed.). *Tradescantia fasciculata* Heyne ex Roth, Nov. Pl. Sp. 189. 1821.

KEY TO THE VARIETIES

- | | | |
|---|-----|-------------------------|
| 1. Leaves linear-lanceolate, white woolly when young ;
filaments bearded | ... | var. <i>fasciculata</i> |
| 1. Leaves linear, glabrous ; filaments not bearded | ... | var. <i>glabrescens</i> |

var. fasciculata

Herbs, 20 - 25 cm high, with a purplish tinge. Leaves $2.0 - 4.5 \times 0.3 - 0.8$ cm. Cymes 2 - 4 together; flowers pink-purple; bracts lanceolate, recurved, 1.5 - 2.5 cm long; bracteoles ovate-lanceolate; sepals elliptic-lanceolate, ca 0.4 cm long; petals ovate, obtuse. Capsules oblong, ca 0.4 cm long, hairy at apex.

Fls. & Frts. : August - October.

Illus. : Wight, Ic. t. 2086. 1853.

Distrib. : Common on plateaus in moist localities. Panchgani, Panchgani-Wai, Yavteshwar.

var. *glabrescens* C.B.Cl. in DC. Monogr. Phan. 3 : 253. 1881; Hook. f. Fl. Brit. India 6 : 388. 1892; Cooke, Fl. Pres. Bombay 3 : 304. 1958 (Repr. ed.).

Herbs, 5 - 15 cm high. Leaves $3 - 6 \times 0.3 - 0.5$ cm. Flowers purple; bracts and bracteoles lanceolate, acute. Capsules oblong, ca 0.5 cm long.

Fls. & Frts. : August - October.

Distrib. : Common, found along with *C. fasciculata*. Kelghar ghat, Koyna, Machutar forest, Mahabaleshwar, Lingmala, Panchgani.

Cyanotis tuberosa (Roxb.) J.A. & J.H. Schult. Syst. 7(2) : 1153. 1830; Hook. f. Fl. Brit. India 6 : 386. 1892; Cooke, Fl. Pres. Bombay 3 : 302. 1958 (Repr. ed.). *Tradescantia tuberosa* Roxb. Pl. Cor. 2 : t. 108. 1799 & Fl. Ind. (Carey ed.) 2 : 19. 1832.

Stems erect or ascending, 30 - 70 cm high, densely villous. Leaves linear or oblong-lanceolate, $5 - 17 \times 0.7 - 2.0$ cm, sparsely hairy, margins villous, sheaths 2 - 3 cm long, villous. Cymes ca 2 cm long on 2 - 7 cm long peduncles; flowers bluish-purple; bracts leafy, falcate; ovate-lanceolate; sepals linear-lanceolate, densely villous; capsules ellipsoid, 2.0 - 2.5 cm long, hairy in upper half. Seeds brown, pitted.

Fls. & Frts. : August - October.

Illus. : Roxb. *op. cit.*

Distrib. : Common along exposed ghat areas in scrub forests. Koyna, Lingmala, Mahabaleshwar, Panchgani, Panchgani-Mahabaleshwar, Shirgaon ghat.

FLOSCOPA Lour.

Floscopa scandens Lour. Fl. Cochinch. 1 : 193. 1790 ; Hook. f. Fl. Brit. India 6 : 390. 1892 ; Cooke, Fl. Pres. Bombay 3 : 306. 1958 (Repr. ed.).

Herbs, ca 35 cm high. Leaves elliptic-lanceolate, 3.5 5.0 × 0.8 - 1.3 cm ; sheaths 0.7 1.0 cm long, hairy. Flowers pink ; panicles 2 3 cm long, villous ; sepals 3, ellipsoid ; petals obovate. Capsules suborbicular, ca. 0.3 cm across. Seeds 2, ellipsoid, ca 0.2 cm long.

Fls. & Frts. : April.

Illus. : Wight, Ic. t. 2079 & 2080. 1853 (*Dithyrocarpus petiolatus*, *D. rothii* & *D. undulatus*).

Distrib. : Rare near forest edges in semi-evergreen forests. Dicholi, Kochhar 157877.

MURDANNIA Royle

1. Flowers in axillary fascicles :

2. Roots fibrous ; leaves ovate-oblong, base semi-amplexicaul ...

M. crocea
ssp. ochracea

2. Roots tuberous ; leaves linear or linear-lanceolate, base not as above ...

M. lanuginosa

1. Flowers in terminal panicles :

3. Seeds 2-seriate in each cell ...

M. semiteres

3. Seeds 1-seriate in each cell :

4. Roots tuberous ; leaves mostly radical, few cauline ...

M. simplex

4. Roots fibrous ; leaves all cauline :

5. Flowers ochre-yellow, blue when dry ; all filaments bearded ...

M. versicolor

5. Flowers blue-purple ; filaments of staminodes glabrous :

6. Stems erect ; leaves narrowed or rounded at base ; seeds brownish-black ...

M. dimorpha

6. Stems decumbent ; leaves cordate at base ; seeds straw coloured ...

M. spirata

Murdannia crocea (Griff.) Faden ssp. **ochracea** (Hassk.) Faden in Kew Bull. 32 : 188. 1977. *Dichaespermum ochraceum* Hassk. Commel. Ind. 41. 1870. *M. ochracea* (Hassk.) Brueck. in Engl. & Prantl, Pflanzenfam. 2, 15a : 173. 1930. *Aneilema ochraceum* (Hassk.) Dalz. in Hook. J. Bot. 3 : 135. 1851 ; Hook. f. Fl. Brit. India 6 : 380. 1892 ; Cooke, Fl. Pres. Bombay 3 : 299. 1958 (Repr. ed.).

Herbs, 12 - 15 cm high. Leaves 2 - 3 × 1.0 - 1.5 cm. Flowers light brown, fading blue ; pedicels 0.6 - 1.3 cm long, jointed below the middle ; sepals elliptic ; petals obovate. Capsules oblong, ca 0.5 cm long, apiculate. Seeds 6, angular, rugose.

Fls. & Frts. : October.

Distrib. : Occasional near forest edges. Machutar forest, Mahabaleshwar, Mahabaleshwar, Old Mahabaleshwar.

M. dimorpha (Dalz.) Brueck. in Engl. & Prantl, Pflanzenfam. 2, 15a : 173. 1930 ; Sant. in Rec. Bot. Surv. India 16(1) : 286. 1967 (3rd Rev. ed.). *Aneilema dimorphum* Dalz. in Hook. Kew J. Bot. 3 : 138. 1851 ; Hook. f. Fl. Brit. India 6 : 377. 1892 ; Cooke, Fl. Pres. Bombay 3 : 297. 1958 (Repr. ed.).

Herbs, 15 - 20 cm high. Leaves linear-oblong, 3 - 6 × 0.5 - 1.5 cm ; sheaths short, ciliate. Bracts small, ovate ; sepals ovate ; petals obovate. Capsules oblong, apiculate, ca 0.5 cm long. Seeds subcubical, obscurely rugose.

Fls. & Frts. : September.

Illus. : Wight, Ic. t. 2075. 1853 (*Aneilema paniculatum*).

Distrib. : Rare, found along with *Cyanotis fasciculata*. Kistrude, Kochhar 154138 ; Shirshingi, Kochhar 153679.

M. lanuginosa (Wall. ex C.B.Cl.) Brueck. in Engl. & Prantl, Pflanzenfam. 2, 5a : 173. 1930. *Aneilema lanuginosum* Wall. ex C.B.Cl. in DC. Monogr. 3 : 380. 1892 ; Cooke, Fl. Pres. Bombay 3 : 300. 1958 (Repr. ed.). *A. siennea* Blatt. in J. Bombay nat. Hist. Soc. 33 : 75. 1928.

Herbs, 5 - 30 cm high. Leaves 3 - 6 × 0.5 - 1.5 cm, hairy. Flowers orange-yellow, fading blue ; pedicels 1 - 2 cm long, jointed with a pair of minute bracts in the middle. Capsules oblong, violet, 0.5 - 1 cm long. Seeds angular, smooth or obscurely pitted.

Fls. & Frts. : July - October.

Distrib. : Occasional in moist, shady places. Koyna, Lingmala, Mahabaleshwar, Panchgani.

Murdannia semiteres (Dalz.) Sant. in Poona Agri. Coll. Mag. 41 : 284. 1951 & in Rec. Bot. Surv. India 16(1) : 286. 1967 (3rd Rev. ed.). *Aneilema semiteres* Dalz. in Hook. Kew J. Bot. 3 : 138. 1851. *A. paniculatum* Wall. ex C.B.Cl. in DC. Monogr. Phan. 3 : 215. 1881 ; Hook. f. Fl. Brit. India 6. 381. 1892 ; Cooke, Fl. Pres. Bombay 3 : 300. 1958 (Repr. ed.).

Herbs, 4 - 14 cm high. Leaves linear, 4 - 8 × 0.1 cm. Branches of panicles capillary ; bracts ochraceous. Capsules subglobose, ca 0.3 cm across. Seeds minute, angular, straw coloured.

Fls. & Frts. : August - October.

Illus. : Wight, Ic. t. 2070, 1853 (*Dichaespermum juncoides*).

Distrib. : Common on plateaus among grasses. Koyna, Mahabaleshwar, Panchgani, Shirshingi.

M. simplex (Vahl) Brenan in Kew Bull. 7 : 186. 1952. *Commelina simplex* Vahl, Enum. Pl. 2 : 177. 1805. *Aneilema sinicum* Ker-Gawl. in Kew Bot. Reg. t. 659. 1822 ; Hook. f. Fl. Brit. India 6 : 379. 1892 ; Cooke, Fl. Pres. Bombay 3 : 299. 1958 (Repr. ed.). *A. rigidum* Blatt. in J. Bombay nat. Hist. Soc. 33 : 73. 1928.

Herbs, 30 - 40 cm high. Leaves linear-lanceolate, 6 - 32 × 1.0 - 1.5 cm ; sheaths 2 - 3 cm long. Flowers blue in lax panicles ; bracts ovate, acute, ca 1 cm long, caducous. Capsules oblong, 0.5 - 0.7 cm long. Seeds 2 - 3, rugose.

Fls. & Frts. : August - October.

Illus. : Wight, Ic. t. 2075. 1853 (*Aneilema secundum*).

Distrib. : Common in wet places in plains and along ghats. Lingmala, Machutar forest ; Mahabaleshwar, Panchgani.

M. spirata (L.) Brueck. in Engl. & Prantl, Pflanzenfam. 2, 15a : 173. 1930. *Commelina spirata* L. Mant. 176. 1767. *Aneilema spiratum* (L.) R. Br. Prodr. 271. 1810 ; Hook. f. Fl. Brit. India 6 : 377. 1892 ; Cooke, Fl. Pres. Bombay 3 : 296. 1958 (Repr. ed.).

Herbs, 15 - 35 cm high. Leaves oblong-lanceolate, 3.0 - 5.5 × 0.4 - 0.8 cm. Flowers in dichotomous panicles ; bracts ovate, minute. Capsules oblong, mucronate, 0.4 - 0.5 cm long. Seeds 5, ca 0.2 cm long, rugose.

Fls. & Frts. : August - November.

Illus. : Wight, Ic. t. 2077. 1853 (*Aneilema nanum* Kth).

Distrib. : Common along water courses. Koyna, Lingmala, Mahabaleshwar, Tapola.

Murdannia versicolor (Dalz.) Brueck. in Engl. & Prantl, Pflanzenfam. 2, 15a : 173. 1930. *Aneilema versicolor* Dalz. in Hook. Kew J. Bot. 3 : 136. 1851 ; Hook. f. Fl. Brit. India 6 : 378. 1892 ; Cooke, Fl. Pres. Bombay 3 : 298. 1958 (Repr. ed.).

Herbs, 10 - 25 cm high. Leaves oblong-lanceolate, $2.0 - 4.5 \times 0.8$ 1.5 cm. Pedicels filiform, jointed about the middle. Capsules subtrigonal, ca 0.5 cm long. Seeds cubical, minute.

Fls. & Frts. : October - November.

Distrib. : Occasional along ghats, also along roadsides. Mahabaleshwar.

POLLIA Thunb.

Pollia subumbellata C.B.Cl. in J. Linn. Soc. 11 : 451. 1870 ; Hook. f. Fl. Brit. India 5 : 368. 1892.

Herbs. Leaves lanceolate, acuminate, $9 - 12 \times 2.5 - 4.0$ cm, base sheathing. Flowers white in terminal panicles. Capsules globose, ca 0.5 cm across.

Fls. & Frts. : September.

Distrib. : Rare along hills. Shirshingi, Kochhar 153640.

ARECACEAE (PALMAE)

- | | | |
|---|-----|---------|
| 1. Climbers | ... | CALAMUS |
| 1. Trees : | | |
| 2. Leaves unipinnate ; leaflets linear-oblong | ... | PHOENIX |
| 2. Leaves bipinnate ; leaflets obliquely flabelliform | ... | CARYOTA |

CALAMUS L.

Calamus pseudotenulis Becc. ex Becc. & Hook. f. in Hook. f. Fl. Brit. India 6 : 445. 1892 ; Cooke, Fl. Pres. Bombay 3 : 317. 1958 (Repr. ed.).

Climbers, spiny. Leaves ca 1 m long, pinnatisect ; leaflets linear-lanceolate, acuminate, $16 - 27 \times 1.0 - 1.5$ cm, apex spiny ; leaf-sheaths

with straight or hooked spines, *ca* 1 cm long. Flowers in axillary, distichous or scorpioid spikes; calyx cupular; petals tubular in male flowers, free in female flowers. Drupes globose, *ca* 1 cm across, beaked, scaly; scales yellow, margins brown.

Fls. & Frts. : April.

Distrib. : Rare in the district and also in Maharashtra, occurring in semi-evergreen forest along ghats. Koyna, Kochhar 153649, 154226, 158262.

CARYOTA L.

Caryota urens L. Sp. Pl. 1189. 1753; Hook. f. Fl. Brit. India 6 : 422. 1892; Cooke, Fl. Pres. Bombay 3 : 315. 1958 (Repr. ed.). 'Mad'.

Trees, 10 - 15 m high. Leaves 3 - 6 m long, drooping; leaflets 15 - 30 × 5 - 10 cm. Spathes 20 - 30 cm long; male flowers: sepals cordate, ciliate; petals concave, reddish; stamens numerous; female flowers: smaller than male flowers; staminodes 3. Berries globose, reddish-black.

Fls. & Frts. : Throughout the year.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 757. 1982.

Distrib. : Rare in evergreen forests. Koyna, Kochhar 153699, 157941.

PHOENIX L.

Phoenix sylvestris (L.) Roxb. Fl. Ind. (Carey ed.) 3 : 787. 1832; Hook. f. Fl. Brit. India 6 : 425. 1892; Cooke, Fl. Pres. Bombay 3 : 311. 1958 ((Repr. ed.); Blatter, Palms Brit. India 3. 1926. *Elate sylvestris* L. Sp. Pl. 1189. 1753. 'Shindi'.

Trees, *ca* 15 m high. Leaves 2 - 4 m long, greyish-green; spines triangular, 5 - 8 cm long. Spathes *ca* 25 cm long, woody, 2-valved; flowers yellow; male flowers: calyx cupular; petals concave, warted without; female flowers: calyx cupular, accrescent; staminodes 6. Drupes oblong-ellipsoid, orange-yellow.

Fls. & Frts. : January - April.

Distrib. : Rare in scrub forests. Koyna, Kochhar 158278.

TYPHACEAE

TYPHA L.

Typha angustifolia L. Sp. Pl. 971. 1753 ; Backer in Steenis, Fl. Males. 1, 4 : 243. 1951. *T. angustata* Bory & Chaub. in Exp. Sci. Moree, Bot. 2, 1 : 338. 1832 ; Hook. f. Fl. Brit. India 6 : 489. 1893 ; Cooke, Fl. Pres. Bombay 3 : 326. 1958 (Repr. ed.). '*Pan-kanis*'.

Herbs, robust, 1 - 2 m high. Leaves linear, distichous, exceeding the flowering stem. Flowers small in dense cylindric spikes ; upper male, lower female, separated by 5 - 10 cm long interval ; perianth of capillary white hairs ; stamens 1 - 3 ; styles free, stigmas clavate. Achenes minute.

Fls. : April.

Illus. : Maheshwari, Ill. Fl. Delhi f. 206. 1966 ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 763. 1982.

Distrib. : Rare, marshy perennial near cultivated field. Karad, 165689.

ARACEAE

- | | | |
|---|-----|--------------|
| 1. Submerged or marshy plants | ... | CRYPTOCORYNE |
| 1. Terrestrial or epiphytic plants : | | |
| 2. Leaves simple, though often deeply lobed : | | |
| 3. Terrestrials | ... | TYPHONIUM |
| 3. Epiphytes : | | |
| 4. Plants with bulbiferous shoots ; stigmas discoid | ... | REMUSATIA |
| 4. Plants without bulbiferous shoots ; stigmas stellately lobed | ... | ARIOPSIS |
| 2. Leaves compound : | | |
| 5. Leaves appear after flowering ; male flowers sessile... | | SAUROMATUM |
| 5. Leaves appear with flowers ; male flowers stipitate | ... | ARIARMA |

ARIOPSIS Nimmo

Ariopsis peltata Nimmo in Grah. Cat. Pl. Bombay 252. 1839 ; Hook. f. Fl. Brit. India 6 : 519. 1893 ; Cooke, Fl. Pres. Bombay 3 : 338.

1958 (Repr. ed.). *Remusatia vivipara* Wight, Ic. t. 900. 1845 non Schott 1832.

Herbs, tubers small, clustered. Leaves solitary, suborbicular, 2.5-10.0 cm across, membranous. Spadix enclosed in purple spathes; male flowers cylindric, dark purple; female flowers green. Berries 3-6 angled.

Fls. & Frts. : June - September.

Illus. : Wight, Ic. t. 900. 1845 non Schott 1832 (*Remusatia vivipara*).

Distrib. : Rare on tree trunks or on wet rocks. Panchgani, Blatter s.n.; Research Nursery, Koyna, Kochhar 158619.

ARISAEMA Mart.

1. Leaves 2-3 pedate; appendages of spathes exerted *A. tortuosum*

1. Leaves solitary, radiate; appendages included:

2. Leaflets petiolate, apex long caudate-acuminate ... *A. caudatum*

2. Leaflets sessile, apex acuminate, not caudate ... *A. murrayi*

Arisaema candatum Engl. in DC. Monogr. Phan. 2: 559. 1879 *emend.* Rolla Rao & Ahuja in Bull. Bot. Surv. India 11: 450, f. 1-5. 1969; Hook. f. Fl. Brit. India 6: 508. 1893; Cooke, Fl. Pres. Bombay 3: 333. 1958 (Repr. ed.). *A. longicaudatum* Blatt. in J. Asiat. Soc. Beng. 26: 365. 1931 & in J. Bombay nat. Hist. Soc. 35: 20. 1931.

Herbs, ca 1 m high; tubers globose, 1-2 cm across. Leaflets 5-7(8) oblong-lanceolate, ca 12.0 × 4.5 cm, base cuneate. Male spathes 20-25 cm long; spadix 8-9 cm long; female spathes similar to male; spadix 5-7 cm long, flowers spirally arranged.

Fls. : June - September.

Illus. : Rao & Ahuja, *op. cit.*

Distrib. : Common along hill slopes in rock crevices during mid-monsoon. Bhikauli forest, Mahabaleshwar, Panchgani Plateau.

A. murrayi (Grah.) Hook. in Bot. Mag. t. 3488. 1848; Hook. f. Fl. Brit. India 6: 507. 1893; Cooke, Fl. Pres. Bombay 3: 332. 1958 (Repr. ed.). *Arum murrayi* Grah. Cat. Pl. Bombay 299. 1839.

Herbs, tuberous. Leaflets 5 - 7, broadly lanceolate, 7 - 10 × 2.4 - 3.0 cm ; petioles ca 18 cm long. Spathe 6 - 20 cm long, striate ; tube greenish, truncate at base ; limb white with purple tinge ; spadix 5 - 7 cm long ; flowers densely packed below, appendix naked.

Fls. & Frts. : June - September.

Distrib. : Common monsoon herbs along ghats and near forest edges. Kas, Khambil-chorghe ghat, Lingmala, Mahabaleshwar, Panchgani, Satara, Shirshingi.

Arisaema tortuosum (Wall.) Schott in Schott & Endl. Melet. Bot. 17. 1832 ; Hook. f. Fl. Brit. India 6 : 502. 1893 ; Cooke, Fl. Pres. Bombay 3 : 332. 1958 (Repr. ed.). *Arum tortuosum* Wall. Pl. As. Rar. 2 : 10, t. 114. 1830. *Arisaema neglectum* Schott in Bonplandia 7 : 26. 1859 ; Hook. f. *op. cit.* 504 ; Chavan *et al.* in M.V.M. Patrika 8 : 15. 1973.

Herbs, ca 1 m high. Leaflets linear-lanceolate or ovate-lanceolate, 10 - 15 cm long. Spathes purple within, greenish without ; male flowers of many, connate stamens ; female flowers densely crowded at base. Berries 4 - 5 seeded.

Fls. & Frts. : July - September.

Illus. : Wight, Ic. t. 788. 1844.

Distrib. : Rarely occurring in forest outskirts in shady areas. Kas, Chavan *et al.* (*op. cit.*) ; Koyna, Kochhar 158970.

CRYPTOCORYNE Fisch. ex Wydler.

Cryptocoryne spiralis (Retz.) Fisch. ex Wydler in Linnaea 5 : 428. 1830 ; Hook. f. Fl. Brit. India 6 : 494. 1893 ; Cooke, Fl. Pres. Bombay 3 : 329. 1958 (Repr. ed.). *Arum spiralis* Retz. Obs. Bot. 1 : 30. 1779. *C. huegelii* Schott, Gen. Aroid. 8, t. 12. 1853 ; Hook. f. Fl. Brit. India *op. cit.* *C. tortuosa* Blatt. & McC. in J. Bombay nat. Hist. Soc. 35 : 16, t. 1, f. A & B. 1931.

Herbs ; stems absent or short with creeping root-stock. Leaves linear-lanceolate, ca 85 cm long, apex recurved ; petioles channelled above. Spathes ca 27 cm long ; tube white or with a purple tinge ; male flowers : stamens 1 - 2, free ; female flowers : 5 - 6 connate ovaries. Fruits subglobose. Seeds spindle shaped, ca 0.5 cm long, irregularly verrucose-rugose.

Fls. & Frts. : September - December.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Frequent near edges of ditches. Lingmala, Mahabaleshwar.

REMUSATIA Schott

Remusatia vivipara (Roxb.) Schott in Schott & Endl. Melet. Bot. 1 : 18. 1832 ; Hook. f. Fl. Brit. India 6 : 521. 1893 ; Cooke, Fl. Pres. Bombay 3 : 339. 1958 (Repr. ed.). *Arum viviparum* Roxb. Fl. Ind. (Carey ed.) 3 : 496. 1832 ('*Viviparium*').

Herbs. Bulbils on blog, ca 0.4 cm long. Leaves broadly peltate, ovate, 7 - 10 × 5 - 7 cm, membranous ; petioles 15 - 20 cm long. Spathes 7 - 10 cm long, coriaceous ; male flowers of 2 - 3 stamens ; female flowers of densely packed ovaries ; neutral flowers mixed with male. Berries obovoid, minute.

Fls. & Frts. : April - September.

Illus. : Wight, Ic. t. 798. 1844.

Distrib. : Common epiphytes on tree trunks, usually on *Ficus* spp. Dicholi, Jadholi, Khambil-Chorghe ghat, Koyna, Koyna valley, Mahabaleshwar, Nauja, Panchgani.

SAUROMAUTM Schott

Sauromatum pedatum (Willd.) Schott in Schott & Endl. Melet. Bot. 17. 1832 ; Hook. f. Fl. Brit. India 6 : 508. 1893. *Arum pedatum* Willd. Enum. Suppl. 54. 1809. *S. guttatum* (Wall.) Schott. *op. cit.* ; Hook. f. Fl. Brit. India 5 : 508. 1893 ; Cooke, Fl. Pres. Bombay 3 : 353. 1958 (Repr. ed.) ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 35 : 25. 1931.

Herbs, tubers globose. Leaves solitary ; lobes 7, elliptic, acuminate, 15 - 20 × 3.5 - 9.5 cm. Spathes yellowish green with purple spots ; spadix sessile, shorter than the spathe, with green or purple appendage. Berries obpyramidal, 1-seeded, reddish-purple.

Fls. & Frts. : August - December.

Illus. : Wight, Ic. t. 800. 1844 [*Arum sessiliflorum* Roxb. Fl. Ind. (Carey ed.) 3 : 507. 1832].

Distrib. : Rare along hill slopes in red soil. Koyna, Kochhar 158664 ; Panchgani, 158895 ; McCann 2853 (BLAT).

CULTIVATED SPECIES

Amorphopallus paeonifolius (Dennst.) Nicolson in Taxon 26 : 338. 1977. *Dracontium paeoniifolius* Dennst. Schl. Hort. Malab. 13, 38. 1818. *A. campanulatus* (Roxb.) Bl. ex Decne. in Nouv. Ann. Mus. Paris 3 : 366. 1834 ; Hook. f. Fl. Brit. India 6 : 513. 1893 ; Cooke, Fl. Pres. Bombay 3 : 336. 1958 (Repr. ed.). 'Suran'.

Herbs ; tubers globose, 3 cm across. Leaves solitary, 3-lobed. Spathes campanulate, purple with white spots. Berries obovoid, red.

Fls. : May July.

Illus. : Wight, Ic. t. 782 & 785. 1844 (*A. campanulatus*) ; Roxb. Pl. Cor. t. 272. 1820 (*Arum campanulatum*).

Distrib. : Cultivated as an ornamental plant. Mahabaleshwar, Research nursery, Koyna.

Colocasia esculenta (L.) Schott in Schott & Endl. Melet. Bot. 18. 1832 ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 35 : 29. 1931. *Arum esculentum* L. Sp. Pl. 965. 1753. *C. antiquorum* Schott *op. cit.* ; Hook. f. Fl. Brit. India 6 : 523. 1893 ; Cooke, Fl. Pres. Bombay 3 : 340. 1958 (Repr. ed.). 'Alu'.

Herbs, rootstock tuberous. Leaves large, peltate-ovate. Spathes pale yellow.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 766 & 979c. 1982.

Distrib. : Widely cultivated throughout the district as a vegetable.

Zantedeschia aethiopica (L.) Spreng. in L. Syst. Veg. 16. 3 : 765. 1826 ; Matthew in Rec. Bot. Surv. India 20 : 218. 1969 & Mat. Fl. Tamilnadu Carnatic 369. 1981. *Calla aethiopica* L. Sp. Pl. 968. 1753.

Herbs, acaulescent. Leaves cordate-hastate. Spathes white, pink or yellow. Berries subglobose or obovoid.

Distrib. : Native of S. Africa, usually cultivated along the hills, rarely found as an escape in moist situations. Mahabaleshwar.

TYPHONIUM Schott

Typhonium roxburghii Schott, Aroid. 1 : 12. 1855 (excl. t. 17) ; Prain, Bengal Pl. 2 : 1106. 1903 [834. 1963 (Repr. ed.)]. *T. mottleyanum* Schott, Prodr. 106. 1860 ; Hook. f. Fl. Brit. India 6 : 510. 1893. *T. amboinense* Blatt. & McC. in J. Bombay nat. Hist. Soc. 35 : 23. 1932.

Herbs, tubers subglobose. Leaves triangular-hastate, deeply or shallowly 3-lobed, 5 - 9 cm long. Spathes ovate-oblong or lanceolate ; spadix longer than spathes ; female flowers at base separated by sterile flowers from male flowers at apex.

Fls. : July.

Illus. : Wight, Ic. t. 803. 1844 [*Arum trilobatum* Roxb. Fl. Ind. (Carey ed.) 3 : 505. 1832].

Distrib. : Rare in rock crevices. Panchgani, McCann 2781 (BLAT).

LEMNACEAE

- | | | |
|--|-----|-----------|
| 1. Fronds with dorsal and ventral scales ; stipes ventrally attached | ... | SPIRODELA |
| 1. Fronds without dorsal and ventral scales ; stipes marginally attached | ... | LEMNA |

LEMNA L.

Lemna perpusilla Torr. Fl. N.Y. 2 : 245. 1843 ; Hartog in Blumea 18 : 363. 1970 ; Plas in Steenis, Fl. Males. 1, 7 : 231. f. 4. 1971. *L. paucicostata* Hegelm. Lemnac. 138, t. 8. 1868 ; Hook. f. Fl. Brit. India 6 : 556. 1893.

Herbs thalloid, floating, roots fibrous. Fronds solitary or 2 - 3 together, ovate to obovate. Stipes hyaline, fugacious. Inflorescence of one male and one female flower enclosed in a spathe. Fruits ellipsoid, laterally compressed.

Fls. & Frts. : July - August.

Illus. : Plas, *op. cit.*

Distrib. : Found in fresh water. Koyna.

SPIRODELA Schleid.

Spirodela polyrrhiza (L.) Schleid. in Linnaea 13 : 392. 1839 ; Hartog & Plas in Blumea 18 : 360. 1970 ; Plas in Steenis, Fl. Males. 1, 7 : 224, f. 2. 1971. *Lemna polyrrhiza* L. Sp. Pl. 970. 1753. *L. maxima* Blatt. & Hallb. in J. Indian Bot. 2 : 49. 1921. *S. maxima* (Blatt. & Hallb.) McC. in J. Bombay nat. Hist. Soc. 43 : 158. 1942.

Herbs, floating. Fronds solitary or 2-5 together, reniform, round or obovate with reddish-purple margin. Stipes hyaline, fugacious. Budding pouches 2, basal. Inflorescence of one male and one female flowers. Fruits slightly winged.

Fls. & Frts. : July.

Illus. : Plas, *op. cit.*

Distrib. : Rare in ponds and ditches. Koyna. Kochhar 158711.

APONOGETONACEAE

APONOGETON L.f.

Aponogeton satorensis Raghavan *et al.* in Kew Bull. 36 : 687, f. 1. 1982.

Herbs, 22 cm high, dioecious ; tubers globose-ellipsoid. Leaves lanceolate, 3.5-8.2 × 0.5-1.4 cm. Spathes conical, 0.8-1.2 cm long, caducous. Inflorescence forked ; male inflorescence ca 7 cm long, purple ; tepals 2, obovate or suborbicular ; stamens 6, 2-seriate ; pistillodes 3, conical ; female inflorescence 2.5-3.5 cm long ; ovaries 3, sessile. Fruits ovoid, fasciculate, ca 0.7 × 0.4 cm.

Fls. & Frts. : June - August.

Illus. : Raghavan *et al. op. cit.*

Distrib. : Found in temporary ponds and puddles along with *Eriocaulon*, *Rotala* and *Pogostemon*. Differs from all other species of *Aponogeton* in male and female plants being separate and forked inflorescence. Mahavashi, S.R. Yadav Y-15, Raghavan 161738.

ERIOCAULACEAE

ERIOCAULON L.

1. Submerged herbs :

- | | | |
|---|-----|---------------------|
| 2. Leaves 1-nerved ; heads greyish-white | ... | <i>E. setaceum</i> |
| 2. Leaves 5-7-nerved ; heads greenish-white | ... | <i>E. dalzellii</i> |

1. Terrestrial or marshy herbs :

3. Involucral bracts hairy :

- | | | |
|--|-----|--|
| 4. Leaves linear | ... | <i>E. cristatum</i> |
| 4. Leaves lanceolate | ... | <i>E. odoratum</i> |
| 3. Involucral bracts glabrous : | | |
| 5. Anthers white or yellow : | | |
| 6. Involucral bracts lacerate | ... | <i>E. miserum</i> var.
<i>mitophyllum</i> |
| 6. Involucral bracts entire : | | |
| 7. Leaves linear | ... | <i>E. breviscapum</i> |
| 7. Leaves lanceolate | ... | <i>E. ritchieanum</i> |
| 5. Anthers black or greenish ; | | |
| 8. Receptacles glabrous : | | |
| 9. Leaves lanceolate ; heads globose | ... | <i>E. melaleucum</i> |
| 9. Leaves oblanceolate ; heads ovoid | . | <i>E. duthiei</i> |
| 8. Receptacles hairy : | | |
| 10. Sepals of female flowers boat-shaped : | | |
| 11. Female sepals 3, unequal | ... | <i>E. eleanorae</i> |
| 11. Female sepals 2, equal : | | |
| 12. Scapes thickened below the heads | ... | <i>E. vanheurckii</i> |
| 12. Scapes not thickened below the heads : | | |
| 13. Female sepals winged | ... | <i>E. stellulatum</i> |
| 13. Female sepals not winged | ... | <i>E. sedgwickii</i> |
| 10. Sepals of female flowers flat ; | | |
| 14. Petals absent in female flowers | ... | <i>E. achiton</i> |
| 14. Petals present in female flowers : | | |
| 15. Heads ovoid | ... | <i>E. quinquangulare</i> |
| 15. Heads hemispheric : | | |
| 16. Floral bracts oblanceolate | ... | <i>E. thwaitesii</i> |
| 16. Floral bracts obovate : | | |
| 17. Involucral bracts as long as heads | ... | <i>E. diana</i> |
| 17. Involucral bracts longer than heads | ... | <i>E. humile</i> |

Eriocaulon achiton Koern. in *Linnaea* 27 : 630. 1854 ; Hook. f. *Fl. Brit. India* 6 : 584. 1893 ; Fyson in *J. Ind. Bot.* 2 : 202, pl. 16. 1921.

Herbs small, marshy. Leaves narrowly lanceolate, *ca* 1.5 cm long. Scapes filiform 5-8 cm long. Heads obconic, 0.2-0.35 cm across. Involucral bracts orbicular, straw-coloured, floral bracts black. Male flowers : sepals and petals 2, narrow ; female flowers : sepals 2, filiform. Seeds ovoid, reddish-brown, longitudinally striate.

Fls. & Frts. : October.

Illus. : Fyson, *op. cit.*

Distrib. : Frequent in moist situations. Cooke had not reported it from the erstwhile Bombay Presidency. Koyna, Machutar forest, Mahabaleshwar.

E. breviscapum Koern. in *Linnaea* 27 : 676. 1857 ; Hook. f. *Fl. Brit. India* 6 : 575. 1893 ; Cooke, *Fl. Pres. Bombay* 3 : 356. 1958 (Repr. ed.) ; Fyson in *J. Ind. Bot.* 3 : 14, pl. 45. 1922.

Herbs. Leaves 15-25 × 0.4-0.5 cm, 7-11 nerved. Heads globose, brown at base, white-villous at apex. Involucral bracts ovate to obovate, black ; floral bracts linear-oblong, white, hairy at apex ; male flowers pedicelled ; female flowers subsessile. Seeds subglobose, shining, yellow.

Fls. & Frts. : December - February.

Illus. : Fyson, *op. cit.*

Distrib. : Rare along ghats. Panchgani. A.S. Rao 77974.

E. cristatum Mart. in *Wall. Pl. As. Rar.* 3 : 28. 1832 ; Hook. f. *Fl. Brit. India* 6 : 574. 1893 ; Fyson in *J. Ind. Bot.* 2 : 312, pl. 31. 1921.

Herbs, densely tufted. Leaves 7-12 × 0.4 cm. Scapes longer than leaves. Heads globose *ca* 0.7 cm across, white. Involucral bracts obovate, cuneate, black on margins ; floral bracts deltoid, shortly bearded ; petals oblanceolate, villous. Seeds oblong.

Fls. & Frts. : November.

Illus. : Fyson, *op. cit.*

Distrib. : Rare ; represented by a single collection from Mahabaleshwar by Santapau (11738) deposited at *BLAT*.

Eriocaulon dalzellii Koern. in Linnaea 27 : 605. 1856 ; Hook f. Fl. Brit. India 6 : 580. 1893. *E. rivulare* Dalz. in Hook. Kew J. Bot. 3 : 280. 1851 non G. Don ex Bth. 1849 ; Cooke, Fl. Pres. Bombay 3 : 355. 1958 (Repr. ed.) ; Fyson in J. Ind. Bot. 3 : 14, pl. 46. 1922.

Stems prostrate, 4 - 6 cm long. Leaves linear, 7 - 20×0.3 cm. Scapes 17 - 24 cm long. Heads globose, 0.5 cm across. Involucral bracts ovate-oblong ; floral bracts oblanceolate, hairy on back ; male flowers : sepals and petals spathulate, densely hairy without ; female flowers : separate linear ; petals spathulate. Seeds globose, shining.

Fls. & Frts. : January.

Illus. : Fyson, *op. cit.*

Distrib. : Found in running water in large community. Bamnoli, Kas.

E. diana Fyson in J. Ind. Bot. 2 : 259, t. 12. 1921.

Herbs, ca 20 cm high. Leaves linear-lanceolate, 3 - 7×0.4 - 0.6 cm. Scapes unequal ; peduncles 7 - 15 cm long. Involucral bracts reflexed ; floral bracts cuneate at base, hairy on back. Seeds reddish-brown.

Fls. & Frts. : August - September.

Illus. : Fyson, *op. cit.*

Distrib. : Common near cultivated fields. Koyna.

E. duthiei Hook. f. Fl. Brit. India 6 : 578. 1893 ; Fyson in J. Ind. Bot. 2 : 200. 1921 ; A.R. Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69. 232. 1972.

Leaves 1.0×0.3 cm. Heads 0.4 cm across, black, shining. Involucral bracts oblong, margins scarious ; floral bracts oblong, cuspidate. Seeds oblong, yellow with brown margin.

Fls. & Frts. : September - October.

Illus. : Fyson, *op. cit.*

Distrib. : Common in marshes. Lingmala, Mahabaleshwar.

E. eleanorae Fyson in J. Ind. Bot. 2 : 316, pl. 35. 1921 ; Sant. in Rec. Bot. Surv. India 16(1) : 294. 1967 (3rd Rev. ed.).

Herbs. Leaves 1.5 - 4.0 cm long. Scapes 4 - 10 cm long. Heads conical, white, *ca* 0.3 cm across ; involucral bracts elliptic, reflexed ; male flowers : anthers black ; female flowers : 2 sepals large, crested, 1 smooth.

Fls. : October.

Illus. : Fyson, *op. cit.*

Distrib. : Rare along ghats. Mahabaleshwar. *Ansari* 67628, *Sedgwick* 4570 (Fyson, *op. cit.*).

Eriocaulon humile Moldenke in *Phytologia* 3 : 162. 1949 ; Sant. in *Rec. Bot. Surv. India* 16(1) ; 294. 1967 (3rd Rev. ed.).

Herbs. Leaves rosulate, linear, acute, 2 - 4 cm long. Scapes many, longer than leaves, twisted. Heads greyish, *ca* 0.3 cm across. Involucral bracts elliptic ; floral bracts whitish, subhyaline.

Fls. : October.

Distrib. : Rare acaulescent herbs. Mahabaleshwar, *M.R. Almeida* 70 A (BLAT).

E. melaleucum Mart. in Wall. Pl. As. Rar. 3 : 29. 1832 ; Hook. f. Fl. Brit. India 6 : 574. 1893 ; Fyson in J. Ind. Bot. 3 : 18. 1922.

Herbs, 6 - 13 cm high. Leaves 1.5 - 3.0 cm long. Scapes solitary or in fascicles. Heads 0.4 - 0.6 cm across ; bracts obovate-oblong, black with white hairs ; female flowers : sepals 3 : petals 3, spatulate glands prominent.

Fls. : August - September.

Illus. : Fyson, *op. cit.*

Distrib. : Occasional in moist grasslands. Mahabaleshwar ; Panchgani.

E. miserum var. *mitophyllum* (Hook. f.) Fyson in J. Ind. Bot. 3 : 14, pl. 48. 1922. *E. mitophyllum* Hook. f. Fl. Brit. India 6 : 575. 1893.

Herbs, densely tufted. Leaves filiform, base broad sheathing, 2 - 4 cm long. Heads hemispheric, black. Involucral bracts obovate-oblong ; floral bracts obovate, bearded ; male flowers : sepals free ; petals unequal ; female flowers sessile ; sepals 2 large, concave, 1 small, flat ; petals oblanceolate, villous.

Fls. : September.

Illus. : *Fyson, op. cit.*

Distrib. : Rare, submerged. Mahabaleshwar, *Bole* 1108, 1137 (*BLAT*).

Eriocaulon odoratum Dalz. in Hook. Kew J. Bot. 3 : 280. 1851 ; Hook, f. Fl. Brit. India 6 : 574. 1893 ; *Fyson* in J. Ind. Bot. 2 : 308, pl. 24. 1921.

Herbs. Leaves *ca* 5.0×0.2 cm, translucent at apex. Scapes filiform ; heads globose, *ca* 0.5 cm across, white ; involucral bracts obovate-oblong, margins scarious ; floral bracts obovate, ciliate ; male flowers sessile, female flowers pedicelled.

Fls. October - November.

Illus. : *Fyson, op. cit.*

Distrib. : Frequent in stagnant water. Mahabaleshwar.

E. quinquangulare L. Sp. Pl. 87, 1753 ; Hook. f. Fl. Brit. India 6 : 582. 1893 ; *Fyson* in J. Bot. 2 : 204, pl. 9. 1921 ; *Cooke*, Fl. Pres. Bombay 3 : 361. 1958 (Repr. ed.).

Herbs. Leaves linear, 2.0 - 7.0×0.2 - 0.5 cm, green above, purple beneath. Scapes 5 - 10 cm long, ribbed ; heads, greyish-white ; involucral bracts linear or obovate-oblong, obtuse, reflexed ; floral bracts oblanceolate, hairy on the back. Seeds ellipsoid, pale yellow.

Fls. & Frts. : October - November.

Illus. : *Fyson, op. cit.*

Distrib. : Occasional on exposed rocks. Leaves red when dry. Mahabaleshwar.

E. ritchieanum Ruhl. in Engl. Pflanzenr. 4(30) : 73. 1903 ; *Fyson* in J. Ind. Bot. 3 : 16. 1922. *E. horsley-kundae* *Fyson op. cit.* 13, pl. 43.

Herbs, marshy. Leaves 2 - 6 cm long. Scapes 14 - 25 cm long ; heads 0.4 - 0.7 cm across ; involucral bracts grey ; floral bracts black with white hairs on the back ; male calyx spathaceous, densely white-woolly at apex ; petals white ; female flowers : sepals free ; petals longer than sepals, pilose. Seeds subglobose, angular, brown.

Fls. & Frts. : October.

Illus. : *Fyson, op. cit.*

Distrib. : Found along ghats in rocks. Koyna, Panchgani.

Eriocaulon sedgwickii *Fyson in J. Ind. Bot.* 2 : 260, pl. 16. 1921.

Herbs. Leaves lanceolate, 2 - 4 cm long. Scapes 7 - 10 cm long ; heads globose, ca 0.8 cm across ; involucral bracts grey ; floral bracts black, densely covered with white hairs ; male flowers : sepals 2 ; petals 3, white, glandular ; anthers black ; female flowers : petals 3, lanceolate, glandular. Seeds oblong-elliptic, reddish-brown.

Fls. & Frts. : August - October.

Illus. : *Fyson, op. cit.*

Distrib. : Common in open areas along ghats on rocks. Koyna, Mahabaleshwar.

E. setaceum *L. Sp. Pl.* 87. 1753 ; *Hook. f. Fl. Brit. India* 6 : 572. 1893 ; *Cooke, Fl. Pres. Bombay* 3 : 354. 1958 (Repr. ed.) ; *Fyson in J. Ind. Bot.* 2 : 193, pl. 1. 1921.

Herbs, ca 1 m high. Leaves linear, 2 - 5 cm long. Scapes fasciculate, twisted ; heads globose, ca 0.4 cm across ; involucral bracts obovate or suborbicular ; floral bracts obovate, cuneate, hairy on the back ; male flowers : calyx spathaceous ; anthers black ; female flowers : sepals free, obovate ; petals linear or spathulate. Seeds oblong, brown.

Fls. & Frts. : October - December.

Illus. : *Fyson, op. cit.*

Distrib. : Occasional in running water. Mahabaleshwar.

E. stelullatum *Koern. in Linnaea* 27 : 620. 1856 ; *Hook. f. Fl. Brit. India* 6 : 579. 1893 ; *Cooke, Fl. Pres. Bombay* 3 : 358. 1958 (Repr. ed.) ; *Fyson in J. Ind. Bot.* 2 : 317. 1921.

Herbs, marshy, 10 - 15 cm high. Leaves lanceolate, acute, 3 - 6 × 0.5 - 0.8 cm. Scapes 5 - 12 cm long ; heads 0.3 - 0.7 cm across. Involucral and floral bracts lanceolate, acute, reflexed ; male flowers : sessile ; sepals free or shortly connate at base ; anthers black ; female flowers : sessile ; sepals dorsally winged ; petals hairy. Seeds broadly ellipsoid, chest-nut brown.

Fls. & Frts. : October.

Distrib. : Common near lakes. Koyna ; Machutar forest, Mahabaleshwar, Panchgani.

Eriocaulon thwaitesii Koern. in *Linnaea* 27 : 627. 1854 ; 'Hook. f. *Fl. Brit. India* 6 : 583. 1893 ; Fyson in *J. Ind. Bot.* 2 : 202, Pl. 202. 1921.

Herbs. Leaves linear, 2.0 6.5×0.3 0.5 cm Scapes filiform, unequal ; heads greyish. Involucral bracts obovate-oblong ; floral bracts greenish, margins scarious ; male flowers sessile ; female flowers pedicelled. Seeds oblong, brown.

Fls. & Frts. : September.

Illus. : Fyson *op. cit.* ; Matthew, *Ill. Fl. Tamilnadu Carnatic* 2 : t. 777. 1982.

Distrib. : Rare in marshy places. Mahabaleshwar. *Sedgwick* 4646 (BLAT).

E. vanheurckii Muell.-Arg. in van Heurck. *Obs. Bot.* 2 : 98. 1870. *E. thomasi* Fyson in *J. Ind. Bot.* 2 : 318, Pl. 41. 1921.

Herbs, ca 15 cm high. Leaves lanceolate, 3 7×0.2 - 1.0 cm, apex acute or mucronate. Scapes 5 10 cm long ; heads globose, white ; involucral bracts shorter than the heads, reflexed ; floral bracts hairy on back ; sepals in male and female flowers 2 ; anthers black.

Fls. & Frts. : August September.

Illus. : Fyson, *op. cit.*

Distrib. : Rare herb with snow-white heads. Koyna, Kochhar 158945.

CYPERACEAE

1. Flowers unisexual :

- | | | |
|---------------------------------|-----|---------|
| 2. Nuts enclosed in utricle | ... | CAREX |
| 2. Nuts not enclosed in utricle | ... | SCLERIA |

1. Flowers bisexual :

3. Hypogynous bristles present :

- | | | |
|--|-----|-------------|
| 4. Leaves well developed ; style base dilated | ... | RYNCHOSPORA |
| 4. Leaves absent or minute scales ; style base not dilated : | | |

- | | | |
|--|-----|----------------|
| 5. Spikelets solitary | ... | ELEOCHARIS |
| 5. Spikelets many in fascicles or umbels | ... | SCHOENOPLECTUS |
3. Hypogynous bristles absent :
6. All glumes distichous :
7. Rhachilla persistent :
- | | | |
|---------------------|-----|------------|
| 8. Nuts flattened | ... | PYCREUS |
| 8. Nuts trigonous : | | |
| 9. Stigmas 2 | ... | JUNCCELLUS |
| 9. Stigmas 3 | ... | CYPERUS |
7. Rhachilla deciduous :
- | | | |
|--------------------------------|-----|----------|
| 10. Spikes stalked ; stigmas 3 | ... | MARISCUS |
| 10. Spikes sessile ; stigmas 2 | ... | KYLLINGA |
6. All or at least upper glumes spirally arranged :
11. Style base dilated :
- | | | |
|------------------------------------|-----|--------------|
| 12. Styles articulated at base | ... | FIMBRISTYLIS |
| 12. Styles not articulated at base | ... | BULBOSTYLIS |
| 11. Style uniform | ... | RIKLIELLA |

BULBOSTYLIS Kunth

- | | | |
|---|-----|-------------------|
| 1. Spikelets ellipsoid, solitary ; leaves shorter than stem | ... | <i>B. densa</i> |
| 1. Spikelets linear-oblong in heads ; leaves equalling stem | ... | <i>B. barbata</i> |

Bulbostylis barbata (Rottb.) C.B.Cl. in Hook. f. Fl. Brit. India 6 : 651. 1893 ; Blatt. in J. Bombay nat. Hist. Soc. 37 : 765. 1935 ; Kern in Steenis, Fl. Males. 1, 7 : 539. 1974. *Scirpus barbatus* Rottb. Progr. 27. 1772. *Stenophyllus barbatus* Cooke, Fl. Pres. Bombay 2 : 887. 1908 [3 : 401. 1958 (Repr. ed.)].

Herbs, ca 5 cm high. Bracts 3, foliaceous, equalling or longer than the inflorescence. Spikelets ca 0.5 cm long ; glumes ca 2 mm long, greenish-brown, aristate, hispid, lower empty ; stigmas 3. Nuts obovoid, shortly stipitate, 5 - 6 mm long, pale brown.

Fls. & Frts. : May - July.

Illus. : A.S. Rao & Verma, Cyp. N.E. India, f. 21 & 21b. 1982.

Distrib. : Rare along hill slopes in open areas. Shirshingi, Kochhar 158419.

Bulbostylis densa (Wall.)-Mazz. in Karsten & Schenk, Vegetationsb. 20 : 16. 1930 ; Kern in Steenis, Fl. Males. 1, 7 : 538. 1954. *Scirpus densus* Wall. in Roxb. Fl. Ind. (Carey & Wall. ed.) 1 : 231. 1820. *B. capillaris* var. *trifida* C.B.Cl. in Hook. f. Fl. Brit. India 6 : 632. 1893 ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37 : 765. 1935.

Herbs, 5 - 10 cm high. Spikelets 4 - 6 mm long ; glumes chestnut brown, keels green. Nuts obovoid, triquetrous, ca 1 mm long, white, becoming brown, verruculose.

Fls. & Frts. October - November.

Illus. : A.S. Rao & Verma, Cyp. N.E. India, f. 22 & 22b. 1982.

Distrib. : Occasional near cultivated fields or in rock-crevices. Machutar Forest, Mahabaleshwar.

CAREX L.

- | | | |
|---|-----|--|
| 1. Spikelets 2.5 - 5.0 cm long | ... | <i>C. baccans</i> |
| 1. Spikelets 0.5 - 1.5 cm long : | | |
| 2. Styles shorter than nuts ; utricles inflated | ... | <i>C. cruciata</i> |
| 2. Styles as long as nuts ; utricles not inflated | ... | <i>C. filicina</i> var.
<i>glaucina</i> |

Carex baccans Nees in Wight, Contrib. Bot. Ind. 122. 1834 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 722. 1894 ; Blatt. in J. Bombay nat. Hist. Soc. 38 : 9. 1935.

Herbs, 1 - 2 m high. Leaves coriaceous, longer than stem. Glumes ovate-oblong, mucronate, reddish-brown ; stamens 3 ; stigmas 3. Nuts triquetrous, ellipsoid, shortly stipitate, dark, brown.

Fls. & Frts. : September - November.

Illus. : A.S. Rao & Verma, Cyp. N.-E. India f. 54. 1982.

Distrib. : Rare perennials. Mahabaleshwar. Blatter 1594, Sedgwick & Bell 7285 (BLAT).

C. cruciata Wahlenb. in Vet. Alkart. Handl. Stockh. 24 : 149. 1803 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 715. 1894 ; Blatt. in J. Bombay nat.

Hist. Soc. 38 : 7. 1935 ; Nelves in Reinwardtia 1 : 277. 1951. *C. condensata* Nees in Wight, Contrib. Bot. India 123. 1834 ; C.B.Cl. *op. cit.* 716 ; Cooke, Fl. Pres. Bombay 3 : 420. 1958 (Repr. ed.).

Herbs, 5 - 15 cm high. Leaves coriaceous, longer than stem. Panicles 15 - 20 cm long ; bracts longer than panicles. Spikelets sessile, spreading ; glumes ovate, acute, purple with brown streaks ; stamens 3 ; stigmas 3. Nuts triquetrous, blackish-brown.

Fls. & Frts. : May March.

Distrib. : Included on Dalzell and Gibson's (Cooke, *op. cit.*) report from Mahabaleshar.

Carex filicina Nees var. *glaucina* (Boeck.) Kueckenth. in Engl. Pflanz. enr. 4, 20. 38 : 274. 1909 ; Sant. in Rec. Bot. Surv. India 16(1) : 303. 1967 (3rd Rev. ed.). *C. glaucina* Boeck. in Linnaea 40 : 353. 1876, *C. mercarensis* sensu C.B.Cl. in Hook. f. Fl. Brit. India 6 : 719. 1894 *p.p. non* Hochst. ex Steud. 1855. *C. mercarensis* var. *major* Steud. ex C.B.Cl. *op. cit.* ; Cooke, Fl. Pres. Bombay 3 : 421. 1958 (Repr. ed.). *C. lindleyana* Nees var. *major* (Steud.) C.E.C. Fischer in Gamble, Fl. Pres. Madras 1867. 1931 [3 : 1169. 1957 (Repr. ed.)] ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 38 : 8. 1935.

Herbs, 25 - 40 cm high. Leaves shorter than stem. Panicles 5 - 10 cm long. Glumes elliptic, aristate. Nuts ellipsoid, ca 3 mm long.

Fls. & Frts. : April - September.

Distrib. : Common perennials in shady areas in deciduous and ever-green forests. Koyna, Mahabaleshwar, Nauja, Old Mahabaleshwar Road, Pratapgad, Vasota.

CYPERUS L.

1. Inflorescence capitate or digitate :

2. Inflorescence capitate :

3. Spikelets linear-lanceolate or narrowly ovoid ; glumes deltoid-ovate	...	<i>C. decumbens</i>
--	-----	---------------------

3. Spikelets oblong ; glumes obovate or oblong	...	<i>C. difformis</i>
--	-----	---------------------

2. Inflorescence digitate :

4. Spikelets erect, rhachilla not visible ; nuts brown	...	<i>C. halpan</i>
--	-----	------------------

4. Spikelets spreading, rhachilla distinctly visible ; nuts white	...	<i>C. tenuispica</i>
--	-----	----------------------

1. Inflorescence spicate :

5. Rhachilla distinctly winged :

6. Leaves usually absent, if present, less than half the length of the stem ... *C. pangorei*

6. Leaves more than half the length of the stem :

7. Rhachilla deciduous *C. macer*

7. Rhachilla persistent :

8. Nuts black ... *C. rotundus*

8. Nuts yellowish-dark brown :

9. Glumes scarious in upper half ... *C. nutans*

9. Glumes not scarious :

10. Spikelets linear; nuts yellowish-brown ... *C. digitatus*

10. Spikelets linear-oblong; nuts dark brown ... *G. distans*

5. Rhachilla not or obscurely winged :

11. Rhachis pilose ... *C. pilosus*

11. Rhachis smooth or scabrid :

12. Perennials with woody rhizomes and long stolons; primary rays 3 - 7; nuts yellow ... *C. procerus*

12. Annuals with tufted stems; primary rays 5 - 20; nuts reddish-brown or black :

13. Rhachis smooth; keel 3 - 5-nerved, smooth ... *C. iria*

13. Rhachis scabrid on angles; keel 7-nerved, margins serrate ... *C. alulatus*

Cyperus alulatus Kern in Reinwardtia 1 : 463, f. 1. 1952. *C. iria* var. *rectangularis* Kuckenth. in Engl. Pflanzenr. 101 : 152. 1935.

Herbs, 15 - 35 cm high. Leaves 7 - 10 cm long. Spikes 2 - 3 cm long; Spikelets oblong, ca 2 cm long. Nuts broadly obovoid, as long as the glumes, dark brown.

Fls. & Frts. : August November.

Illus. : Kern, *op. cit.*

Distrib. : Common near rice fields. Jadholi, Koyna.

Notes : Bennet in Indian Forester 95 : 692. 1969 had raised Kuekenenthal's variety to specific level and effected a new combination as *C. rectangularis*. However, according to Art. 60 : 1. of ICBN (1978) the varietal epithet has no priority outside its rank and hence Kern's specific epithet is valid and has to be accepted.

Cyperus decumbens Govind. in J. Ind. Bot. Soc. 52 : 72, f. 1. 1973.

Annuals ; culms caespitose, trigonous, erect or decumbent at base. Leaves shorter than or as long as the culms. Bracts 2, unequal ; glumes distichous, castaneous, margins hyaline, *ca* 1.6 × 1.5 mm, keeled. Nuts sub-orbicular or subelliptical, castaneous black, shortly stipitate.

Distrib. : This new species from Mahabaleshwar, is known only by type collection. Mahabaleshwar, *Sedgwick* 4792 (Herb. Pres. College, Madras) 4792A (*CAL*).

C. difformis L. in Torner, Cent. Pl. 2 : 6. 1756 & Sp. Pl. ed. 2. 67. 1762 ; C.B.Cl. in J. Linn. Soc. 21 : 133. 1884 & in Hook. f. Fl. Brit. India 6 : 599. 1893 ; Cooke, Fl. Pres. Bombay 3 : 376. 1958 (Repr. ed.) ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37 : 259. 1934 ; Kuekenenth. in Engl. Pflanzenr. 101 : 238, f. 27 F-H. 1936.

Herbs, *ca* 50 cm high ; stems triquetrous towards the apex. Leaves shorter than stem. Bracts 2 - 3, leafy. Nuts obovoid, apiculate.

Fls. & Frts. : July - November.

Illus. : Kuekenenth. *op. cit.*

Distrib. : Common weed in rice-fields, found along with *C. tria* Dhebewadi, Jadholi, Koyna, Rasati.

C. digitatus Roxb. Fl. Ind. (Carey ed.) 1 : 205. 1832 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 618. 1893 ; Cooke, Fl. Pres. Bombay 3 : 387. 1958 (Repr. ed.) ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37 : 277. 1934.

Herbs, creeping, *ca* 1 m long. Leaves coriaceous, flat. Spikes 20 - 25 cm long ; bracts 3 - 6, leafy ; glumes ovate, mucronate, chest-nut brown.

Fls. & Frts. : September - December.

Distrib. : Common weed near cultivated fields. Panchgani-Mahabaleshwar.

Cyperus distans L. f. Suppl. 103. 1781 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 606. 1893 ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37 : 266. 1934 ; Kern in Steenis, Fl. Males. 1, 7 : 610. 1974.

Herbs, 1.0 - 1.5 m high ; stems triquetrous. Bracts 3, foliaceous, 16 - 32 cm long. Spikelets 1.5 - 5.0 cm long ; glumes elliptic, lax, ca 4 mm long, brownish. Nuts ellipsoid, ca 1.5 mm long.

Fls. & Frts. : August - November.

Distrib. : Found growing in large communities along river banks. Lingmala, Mahabaleshwar, Research Nursery, Koyna.

C. halpan L. Sp. Pl. 45. 1753 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 600. 1893 ; Cooke, Fl. Pres. Bombay 3 : 376. 1958 (Repr. ed.) ; Kern in Steenis, Fl. Males. 1, 7 : 624, f. 56. 1974 (*haspan*).

Herbs, 10 - 15 cm high. Leaves half the length of the stem. Bracts 2 - 3, foliaceous, 2.0 - 3.5 cm long. Spikelets lanceolate, ca 1.5 cm long. Nuts shortly stipitate, obovoid, ca 5 mm long.

Fls. & Frts. : October - November.

Illus. : Kern, *op. cit.*

Distrib. : Rare along streams. Koyna, Kochhar 157337 ; way to Jadholi ; Kochhar 157822.

C. iria L. Sp. Pl. 45. 1753 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 606. 1893 ; Cooke, Fl. Pres. Bombay 3 : 380. 1958 (Repr. ed.) ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37 : 264. 1934 ; Kern in Steenis, Fl. Males. 1, 7 : 616. 1974.

Herbs, 20 - 60 cm high. Bracts 12 - 20 cm long. Spikelets linear-oblong, yellowish-brown ; glumes obovate, 3 - 5 nerved, margins hyaline. Nuts obovoid, brownish-black.

Fls. & Frts. : August - December.

Illus. : Maheshwari, Ill. Fl. Delhi f. 218. 1966.

Distrib. : Common weed in cultivated fields and along roadsides. Dhamani, Koyna, Padolshi, Panchgani, Yavatashwar.

C. macer C.B.Cl. in J. Linn. Soc. 21 : 160. 1884 & in Hook. f. Fl. Brit. India 6 : 613. 1893 ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37 : 272. 1934.

Herbs, 60 - 90 cm high. Bracts 13 - 50 mm long. Spikelets linear, 1.0 - 1.3 cm long ; glumes ovate-oblong, 3 - 5 nerved, green with brown margin. Nuts obovoid, ashy-black.

Fls. & Frts. : September - November.

Distrib. : Slender annuals, common along river beds forming dense mats. Fitzgerald ghat, Karad-Islampur, Lingmala, Mahabaleshwar, Panchgani.

Cyperus nutans Vahl, Enum. Pl. 2 : 363. 1806; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 607. 1893 ; Cooke, Fl. Pres. Bombay 3 : 381. 1958 (Repr. ed.) ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37 : 266. 1934 ; Kern in Steenis, Fl. Males. 1, 7 : 609. 1974.

KEY TO THE VARIETIES

- | | | |
|---|-----|--------------------------|
| 1. Primary rays obliquely spreading ; nuts narrowly obovoid | ... | var. <i>nutans</i> |
| 1. Primary rays suberect ; nuts broadly oblong | ... | var. <i>eleusinoides</i> |

var. *nutans*.

Herbs, 60 - 100 cm high. Bracts 10 - 25 cm long. Spikes 2.0 - 3.5 cm long ; spikelets reddish-brown ; glumes ca 2.5 mm long, keeled. Nuts ca 1.2 mm long.

Fls. & Frts. : June - October.

Distrib. : Common on rocky substratum in forest margins, also along sandy river beds. Jangli Jaigad, Koyna, Lingmala, Mahabaleshwar, Panchgani, Rasati.

var. *eleusinoides* (Kunth) Haines, Bot. Bihar Orissa 5 : 898. 1924-941. 1961 (Repr. ed.) ; Kern in Steenis, Fl. Males. 1, 7 : 610. 1974. *C. eleusinoides* Kunth, Enum. Pl. 2 : 39. 1837 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 608. 1893 ; Cooke, Fl. Pres. Bombay 3 : 382. 1958 (Repr. ed.) ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37 : 267. 1934.

Herbs, ca 1 m high. Spikes ca 3.5 cm long ; spikelets ca 3 mm long ; glumes narrowly oblong, straw coloured. Nuts ca 1 mm long.

Fls. & Frts. : July - September.

Distrib. : Common in shallow water during monsoon. It attains gregarious size under favourable conditions. Panchgani, Pasarni ghat, Salve, Wai.

Cyperus pangorei Rottb. Descr. Ic. Rar. Nov. Pl. 31, t. 7, f. 3. 1773; T. Koyama in Gard. Bull. Straits Settle. 30 : 131. 1977. *C. corymbosus* Rottb. var. *pangorei* (Rottb.) C.B.Cl. in J. Linn. Soc. 21 : 292. 159. 1884 & in Hook. f. Fl. Brit. India 6 : 612. 1893 ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37 : 270. 1934. *C. tegetum* Roxb. Fl. Ind. (Carey ed.) 1 : 208. 1832 ; C.B.Cl. *op. cit.* 613 ; Cooke, Fl. Pres. Bombay 3 : 384. 1958 (Repr. ed.).

Herbs, ca 1 m high. Bracts 15 - 20 cm long, margins scaberulous ; spikelets reddish brown, compressed ; glumes narrowly oblong, ca 2 mm long, 3 - 5 nerved. Nuts ca 1.5 mm long.

Fls. & Frts. : October - January.

Distrib. : Tall perennials, common in running water. Kas, Koyna, Lingmala, Mahabaleshwar, Panchgani.

C. pilosus Vahl, Enum. Pl. 2 : 354. 1806 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 609. 1893 ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37 : 268. 1934 ; Kern in Steenis, Fl. Males. 1, 7 : 611. 1974.

Herbs, ca 1 m high. Leaves flat or faintly channelled. Bracts 10 - 15 cm long ; spikelets linear, 0.5 - 1.0 cm long ; glumes broadly ovate, mucronate. Nuts obovoid or ellipsoid, greyish, stipitate.

Fls. & Frts. : August - November.

Illus. : A.S. Rao & Verma, Cyp. N-E. India f. 9 - 6B. 1982.

Distrib. : Common along water courses. Panchgani.

C. procerus Rottb. Descr. Ic. Rar. Nov. Pl. 29, t. 5, f. 3. 1773 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 610. 1893 ; Cooke, Fl. Pres. Bombay 3 : 381. 1958 (Repr. ed.) ; Kern in Steenis, Fl. Males. 1, 7 : 611, f. 51. 1974.

Herbs, ca 1 m long, stolons elongate, woody, covered with scales. Bracts 2 - 5, foliaceous ; spikelets lax, 7 - 10 flowered ; glumes straw coloured. Nuts ca 1.5 mm long, dark brown.

Fls. & Frts. : November.

Illus. : Kern, *op. cit.*

Distrib. : Rare, in wet rice fields. Kistrude ; Kochhar 157845.

Cyperus rotundus L. Sp. Pl. 45. 1753 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 614, 1893 ; Cooke, Fl. Pres. Bombay 3 : 385. 1958 (Repr. ed.) ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37 : 273. 1934 ; Kern in Steenis, Fl. Males. 1, 7 : 604. 1974.

Herbs, 10 - 30 cm high. Spikelets linear, reddish-brown, 1 - 2 cm long, compressed ; glumes oblong, slightly apiculate. Nuts *ca* 1.5 mm long.

Fls. & Frts. : Throughout the year.

Distrib. : Common weed along roadsides. It grows throughout the year in moist places, however, flowerishes well during the monsoon. Dhom dham near Wai, Koyna, Manhuli, Panchgani.

C. tenuispica Steud. Syn. Cyp. 11. 1855 ; Kern in Steenis, Fl. Males. 1, 7 : 625, f. 58. 1974. **C. flavidus** sensu C.B.Cl. in Hook. f. Fl. Brit. India 6 : 600. 1893 *non* Retz. 1789.

Herbs, tufted ; stems 20 - 40 high, slender, ribbed. Leaves flat, scaberulous, Inflorescence 4 - 10 cm long. Spikelets 3 - 5, pale brown, distant ; glumes ovate, obtuse, margins purple ; keels 3-nerved. Nuts ovoid or subglobose, shining.

Fls. & Frts. : July - September.

Illus. : Kern, *op. cit.*

Distrib. : Rare in marshy places. Koyna, Kochhar 158407, 160353.

ELBOCHARIS R. Br.

- | | | |
|--|-----|----------------------|
| 1. Stems stout ; glumes coriaceous ; stigmas 3 | ... | <i>E. acutangula</i> |
| 1. Stems slender ; glumes membranous ; stigmas 2 | ... | <i>E. geniculata</i> |

Eleocharis acutangula (Roxb.) Schult. in R. & S. Mant. 2 : 91. 1824 ; Kern in Steenis, Fl. Males. 1, 7 : 525. 1974. **Scirpus acutangulus** Roxb. Fl. Ind. (Carey & Wall. ed.) 1 : 216. 1820. **E. fistulosa** Schult. *op. cit.* 89 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 629. 1893 ; Cooke, Fl. Pres. Bombay 3 : 402. 1958 (Repr. ed.) ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37 : 537. 1934.

Herbs, *ca* 1 m high ; stems triquetrous, ribbed. Spikelets ovoid, 1.5 - 2.5 cm long ; glumes broadly ovate, margins scarious ; hypogynous bristles 6 - 7, unequal, brown, scabrid. Nuts obovoid, striate, constricted at apex.

Fls. & Frts. : November.

Illus. : A.S. Rao & Verma, Cyp. N-E. India f. 9 - 9a. 1982 ;
Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 786. 1982.

Distrib. : Grows in black soil in monsoon along with *Schoenoplectus corymbosus*. Panchgani.

Eleocharis geniculata (L.) R. & S. Syst. Veg. 2 : 150. 1817 ; Kern in Steenis, Fl. Males. 1, 7 : 536. 1974. *Scirpus geniculatus* L. Sp. Pl. 48. 1753. *E. capitata* R. Br. Prodr. 225. 1810 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 627. 1893 ; Cooke, Fl. Pres. Bombay 3 : 404. 1958 (Repr. ed.) ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37. 538. 1934.

Herbs, ca 6 cm high. Spikelets globose or oblong-ovoid, obtuse ; glumes concave, ca 2 mm long. Nuts obovoid, ca 1 mm long, apiculate, white becoming brown.

Fls. & Frts. : February - March.

Distrib. : Occasional in open wet grasslands. Mahabaleshwar.

FIMBRISTYLIS Vahl

1. Stigmas 3 ; nuts trigonous :

2. Glumes distichous :

3. Spikelets solitary ... *F. ovata*

3. Spikelets more than one ... *F. tenera*

2. Glumes spiral ... *F. littoralis*

1. Stigmas 2 ; nuts bioconvex :

4. Spikelets solitary ;

5. Stamen 1 ; nuts smooth ... *F. aestivalis*

5. Stamens 2 ; nuts ribbed ... *F. tetragona*

4. Spikelets more than one :

6. Nuts smooth ... *F. ferruginea*

6. Nuts trabeculate :

7. Glumes membranous, sharply keeled ... *F. bis-umbellata*

7. Glumes chartaceous, scarcely keeled ... *F. dichotoma*

Fimbristylis aestivalis (Retz.) Vahl, Enum. Pl. 2 : 288. 1806 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 637. 1893 ; Cooke, Fl. Pres. Bombay 3 : 395. 1958 (Repr. ed.) ; Kern in Steenis, Fl. Males. 1, 7 : 584. 1974. *Scirpus aestivalis* Retz. Obs. Bot. 4 : 12. 1786.

Herbs, 5 - 10 cm high. Leaves slightly shorter than the stem, hairy. Inflorescence anthelate ; bracts 4 - 6, filiform, hairy. Spikelets oblong-lanceolate, ca 3.5 mm long, hairy ; glumes ovate-aristate, ca 2 mm long, hairy. Nuts obovoid, ca 1 mm long.

Fls. & Frts. : February - June.

Distrib. : Found in large patches in ditches and moist, open places. Gojegaon, Lingmala, Mahabaleshwar, Shirshingi.

F. bis-umbellata (Forssk.) Bub. in Dodec. 30. 1850 ; Kern in Steenis, Fl. Males. 1, 7 : 579. 1974. *Scirpus bis-umbellatus* Forssk. Fl. Aeg.-Arab. 15. 1775. *F. dichotoma* C.B.Cl. in Hook. f. Fl. Brit. India 6 : 635. 1893 non Vahl, 1806.

Herbs, ca 15 cm high ; stems, trigonous. Leaves flat, shorter than or equalling the stem. Inflorescence anthelate ; bracts 3 - 6 cm long, exceeding the inflorescence. Spikelets oblong, ca 4 mm long ; glumes broadly ovate, ca 1.5 mm long, brown. Nuts obovoid, umbonate, ca 1 mm long, white, shining.

Fls. & Frts. : February - July.

Distrib. : Rare along river banks. Koyna ; Kochhar 154732, 158494, 158911.

F. dichotoma (L.) Vahl, Enum. Pl. 2 : 287. 1806 ; Kern in Steenis, Fl. Males. 1, 7 : 575. 1974 ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37 : 542. 1934. *Scirpus dichotomus* L. Sp. Pl. 50. 1753. *Fimbristylis diphylla* Vahl, op. cit. 289 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 636. 1893 ; Cooke, Fl. Pres. Bombay 3 : 396. 1958 (Repr. ed.).

Herbs, 15 - 45 cm high ; stems tufted, striate. Leaves shorter than the stem. Inflorescence anthelate ; rays 2 - 5 cm long ; bracts unequal. Spikelets ellipsoid, 4 - 10 mm long ; glumes ovate, reddish-brown, rhachilla winged. Nuts obovoid, umbonate, white.

Fls. & Frts. : April - August.

Illus. : A.S. Rao & Verma, Cyp. N-E India f. 17. 1982 ; Maheshwari, Ill. Fl. Delhi f. 223. 1966.

Distrib. : Common weed in dry places on exposed rocks. Dhebewadi, Gondavale, Koyna, Panchgani.

Fimbristylis ferruginea (L.) Vahl, Enum. Pl. 2 : 291. 1806 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 638. 1893 ; Cooke, Fl. Pres. Bombay 3 : 396. 1958 (Repr. ed.) ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37 : 544. 1934 ; Kern in Steenis, Fl. Males. 1, 7 : 572. 1974. *Scirpus ferrugineus* L. Sp. Pl. 50. 1753.

Herbs, *ca* 1 m high. Inflorescence 3–5 cm long. Spikelets ellipsoid, reddish-brown ; rhachilla narrowly winged ; glumes broadly ovate, *ca* 3 mm long, shortly mucronate. Nuts compressed, 1.0–1.5 mm long, straw coloured.

Fls. & Frts. : August - September.

Illus. : Maheshwari, Ill. Fl. Delhi f. 222. 1966.

Distrib. : Common in sandy soil along river banks. Panchgani, Pasarni ghat Wai, Yavteshwar.

F. littoralis Gaud. in Freyc. Voy. Bot. 413. 1826 ; Kern in Steenis, Fl. Males. 1, 7 : 551. 1974. *F. millacea* sensu Bth. Fl. Austral. 316. 1878 *non* Vahl 1806 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 644. 1893 ; Cooke, Fl. Pres. Bombay 3 : 397. 1958 (Repr. ed.).

Herbs, *ca* 15 cm high. Leaves distichous, shorter or equalling the stem, laterally compressed. Inflorescence 5–6 cm long ; bracts *ca* 2 cm long. Spikelets solitary, ovoid-oblong, 2–5 mm long ; glumes ovate, *ca* 1 mm long, brown, midrib green. Nuts obovoid *ca* 1 mm long, white, becoming brown, verruculose.

Fls. & Frts. : June - August.

Distrib. : Weed in cultivated fields and along roadsides. Koyna.

F. ovata (Burm. f.) Kern in Blumea 15 : 126. 1967 & in Steenis, Fl. Males. 1, 7 : 565. 1974. *Carex ovata* Burm. f. Fl. Ind. 194. 1768. *F. monostachyos* (L.) Hassk. Pl. Jav. Rar. 61. 1848 ('*monostachya*') ; C.B. Cl. in Hook. f. Fl. Brit. India 6 : 649. 1893 ; Cooke, Fl. Pres. Bombay 3 : 399. 1958 (Repr. ed.).

Herbs, 15–30 cm high ; stems slender, striate. Leaves linear, shorter than stems. Spikelets narrowly ovate, acute *ca* 1.0×0.5 cm, straw-coloured ; rhachilla winged ; glumes triangular-ovate, acute, keel green curved. Nuts *ca* 3 mm long, warty, white.

Fls. & Frts. : August - September.

Distrib. : Occasional perennials in damp situations. Wai, Yavteshwar.

Fimbristylis tenera Schult. in R. & S. Syst. Veg. Mant. 2 : 157. 1824 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 642. 1893. *F. monticola* Hochst. ex Steud. Syn. Pl. Cyp. 111. 1855 ; C.B.Cl. in Hook. f. *op. cit.* 6 : 642. 1893 ; Cooke, Fl. Pres. Bombay 3 : 399. 1958 (Repr. ed.) ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37 : 546. 1934.

Herbs ; stems slender, *ca* 30 cm long, 4 angled, scabrid. Leaves filiform, half, the length of stem. Spikelets ovate, acute, reddish-brown ; rhachilla winged ; glumes *ca* 1.5 mm long. Nuts *ca* 1 mm long, straw coloured.

Fls. & Frts. : August - September.

Distrib. : Common annual. Kas, Koyna, Lingmala, Panchgani.

F. tetragona R. Br. Prodr. 226. 1810 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 631. 1893 ; Cooke, Fl. Pres. Bombay 3 : 393. 1958 (Repr. ed.) ; Kern in Steenis, Fl. Males. 1, 7 : 590. 1974.

Herbs ; stems 15 - 50 cm long, quadrangular, ribbed. Spikelets solitary, ovoid-ellipsoid, straw coloured, 6 - 8 mm long ; rhachilla with tetragonal pits ; glumes broadly oblong, rounded at apex. Nuts subcylindric, straw-coloured.

Fls. & Frts. : December.

Illus. : A.S. Rao & Verma, Cyp. N-E. India f. 13-139. 1982.

Distrib. : Rare, near streams. Gadoli, 166561.

JUNCCELLUS C.B.Cl.

1. Inflorescence umbellate ; nuts obovoid ... *J. alopecuroides*

1. Inflorescence capitate ; nuts ellipsoid ... *J. pygmaeus*

Juncellus alopecuroides (Rottb.) C.B.Cl. in Hook. f. Fl. Brit. India 6 : 595. 1893. *Cyperus alopecuroides* Rottb. Descr. Rar. Progr. 20. 1772 ; Cooke, Fl. Pres. Bombay 3 : 373. 1958 (Repr. ed.).

Herbs ; stems *ca* 1 m high, tufted. Leaves equalling stem, coriaceous, margins. Inflorescence of compound umbels ; bracts leafy, 20 - 30 cm long ; bracteoles 3 - 4, linear, acute ; spikelets elliptic-lanceolate, compressed, *ca* 7 mm long, straw coloured. Nuts 1 mm long, straw coloured.

Fls. & Frts. : January.

Distrib. : Rare in swamps. Vardhangad, 166673.

Juncellus pygmaeus (Rottb.) C.B.Cl. in Hook. f. Fl. Brit. India 6 : 596. 1893. *Cyperus pygmaeus* Rottb. Descr. & Ic. 20, t. 14, f. 4 - 5 1773 ; Cooke, Fl. Pres. Bombay 3 : 372. 1958 (Repr. ed.).

Herbs, 15 - 20 cm high. Leaves linear, equalling or slightly shorter than stem. Spikelets ovate-lanceolate, *ca* 5 mm long ; glumes membranous, spinulose on keels. Nuts *ca* 1.5 mm long.

Fls. & Frts. : January.

Illus. : Kuekenth. in Engl. Pflanzenr. 101 : 313, f. 35-FG. 1935.

Distrib. : Rare along hills in marshy places. Vardhangad, 166682.

KYLLINGA Rottb.

1. Rhizomes elongate, creeping :

2. Spikelets lanceolate ; nuts ellipsoid ... *K. brevifolia*

2. Spikelets ovate-elliptic ; nuts obovoid ... *K. nemoralis*

1. Rhizomes absent ... *K. tenuifolia*

Kyllinga brevifolia Rottb. Descr. & Ic. 13, t. 4, f. 3. 1773 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 588. 1893 & Illus. *Cyper.* t. 1, f. 1 - 4. 1909. *Cyperus brevifolius* (Rottb.) Hassk. Cat. Hort. Bogor. 24. 1844 ; Kern in Steenis, Fl. Males. 1, 7 ; 656. 1974.

Herbs, 5 - 15 cm high. Leaves 5 - 8 cm long. Inflorescence capitate ; bracts 3, 4 - 9 cm long. Spikes solitary, *ca* 4 mm across ; spikelets *ca* 2 mm long, keel spinulose in lower half. Nuts yellowish-brown.

Fls. & Frts. : March - July.

Distrib. : Perennials in moist, sandy soil. Koyna.

K. nemoralis ((J.R. & G. Forst.) Dandy ex Hutch. & Dalziel, Fl. W. Trop. Afr. 2 : 487. 1936 ; Getliffe in J.S. Afr. Bot. 49 : 272. 1983. *Thryocephalon nemorale* J.R. & G. Forst. Character. Gen. Pl. 129, t. 65. 1776. *K. monocephala* Rottb. Descr. & Ic. 13, f. 4. 1773 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 588. 1893 ; Cooke, Fl. Pres. Bombay 3 : 390. 1958 (Repr. ed.).

Herbs, 5 - 20 cm high, perennials. Leaves linear, acute, shorter than stem, scaberulous. Spikelets 2 - 3 mm long, 1 - 2 flowered. Nuts yellowish, dorsally compressed.

Fls. & Frts. : June - September.

Distrib. : Occasional in moist places near forest margins. Koyna.

Kyllinga tenuifolia Steud. Syn. Pl. Glum. 2 : 69. 1855 ; Hooper in Saldanha & Nicolson, Fl. Hassan Dist. 688. 1976. *K. triceps* Rottb. Descr. & Ic. 14, t. 4, f. 6. 1773; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 587. 1893; Cooke, Fl. Pres. Bombay 3 : 391. 1958 (Repr. ed.).

Herbs, 10 - 20 cm high. Leaves linear, shorter than stems. Spikes solitary, oblong ; bracts leafy, 2 - 3, 4 - 6 cm long ; lower to glumes lanceolate, hyaline, upper two membranous, ovate-lanceolate, green. Nuts ellipsoid-oblong, compressed, ca 1.5 mm long.

Fls. & Frts. : April - July.

Distrib. : Common in grasslands. Ghotil, Koyna, Kumbharli ghat, Mahabaleshwar, Rasati.

MARISCUS Vahl

- | | | |
|---|-----|-----------------------|
| 1. Stem base thickened with turgid sheaths | ... | <i>M. blatteri</i> |
| 1. Stem base not thickened : | | |
| 2. Spikelets oblong, dense ; glumes aristate | ... | <i>M. squarrosus</i> |
| 2. Spikelets cylindrical, distant ; glumes not aristate : | | |
| 3. Stems slender ; margin of glume hyaline | ... | <i>M. paniceus</i> |
| 3. Stems large, stout ; margin of glume not hyaline : | | |
| 4. Spikelets spreading ; nuts chestnut brown | ... | <i>M. sumatrensis</i> |
| 4. Spikelets erect ; nuts light brown | ... | <i>M. konkanensis</i> |

Mariscus blatteri McC. in J. Bombay nat. Hist. Soc. 37 : 532. 1934.

Herbs, ca 70 cm high, tufted. Leaves equalling or longer than stem, linear, acuminate, scabrous on upper surface. Bracts leafy, ca 34 cm long. Spikes ca 2.4 cm long ; spikelets angular, ca 9 mm long, rhachilla winged ; glumes ovate-lanceolate, 7 - 9 nerved. Nuts oblong, ca 3.5 × 1.3 mm.

Distrib. : This species from Mahabaleshwar, is known only by type collection. Mahabaleshwar, Nana 7646 (BLAT).

Mariscus konkanensis (T. Cooke) Sedgw. in J. Bombay nat. Hist. Soc. 25 : 698. 1918 ; Blatt. & McC. *ibid.* 37 : 534. 1934. *Cyperus konkanensis* T. Cooke, Fl. Pres. Bombay 2 : 874. 1908 [3 : 387. 1958 (Repr. ed.)].

Herbs, 30 - 60 cm high. Leaves shorter or as long as stem. Spikelets lanceolate-subterete, straw-coloured ; glumes oblong, obtuse, scarious. Nuts oblong.

Fls. & Frts. : July - November.

Distrib : Grows in dense tufts on hillsides and steep banks at forest margins. Fitzgerald ghat, Mahabalesher.

M. paniceus (Rottb.) Vahl, Enum. Pl. 2 : 373. 1806 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 620. 1893 ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37 : 533. 1934. *Kyllinga panicea* Rottb. Descr. & Ic. 15, t. 4, f. 1. 1773.

Herbs, 15 - 30 cm high, perennials. Leaves shorter than stem ; bracts 3 - 5, leafy. Inflorescence of 3 - 5, cylindric spikes ; spikelets linear-lanceolate ; rhachilla winged ; glumes ovate-lanceolate. Nuts oblong, reddish-brown.

Fls. & Frts. : July - October.

Distrib. : Common, growing at forest margins in shady places. It varies in size and number of spikes according to the habitat it grows in. Koyna, Panchgani.

S. squarrosus (L.) C.B. Cl. in Hook. f. Fl. Brit. India 6 : 623. 1893. *Cyperus squarrosus* L. in Torner, Cent. Pl. 2 : 6. 1756. *C. aristatus* Rottb. Descr. Pl. Rar. Progr. 22. 1772 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 606. 1893 ; Cooke, Fl. Pres. Bombay 3 : 380. 1958 (Repr. ed.) ; Blatt. & McC. in J. Bombay. nat. Hist. Soc. 37 : 263. 1934.

Herbs, 10 - 14 cm high, annuals. Leaves linear, flat, shorter than stem. Inflorescence spicate, 0.5 - 1.0 cm long. Spikelets flat, 5 - 7 mm long ; glumes oblong, brown, keel produced into a recurved beak. Nuts brown, ca 1.5 mm long.

Fls. & Frts. : April - August.

Distrib. : Common growing in ditches ; waste lands and on walls. Dhom dam near Wai, Koyna, Medha, Panchgani.

Mariscus sumatrensis (Retz.) Raynal in Adansonia 15 : 110. 1975. *Kyllinga sumatrensis* Raetz. Obs. Bot. 4 : 13. 1786. *Mariscus sieberianus* Nees ex C.B.Cl. in Hook. f. Fl. Brit. India 6 : 622. 1893.

Herbs, 20 - 35 cm high ; stems striate. Inflorescence of compound umbels ; primary rays 4 - 5 ; bracts leafy, ca 30 cm long. Spikelets lanceolate, 4.5 - 6.0 mm long, straw coloured. Nuts oblong, ca 3.5 cm long.

Fls. & Frts. : August - September.

Distrib. : Common along ghats. Kelghar ghat, Koyna.

PYCREUS P. Beauv.

1. Stamen 1 :

- | | | |
|---|-----|--------------------|
| 2. Nuts with longitudinal depression on each face | ... | <i>P. sulcinus</i> |
| 2. Nuts without longitudinal depression | ... | <i>P. pumilus</i> |

1. Stamens 2 :

- | | | |
|---|-----|--------------------------|
| 3. Nuts black with raised, horizontal lines | ... | <i>P. diaphanus</i> |
| 3. Nuts dark brown, smooth : | | |
| 4. Stems decumbent, rooting at base | ... | <i>P. sanguinolentus</i> |
| 4. Stems erect, not rooting at base | ... | <i>P. flavidus</i> |

Pycnus diaphanus (Schrader ex R. & S.) Hooper & T. Koyama in J. Jap. Bot. 51 : 316. 1976. *Cyperus diaphanus* Schrader ex R. & S. Mant. 2 : 477. 1824. *C. latespicatus* Boeck. in Flora 42 : 433. 1859 ; Cooke, Fl. Pres. Bombay 3 : 368. 1958 ((Repr. ed.). *P. latespicatus* (Boeck.) C.B.Cl. in Hook. f. Fl. Brit. India 6 : 590. 1893.

Herbs, 15 - 30 cm high. Leaves half the length of stem. Inflorescence umbellate ; bracts 2, spreading, 3.5 - 8.0 cm long. Spikelets oblong-lanceolate ; glumes broadly ovate. Nuts obovoid, ca 1.5 mm long, black.

Fls. & Frts. : October - November.

Distrib. : Common along streams and rice fields. Lingmala, Mahabaleshwar, Panchgani.

P. flavidus (Retz.) T. Koyama in J. Jap. Bot. 51 : 316. 1976. *Cyperus flavidus* Retz. Obs. Bot. 5 : 13. 1789. *C. globosus* All. Fl. Pedem. 49. 1789 non. Forsk. 1775 ; Cooke, Fl. Pres. Bombay 3 : 370. 1958 (Repr.

ed.). *P. capillaris* (Koen. ex Roxb.) Nees ex C.B.Cl. in Hook. f. Fl. Brit. India 6 : 591. 1893. *P. globosus* (All.) Reichb. Fl. Germ. Excurs. 2 : 140. 1830.

Herbs, 15–50 cm long. Leaves shorter than stem. Bracts leafy, 2–3. Spikelets linear, ca 1.5 mm long, rhachilla tetragonus, chest-nut brown. Nuts broadly ovoid, ca 1 mm long, apiculate.

Fls. & Frts. : June–September.

Distrib. : Weed in moist, shady localities. Karanjewadi, Kas, Mahabaleshwar, Wai.

Pycnus pumilus (L.) Nees ex C.B.Cl. in Hook. f. Fl. Brit. India 6 : 591. 1893. *Cyperus pumilus* L. in Torner, Cent. Pl. 2 : 6. 1756 ; Cooke, Fl. Pres. Bombay 3 : 370. 1958 (Repr. ed.).

Herbs, annuals, 5–10 cm high. Leaves equalling stem. Inflorescence of 2–6, diverging rays. Spikelets linear-oblong, compressed. Nuts oblong-obovate, apiculate, dark brown.

Fls. & Frts. : June–August.

Distrib. : Occasional in moist places. Koyna.

P. sanguinolentus (Vahl) Nees ex C.B.Cl. in Hook. f. Fl. Brit. India 6 : 590. 1893. *Cyperus sanguinolentus* Vahl, Enum. Pl. 2 : 351. 1806 ; Cooke, Fl. Pres. Bombay 3 : 369. 1958 (Repr. ed.).

Herbs, 5–13 cm high. Leaves shorter than stem. Bracts 2–3, foliaceous, 2.5–5.0 cm long. Spikelets oblong-lanceolate, 7–12 mm long. Nuts obovoid or sub-orbicular, ca 1.2 × 1.0 mm.

Fls. & Frts. : May–September.

Distrib. : Common along river banks and in moist rice fields. Koyna.

P. sulcinus (C.B.Cl.) C.B.Cl. in Hook. f. Fl. Brit. India 6 : 593. 1893. *Cyperus sulcinus* C.B.Cl. in J. Linn. Soc. 21 : 56. 1884.

Herbs, tufted ; stems 10–20 cm high, slender, scaberulous. Leaves shorter than stem. Inflorescence of 3–8 spikes ; bracts 3–5, leafy. Spikelets 3–8, linear-lanceolate ; rhachilla narrowly winged. Nuts linear-oblong, blackish-brown.

Fls. & Frts. : July–December.

Distrib. : Rare near moist rice fields. Koyna, Kochhar 157913.

RHYNCHOSPORA Vahl

Rhynchospora wightiana (Nees) Steud. Syn. Pl. Glum. 2 : 148. 1855 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 669. 1893 ; Cooke, Fl. Pres. Bombay 3 : 415. 1958 (Repr. ed.). *Haplostylis wightiana* Nees, Nov. Act. Ac. Caes. Leop. Car. 19, Suppl. 101. 1845.

Herbs, 7 - 12 cm high. Leaves linear, acuminate, 2 - 4 cm long. Spikelets reddish-brown in terminal heads ; bracts 2 - 3, longer than heads ; glumes elliptic-lanceolate, acute, subequul. Nuts oblong, compressed.

Fls. & Frts. : August.

Distrib. : Rare along hill slopes in moist places. Mahabaleshwar. Soman 156974.

RIKLIELLA Raynal

Rikliella squarrosa (L.) Raynal in Adansonia 2, 13 : 154. 1973. *Scripus squarrosus* L. Mant. Pl. 181. 1771 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 663. 1893 ; Cooke, Fl. Pres. Bombay 3 : 410. 1958 (Repr. ed.).

Herbs, 10 - 15 cm high. Leaves filiform, 5 - 10 cm long. Spikelets sessile, solitary or 2 - 3 together, oblong, 4 - 5 mm long ; glumes ovate, mucronate, midrib excurrent, recurved. Nut ellipsoid, ca 1.2 mm long, white.

Fls. & Frts. : August - September.

Illus. : A.S. Rao & Verma, Cyp. N-E. India f. 27 - 27a. 1982.

Distrib. : Rare near streams. Koyna, Kochhar 152518, Pandavgad, 169030.

SCHOENOPLECTUS (Reichb.) Palla

1. All spikelets sessile :

2. Stem septate at base ; spikelets rusty-brown ; glumes not keeled ...

S. articulatus

2. Stem not septate ; spikelets green ; glumes distinctly keeled ...

S. supinus

1. Sessile and pedicellate spikelets intermixed :

3. Glumes broadly keeled ; nuts with transverse lines ... *S. lateriflorus*3. Glumes narrowly keeled ; nuts without transverse lines ... *S. corymbosus*

Schoenoplectus articulatus (L.) Palla in Bot. Jahrb. Syst. 10 : 299. 1888 ; Hooper in Saldanha & Nicolson, Fl. Hassan Dist. 697. 1976. *Scirpus articulatus* L. Sp. Pl. 47. 1753 ; C.B. Cl. in Hook. f. Fl. Brit. India 6 : 656. 1893 ; Cooke, Fl. Pres. Bombay 3 : 406. 1958 (Repr. ed.) ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37 : 767. 1935.

Herbs, 10 - 20 cm high, rootstock woody. Inflorescence capitate, 1 - 2 cm across ; bracts solitary, 7 - 17 cm long. Spikelets ovoid-oblong, dense, 5 - 7 mm long ; glumes densely imbricate. Nuts ovoid, ca 2 mm long, dark brown.

Fls. & Frts. : December.

Distrib. : Rare in marshy localities. Pali-Nagathana, Gammie s.n.

S. corymbosus (Roth ex R. & S.) Raynal in J.B. Lebrun *et al.* Cat. Niger Pl. 343. 1976. *Isolepis corymbosus* Roth ex R. & S. Sist. Veg. 2 : 110. 1817. *Scirpus corymbosus* Heyne ex Roth, Nov. Pl. Sp. 28. 1821 ; C.B.Cl. in Hook f. Fl. Brit. India 6 : 657. 1893 ; Cooke, Fl. Pres. Bombay 3 : 407. 1958 (Repr. ed.) ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37 : 768. 1935.

Herbs, ca 1 m long. Spikelets ellipsoid, reddish-brown ; glumes broadly ovate, acute, keel prolonged into a short mucro. Nuts trigonous, yellow.

Fls. & Frts. : September - December.

Distrib. : Found in large patches in shallow pools and lakes on table lands. Panchgani.

S. lateriflorus (Gmel.) Lye in Bot. Notiser 124 : 290. 1971 ; Raynal in Adansonia 2, 16 : 139. 1976. *Scirpus lateriflorus* Gmel. Syst. Veg. 13, 1 : 127. 1791. *S. supinus* Roxb. Fl. Ind. (Carey & Wall. ed.) 1 : 219. 1820 non L. 1753. *S. supinus* var. *uninodis* sensu C.B.Cl. in Hook. f. Fl. Brit. India 6 : 656. 1893 non (Del.) Asch. & Schweinf. 1887.

Herbs, 10 - 25 cm high, slender, tufted. Bracts solitary, shorter than stem ; spikelets 6 - 10, ovoid-oblong ; glumes laxly imbricate, ovate, mucronate. Nuts sessile, obovoid, blackish-brown.

Fls. & Frts. : August - November.

Illus. : A.S. Rao & Verma, Cyp. N-E. India f. 23. 1982.

Distrib. : Rare in wet rice fields. Jadhali, Kochhar 157774.

Schoenoplectus supinus (L.) Palla in Bot. Jahrb. 10 : 299. 1889; Raynal in Adansonia 2, 16 : 145. 1976. *Scirpus supinus* L. Sp. Pl. 49. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 655. 1893 ; Cooke, Fl. Pres. Bombay 3 : 406. 1958 (Repr. ed.) ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37 : 766. 1935.

Herbs, 15 - 30 cm high. Spikelets 3 - 8, ellipsoid-oblong ; glumes imbricate, ovate, acute. Nuts obovoid, rugose, umbonate, black.

Fls. & Frts. : October.

Distrib. : Submerged, annuals, rare. Panchgani, Blatter & Hallberg B 1499 (BLAT).

SCLERIA P. Berg.

Scleria stocksiana Boeck. in Linnaea 38 : 474. 1874 ; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 687. 1894 ; Cooke, Fl. Pres. Bombay 3 : 419. 1958 (Repr. ed.) ; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37 : 779. 1935.

Herbs ; stems 10 - 30 cm high, triquetrous, striate, scabrous on margin. Leaves equalling or shorter than stems. Bracts 4 - 7 cm long. Spikelets solitary or in fascicles, oblong, obtuse ; glumes ovate-lanceolate. Nuts broadly ellipsoid, umbonate, white, shining.

Fls. & Frts. : July - September.

Distrib. : Grows in marshy, shady localities. Bhosgaon, Panchgani.

POACEAE

1. Large shrubs or trees, woody with large culm-sheaths ;
leaves with transverse nerves, articulate on sheaths :

2. Internodes solid ; spikelets in globose heads ... DENDROCALAMUS

2. Internodes hollow ; spikelets in panicles :

3. Paleae all keeled ; filaments free ... BAMBUSA

3. Paleae of only lower floret keeled ; filaments connate ... OXYTENANTHERA
1. Herbs or shrubs, not woody, without culm-sheaths ; leaves with parallel nerves, not articulate on sheaths :
4. Spikelets 2-flowered, falling entire at maturity, usually with the upper floret hermaphrodite and the lower male or barren and if the latter, often reduced to the lemma or rarely the lemma entirely absent, all alike or more often differing in size, shape and structure, frequently dorsally compressed :
5. Male and female spikelets in separate inflorescences or in different parts of the same inflorescence and of different appearance ; lemmas hyaline or membranous and thinner than the glumes :
6. Fruiting spikelets enclosed in hard, shining bract ... COIX
6. Fruiting spikelets enclosed in crustaceous lower glume ... TRILOBACHNE
5. Spikelets all hermaphrodite, or with male or barren and hermaphrodite mixed in the same inflorescence and so arranged that a male or barren spikelet is near a hermaphrodite spikelet or if unisexual then the lemma of the fertile floret indurated :
7. Spikelets often paired, with one sessile and the other pedicelled, those of each pair similar or more often dissimilar, rarely solitary and all alike ; glumes as long as the spikelet and enclosing the florets, more or less rigid and firmer than the lemmas which are both hyaline or membranous ; upper lemma usually awned :
8. Spikelets unawned :
 9. Racemes fascicled ; lower glume of sessile spikelets subglobose, pitted ... HACKELOCHLOA
 9. Racemes solitary ; lower glume of sessile spikelets umbonate, ovate-obtuse, winged on both sides above the middle ... MANISURUS
8. Spikelets awned :
 10. Lemmas unawned ... GLYPHOCCHLOA
 10. Lemmas awned :
 11. Inflorescence spathed :
 12. Involucral spikelets present :

- | | |
|--|-------------------------|
| 13. Involucral spikelets sessile, either at the same level or in superposed pairs ... | THEMEDA |
| 13. Involucral spikelets pedicelled, all at the same level ... | ISILEMA |
| 12. Involucral spikelets absent : | |
| 14. Basal joint of the raceme bulbous ... | APLUDA |
| 14. Basal joint of the racemes bulbous : | |
| 15. Joints thickened upwards, toothed at apex ... | ANDROPOGON |
| 15. Joints not toothed at apex : | |
| 16. Inflorescence of sub-umbellate fascicles of racemes, 2-jointed, the basal with one sessile and one pedicelled spikelet, the upper with one sessile and 2-pedicelled spikelets ... | PSEUDANTHISTIRIA |
| 16. Inflorescence of paired racemes, usually one sessile, the other peduncled, collected into a frequently much branched panicle ; joints and pedicels of the lowest pairs sometimes swollen ... | CYMOPOGON |
| 11. Inflorescence not spathed : | |
| 17. Lower glume with 5 - 9 prominent nerves ... | SPODIPOGON |
| 17. Lower glume not prominently nerved : | |
| 18. Spikelets in threes, one sessile, the other two pedicelled ... | CHRYSOPOGON |
| 18. Spikelets solitary or binate : | |
| 19. Spikelets solitary ... | DIMERIA |
| 19. Spikelets binate : | |

20. Pedicelled spikelet usually reduced, often to a pedicel : (occasionally developed in some species of *Arthraxon*) :
21. Upper lemma of sessile spikelet awned from the back, often just above the base ... **ARTHRAXON**
21. Upper lemma 2-fid or lobed, awned from the sinus :
22. Lower glume of sessile spikelets coriaceous or chartaceous, smooth ... **SORGHUM**
22. Lower glume of sessile spikelets thickly coriaceous, transversely strongly ridged, tubercled ... **THELEPOGON**
20. Pedicelled spikelets well developed :
23. One spikelet long, the other short pedicelled ... **ISCHAEMUM**
23. One spikelet sessile, the other pedicelled :
24. Inflorescence a solitary raceme, rarely 2 :
25. Lower glume of sessile spikelets deeply grooved, 2-toothed or cuspidate **SEHIMA**
25. Lower glume of sessile spikelets not grooved, obtuse or acute ... **HETEROPOGON**
24. Inflorescence of digitate, fascicled, corymbose racemes or panicles :
26. Upper lemma of sessile spikelets developed :

27. Upper lemma awned from the back, often front just above the base ... **ARTHRAOXON**
27. Upper lemma 2-fid or lobed, awned from the sinus :
28. Joints and pedicels slender ... **EUREALIA**
28. Joints and pedicels flattened or subconcave on the inner side, stout ... **ISCHAEMUM**
26. Upper lemma of sessile spikelets reduced to the hyaline base of the awn :
29. Lower glume of sessile spikelets 2-lobed, broadly winged ... **PSEUDODICHANTHIUM**
29. Lower glume of sessile spikelets entire, not winged ... **DICHANTHIUM**
7. Spikelets solitary or paired, more or less similar ; glumes usually membranous, the lower usually smaller or sometimes suppressed ; lower lemma often resembling the upper glume in texture ; upper lemma papery to very tough and rigid, usually awnless :
30. Spikelets awned :
31. Upper shortly aristate, lower lemma unawned ; upper glume cuspidate ... **ALLOTROPIS**
31. Upper lemma muticous, lower lemma unawned or awned ; upper glume awned or aristate :
32. Lower glume, upper glume and lower lemma awned ... **OPLISMENUM**
32. Lower glume unawned :
33. Lemmas unawned ... **PSEUDORAPHIS**
33. Lower lemma awned :
34. Upper glume 2-lobed, aristate from the sinus ... **RHYNCHELYTRUM**

34. Upper glume entire awned
(glumes and lower lemma
acute in *E. colonum*) ... ECHINOCHLOA
30. Spikelets unawned :
35. Inflorescence of spiciform racemes
arranged on a common axis :
36. Spikelets 2 - 4, clustered ... CENCHRUS
36. Spikelets solitary, binate or ternate,
not clustered :
37. Lower glume well developed :
38. Lower glume turned away
from the axis ... UROCHLOA
38. Lower glume turned towards
the axis ... BRACHIARIA
37. Lower glume usually absent, if
present, minute, scale-like :
39. Spikelets deciduous ; lemma
of upper floret coriaceous or
crustaceous, usually with
incurved margins ... PASPALUM
39. Spikelets persistent ; lemma
of upper floret thinly cartila-
ginous, usually with flat
margins ... DIGITARIA
35. Inflorescence of panicles :
40. Spikelets usually subtended by an
involucre of bristles :
41. Bristles rigid ; upper lemma
often rugose or transversely
striate ... SETARIA
41. Bristles rather soft, upper lemma
more or less smooth ... PENNISETUM
40. Spikelets not subtended by bristles :
42. Spikelets with an annular callus
at the base ... ERIOCHLOA
42. Spikelets without an annular
callus at the base :
43. Spikelets gibbous :

- | | |
|---|--------------------|
| 44. Spikelets strongly laterally compressed ... | CYRTOCOCCUM |
| 44. Spikelets not laterally compressed ... | SACCIOLEPIS |
| 43. Spikelets symmetrical ... | PANICUM |
4. Spikelets 1-to many-flowered, breaking up at maturity above the more or less persistent glumes or if falling entire, then not 2-flowered, with the lower floret male or barren and the upper hermaphrodite, usually more or less laterally compressed or terete :
45. Spikelets unawned :
46. Spikelets 1-flowered :
- | | |
|---|-------------------|
| 47. Inflorescence a panicle ... | SPOROBOLUS |
| 47. Inflorescence of umbellate spikes ... | CYNODON |
46. Spikelets 2-many-flowered :
48. Inflorescence of spikes :
- | | |
|---|----------------------|
| 49. Spikes solitary ... | ERAGROSTIELLA |
| 49. Spikes few in a whorl, occasionally 1 - 2 solitary spikes below the whorl ... | ELEUSINE |
84. Inflorescence of panicles :
- | | |
|--|-------------------|
| 50. Florets many ... | ERAGROSTIS |
| 50. Florets 2 : | |
| 51. Panicles effuse, spikelets many ; glumes deciduous, upper lemma becoming indurated ... | ISACHNE |
| 51. Panicles contracted or speciform, spikelets few ; glumes persistent ; upper lemma membranous ... | COELACHNE |
45. Spikelets awned :
52. Spikelets 1-flowered:
- | | |
|--|-----------------|
| 53. Spikelets caducous ; glumes reduced ... | ORYZA |
| 53. Spikelets persistent ; glumes well developed : | |
| 54. Awn of lemma with 3 setae ... | ARISLIAD |

54. Awn of lemma without setae :
55. Glumes usually notched, long awned from the sinus ... **POLYPOGON**
55. Glumes entire, aristate ... **GARNOTIA**
52. Spikelets 2-many-flowered :
56. Lemmas unawned ; glumes aristate ... **DINEBRA**
56. Lemmas awned ; glumes awned or unawned :
57. Spikelets 2-flowered ; upper floret hermaphrodite ; lower male, barren or hermaphrodite :
58. Glumes shortly awned ; lower lemma shortly aristate ; column of awn flat ; panicles compact, head like ... **JANSENELLA**
58. Glumes acute or acuminate ; lower lemma unawned ; column of awn not flat ; panicles effuse or contracted ... **ARUNDINELLA**
57. Spikelets few-many flowered ; often uppermost floret or florets reduced, lower hermaphrodite, rarely reduced :
59. Glumes toothed or notched at apex :
60. Awn of lemma perfect, geniculate, twisted at base ; lemmas 2-fid at apex ... **INDOPOA**
60. Awn imperfect, not geniculate ; lemmas 2 - 4-fid at apex ... **TRIPOGON**
59. Glumes entire :
61. Glumes muticous ... **DIPLACHNE**
61. Lower or upper or both glumes aristate :
62. Spikelets densely imbricate ... **DACTYLOCTENIUM**
62. Spikelets secund :
63. Inflorescence of spici-form racemes ; spikelets

with 1-perfect floret
below and 1 - 3 imper-
fect florets above ...

CHLORIS

63. Inflorescence of sessile
or shortly peduncled
clusters of 4 - 5 spikes
on a flattened, solitary
axis ; floret 2 ...

MELANOCENCHRIS

ALLOTEROPSIS J.S. ex C.B. Presl

Alloteropsis cimicina (L.) Stapf in Prain, Fl. Trop. Afr. 9 : 487. 1919 ; Blatt. & McC. Bombay Grass. 129, t. 83. 1935 ; Bor, Grass. Ind. 276. 1960. *Milium cimicinum* L. Mant. Alt. 194. 1771. *Axonopus cimicinus* (L.) P. Beauv. Ess. Agrost. 12. 1812 ; Hook. f. Fl. Brit. India 7 : 64. 1896 ; Cooke, Fl. Pres. Bombay 3 : 441. 1958 (Repr. ed.). 'Sinri'.

Herbs, ca 45 cm high, tufted. Leaves ovate-lanceolate, 5 - 7 × 1.0 - 1.2 cm, margins ciliate. Spikes ca 12 cm long ; spikelets ca 0.7 cm long, yellow ; lower glume ovate-lanceolate ; upper glume ovate, densely hairy along margins ; lower lemma oblong, ca 0.3 cm long ; upper lemma ovate, acute, ca 0.6 cm long.

Fls. & Frts. : July - August.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Rare in cultivated fields and along roadsides. Koyna, Kochhar 158634, Panchgani, Hallberg s.n. (BLAT).

ANDROPOGON L.

Andropogon pumilus Roxb. Fl. Ind. (Carey & Wall. ed.) 1 : 277. 1820 ; Hook. f. Fl. Brit. India 7 : 170. 1896 ; Cooke, Fl. Pres. Bombay 3 : 495. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 99, t. 65. 1935 ; Bor. Grass. Ind. 93. 1960. 'Gondval'.

Herbs ; culms slender, ca 40 cm high, decumbent. Leaves linear, 2.5 × 0.2 - 0.4 cm. Racemes in pairs, ca 2 cm long ; sessile spikelets : lower glume linear-lanceolate, acuminate, bi-cuspidate ; upper glume mucronate ; lower lemma linear-lanceolate ; pedicelled spikelets unawned.

Fls. & Frts. : December.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Infrequently distributed along hills in drier parts. Panchgani.

APLUDA L.

Apluda mutica L. Sp. Pl. 82. 1753 ; Bor, Grass. Ind. 93. 1960. *A. varia* Hack. in DC. Monogr. Andropog. 6 : 196. 1889 ; Hook. f. Fl. Brit. India 7 : 150. 1896 ; Cooke, Fl. Pres. Bombay 3 : 474. 1958 (Repr. ed.). *A. varia* var. *aristata* Hack. *op. cit.* ; Blatt. & McC. Bombay Grass. 29, t. 20. 1935. 'Kharwel'.

Herbs ; culms erect or ascending, 35 60 cm high, rooting at nodes. Leaves linear-lanceolate, 5 20 cm long ; margins scabrid. Panicles 5 18 cm long, greenish-purple ; spikelets 3-flowered, central sessile, bi-sexual ; lateral 2 pedicelled, male.

Fls. & Frts. : September May.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Common near hedges, along roadsides and near forest edges. Bhikauli forest, Mahabaleshwar, Dhawadi, Gureghar, Karanjewadi, Kelghar ghat, Kumbharli ghat, Lingmala, Maval, Panchgani.

ARISTIDA L.

1. Awns articulated :

2. Lemmas shorter than glumes ; lateral awns reduced ... *A. redacta*

2. Lemmas longer than glumes ; lateral awns developed but shorter than middle awn ... *A. adscensionis*

1. Awns not articulated ... *A. funiculata*

Aristida adscensionis L. Sp. Pl. 82. 1753 ; Hook. f. Fl. Brit. India 7 : 224. 1896 ; Cooke, Fl. Pres. Bombay 3 : 529. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 209, t. 138, 1935 ; Bor, Grass. Ind. 409. 1960. 'Longi-Kusal'.

Herbs, 20 25 cm high. Leaves convolute, 5 - 20 cm long. Panicles contracted subsecund ; spikelets 0.4 0.7 cm long ; lower glume oblong-lanceolate, ca 0.45 cm long ; upper glume ca 0.65 cm long.

Fls. & Frts. : July October.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Common along dry hills. Koregaon, Panchgani, Hills around Satara.

Aristida funiculata Trin. & Rupr. Sp. Gram. Stip. 159. 1842 & in Mem. Acad. Sci. Petersb. 6, 7 : 159. 1843; Hook. f. Fl. Brit. India 7 : 226. 1896 ; Cooke, Fl. Pres. Bombay 3 : 531. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 214, t. 142. 1935 ; Bor, Grass, Ind. 410. 1960. '*Pandhri-Kusal*'.

Herbs, *ca* 60 cm high. Leaves convolute or flat, 5-15 cm long, ciliate at base. Panicles 10-25 cm long, lax ; lower glume linear-lanceolate, aristate ; lemma narrow, cylindric.

Fls. & Frts. : October.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Slender annuals in drier parts of the district. Panchgani, Satara, Wai.

A. redacta Stapf in Kew Bull. 1892 : 85. 1892 ; Hook. f. Fl. Brit. India 7 : 227. 1896 ; Cooke, Fl. Pres. Bombay 3 : 531. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 215. 1935 ; Bor, Grass. Ind. 412. 1960.

Herbs, 15 - 20 cm high. Leaves convolute, 7 - 10 cm long. Panicles *ca* 15 cm long ; spikelets *ca* 1 cm long ; glumes lanceolate, subequal, mucronate.

Fls. & Frts. : October - November.

Distrib. : Rare on exposed rocky hill slopes. Panchgani, Blatter & Hallberg B 1275 (BLAT) ; Wai, Talbot 4484.

ARTHRAXON P. Beauv.

- | | | |
|--|-----|-----------------------|
| 1. Awns 10 - 15 cm long ; column scaberulous | ... | <i>A. jubatus</i> |
| 1. Awns upto 2 cm long ; column smooth : | | |
| 2. Margin of lower glume of sessile spikelets inflexed ;
pedicelled spikelets present | ... | <i>A. lanceolatus</i> |
| 2. Margin of lower glume of sessile spikelets not inflexed ;
pedicelled spikelet usually absent, if present, only in
upper part of racemes : | | |
| 3. Joints pilose ; pedicelled spikelets present | ... | <i>A. lancifolius</i> |
| 3. Joints glabrous ; pedicelled spikelets absent | ... | <i>A. hispidus</i> |

Arthraxon hispidus (Thunb.) Makino in Bot. Mag. Tokyo 26 : 214. 1912 ; Bor, Grass, Ind. 99. 1960 ; Jain in J. Ind. Bot. Soc. 51 : 173. 1972 ; Welzen in Blumea 27 ; 266, f. 1. 1981. *Phalaris hispidus* Thunb. Fl. Jap. 44. 1784. *A. ciliaris* P. Beauv. Ess. Agrost. 111, 152, t. 11, f. 6. 1812 ; Hook. f. Fl. Brit. India 7 : 145, 1896 ; Cooke, Fl. Pres. Bombay 3 : 489. 1958 (Repr. ed). *A. satarensis* Almeida in J. Bombay nat. His. Soc. 66 : 515. 1970 *emend.* Deshpande & Hemadri in Bull. Bot. Surv. India 12 : 274. 1970.

Herbs ; culms 20 - 50 cm high, much branched, slender, rooting at nodes. Leaves ovate-lanceolate, base cordate, 1.5 - 4.0 × 0.5 - 1.0 cm, margin ciliate. Spikes 4 - 7, digitate, 1.0 - 4.5 cm long. Sessile spikelets 0.3 - 0.4 cm long ; lower glume rounded.

Fls. & Frts. : August - November.

Illus. : Welzen, *op. cit.*

Distrib. : In open to shaded grasslands and waste areas. Gureghar, Jadholi, Kelghar ghat, Khambil Chorghe ghat, Mahabaleshwar, Panchgani, Shirshingi.

Notes : This species is most variable and has a wide distribution, therefore, described as distinct taxa by many authors. Jain (1972) separated *A. satarensis* Almeida from *A. quartinianus* var. *glabrescens* on the basis of spikelet length and absence of pedicel. But such characters could not be used in delimiting taxa after the study of Indian material from various regions. Therefore, Welzen (*op. cit.*) merged it under *A. hispidus*.

A. jubatus Hack. in DC. Monogr. Phan. 6 : 358. 1889 ; Hook. f. Fl. Brit. India 7 : 147. 1896 ; Cooke, Fl. Pres. Bombay 3 : 489. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 79, t. 50. 1935 ; Bor, Grass. Ind. 100. 1960 ; Welzen in Blumea 27 : 280. 1981.

Herbs, annuals ; culms 15 - 30 cm high, ascending. Leaves lanceolate-elliptic, 0.5 - 3.0 cm long, densely pubescent. Sessile spikelets lanceolate, ca 0.45 cm long ; lower glume linear, acute.

Fls. & Frts. : May.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Rare, in dense clumps in rock crevices. Way to Pratapgad, R.S. Rao 71712.

Arthraxon lanceolatus (Roxb.) Hochst. in Flora 39 : 188. 1856 ; Hook. f. Fl. Brit. India 7 : 143. 1896 ; Bor, Grass. Ind. 100. 1960 ; Jain in J. Ind. Bot. Soc. 51 : 175. 1972 ; Welzen in Blumea 27 : 283, f. 8. 1982. *Andropogon lanceolatus* Roxb. Fl. Ind. (Carey & Wall. ed.) 1 : 262. 1820. *Arthraxon prionodes* (Steud.) Dandy in Andrews, Fl. Pl. Sudan 3 : 399. 1956 ; Bor, *op. cit.* 101. *A. serrulatus* Hochst. *op. cit.* (p.p.); Blatt. & McC. Bombay Grass. 75. 1935.

KEY TO THE VARIETIES

1. Lower glume of sessile spikelet with single stiff hair on marginal and sub-marginal nerves ... var. *lanceolatus*
1. Lower glume of sessile spikelet with tuft of stiff hairs on marginal and sub-marginal nerves :
 2. Lower glume of sessile spikelets densely villous on dorsal surface ... var. *raizadae*
 2. Lower glume of sessile spikelets glabrous on dorsal surface ... var. *meeboldii*

var. *lanceolatus*

Herbs, ca 1 m high. Leaves ovate-lanceolate, 1.5 - 2.5 cm long, sparsely hairy with bulbous based hairs, margins ciliate. Spikes 3 - 4 cm long ; sessile spikelets lanceolate ; pedicelled spikelets linear-lanceolate.

Fls. & Frts. : September - November.

Illus. : Blatt. & McC. *op. cit.* ; Welzen *op. cit.*

Distrib. : Occurs along slightly shaded roadsides and forest margins in evergreen forests. Kamalgad, Panchgani, Shirgaon ghat.

var. *meeboldii* (Stapf) Welzen in Blumea 27 : 285, f. 10. 1981. *A. meeboldii* Stapf in Kew Bull. 1908 : 449. 1908 ; Cooke, Fl. Pres. Bombay 3 : 488 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 76, t. 47. 1935 ; Bor, Grass. Ind. 101. 1960 ; Jain in J. Ind. Bot. Soc. 51 : 177, f. 23. 1972.

Herbs, 20 - 30 cm long. Leaves lanceolate, 3 - 6 × 0.5 - 1.0 cm. Spikelets ca 0.45 cm long ; lower glume of sessile spikelet with 2 rows of tubercles on dorsal surface.

Fls. & Frts. : September - November.

Illus. : Welzen, *op. cit.*

Distrib. : Common along the open hill slopes. Jadholi, Karanjewadi, Mahabaleshwar, Nauja, Panchgani.

var. *raizadae* (Jain *et al.*) Welzen in *Blumea* 27 : 287. 1981. *A. raizadae* Jain *et al.* in *J. Ind. Bot. Soc.* 51 : 103, f. 6 9. 1972.

Herbs, ascending, 10 - 50 cm high. Leaves ovate-lanceolate, 2 - 7 × 0.4 - 2.0 cm, base cordate, with tubercle based hairs. Spikes 8 - 12 cm long ; lower glume 0.6 - 0.7 cm long ; upper glume 0.5 - 0.7 cm long ; awns 1.5 - 1.7 cm long.

Fls. & Frts. : December - October.

Illus. : Jain, *op. cit.*

Distrib. : Common along roadsides in rock crevices and walls. Fitzgerald ghat, Lingmala, Mahabaleshwar, Old Mahabaleshwar road, Near Gureghar Nursery, Panchgani, Way to Pratapgad.

Arthraxon lancifolius (Trin.) Hochst. in *Flora* 39 : 188. 1856 ; Blatt. & McC. *Bombay Grass*. 77, t. 48. 1935 (*p.p.*) ; Bor, *Grass. Ind.* 100. 1960 ; Jain *et al.* in *J. Ind. Bot. Soc.* 51 : 176, f. 7. 1972 ; Welzen in *Blumea* 27 : 288 1981. *Andropogon lancifolius* Trin. in *Mem. Acad. Sci. Petersb.* 6, 2 : 271. 1832. *Arthraxon microphyllus* Hook. f. *Fl. Brit. India* 7 : 147. 1896 *non* Hochst. 1856 ; Cooke, *Fl. Pres. Bombay* 3 : 1958 (*Repr. ed.*).

Herbs ; culms tufted, 15 - 30 cm long, hairy below the spikes. Leaves elliptic-lanceolate, 2 - 4 × 0.6 - 1.0 cm, sparsely hairy. Spikes 2 - 6, 1 - 3 cm long ; sessile spikelets ca 0.3 cm long, laterally compressed ; lower glume lanceolate, cuspidate.

Fls. & Frts. : September - November.

Illus. : Jain, *op. cit.*

Distrib. : Found in rock crevices along hill slopes. Kistrude, Koyna.

ARUNDINELLA Raddi

- | | | |
|--|-----|-----------------------|
| 1. Inflorescence a solitary, cylindrical spike | ... | <i>A. spicata</i> |
| 1. Inflorescence of panicles : | | |
| 2. Whole plant with tubercle-based hairs ; upper lemma with two setae on either sides of awn | ... | <i>A. tuberculata</i> |
| 2. Plants without tubercle based hairs ; upper lemma with awn without setae or awnless : | | |
| 3. Upper lemma unawned | ... | <i>A. leptochloa</i> |

3. Upper lemma awned :

- | | | |
|---|-----|----------------------|
| 4. Leaves elliptic, acuminate ; spikelets ca 0.2 cm long | ... | <i>A. pumila</i> |
| 4. Leaves linear to linear-lanceolate ; spikelets 0.3 - 0.4 cm long : | | |
| 5. Annuals ; rhachis scabrid | ... | <i>A. metzii</i> |
| 5. Perennials ; rhachis glabrous | ... | <i>A. nepalensis</i> |

Arundinella leptochloa (Nees ex Steud.) Hook. f. Fl. Brit. India 7 : 76. 1896 ; Bor, Grass. Ind. 423. 1960. *Panicum leptochloa* Nees ex Steud. Syn. Pl. Glum. 1 : 62. 1854. *A. gigantea* Dalz. in Dalz. & Gibs., Bombay Fl. 293. 1861 ; Hook. f. *op. cit.* ; Cooke, Fl. Pres. Bombsy 3 : 525. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 197, t. 130. 1935.

Herbs, ca 1 m high. Leaves linear-lanceolate, acuminate, 18 20 × 2 cm. Panicles, 12 - 17 cm long ; rhachis scabrid ; spikelets ovate-lanceolate, 0.25 0.3 cm long ; upper glume and lower lemma ovate ; upper lemma elliptic, coriaceous.

Fls. & Frts. : October - February.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Common along ghats. Dicholi, Jangli jaigad, Koyna, Mahabaleshwar.

A. metzii Hochst. ex Miq. in Verh. Nederl. Inst. 3(4) : 31. 1851 ; Hook. f. Fl. Brit. India 7 : 72. 1896 ; Cooke, Fl. Pres. Bombay 3 : 523. 1958 (Repr. ed.) ; Bor, Grass. Ind. 423. 1960. *A. lawii* Hook. f. in Trim. Fl. Ceyl. 5 : 180. 1900 ; Cooke, *op. cit.* ; Blatt. & McC. Bombay Grass. 195. 1935. *A. pygmaea* Hook. f. *op. cit.* ; Blatt. & McC. *op. cit.* 194 ; Cooke, *op. cit.* 522.

Herbs, ca 1 m high. Leaves linear-lanceolate, acuminate, 3.5 10.0 cm long. Panicles 7 - 10 cm long ; lower glume ovate-lanceolate, mucronate ; lower lemma elliptic, obtuse, paleate ; upper lemma ovate, obtuse.

Fls. & Frts. : October - November.

Distrib. : Common near cultivated fields ; grows in large community along streams. Kistrude, Koyna, Mahabaleshwar, Rohine.

A. nepalensis Trin. Gram. Panic. 62. 1826 ; Bor, Grass. Ind. 423. 1960. *A. brasiliensis* Hook. f. Fl. Brit. India 7 : 73. 1896 non Raddi 1823 ; Cooke, Fl. Pres. Bombay 3 : 524. 1958 (Repr. ed.). *A. hispida* Blatt. & McC. Bombay Grass. 195. 1935 non O, Ktze. 1891.

Herbs, *ca* 1 m high. Leaves linear, 10 - 20 cm long. Panicles 17 - 30 cm long ; spikelets 0.3 - 0.4 cm long ; lower glume ovate-lanceolate, hairy on the nerves ; upper glume ovate-lanceolate ; lower lemma elliptic-oblong ; upper lemma lanceolate.

Fls. & Frts. : October - April.

Distrib. : Rare, near forest clearing in scrub jungles in rock crevices. Mahabaleshwar, *Mahajan* 24752, *Puri* 269, Panchgani, *Woodrow* s.n.

Arundinella pumila (Hochst. ex A. Rich) Steud. Syn. Pl. Glum. 1 : 114. 1854 ; Bor, Grass. Ind. 423. 1960. *Acratherum pumilum* Hochst. ex A. Rich. Tent. Fl. Abyss. 2 : 414, f. 100. 1851. *Arundinella tenella* Nees ex Steud. *op. cit.* 115 ; Hook. f. Fl. Brit. India 7 : 71. 1896 ; Cooke, Fl. Pres. Bombay. 3 : 522. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 193, t. 127. 1935.

Herbs, 5 - 45 cm high. Leaves 5 - 15 × 0.5 - 1.3 cm, sparsely hairy. Panicles 15 - 30 cm long ; lower glume lanceolate, *ca* 0.15 cm long ; upper glume ovate-lanceolate, cuspidate ; lower lemma ovate, *ca* 0.15 cm long ; upper lemma lanceolate, *ca* 0.1 cm long.

Fls. & Frts. : September - May.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Common on old walls and among forest undergrowth ; very handsome when in bloom. Deshmukhwadi, Kelghar ghat, Machutar Forest, Mahabaleshwar, Pratapgad, Old Mahabaleshwar, Shirshingi.

A. spicata Dalz. in Dalz. & Gibs. Bombay Fl. 293. 1861 ; Hook. f. Fl. Brit. India 7 : 77. 1896 ; Cooke, Fl. Pres. Bombay 3 : 525. (Repr. ed.) ; Blatt. & McC. Bombay Grass. 197, t. 129. 1935.

Herbs, 7 - 20 cm high. Leaves linear-lanceolate, 2 - 3 × 0.5 cm, densely hairy. Spikes 1 - 3 cm long ; spikelets lanceolate, acuminate ; lower glume *ca* 0.3 cm long with bulbous based hairs ; upper glume and lower lemma lanceolate, acute, *ca* 0.25 cm long ; upper lemma oblong, *ca* 0.13 cm long.

Fls. & Frts. : September - October.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Occasional on plateaus ; endemic to Maharashtra. Mahabaleshwar, Panchgani.

Arundinella tuberculata Munro ex Lisboa in J. Bombay nat. Hist. Soc. 5 : 344. 1891 ; Hook. f. Fl. Brit. India 7 : 69. 1896 ; Cooke, Fl. Pres. Bombay 3 : 521. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 192. 1935 ; Bor, Grass. Ind. 425. 1960.

Herbs, 30 - 45 cm high. Leaves linear-lanceolate, acute, 4 - 6 × 0.4 - 0.6 cm, hispid. Panicles narrowly oblong, 10 - 13 cm long ; rhachis angular ; lower glumes oblong-lanceolate, acute, 0.4 - 0.5 cm long, hairy along the nerves ; upper glume ovate, acute, 0.8 - 0.9 cm long, hairy ; lower lemma elliptic-oblong, ca 0.4 cm long, bifid ; upper lemma lanceolate, acute 0.2 cm long.

Fls. & Frts. : September - October.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Rare annuals in dry localities. Panchgani ghat, *Ansari* 67746 ; Panchgani, *Blatter & Hallberg* 1232, Pasarni ghat, *Blatter & Hallberg* 1306 (*BLAT*).

CULTIVATED SPECIES

Arundo donax L. Sp. Pl. 81. 1753 ; Hook. f. Fl. Brit. India 7 : 302. 1896 ; Cooke, Fl. Pres. Bombay 3 : 574. 1958 (Repr. ed.) ; Bor, Grass. Ind. 413. 1960.

Culms 3 - 4 m high. Leaves linear-lanceolate, 20 - 25 cm long. Panicles 20 - 30 cm long.

Distrib. : Grown as an ornamental plant at Mahabaleshwar.

BAMBUSA Schreb.

Bambusa arundinacea (Retz.) Willd. Sp. Pl. 2 : 245. 1799 ; Gamble in Hook. f. Fl. Brit. India 7 : 395. 1896 ; Cooke, Fl. Pres. Bombay 3 : 569. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 283. 1935.

Trees, 20 - 30 m high, large, tufted, armed with recurved spines. Leaves linear or linear-lanceolate, rounded at base ; sheaths coriaceous, orange-yellow with green or red streaks, ciliate. Panicles large, equalling the stem ; spikelets 1-flowered lanceolate, acute, ca 0.25 cm long ; glume ovate-lanceolate, mucronate ; lemmas 3 - 7 ; upper 1 - 3, male or empty, lower bisexual.

Distrib. : Rare in evergreen forests, usually grown in gardens. Koyna, *Vasavada* 5020.

CULTIVATED SPECIES

Bambusa vulgaris Schrad. in Wendel. Collect. Pl. 2 : 26, t. 47. 1810 ; Gamble in Hook. f. Fl. Brit. India 7 : 391. 1896 ; Cooke, Fl. Pres. Bombay 3 : 570. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 282. 1935.

Trees, 5 - 15 m high, unarmed. Leaves linear-lanceolate. Panicles large, leafy. Spikelets in bractate clusters.

Distrib. : Occasionally cultivated in gardens as an ornamental plant.

BRACHIARIA Griseb.

Brachiaria eruciformis (J.E. Sm.) Griseb. in Ledeb. Fl. Ross. 4 : 469. 1853 ; Bor, Grass. Ind. 283. 1960. *Panicum eruciforme* J.E. Sm. in Sibth. & J.E. Sm. Fl. Graeca 1 : 44, f. 59. 1806. *P. isachne* Roth ex R. & S. Syst. Veg. 458. 1817 ; Hook. f. Fl. Brit. India 7 : 281. 1896 ; Cooke, Fl. Pres. Bombay 3 : 448. 1958 (Repr. ed.). *B. isachna* Stapf in Fl. Trop. Afr. 9 : 552. 1919 ; Blatt. & McC. Bombay Grass. 133, t. 85. 1935. '*Shimpi*'.

Herbs, 15 - 25 cm high. Leaves linear-lanceolate, 2.5 - 5.0 × 0.2 - 0.5 cm. Spikes ca 5 cm long ; spikelets oblong, ca 0.25 cm long, secund ; lower glume a minute scale ; upper glume oblong, membranous, 5-nerved, pubescent ; lower lemma oblong, 3-nerved ; upper lemma oblong, shining, paleate. Grains oblong.

Fls. & Frts. : April.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Frequent in damp situations. Nauja, Panchgani, Taldeo.

CENCHRUS L.

Cenchrus ciliaris L. Mant. Alt. 302. 1771. Bor, Grass. Ind. 287, f. 33. 1960. *Pennisetum cenchroides* L.C. Rich. in Pers. Syn, Pl. 1 : 72. 1805 ; Hook. f. Fl. Brit. India 7 : 88. 1896 ; Cooke, Fl. Pres. Bombay 3 : 432. 1958 (Repr. ed.). *P. ciliare* Link, Hort. Berol. 1 : 213. 1827 ; Blatt. & McC. Bombay Grass. 181, t. 116. 1935.

Herbs, 15 - 45 cm high. Leaves linear, 3 - 9 cm long with tubercle based hairs. Racemes cylindric, 2.5 - 4.5 cm long ; involucre bristles free, antrorsely scabrid ; inner ca 1 cm long ; puberulous ; glumes ca 0.2

cm long, sub-orbicular, shortly cuspidate ; lower lemma sub-orbicular, ca 0.3 cm long.

Fls. & Frts. : July.

Illus. : Bor, *op. cit.*

Distrib. : Tufted perennials in drier part of the district. Pingli.

CHLORIS Swartz

Chloris virgata Swartz, Fl. Ind. Occ. 1 : 203. 1797 ; Hook. f. Fl. Brit. India 7 : 291. 1896 ; Blatt. & McC. Bombay Grass. 255, t. 170. 1935 ; Bor, Grass. Ind. 468. 1960,

Herbs, prostrate, 15 - 30 cm long. Leaves lanceolate, 5 - 15 cm long. Racemes crowded, 2.5 - 6.0 cm long ; spikelets 0.2 - 0.3 cm long ; lower glume oblong, acute, ca 0.25 cm long, scaberulous on keel, awned ; upper glume oblong-lanceolate, aristate, ca 0.3 cm long, bi-lobed at apex, scaberulous on keel ; lemmas oblong, bi-lobed.

Fls. & Frts. : July - November.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Rare near cultivated fields. Koyna, Vasavada 5029, Nanal, Kochhar 154290.

CHRYSOPOGON Trin.

- | | | |
|--|-----|----------------------|
| 1. Pedicels of the pedicelled spikelets upto half of the sessile spikelets or more | ... | <i>C. lancearius</i> |
| 1. Pedicels of the pedicelled spikelets less than half of the sessile spikelets | ... | <i>C. fulvus</i> |

Chrysopogon fulvus (Spr.) Chiov. Fl. Somala 1 : 327. 1929 ; Bor, Grass. Ind. 116. 1960. *Pollinia fulva* Spr. Pugill. 2 : 10. 1815. *Andropogon monticola* R. & S. Syst. Veg. 2, Mant. 3 : 665. 1827 ; Hook. f. Fl. Brit. India 7 : 192. 1896 ; Cooke, Fl. Pres. Bombay 3 : 505. 1958 (Repr. ed.). *C. montanus* Trin. ex Spr. Neue Entdeck. 2 : 93. 1921 ; Blatt. & McC. Bombay Grass. 70. t. 62. 1935 (*p.p.*).

Herbs, 40 - 50 cm high. Leaves linear, acuminate, 8 - 10 cm long, margin scabrid. Panicles 5 - 12 cm long ; branches capillary ; sessile spikelets clavate, ca 0.5 cm long ; callus short, bearded with brown

hairs ; lower glume oblong, 2 4 nerved ; keels hispid above ; lower lemma ciliate ; pedicelled spikelets ; densely ciliate with golden brown hairs.

Fls. & Frts. : November.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Rare in sandy soil. Shirgaon ghat, 166463.

Chrysopogon lancearius (Hook. f.) Haines, Bot. Bihar Orissa 1036. 1924. 1080. 1961 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 69. 1935 ; Bor. Grass. Ind. 118. 1960. *Andropogon lancearius* Hook. f. Fl. Brit. India 7 : 190. 1896 ; Cooke, Fl. Pres. Bombay 3 : 504. 1958 (Repr. ed.).

Herbs, *ca* 1 m high. Leaves lanceolate, acuminate, *ca* 30×1 cm, margins spinulose. Panicles *ca* 15 cm long ; sessile spikelets *ca.* 0.6 cm long ; lower glume oblong, truncate or notched ; lower lemma linear-oblong, *ca* 0.4 cm long ; upper lemma linear, *ca* 0.25 cm long ; pedicelled spikelets, lanceolate, acute, *ca* 0.8 cm long.

Fls. & Frts. : October.

Distrib. : Rare along hill slopes. Panchgani, *Blatter & Hallberg B* 1230 (*BLAT*).

COELACHNE R. Br.

- | | | |
|--|-----|--------------------------|
| 1. Spikelets <i>ca</i> 0.1 cm long ; stamens usually 2 | ... | <i>C. minuta</i> |
| 1. Spikelets more than 0.15 cm long ; stamens 3 | ... | <i>C. simpliciuscula</i> |

Coelachne minuta Bor in J. Bombay nat. Hist. Soc. 58 : 317. 1961 & Grass. Ind. App. IV. 1973 (Repr. ed.). *C. ghatica* Naik in Reinwardtia 9 : 393, f. 1. 1980 ; Ved Prakash & Jain in Fasc. Fl. India 14 : 5, f. 1 - 13. 1984.

Herbs, 5 - 15 cm high. Leaves lanceolate, acute, 0.5 3.0 cm long. Panicles *ca* 2.8 cm long ; branches capillary, *ca* 1.5 cm long ; spikelets obovoid ; lower glume *ca* 0.05 cm long ; upper glume 0.05 - 0.1 cm long, 3 5 nerved ; lower lemma *ca* 0.1 cm long ; upper lemma lanceolate, *ca* 0.1 cm long, 2-keeled, keels hairy on dorsal surface.

Fls. & Frts. : August - September.

Illus. : Ved Prakash & Jain, *op. cit.*

Distrib. : Rare ; endemic to Maharashtra at about 650 m altitude. Mahabaleshwar, Santapau 22731 (BLAT).

Coelachne simpliciuscula (Wight & Arn. ex Steud.) Munro ex Bth. in J. Linn Soc. 19 : 93. 1881 ; Bor, Grass. Ind. 576, f. 61 A. 1960 ; Ved Prakash & Jain in Fasc. Fl. India 14 : 6. 1984. *Panicum simpliciusculum* Wight & Arn. ex Steud. Syn. Pl. Glum. 1 : 96. 1854. *C. pulchella* sensu Hook. f. Fl. Brit. India 7 : 220. 1896 non R. Br. 1810 ; Blatt. & McC. Bombay Grass. 200, t. 131. 1935.

Herbs, 15 - 20 cm long. Leaves lanceolate, acuminate. 1.5 - 3.0 cm long, minutely scaberulous above. Panicles 3.5 - 9.0 cm long ; branches alternate ; lower glume sub-orbicular, ca 0.1 cm long.

Fls. & Frts. : Throughout the year.

Illus. : Blatt. & McC. *op. cit.* ; Bor, *op. cit.*

Distrib. : Tufted annuals ; common in marshy areas in large patches. Bamnoli, Dicholi, Karanjewadi, Koyna, Mahabaleshwar.

COIX L.

Coix lacryma-jobi L. Sp. Pl. 972. 1753 ; Hook. f. Fl. Brit. India 7 : 100. 1896 ; Cooke, Fl. Pres. Bombay 3 : 517. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 3, f. 1. 1935 ; Bor, Grass. Ind. 264. 1960.

Herbs, 1.0 - 1.5 m high. Leaves narrowed, base cordate, 15 - 38 × 1.0 - 2.5 cm. Racemes 2 - 5 cm long ; lower spikelets female, solitary ; upper male ; male spikelets 3 at each node, two sessile, one pedicelled, lanceolate, ca 1.4 cm long ; lower glume elliptic-lanceolate, acute, margin inflexed, narrowly winged ; upper glume slightly smaller than the lower, not winged.

Fls. & Frts. : November - December.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Common near cultivated fields in moist places. Kumbhali ghat, Padolshi, Panchgani.

CYMBOPOGON Spreng.

Cymbopogon martinii (Roxb.) Wats. in Atkins. Gaz. N.W. Prov, Ind. 392. 1882 ; Blatt. & McC. Bombay Grass. 104. 1935 ; Bor, Grass.

Ind. 129. 1960. *Andropogon martinii* Roxb. Fl. Ind. (Carey & Wall. ed.) 1 : 280. 1820. *A. schoenanthus* var. *martinii* Hook. f. Fl. Brit. India 7 : 204. 1896.

Herbs, 1.5 - 2.5 m high. Leaves lanceolate, 12 - 20 × 0.5 - 1.5 cm, base subordinate, apex tapering. Panicles 10 - 12 cm long; sessile spikelets ca 0.35 cm long, ciliate; lower glume with a deep slit in the lower half; upper glume lanceolate, narrowly winged; lower lemma oblong; upper lemma hyaline, bi-lobed from middle; pedicelled spikelets; oblong, lanceolate, ca 0.5 cm long.

Fls. & Frts. : September - January.

Distrib. : Aromatic herbs, widely distributed along ghats in open areas. Dhamani, Lingmala, Panchgani, Pasarani ghat.

CULTIVATED SPECIES

Cymbopogon winteranus Jowitt in Ann. Roy Bot. Gdns. Peradeniya 4 : 189. 1908; Bor, Grass. Ind. 132. 1960; Soenarko in Reinwardtia 9 : 348. 1977.

Tufted perennials. Leaves ca 16 cm long, base cordate, tapering towards apex. Panicles large, drooping; spikelets 0.4 - 0.5 cm long.

Fls. & Frts. : November.

Distrib. : Cultivated in gardens. Research Nursery, Koyna.

CYNODON L.C. Rich.

Cynodon dactylon (L.) Pers. Syn. Pl. 1 : 85. 1805; Hook. f. Fl. Brit. India 7 : 288. 1896; Cooke, Fl. Pres. Bombay 3 : 554. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 249, t. 166. 1935; Bor, Grass. Ind. 469, f. 52. 1960; Jain in Bull. Bot. Surv. India 9 : 139. 1968. *Panicum dactylon* L. Sp. Pl. 58. 1753. 'Harali'.

Herbs, stolons creeping, woody, 7 - 20 cm long. Leaves linear, flat or convolute, 5 - 15 cm long, sparsely hairy. Spikes 2.5 - 3.5 cm long; rachis flat, keeled, scabrid; spikelets alternate on the lower surface, sessile, elliptic ca 0.2 cm long; lower glume lanceolate, ca 0.1 cm long; lemmas ovate, obtuse, ca 0.2 cm long, 3-nerved. Grains oblong, minute.

Fls. & Frts. : August - April.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Common perennials with underground rhizomes in cultivated fields, along roadsides and pastures. Dhom dam near Wai, Koyaa, Mahabaleshwar, Panchgani, Wai.

CYRTOCOCCUM Stapf

Cyrtococcum oxyphyllum (Steud.) Stapf in Hook. Ic. Pl. Sub. t. 3096. 1922 ; Bor, Grass. Ind. 291. 1960. *Panicum oxyphyllum* Steud. Syn. Pl. Glum. 1 : 65. 1854. *P. pilipes* Nees ex Arn. ex Buese in Miq. Pl. Jungh. 3 : 376. 1854 ; Hook. f. Fl. Brit. India 7 : 57. 1896. *C. pilipes* A. Camus in Bull. Mus. Hist. Nat. Paris 27 : 118. 1921 ; Blatt. & McC. Bombay Grass. 169, t. 110. 1935.

Herbs, procumbent, 30-50 cm high. Leaves elliptic-lanceolate, acuminate, 6-9 × 0.5-1.0 cm, sparsely hairy. Panicles 5-8 cm long ; branches lax, spreading, sparsely hairy ; spikelets shortly pedicelled, 0.2-0.25 cm long ; lower glume ovate, ca 0.15 cm long.

Fls. & Frts. : October - February.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Common in moist, shady places. Jangli Jaigad, Mahabaleshwar, Nauja, Pratapgad, Shirshingi.

DACTYLOCTENIUM Willd.

Dactyloctenium aegyptium (L.) Willd. Enum. Pl. Hort. Berol. 1029. 1809 ; Blatt. & McC. Bombay Grass. 262, t. 176. 1935 ; Bor, Grass. Ind. 489. 1960. *Cynosurus aegyptius* L. Sp. Pl. 72. 1753. *Eleusine aegyptiaca* (L.) Desf. Fl. Atlant. 1 : 85. 1798 ; Hook. f. Fl. Brit. India 7 : 295. 1896 ; Cooke, Fl. Pres. Bombay 3 : 560. 1958 (Repr. ed.).

Herbs, 10-25 cm high. Leaves linear, acuminate, 5-11 × 0.4-0.6 cm, ciliate on margins. Spikes 2, ca 3 cm long ; spikelets ca 0.45 cm long ; lower glume ovate, acute, ca 0.25 cm long ; upper glume oblong, ca 0.45 cm long ; lemmas ovate, mucronate, ca 0.3 cm long.

Fls. & Frts. : August - October.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Occasional in moist places near cultivated fields and along river banks. Nauja, Wai.

DENDROCALAMUS Nees

Dendrocalamus strictus (Roxb.) Nees in *Linnaea* 9 : 476. 1834 ; Gamble in *Hook. f. Fl. Brit. India* 7 : 404. 1896 ; Cooke, *Fl. Pres. Bombay* 3 : 572. 1958 (Repr. ed.) ; Blatt. & McC. *Bombay Grass*. 285. 1935. *Bambos stricta* Roxb. *Pl. Cor.* 1 : 58, t. 80. 1795.

Shrubs, ca 6 m high. Leaves linear, 11-14 × 2.8 cm, shortly petioled ; sheaths striate, auricled, hairy. Heads 2-4 cm across ; spikelets ovate, acute, spiny ; lower 2-3 florets empty ; lower glumes, ovate, aristate ca 0.4 cm long ; lower floret male ; stamens 4 ; upper floret bisexual.

Fls. & Frts. : May - June.

Distrib. : Occasional in deciduous forests. Jadholi, Lingmala, Mahabaleshwar.

DICHANTHIUM Willemet

1. Joints and pedicels with a translucent furrow :

2. Spikelets arranged along a central axis :

3. Lower glume of sessile spikelets without pits or depressions ... *D. concanensis*

3. Lower glume of sessile spikelets with pits or shallow depressions :

4. Lower glume hairy below the middle ; upper glume 3-5-nerved ... *D. pertusum*

4. Lower glume glabrous ; upper glume 1-nerved ... *D. jainii*

2. Spikelets arranged at apex of branches :

5. Nodes glabrous ; callus shortly bearded ... *D. assimile*

5. Nodes and callus densely bearded ... *D. huegelii*

1. Joints and pedicels without any translucent furrow :

6. Racemes solitary :

7. Rhizomes woolly ... *D. foveolatum*

7. Rhizomes not woolly ... *D. oliganthum*

6. Racemes 2-many :

8. Lower glume of both or only sessile spikelet pitted :
9. Lower glume of only sessile spikelet pitted ... *D. armatum*
9. Lower glume of both spikelets pitted ... *D. panchganiense*
8. Lower glume of spikelets not pitted :
10. Hairs on lower glume of sessile spikelets bulbous based ... *D. maccannii*
10. Hairs on lower glume of sessile spikelets not bulbous based :
11. Lower glume of sessile spikelets oblong; pedicels slightly shorter than half of the sessile spikelets ... *D. annulatum*
11. Lower glume of sessile spikelets obovate; pedicels longer than half of the sessile spikelets ... *D. caricosum*

Dichanthium annulatum (Forsk.) Stapf in Prain, Fl. Trop. Afr. 9 : 178. 1917 ; Blatt. & McC. Bombay Grass. 94, t. 62. 1935 ; Bor, Grass. Ind. 133. 1960 ; Deshpande in Fasc. Fl. India 15 : 5, f. 1 2. 1984, *Andropogon annulatus* Forssk. Fl. Aeg.-Arab. 173. 1775 ; Hook. f. Fl. Brit. India 7 : 196. 1896 ; Cooke, Fl. Pres. Bombay 3 : 508. 1958 (Repr. ed.).

Herbs, ca 50 cm high. Leaves linear, acuminate, 13 - 16 × 0.3 cm. Racemes 2 - 6, 2 - 7 cm long ; sessile spikelets ca 0.4 cm long ; lower glume ciliate on keel, distinctly nerved ; upper glume lanceolate, acute ; lower lemma oblong, obtuse ; pedicelled spikelets as long as the sessile.

Fls. & Frts. : September - December.

Illus. : Blatt. & McC. *op. cit.* ; Deshpande, *op. cit.*

Distrib. : Occasional tufted annuals. Patan, Rasati, Taldeo.

D. armatum (Hook. f.) Blatt. & McC. in J. Bombay nat. Hist. Soc. 32 : 425. 1928 & Bombay Grass. 91, t. 59. 1935 ; Bor, Grass. Ind. 134. 1960 ; Deshpande in Fasc. Fl. India. 15 : 6, f. 3 4. 1984. *Andropogon armatus* Hook. f. Fl. Brit. India 7 : 197. 4896 ; Cooke, Fl. Pres. Bombay 3 : 507. 1958 (Repr. ed.).

Herbs, 15 - 45 cm high. Leaves linear, 10 - 15 cm long, hairy. Racemes subdigitate, 1.5 - 4.0 cm long ; joints and pedicels ciliate ;

ciliate ; sessile spikelets 0.3 - 0.35 cm long ; lower glume elliptic, ca 0.3 cm long ; pedicelled spikelets slightly longer than the sessile ; lower glume with bulbous based hairs on margins.

Fls. & Frts. : September - October.

Illus. : Blatt. & McC. *op. cit.* ; Deshpande, *op. cit.*

Distrib. : Rare ; endemic to Western Ghats in Maharashtra, Panchgani, *Blatter & Hallberg* B 1212, Pasarni ghat, *Blatter & Hallberg* B 1304 (*BLAT*).

Dichanthium assimile (Steud.) Deshpande in *Fasc. Fl. India* 15 : 6, f. 5 - 6. 1984. *Andropogon assimile* Steud. in *Zoll. Syst. Verz.* 58. 1854 & in *Syn. Pl. Glum.* 1 : 397. 1854 ; Hook. f. *Fl. Brit. India* 7 : 179. 1896 ; Cooke, *Fl. Pres. Bombay* 3 : 501. 1958 (Repr. ed.). *Capillipedium assimile* (Steud.) A. Camus in *Lecomte Fl. Gen. de L'Indo-Chine* 7 : 314, 1922 ; Blatt. & McC. *Bombay Grass.* 80, t. 51. 1935 ; Bor, *Grass. Ind.* 110. 1960.

Herbs, suffruticose, ca 50 cm high. Leaves linear-lanceolate, 10 - 15 cm long. Panicles 4 - 7 cm long ; sessile spikelets ovoid-oblong, ca 0.2 cm long ; pedicelled spikelets narrowly lanceolate, ca 0.4 cm long.

Fls. & Frts. : September - December.

Illus. : Blatt. & McC. *op. cit.* ; Deshpande, *op. cit.*

Distrib. : Occasional near forest clearings in deciduous forests. Koyna, Mahabaleshwar-Panchgani.

D. caricum (L.) A. Camus in *Bull. Mus. Hist. Nat. Paris* 27 : 549. 1921 ; Blatt. & McC. *Bombay Grass.* 92, t. 61. 1935 ; Bor, *Grass. Ind.* 134. 1960 ; Deshpande in *Fasc. Fl. India* 15 : 7, f. 7 - 17. 1984. *Andropogon caricum* L. *Sp. Pl.* ed. 2, 1480. 1763 ; Hook. f. *Fl. Brit. India* 7 : 196. 1896 ; Cooke, *Fl. Pres. Bombay* 3 : 507. 1958 (Repr. ed.). *D. aristatum* (Poir.) C.E. Hubb. in *Kew Bull.* 1939 ; 654. 1939 ; Bor, *op. cit.*

Herbs, 30 - 45 cm high. Leaves lanceolate, 15 - 20 × 0.3 - 0.4 cm. Racemes paired, 1.5 - 2.0 cm long ; sessile spikelets 0.3 - 0.5 cm long ; pedicelled spikelets as long as sessile ones.

Fls. & Frts. : October - December.

Illus. : Blatt. & McC. *op. cit.* ; Deshpande, *op. cit.*

Distrib. : Common weed near cultivated fields and in places. Dhebewadi, Gojegaon, Mahabaleshwar-Panchgani, Panchgani, Vajegaon.

Dichanthium concanensis (Hook. f.) Jain & Deshpande in Bull. Bot. Surv. India 20 : 134. 1979 ; Deshpande in Fasc. Fl. India 15 : 11, f. 18 - 19. 1984. *Andropogon concanensis* Hook. f. Fl. Brit. India 7 : 174. 1896 ; Cooke, Fl. Pres. Bombay 3 : 499. 1958 (Repr. ed.). *Amphilophis concanensis* (Hook. f.) Blatt. & McC. Bombay Grass. 87, t. 56. 1935. *Bothriochloa concanensis* (Hook. f.) Henr. in Blumea 3 : 457. 1940 ; Bor, Grass. Ind. 107. 1960.

Herbs, 60 - 80 cm high. Leaves linear, 20 - 30 cm long. Racemes 5 - 7 cm long ; sessile spikelets ca 0.4 cm long ; lower glume 7 - 9 nerved ; upper glume 3-nerved.

Fls. & Frts. : October - November.

Illus. : Blatt. & McC. *op. cit.* ; Deshpande, *op. cit.*

Distrib. : Rare ; endemic to Western Ghats. Lingmala ; Sedgwick & Bell 4652 ; Blatter & Hallberg B 1328 (BLAT).

D. foveolatum (Del.) Roberty in Boissiera 9 : 170. 1900. *Eremopogon foveolatus* (Del.) Stapf in Prain, Fl. Trop. Afr. 9 : 183. 1919 ; Blatt. & McC. Bombay Grass. 96, t. 64. 1935 ; Bor, Grass. Ind. 148. 1960. *Andropogon foveolatus* Del. Fl. d'Egypte 16, t. 8, f. 2. 1812 ; Hook. f. Fl. Brit. India 7 : 168. 1896 ; Cooke, Fl. Pres. Bombay 3 : 496. 1958 (Repr. ed.).

Herbs ; stems geniculately ascending, 30 - 50 cm long, slender ; nodes bearded. Leaves linear, scaberulous beneath. Racemes ca 2.5 cm long on erect, capillary peduncle ; joints and pedicels hairy ; sessile spikelets oblong-lanceolate, purplish ; lower glume lanceolate-oblong with a deep pit above the middle ; upper glume lanceolate, acute ; lower lemma oblong-lanceolate ; pedicelled spikelets : glumes lanceolate 3 - 5 nerved.

Fls. & Frts. : October.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Occasional in plains in drier parts. Panchgani.

D. huegelii (Hack.) Jain & Deshpande in Bull. Bot. Surv. India 20 : 135. 1979 ; Deshpande in Fasc. Fl. India 15 : 15, f. 29 - 30. 1984. *Andropogon huegelii* Hack. in DC. Monogr. Phan. 6 : 492. 1889 ; Cooke, Fl. Pres. Bombay 3 : 501. 1958 (Repr. ed.). *Capillipedium huegelii* (Hack.) Stapf in Hook. Ic. Pl. sub t. 3945. 1922 ; Blatt. & McC. Bombay Grass. 81, t. 52. 1935 ; Bor, Grass. Ind. 111. 1960.

Herbs, 30 - 60 cm high. Leaves linear-lanceolate, acuminate, 4 - 20 cm long, margins scaberulous. Panicles 3 - 6 cm long, greenish purple; joints and pedicels ciliate; sessile spikelets ovate-lanceolate; lower glume *ca* 0.4 cm long; lower lemma lanceolate *ca* 0.2 cm long; pedicelled spikelets lanceolate, *ca* 0.4 cm long; lower and upper glume lanceolate, 9 - 11 nerved, ciliate on keels.

Fls. & Frts. : August - December.

Illus. : Blatt. & McC. *op. cit.*; Deshpande *op. cit.*

Distrib. : Common in cultivated fields and along hill slopes. Kamalgad, Kelghar ghat, Koyna, Mahabaleshwar, Morgiri, Panchagni.

Dichanthium jainii (Deshpande & Hemadri) Deshpande in Bull. Bot. Surv. India 21; 198. 1981 & Fasc. Fl. India 15: 17, f. 25 - 26. 1984. *Bothriochloa jainii* Deshpande & Hemadri in Indian Forester 97: 593, f. 1 - 19. 1971.

Herbs, *ca* 1.5 m high; nodes bearded. Leaves 15 - 25 cm long. Panicles *ca* 14 cm long; joints and pedicels hairy; sessile spikelets 0.45 - 0.6 cm long; pedicelled spikelets 0.55 - 0.9 cm long.

Fls. & Frts. : October - January.

Illus. : Deshpande & Hemadri, *op. cit.*

Distrib. : Tufted perennials, growing along open hill slopes above alt. 1000 m. Lingmala.

D. maccannii Blatt. in J. Bombay nat. Hist. Soc. 32: 357. 1927; Blatt. & McC. Bombay Grass. 92, t. 60. 1935; Deshpande in Fasc. Fl. India 15: 19, f. 31 - 32. 1984; Bor, Grass. Ind. 135. 1960.

Herbs, culms tufted, *ca* 45 cm long, densely bearded at nodes. Leaves linear-lanceolate, *ca* 10 cm long, base amplexicaul, hairy with bulbous based hairs. Racemes *ca* 3.5 cm long; lowest 3 - 4 pairs of spikelets glabrous upper with a line of ciliate hairs; sessile spikelets *ca* 0.4 cm long; upper glume broadly lanceolate; lower lemma narrowly oblong, obtuse; pedicelled spikelets slightly longer than sessile.

Fls. & Frts. : October.

Illus. : Blatt. & McC. *op. cit.*; Deshpande, *op. cit.*

Distrib. : Rare; so far known only from the type collection. Panchgani, McCann *s.n.* (BLAT).

Dichanthium oliganthum (Hochst. ex Steud.) T.A. Cope in Kew Bull. 35 : 703. 1980. *Andropogon oliganthus* Hochst. ex Steud. Syn. Pl. Glum. 1 : 368. 1854 : Hook. f. Fl. Brit. India 7 : 201. 1896. *Heteropogon oliganthus* (Hochst. ex Steud.) Blatt. & McC. in J. Bombay nat. Hist. Soc. 32 : 623. 1928 & Bombay Grass. 107, t. 68. 1935. *Indochloa oligantha* (Hochst. ex Steud.) Bor, in Kew Bull. 1954 : 79. 1954 & Grass. Ind. 171, f. 9. 1960.

Herbs, 7 - 15 cm high. Leaves 5.0 - 7.5 cm long, hairy. Racemes 7 - 16 cm long ; joints and pedicels ciliate ; sessile spikelets oblong, ca 0.5 cm long ; lower glume dorsally villous at base ; lower lemma broadly oblong, ciliate ; pedicelled spikelets ovate-oblong.

Fls. & Frts. : September - October.

Distrib. : Rare, restricted to higher ghats above 1000 m high. Mahabaleshwar, *Sedgwick & Bell* 4608 ; Panchgani, *Blatter & Hallberg* B 12211 (*BLAT*).

Notes : According to Hackel this species is intermediate between *Dichanthium* and *Heteropogon* but nearer to the later. The sessile spikelets differ from the pedicelled in shape, nervation and dorsal furrow. (Blatt. & McC. *op. cit.*).

D. panchganiense Blatt. & McC. in J. Bombay nat. Hist. Soc. 32 : 357. 1927 & Bombay Grass. 90, t. 58. 1935 ; Deshpande in Fasc. Fl. India 15 : 21, f. 33 - 34. 1984 ; Bor, Grass. Ind. 135. 1960.

Herbs, ca 30 cm high. Leaves linear, acuminate, 1.5 × 0.3 cm, hairy. Racemes 1.5 - 2.0 cm long ; sessile spikelets ca 0.25 cm long ; lower glume oblong, puberulous ; lower lemma oblong, ciliolate on the margin ; upper glume oblong-lanceolate ; pedicelled spikelets ca 0.3 cm long, lower glume with bulbous based bristles.

Fls. & Frts. October - November.

Illus. : Blatt. & McC. *op. cit.* ; Deshpande, *op. cit.*

Distrib. : Rare ; endemic to the district. Panchgani, U.R. Deshpande 104601 A & B, *McCann s.n.*

D. pertusum (L.) W.D. Clayton in Kew Bull. 32 : 4. 1977 ; Deshpande in Fasc. Fl. India 15 : 22, f. 42 - 44. 1984. *Holcus pertusus* L. Mant. 301. 1771. *Andropogon pertusus* (L.) Willd. Sp. Pl. 4 : 922. 1806 ; Hook. f. Fl. Brit. India 7 : 173. 1896. *Bothriochloa pertusa* (L.) A. Camus in Ann. Soc. Linn. Lyon 1930, n.s. 76 : 164. 1931 ; Bor, Grass. Ind. 109. 1960. *Amphilophis pertusa* (L.) Stapf in Prain, Fl. Trop. Afr. 9 : 175. 1919 ; Blatt. & McC. in Bombay Grass. 84, t. 54. 1935.

Herbs, 50 - 70 cm long, bearded at nodes. Leaves narrowly linear, acute, 10 - 15 cm long, margins scabrid. Racemes ca 5 cm long, hairy; sessile spikelets oblong-lanceolate, ca 4 cm long; lower glume elliptic-oblong with 1 - 2 pits above the middle, margins spinulose; upper glume lanceolate; lower lemma ca 0.2 cm long.

Fls. & Frts. : August - November.

Distrib. : Common along roadsides and near forest edges. Mahabaleshwar, Panchgani, Satara.

DIGITARIA Haller

- | | | |
|--|-----|----------------------|
| 1. Spikelets lanceolate; lower glume less than half the length of spikelet | ... | <i>D. ciliaris</i> |
| 1. Spikelets oblong; lower glume reduced or absent : | | |
| 2. Spikelets without clavate hairs : | ... | <i>D. longiflora</i> |
| 2. Spikelets with clavate hairs : | | |
| 3. Spikelets 0.12 cm long | ... | <i>D. stricta</i> |
| 3. Spikelets 0.3 - 0.35 cm long | ... | <i>D. ternata</i> |

Digitaria ciliaris (Retz.) Koel. Descr. Gram. 27. 1802; Veldk. in Blumea 21 : 32. 1973. *Panicum ciliare* Retz. Obs. Bot. 4 : 16. 1786. *Paspalum sanguinale* Lam. var. *ciliare* Hook. f. Fl. Brit. India 7 : 15. 1896. *D. marginata* L. var. *fimbriata* Stapf in Prain, Fl. Trop. Afr. 9 : 440. 1919; Blatt. & McC. Bombay Grass. 125, t. 78. 1935. *D. sanguinalis* Scop. var. *ciliaris* Prain, Beng. Pl. 1181. 1903; Cooke, Fl. Pres. Bombay 3 : 457. 1958 (Repr. ed.). *D. adscendens* (HBK.) Henr. in Blumea 1 : 92. 1934; Bor, Grass. Ind. 298. 1960.

Herbs, ca 50 cm high, erect or prostrate. Leaves linear-lanceolate, 4 - 8 × 0.7 - 1.0 cm. Racemes 2 - 5, digitate, 3 - 15 cm long; rhachis triangular, narrowly winged; spikelets ca 0.35 cm long; upper glume ca 0.25 cm long, 3-nerved, ciliate; lower lemma oblong-lanceolate, acute, ca 0.35 cm long, 5-nerved; upper lemma oblong-lanceolate, ca 0.3 cm long. Grains oblong, ca 0.25 cm long.

Fls. & Frts. : August - November.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Common annual in open areas. Koyna, Panchgani, Shirgaon ghat, Yavteshwar, Wai.

***Digitaria longiflora* (Retz.) Pers. Syn. Pl. 1 : 85. 1805 ; Cooke, Fl. Pres. Bombay 3 : 458. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 127, t. 81. 1935 ; Bor, Grass. Ind. 302. 1960 ; Veldk. in Blumea 21 : 66. 1973. *Paspalum longiflorum* Retz. Obs. Bot. 4 : 15. 1768 ; Hook. f. Fl. Brit. India 7 : 17. 1896.**

Herbs, ca 50 cm high, erect or ascending. Leaves lanceolate, acute, 2.5 - 5.0 cm long. Racemes 2 - 3 together, 2 - 3 cm long ; rhachis winged, serrate ; spikelets ca 0.15 cm long, verrucose ; upper glume ca 0.2 cm long, 5-nerved, hairy ; upper lemma ovate-oblong.

***Fls. & Frts.* : July.**

***Illus.* : Blatt. & McC. op. cit.**

***Distrib.* : Tufted annuals, growing in marshy places. Koyna, Shirshingi.**

***D. stricta* Roth ex R. & S. Syst. Veg. 2 : 474. 1847 ; Bor, Grass. Ind. 305. 1960 ; T.A. Cope in Nasir & Ali Fl. Pak. 143 : 222. 1982. *Paspalum royleanum* Nees ex Hook. f. Fl. Brit. India 7 : 18. 1896. *D. royleana* (Nees) Prain, Beng. Pl. 1182. 1903 ; Cooke, Fl. Pres. Bombay 3 : 459. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 127, t. 82. 1935.**

Herbs, slender, 15 - 20 cm high. Leaves 4 - 8 cm long, margins scabrid. Racemes 2 - 3 together, 2 - 7 cm long ; rhachis winged ; upper glume short, hairy ; lower lemma elliptic, ca 0.12 cm long, 5-nerved ; upper lemma ovate, acute, black, shining.

***Fls. & Frts.* : August - September.**

***Illus.* : Blatt. & McC. op. cit.**

***Distrib.* : Common near rice-fields. Koyna, Mahabaleshwar, Panchgani, Yavteshwar.**

***D. ternata* (A. Rich.) Stapf ex Dyer, Fl. Cap. 7 : 376. 1898 ; Cooke, Fl. Pres. Bombay 3 : 457. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 124, t. 77. 1935 ; Bor, Grass. Ind. 306. 1960 ; Veldk. in Blumea 21 : 59. 1973. *Cynodon ternatus* A. Rich. Tent. Fl. Abyss. 2 : 405. 1851. *Paspalum ternatum* Hook. f. Fl. Brit. India 7 : 17. 1896.**

Herbs, 30 - 54 cm high. Racemes 7 - 10 cm long ; upper glume oblong, ca 0.23 cm long, hairy ; lower lemma elliptic, ca 0.33 cm long, 5-nerved ; upper lemma ovate, acute, black, shining.

***Fls. & Frts.* : August - September.**

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Rare ; near water courses. Dhom dam, Wai, 169016 ; Dicholi, Kochhar 154117.

DIMERIA R. Br.

Dimeria ornithopoda Trin. Fund. Agrost. 167, t. 14. 1820 ; Hook. f. Fl. Brit. India 7 : 104. 1896 ; Cooke, Fl. Pres. Bombay 3 : 462. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 8, t. 4. 1935 ; Bor, Grass. Ind. 142. 1960.

Herbs, 15 - 20 cm high. Leaves lanceolate, 2.5 - 5.0 × 0.2 - 0.3 cm. Panicles 2 - 3, 3 - 5 cm long ; rhachis winged, hairy ; spikelets linear, ca 0.25 cm long ; lower lemma ca 0.2 cm long ; upper lemma ca 0.15 cm long.

Fls. & Frts. : September - November.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Common on exposed rocks along ghats. Lingmala-Mahabaleshwar, Mahabaleshwar, Panchgani.

DINEBRA Jacq.

Dinebra retroflexa (Vahl) Panz. in Denkschr. Acad. Wiss. Munchen, 270, t. 12. 1814 ; Blatt. & McC. Bombay Grass. 264, t. 177. 1935 ; Bor, Grass. Ind. 491. 1960. *Cynosurus retroflexus* Vahl, Symb. Bot. 2 : 1791. *D. arabica* Jacq. Fragment. 77, t. 121, f. 1. 1807 ; Hook. f. Fl. Brit. India 7 : 297. 1896 ; Cooke, Fl. Pres. Bombay 3 : 562. 1958 (Repr. ed.).

Herbs, 30 - 50 cm high. Leaves lanceolate, 10 - 15 × 0.2 - 0.5 cm, flat or convolute. Spikes 8 - 28 cm long ; spikelets ca 0.45 cm long ; glumes lanceolate, ca 0.3 cm long ; lemmas oblong, keeled with greenish nerves.

Fls. & Frts. : July.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Rare in drier part of the district. Gondavale ; 155836.

DIPLACHNE P. Beauv.

Diplachne fusca (L.) P. Beauv. ex R. & S. Syst. Vrg. 2 : 615. 1817 ; Hook. f. Fl. Brit. India 7 : 329. 1896 ; Cooke, Fl. Pres. Bombay 3 : 552. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass, 246, t. 163. 1935 ; Bor, Grass. Ind. 492. 1960. *Festuca fusca* L. Syst. Veg. ed. 10. 2 : 876. 1759.

Herbs ; culms tufted, ascending *ca.* 1 m high. Leaves convolute, 5 - 10 cm long. Panicles 1⁰ - 17 cm long ; spikelets linear-oblong, 8-flowered ; lower glume oblong-lanceolate, *ca* 0.3 cm long, 1-nerved, lemmas elliptic, oblong, *ca* 0.4 cm long, 3-lobed, 1-nerved, margins ciliate.

Fls. & Frts. : September - October.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Rare in plains. Bhosgaon ; 166407 ; Pratapgad, 169074.

ECHINOCHLOA P. Beauv.

- | | | |
|---|-----|-----------------------|
| 1. Ligule, a fringe of stiff hairs | ... | <i>E. stagnina</i> |
| 1. Ligule absent : | | |
| 2. Panicles continuous ; grains not deciduous | ... | <i>E. frumentacea</i> |
| 2. Panicles interrupted ; grains deciduous : | | |
| 3. Spikelets awned | ... | <i>E. crusgallii</i> |
| 3 Spikelets unawned | ... | <i>E. colona</i> |

Echinochloa colona (L.) Link, Hort. Berol. 2 : 209. 1833 ; Blatt. & McC. Bombay Grass. 148, t. 94. 1935 ; Bor, Grass. Ind. 308, f. 34. 1960. *Panicum colonum* L. Syst. Nat. 10, 2 : 870. 1759 ; Hook. f. Fl. Brit. India 7 : 32. 1896 ; Cooke, Fl. Pres. Bombay 3 : 447. 1958 (Repr. ed.).

Herbs ; culms tufted, 30 - 50 cm high. Leaves linear-lanceolate, 6 - 10 cm long, margins scaberulous. Spikelets 0.2 - 0.25 cm long, sessile or shortly pedicelled ; lower glume ovate, cuspidate, membranous ; upper lemma elliptic, crustaceous.

Fls. & Frts. : July - April.

Illus. : Blatt. & McC. *op. cit.* ; Bor, *op. cit.*

Distrib. : Common near cultivated fields and along roadsides. Dhondam, Wai, Gondavale, Koyna, Medha, Old Mahabaleshwar, Panchgani, Satara-Pune Road, Tapola, Yavteshwar.

Echinochloa crusgalli (L.) P. Beauv. Ess. Agrost. 53 : 761. 1812 ; Bor, Grass. Ind. 310. 1960. *Panicum crusgalli* L. Sp. Pl. 56. 1753 ; Hook. f. Fl. Brit. India 7 : 80. 1896.

Herbs, 30 - 40 cm high. Leaves linear-lanceolate, 15 - 20 × 0.1 cm. Spikelets 0.3 - 0.4 cm, hispidulous ; lower glume ovate, rounded ; upper glume ovate, acuminate ; lower lemma cuspidate ; upper lemma acuminate.

Fls. & Frts. : October.

Illus. : Rang. & Tad. S.I. Grasses f. 87. 1921 (*Panicum crusgalli*).

Distrib. : Rare along water courses. Panchgani, Ansari 67717.

E. frumentacea Link, Hort. Berol. 1 : 204. 1827 ; Bor. Grass. Ind. 311. 1960. *P. crusgalli* var. *frumentacea* (Link.) Hook. f. Fl. Brit. India 7 : 31. 1896. *P. stagninum* var. *frumentacea* (Link) Trim. Cat. Ceyl. Pl. 104. 1885 ; Cooke, Fl. Pres. Bombay 3 : 447. 1958 (Repr. ed.). 'Shamula'.

Herbs, 15 - 35 cm high. Leaves linear-lanceolate, 6 - 35 cm long. Spikes 1.0 - 2.5 cm long ; spikelets globose, cuspidate, ca 0.35 cm long ; lower glume broadly ovate ; upper lemma shining. Grains ovoid.

Fls. & Frts. : November - April.

Distrib. : Occasional in cultivated fields. Jadholi, Taldeo.

E. stagnina (Retz.) P. Beauv. Ess. Agrost. 53, 161, 171. 1812 ; Blatt. & McC. Bombay Grass. 151. 1935 ; Bor, Grass. Ind. 311. 1960. *Panicum stagninum* Retz. Obs. Bot. 5 : 17. 1789 ; Cooke, Fl. Pres. Bombay 3 : 446. 1958 (Repr. ed.). *P. crusgalli* sensu Hook. f. Fl. Brit. India 7 : 130. 1896 p.p. non L. 1753. 'Banti'.

Herbs, ca 1.5 m high. Leaves linear, acute, 15 - 45 cm long. Panicles 10 - 20 cm long ; rhachis grooved, scabrid on angles ; spikelets ovoid-lanceolate, 0.4 - 0.5 cm long with bulbous based hairs ; lower glume broadly ovate orbicular, half the length of spikelets, hairy ; upper glume broadly ovate ca 0.5 cm long ; upper lemma ovate-lanceolate, ca 0.4 cm long.

Fls. & Frts. : October.

Illus. : Rang. & Tag. S.I. Grasses f. 88. 1921 (*Panicum stagninum*).

Distrib. : Rare, in stagnant water. Panchgani, Blatter & Hallberg B 1241 (BLAT).

ELEUSINE Gaertn.

Eleusine indica (L.) Gaertn. Fruct. 1 : 8. 1789 ; Hook. f. Fl. Brit. India 7 : 293. 1896 ; Cooke, Fl. Pres. Bombay 560. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 259, t. 172. 1935 ; Bor, Grass. Ind. 493. 1960. *Cynosurus indicus* L. Sp. Pl. 72. 1753.

Herbs, 30 - 60 cm high. Leaves 10 - 15 cm long, flat. Spikes 7 - 13 cm long ; rachis compressed ; spikelets 0.3 - 0.5 cm long ; lower glume lanceolate, acute, ca 0.15 cm long, with 1 green nerve on the back, scabrid ; upper glume ovate, 0.3 - 0.4 cm long ; scabrid ; lemmas ovate, acute, ca 0.3 cm long. Grains ovoid ca 0.25 cm long, brown, rugose.

Fls. & Frts. : July - February.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Common in cultivated fields and waste places in moist situations. Koyna, Nanal.

CULTIVATED SPECIES

E. coracana (L.) Gaertn. Fruct. 1 : 8, t. 1, f. 11. 1789 ; Hook. f. Fl. Brit. India 7 : 294. 1896 ; Cooke, Fl. Pres. Bombay 3 : 561. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 260, t. 173. 1935 ; Bor, Grass. Ind. 492. 1960. *Cynosurus coracanus* L. Syst. Nat. ed. 10. 2 : 875. 1759. 'Nachani'.

Herbs, stout, 30 - 50 cm high. Leaves linear, longer than the stem. Spikes 7 - 10, dense. Seeds globose, ca 0.2 cm across.

Fls. & Frts. : September - February.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Cultivated along the hill slopes. Koyna, Panchgani.

ERAGROSTIELLA Bor

Eragrostiella brachyphylla (Stapf) Bor in Indian Forester 66 : 270. 1940 & Grass. Ind. 494. 1960. *Eragrostis brachyphylla* Stapf in Hook. f. Fl. Brit. India 7 : 327. 1896 ; Blatt. & McC. Bombay Grass. 242. 1935.

Herbs, 20 - 40 cm high. Leaves linear, convolute, 2 - 4 cm long. Spikes 9 - 14 cm long ; spikelets linear-oblong, 0.4 - 0.7 cm long, lead-grey ; lower glume linear-lanceolate, ca 0.2 cm long ; upper glume ca 0.25 cm long ; lemmas elliptic, ca 0.15 cm long.

Fls. & Frts. : August.

Distrib. : Rare in drier parts. Shirgaon ghat, 169045.

ERAGROSTIS Wolf

1. Rhachis fragile ; spikelets breaking from above downwards :
 2. Palea ciliate on keels ... *E. tenella*
 2. Palea not ciliate on keels ... *E. japonica*
1. Rhachis tough ; spikelets breaking from below upwards :
 3. Spikelets ovate-elliptic or oblong ... *E. unioloides*
 3. Spikelets linear to linear-lanceolate :
 4. Lemmas upto 0.15 cm long :
 5. Spikelets fascicled, 10 - 30-flowered ; grains oblong ... *E. gangetica*
 5. Spikelets scattered, 5 - 12-flowered ; grains ellipsoid ... *E. pilosa*
 4. Lemmas more than 0.15 cm long :
 6. Leaf margin with raised glands ... *E. minor*
 6. Leaf margin eglandular :
 7. Mouth of sheaths bearded ; palea as long as lemma .. *E. nigra*
 7. Mouth of sheaths naked ; palea shorter than lemma ... *E. tenuifolia*

Eragrostis gangetica (Roxb.) Steud. Syn. Pl. Glum. 1 : 266. 1854 ; Cooke, Fl. Pres. Bombay 3 : 547. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 236. 1935 ; Bor, Grass. Ind. 508. 1960. *Poa gangetica* Roxb. Fl. Ind. (Carey & Wall. ed.) 1 : 341. 1820. *E. stenophylla* Hochst. ex Miq. in Vern. Konink.-Nederl. Inst. 3, 4 : 39. 1851 ; Stapf in Hook. f. Fl. Brit. India 7 : 318. 1896.

Herbs, 30 - 45 cm high. Panicles 10 - 15 cm long ; spikelets slate-grey, ca 0.2 cm long ; glumes subequal, ovate-oblong ; lemmas ; ca 0.15 cm long,

Fls. & Frts. : November - April.

Distrib. : Common near water sources. Gojegaon, Koyna, Lingmale, Panchgani, Shirshingi.

Eragrostis japonica (Thunb.) Trin. in Mem. Acad. Sci. Petersb. 6, 1 : 405. 1831 ; Bor, Grass, Ind. 509. 1960. *Poa japonica* Thunb. Fl. Jap. 51. 1784. *E. diarrhena* (Schult.) Steud. Syn. Pl. Glum. 1 : 266. 1854 ; Bor, *op. cit.* 507.

Herbs ; culms slender, tufted *ca* 1 m high. Panicles *ca* 25 cm long ; branches *ca* 3 cm long ; spikelets *ca* 0.1 cm long ; glumes oblong, subequal ; lemmas slightly shorter than glumes, scabrid on the keel ; palea oblong, keeled.

Fls. & Frts. : November - December.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 864 & 865. 1982.

Distrib. : Rare in moist situations. Patan, Kochhar 154352 ; Satara-Pune Road, 49/2 n.s. A.S. Rao 71759 ; Vajegaon, Kochhar 158030.

E. minor Host, Gram. Austr. 4 : 15. 1809 ; Stapf in Hook. f. Fl. Brit. India 7 : 321. 1896 ; Cooke, Fl. Pres. Bombay 3 : 548. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 238, t. 158. 1935. *E. poaeoides* P. Beauv. Ess. Agrost. 162. 1812 ; Bor, Grass. Ind. 512. 1960.

Herbs, 15 - 40 cm high. Leaves linear, acute, 10 - 12 cm long ; sheaths shortly bearded at mouth ; ligule a pubescent ring. Panicles 6 - 10 cm long ; spikelets *ca* 1.2 cm long, olive-grey ; glumes unequal, 1-nerved ; lemmas ovate, mucronate, *ca* 0.2 cm long.

Fls. & Frts. : September - February.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Slender annuals near cultivated fields. Mahabaleshwar, Yavteshwar.

E. nigra Nees ex Steud. Syn. Pl. Glum. 1 : 267. 1854 ; Stapf in Hook. f. Fl. Brit. India 7 : 324. 1896 ; Bor, Grass. Ind. 511. 1960.

Herbs, *ca* 1 m high. Panicles effuse, 17 - 20 cm long, drooping ; spikelets slate-grey, 0.2 - 0.5 × 0.15 - 0.2 cm ; lower glume *ca* 0.15 cm long ; upper glume *ca* 0.2 cm long ; lemmas *ca* 0.2 cm long. Grains oblong, *ca* 0.1 cm long, brownish.

Fls. & Frts. : August.

Distrib. : Rare, in marshy places. This is the first record of the species for Maharashtra, as Cooke has not reported in his flora. Dhondam, near Wai, 169011.

Eragrostis pilosa (L.) P. Beauv. Ess. Agrost. 71, 162, 175. 1812; Stapf in Hook. f. Fl. Brit. India 7 : 323. 1896; Cooke, Fl. Pres. Bombay 3 : 550. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 241, t. 160. 1935; Bor, Grass. Ind. 512. 1960. *Poa pilosa* L. Sp. Pl. 68. 1753.

Herbs, ascending, ca 30 cm high. Leaves linear, 5-7 cm long. Panicles narrow, 7-15 cm long; rhachis filiform; spikelets ca 0.2 cm long, purple at apex, rhachilla scabrid; lower glume ovate, ca 0.05 cm long; upper glume ovate-lanceolate, acuminate, ca 0.12 cm long; lemmas lanceolate, acuminate. Grains ca 0.14 cm long.

Fls. & Frts. : August - October.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Common annual in damp places. Dhom dam, near Wai, Koyna, Wai, Yavteshwar.

E. tenella (L.) P. Beauv. ex R. & S. Syst. Veg. 2 : 576. 1817; Stapf in Hook. f. Fl. Brit. India 7 : 315. 1896; Bor. Grass. Ind. 513. 1960. *Poa tenella* L. Sp. Pl. 69. 1753. *E. tenella* (L.) P. Beauv. var. *plumosa* (Retz.) Stapf *op. cit.* 1896; Cooke, Fl. Pres. Bombay 3 : 545. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 232. 1935.

Herbs, 20-50 cm high. Leaves narrow, convolute, 4-6 cm long. Panicles effuse, 7-10 cm long; spikelets oblong, ca 0.1 cm long with a purple tinge. Grains ovoid, yellow.

Fls. & Frts. : November.

Distrib. : Rare along ghats in dry areas. Panchgani, Blatter & Hallberg B 1280 (BLAT); Shirgaon ghat, 166466.

E. tenuifolia Hochst. ex Steud. Syn. Pl. Glum. 1 : 268. 1854; Stapf in Hook. f. Fl. Brit. India 7 : 322. 1896; Cooke, Fl. Pres. Bombay 3 : 549. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 240. 1935; Bor, Grass. Ind. 514. 1960.

Herbs, ca 1 m high. Leaves 5-20 × 0.5-1.5 cm. Panicles 7-15 cm long, lax; spikelets ca 0.6 cm long, 5-15 flowered; lower glume minute; upper glume ovate, subacute, ca 0.1 cm long; lemmas ovate, subacute, ca 0.2 cm long, dorsally grooved.

Fls. & Frts. : August - October.

Distrib. : Rare along hills. Koyna, Kochhar 158578, 158914, Panchgani, Blatter & Hallberg B 1313, 1317 (BLAT).

Eragrostis unioides (Retz.) Nees ex Steud. Syn. Pl. Glum. 1 : 264. 1854 ; Blatt. & McC. Bombay Grass. 235, t. 156. 1935 ; Bor, Grass. Ind. 515. 1960. *Poa unioides* Retz. Obs. Bot. 5 : 19. 1789. *E. amabilis* Stapf in Hook. f. Fl. Brit. India 7 : 317. 1896 *non* Wight & Arn. ex Nees 1838 ; Cooke, Fl. Pres. Bombay 3 : 546. 1958 (Repr. ed.).

Herbs ; culms tufted, erect or ascending, 15 - 40 cm high. Leaves lanceolate, 4 - 6 cm long, base cordate, apex tapering. Panicles ovate-oblong, 2 - 4 cm long ; spikelets purple, *ca* 0.2 cm long ; lower glume ovate or ovate-oblong, *ca* 0.2 cm long ; upper glume *ca* 0.22 cm long, keeled ; lemmas ovate-elliptic. Grains oblong.

Fls. & Frts. : August - April.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Common throughout the district in all types of habitats. Khandala, Kistrude, Koyna, Kumbharli ghat, Mahabaleshwar, Panchgani, Punoli, Umarkanchan, Yavteshwar.

ERIOCHLOA HBK.

Eriochloa procera (Retz.) C.E. Hubb. in Kew Bull. 1930 : 256. 1930 ; Bor, Grass. Ind. 312. 1960. *Agrostis procera* Retz. Obs. Bot. 4 : 19. 1786. *E. polystachya* Hook. f. Fl. Brit. India 7 : 20. 1896 *non* HBK. 1816 ; Cooke, Fl. Pres. Bombay 3 : 461. 1958 (Repr. ed.). *E. ramosa* O. Ktze. Rev. Gen. Pl. 2 : 775. 1891 ; Blatt. & McC. Bombay Grass. 131, t. 84. 1935.

Herbs ; culms tufted, ascending 30 - 70 cm high. Leaves lanceolate, 7 - 15 cm long. Panicles slender, *ca* 12 cm long ; spikelets elliptic-lanceolate, shining, 0.25 - 0.3 cm long, shortly pedicellate ; lower glume absent ; upper glume and lower lemma oblong-lanceolate, *ca* 0.3 cm long ; upper lemma elliptic-oblong, *ca* 0.25 cm long, shining. Grains oblong, *ca* 0.2 cm long.

Fls. & Frts. : July.

Illus. : Blatt. & McC. *op. cit.* ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 868 & 869. 1982.

Distrib. : Rare along river bank. Khatav, 165770.

EULALIA Kunth

Eulalia trispicata (Schult.) Henr. in Blumea 3 : 453. 1940 ; Bor. Grass. Ind. 157. 1960. *Andropogon trispicatus* Schult. Syst. Veg. 2, Mant. 452. 1824. *E. argentea* Brongn. in Duperr. Voy. Coquille Bot. 2 : 92. 1830 ; Blatt. & McC. Bombay Grass. 52, t. 35. 1935. *Pollinia argentea* (Brongn.) Trin. in Bull. Acad. Sci. Petersb. 1 : 71. 1836; Hook. f. Fl. Brit. India 7 : 111. 1896 ; Cooke, Fl. Pres. Bombay 3 : 467. 1958 (Repr. ed.).

Herbs, 30 - 90 cm high. Leaves linear, 15 - 20 cm long. Racemes 7 - 12 cm long ; spikelets 0.3 - 0.4 cm long, hairy ; lower glume oblong, 0.3 - 0.4 cm long, crustaceous below, villous on the back ; upper glume oblong, ca 0.4 cm long, ciliate on margins ; lower lemma narrowly oblong, ca 0.4 cm long.

Fls. & Frts. : November - April.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Common perennial in open grass lands. Dicholi, Gureghar, Jodholi, Koyna, Lingmala, Mahabaleshwar, Nanal, Panchgani, Vasota.

GARNOTIA Brongn.

Garnotia tenella (Arn. ex Miq.) Jan. in Fedde, Rep. Sp. Nov. 17 ; 86. 1921 ; Gould in Kew Bull. 27 : 528. 1972 ; Vcd Prakash & Jain in Fasc. Fl. India 3 : 13. 1979. *Berghausia tenella* Arn. ex Miq. in Verh. Konink. Nederl. Inst. 4 : 34. 1851. *G. stricta* sensu Hook. f. Fl. Brit. India 7 : 243. 1896 *non* Brongn. 1831 ; Cooke, Fl. Pres. Bombay 3 : 534. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 207, t. 136. 1935 ; Bor. Grass. Ind. 569. 1960.

Herbs, 30 - 60 cm high. Leaves lanceolate or linear-lanceolate, 7 - 20 cm long, scabrous above. Panicles 5 - 20 cm long ; spikelets 0.2 - 0.3 cm long, sparsely hairy ; lower glume ovate-lanceolate ; lemmas entire or notched.

Fls. & Frts. : August - December.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : A polymorphic taxon, rare in the district. Panchgani, Blatter & Hallberg B-1283, 1305 (BLAT).

GLYPHOCHLOA W.D. Clayton

Glyphochloa forficulata (C.E.C. Fischer) W.D. Clayton in Kew Bull. 35 : 815. 1981. *Manisuris forficulata* C.E.C. Fischer *ibid* 1933 : 353. 1933 *emend.* Jain in Bull. Bot. Surv. India 12 : 12, f. 6. 1970 ; Bor, Grass. Ind. 192. 1960. *Rottboellia divergens* Hook. f. Fl. Brit. India 7 : 155. 1896 *non* Hack. 1889 ; Cooke, Fl. Pres. Bombay 3 : 470. 1958 (Repr. ed.). *Peltophorus divergens* Blatt. & McC. Bombay Grass. 34. 1935.

Herbs, 7 - 20 cm long, villous. Leaves linear, 4 - 10 cm long. Racemes solitary, 1.5 - 4.0 cm long ; sessile spikelets : lower glume ovate-lanceolate, *ca* 0.55 cm long, tuberculate ; awns divaricate ; upper glume oblong, *ca* 0.35 cm long ; lower lemma oblong-lanceolate, *ca* 0.25 cm long ; upper lemma *ca* 0.2 cm long ; pedicelled spikelets longer than the sessile.

Fls. & Frts. : October.

Illus. : Jain, *op. cit.*

Distrib. : Common on rocky plateaus and along ghats. Machutar forest, Mahabaleshwar, Old Mahabaleshwar.

HACKELOCHLOA O. Ktze.

Hackelochloa granularis (L.) O. Ktze. Rev. Gen. Pl. 2 : 776. 1981 ; Bor, Grass. Ind. 159. 1960. *Cenchrus granularis* L. Mant. 2, App. 575. 1771. *Manisuris granularis* (L.) L. f. Nov. Gram, Gen. 40. 1779 ; Hook. f. Fl. Brit. India 7 : 159. 1896 ; Cooke, Fl. Pres. Bombay 3 : 473. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 32, t. 22. 1935.

Herbs, 15 - 18 cm high. Leaves lanceolate, 3 - 6 × 0.4 cm ; base cordate, bulbous-based hairy. Racemes 0.5 - 1.5 cm long ; sessile spikelets *ca* 0.15 cm long ; upper glume elliptic oblong ; pedicelled spikelets : longer than the sessile, broadly ovate. Grains oblong, *ca* 0.1 cm long.

Fls. & Frts. : September.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Rare near cultivated fields. Dhebewadi, 162597.

HETEROPOGON Pers.

- | | | |
|--|-----|------------------------|
| 1. Slender annuals, upto 25 cm high | ... | <i>H. polystachyos</i> |
| 1. Perennials, 1 - 2 m high : | | |
| 2. Stout herbs ; racemes more than 4 cm long ; pedicelled spikelets upto 1.5 cm long | ... | <i>H. triticeus</i> |
| 2. Small, tufted herbs ; racemes upto 4 cm long ; pedicelled spikelets not more than 0.6 cm long | ... | <i>H. contortus</i> |

Heteropogon contortus (L.) P. Beauv. ex R. & S. Syst. Veg. 2 : 836. 1817 ; Blatt. & McC. Bombay Grass. 109, t. 71. 1935 ; Bor, Grass. Ind. 163. 1960. *Andropogon contortus* L. Sp. Pl. 1045. 1753 ; Hook. f. Fl. Brit. India 7 : 199. 1896 ; Cooke, Fl. Pres. Bombay 3 : 510. 1958 (Repr. ed.).

Herbs, *ca* 1.5 m high. Leaves linear, acuminate, 3 - 6 cm long. Racemes 2 - 3 cm long, terete, bristly ; lower 2 - 3 spikelets empty, unawned ; upper spikelets sessile, linear-oblong, truncate, *ca* 0.5 cm long, hispid ; awns 6 - 8 cm long, brown ; pedicelled spikelets lanceolate with short pedicels.

Fls. & Frts. : August - November.

Illus. : Blatt. & McC. *op. cit.* ; Bor, *op. cit.*

Distrib. : Common weed along hill slopes in open grasslands. Koyna, Lingmala, Mahabaleshwar, Panchgani, Pirachiwadi, Shirgaon ghat.

***H. polystachyos* (Roxb.) Schult. Syst. Veg. 2, Mant. 460. 1824 ; Blatt. & McC. Bombay Grass. 107. 1935 ; Bor, Grass. Ind. 165. 1960. *Andropogon polystachyos* Roxb. Fl. Ind. (Carey & Wall. ed.) 1 : 265. 1820 ; Hook. f. Fl. Brit. India 7 : 202. 1896 ; Cooke, Fl. Pres. Bombay 3 : 508. 1958 (Repr. ed.).**

Herbs. Leaves 5 - 10 cm long, lower flat, upper convolute, hairy. Racemes 1.3 - 2.5 cm long ; peduncles slender, 5 - 10 cm long ; sessile spikelets *ca* 0.5 cm long, dark brown ; callus bearded on one side ; lower glume oblong, obtuse, pubescent on back ; upper glume linear-oblong, coriaceous, margins broad, hyaline ; lower lemma oblong, ciliate ; awns *ca* 5 cm long, hairy ; pedicelled spikelets *ca* 0.6 cm long ; lower glume winged on margins ; upper glume lanceolate, ciliate.

Notes : Included on the authority of Dalzell & Gibson (Cooke, *op. cit.*) who reported it from Mahabaleshwar. There is no herbarium sheet of this species from the district in *BSI*, *BLAT* or *CAL*.

Heterogogon triticeus (R. Br.) Stapf ex Craib in Kew Bull. 1912 ; 432. 1912 ; Bor, Grass. Ind. 165. 1960. *Andropogon triticeus* R. Br. Prodr. 201. 1810 ; Hook. f. Fl. Brit. India 7 : 200. 1896 ; Cooke, Fl. Pres. Bombay 3 : 509. 1958 (Repr. ed.). *H. insignis* Thw. Enum. Pl. Zeyl. 437. 1864 ; Blatt. & McC. Bombay Grass. 108, t. 69. 1935.

Herbs, 1 - 2 m high. Leaves linear, acuminate, 5 - 12 × 0.3 - 0.6 cm, sparsely hairy, margins scaberulous. Racemes 5 - 8 cm long, lower glume linear-oblong, ca 0.12 cm long, margins inflexed ; upper glume slightly longer than the lower, truncate ; lower lemma oblong, truncate, shorter than the lower glume ; pedicelled spikelets lanceolate.

Fls. & Frts. : September.

Distrib. : Rare along ghats in grasslands. Kelghar ghat, 162546.

INDOPOA Bor

Indopoa paupercula (Stapf) Bor in Kew Bull. 13 : 225. 1958. *Tripogon pauperculus* Stapf in Hook. Ic. Pl. f. 2442. 1896 ; Hook. f. Fl. Brit. India 7 : 285. 1896 ; Cooke, Fl. Pres. Bombay 3 : 558. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 266, t. 178. 1935 ; Bor, Grass. Ind. 222. 1960.

Herbs ; culms 7 - 11 cm long, capillary, shining. Leaves slender, ca 2.5 cm long, involute. Spikelets ca 0.5 cm long, hairy at base ; lower glume lanceolate, acute, ca 0.3 cm long ; upper glume lanceolate, ca 0.4 cm long, cuspidate ; lemma linear oblong, ca 0.5 cm long. Grains narrowly oblong, ca 0.3 cm long.

Fls. & Frts. : September - November.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Common in grasslands on plateaus. Koyna, Mahabaleshwar, Panchgani.

ISACHNE R. Br.

1. Florets homomorphous :

- | | | |
|--|-----|--------------------|
| 2. Glumes conspicuously longer than the spikelets | --- | <i>I. ilisboae</i> |
| 2. Glumes shorter, equal or slightly longer than the spikelets : | | |
| 3. Leaves glabrous ; branches and pedicels without glandular bands : | --- | <i>I. elegans</i> |
| 3. Leaves hirsute with tubercle based hairs ; branches and pedicels with glandular bands : | | |

4. Ascending herbs, 14 - 40 cm high ; leaves
1.0 - 4.5×0.2 - 0.8 cm ... *I. bicolor*
4. Erect herbs, 30 - 95 cm high ; leaves 5 - 16×0.5 -
1.7 cm ... *I. swaminathanii*
1. Florets heteromorphous :
5. Spikelets 0.15 - 0.2 cm long ... *I. globosa*
5. Spikelets upto 0.15 cm long :
- 6 Culms pilose at nodes ; glumes glabrous ... *I. pulchella*
- 6 Culms glabrous at nodes ; glumes scaberulous or
setose :
7. Leaves ovate, spikelets ovoid ... *I. miliacea*
7. Leaves elliptic, spikelets globose ... *I. gracilis*

***Isachne bicolor* Naik & Patunkar in Bull. Bot. Surv. India 15 : 157.
(1973) 1976 ; Ved Prakash & Jain in Fasc. Fl. India 14 : 14. 1984.**

Herbs. Leaves linear or ovate-lanceolate, acute, sparsely hirsute
above, densely so beneath. Panicles 2 - 7 cm long ; spikelets globose or
obovoid, dark purple, 0.2 - 0.3 cm long.

***Fls. & Frts.* : September - October.**

***Distrib.* : Rare, growing in open, moist grasslands along with species
of *Eriocaulon*, *Swertia*, *Utricularia* and *Cyperus*. Endemic to Maharashtra,
Panchgani, Ved Prakash 346 A-F (CAL).**

***I. elegans* Dalz in Dalz. & Gibs. Bombay Fl. 291. 1861 ; Hook. f.
Fl. Brit. India 7 : 23. 1896 ; Cooke, Fl. Pres. Bombay 3 : 439. 1958 (Repr.
ed.) ; Blatt. & McC. Bombay Grass. 187, t. 121. 1935 ; Bor, Grass. Ind.
580. 1960 ; Ved Prakash & Jain in Fasc. Fl. India 14 : 18, f. 1 - 10. 1984.**

Herbs, ca 30 cm high. Leaves linear-lanceolate, 5 - 8 cm long.
Panicles 7 - 10 cm long ; branches 1.5 - 2.5 cm long ; spikelets 0.25 - 0.3
cm long ; lower glume suborbicular, purple, hairy in the upper half.

***Fls. & Frts.* : August - January.**

***Illus.* : Blatt. & McC. op. cit. ; Ved Prakash & Jain, op. cit.**

***Distrib.* : Common in moist situations near cultivated fields or along
water courses, endemic to Maharashtra. Koyna, Mahabaleshwar,
Nagthana, Nauja, Panchgani.**

***I. globosa* (Thunb.) O. Ktze. Rev. Gen. Pl. 2 : 778. 1891 ; Bor,
Grass. Ind. 580. 1960 ; Ved Prakash & Jain in Fasc. Fl. India 14 : 22, f.**

1 13. 1984. *Milium globosum* Thunb. Fl. Jap. 49. 1784. *I. australis* R. Br. Prodr. 1 : 196. 1810 ; Hook. f. Fl. Brit. India 7 : 24. 1896 ; Cooke, Fl. Pres. Bombay 3 : 439. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 188, t. 122. 1935.

Herbs, 17 - 20 cm high. Leaves linear-lanceolate, acuminate, 2.5 - 7.5 × 0.3 - 0.7 cm, scaberulous. Panicles 2.5 - 7.0 cm long ; lower and upper glumes similar, broadly ovate, obtuse.

Fls. & Frts. : Throughout the year.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Erect annuals, growing gregariously in marshy areas. It is polymorphic, showing great variation in leaf shape, hairiness of leaves and glumes. Mahabaleshwar, Punoli, Tapola.

Isachne gracilis C.E. Hubb. in Kew Bull. 1927 : 77. 1927 ; Bor, Grass. Ind. 581. 1960 ; Ved Prakash & Jain in Fasc. Fl. India 14 : 25, f. 1 - 15. 1984.

Herbs, 12 - 30 cm high. Leaves 1 - 7 cm long, glabrous or sparsely hairy. Panicles 2 - 8 cm long ; branches capillary with reddish glandular bands. Spikelets ca 0.1 cm long.

Fls. & Frts. : August - November.

Illus. : Ved Prakash & Jain, *op. cit.*

Distrib. : Rare, growing on moist rocks and walls. Endemic to Madhya Pradesh, Maharashtra and Karnataka. Mahabaleshwar, *Ved Prakash* s.n. (CAL) ; Panchgani, *Ved Prakash* s.n. (CAL).

I. lisboae Hook. f. Fl. Brit. India 7 : 22. 1896 ; Cooke, Fl. Pres. Bombay 3 : 438. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 187, t. 120. 1935 ; Bor, Grass. Ind. 581. 1960 ; Ved Prakash & Jain in Fasc. Fl. India 14 : 30. 1984.

Herbs, 8 - 15 cm high. Leaves lanceolate, acute, 2.0 - 3.5 × 0.5 - 1.0 cm, margins ciliate. Panicles 3 - 6 cm long ; branches 1.5 - 2.0 cm long ; spikelets globose ; lower and upper glumes broadly ovate, ca 0.25 cm long, 5-nerved, setose ; lemmas concave, shining.

Fls. & Frts. : August - November.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Endemic to Maharashtra and Karnataka at altitudes above 1000 m. It is common at Mahabaleshwar and Panchgani and represented by a single report from Karnataka. Fitzgerald ghat, Koyna, Mahabaleshwar, Old Mahabaleshwar Road, Panchgani.

Isachne miliacea Roth ex R. & S. Syst. Veg. 2 : 476. 1817 ; Hook. f. Fl. Brit. India 7 : 25. 1896 ; Cooke, Fl. Pres. Bombay 3 : 439. 1958 (Repr. ed.). Blatt. & McC. Bombay Grass. 189, t. 123. 1935 ; Bor, Grass. Ind. 582. 1960 ; Ved Prakash & Jain in Fasc. Fl. India 14 : 31. 1984.

Herbs ; culms slender, 8 - 35 cm high, rooting at lower nodes. Leaves 1 - 3 cm long. Panicles 6 - 10 cm long ; pedicels and branches with or without glandular bands.

Fls. & Frts. : August - November.

Illus. : Blatt. & McC. *op. cit.*

Notes : According to Blatt. & McC. (*op. cit.*) it is a common species, however I have included it on the authority of McCann who reported it from Mahabaleshwar and Panchgani, which is the only report from the district.

I. pulchella Roth ex R. & S. Syst. Veg. 2 : 476. 1817 ; Bor, Grass. Ind. 582. 1960 ; Ved Prakash & Jain in Fasc. Fl. India 14 : 33. 1984.

Herbs, ascending, 16 - 76 cm high. Leaves ovate-lanceolate or ovate-elliptic, 1.5 - 4.0 cm long, hirsute, margins cartilaginous. Panicles 1.0 - 7.5 cm long ; branches *ca* 3.5 cm long, spreading ; spikelets globose-obovoid ; lower glume 5 - 7-nerved ; upper glume 7 - 9-nerved.

Fls. & Frts. : September - February.

Distrib. : Slender annuals in moist places. Mahabaleshwar.

I. swaminathanii Ved Prakash & Jain in Proc. Ind. Acad. Sci. (Pl. Sci.) 92 : 19. 1983 & in Fasc. Fl. India 14 : 36. 1984.

Herbs. Leaves linear or broadly lanceolate, apex acute or acuminate, hairy, margins cartilaginous. Panicles 8 - 18 cm long, branches slender, *ca* 6 cm long ; spikelets globose, 0.22 - 0.27 cm across ; glumes broadly elliptic, obtuse, subequal, glabrous or sparsely setose ; lemmas similar to the glumes.

Fls. & Frts. : September - October.

Distrib. : Endemic to Maharashtra above 600 m alt. Grows in damp, shady places in sandy, rocky soil. Mahabaleshwar.

ISCHAEMUM L.

- | | | |
|---|-----|--------------------------|
| 1. Racemes 4 - 5, pilose | ... | <i>I. pilosum</i> |
| 1. Racemes 2, glabrous or hairy : | | |
| 2. Lower glume of sessile spikelets expanded below the middle : | | |
| 3. Keels of upper glume of sessile spikelets winged above the middle | ... | <i>I. indicum</i> |
| 3. Keels of upper glume of sessile spikelets not winged above the middle : | | |
| 4. Spikelets 0.4 - 0.5 cm long ; lower glume of sessile spikelet distinctly ribbed at apex | ... | <i>I. thomsonianum</i> |
| 4. Spikelets 0.25 - 0.3 cm long ; lower glume of sessile spikelets not distinctly ribbed | ... | <i>I. timorense</i> |
| 2. Lower glume of sessile spikelets inflexed evenly from base to apex : | | |
| 5. Pedicels more than one-third the length of sessile spikelets : | | |
| 6. Upper glume of sessile spikelets humped on dorsal surface ; lower glume without nodules on margins | ... | <i>I. impressum</i> |
| 6. Upper glume of sessile spikelets not humped ; lower glume with obscure nodules on margins | ... | <i>I. commutatum</i> |
| 5. Pedicels less than one-third the length of sessile spikelets : | | |
| 7. Lower glume humped on dorsal surface with two tufts of hairs in the centre | ... | <i>I. diplopogon</i> |
| 7. Lower glume not humped : | | |
| 8. Leaves sessile | ... | <i>I. tumidum</i> |
| 8. Leaves petioled : | | |
| 9. Leaves cordate at base ; lower glume of pedicelled spikelets with nodules | ... | <i>I. ritchiei</i> |
| 9. Leaves hastate at base ; lower glume of pedicelled spikelets without nodules | ... | <i>I. semisagittatum</i> |

Ischaemum commutatum Hack. in DC. Monogr. Phan. 6 : 209. 1889 ; Hook. f. Fl. Brit. India 7 : 131. 1896 ; Bor, Grass. Ind. 178. 1960.

Herbs ; culms 10 - 40 cm long, root stock woody. Leaves sessile, 5 - 7 × 1 cm, base sagittate. Spikes ca 2.5 cm long ; sessile spikelets : callus

bearded ; lower glume oblong-obtuse, *ca* 0.55 cm long ; awns *ca* 1.5 cm long ; pedicelled spikelets similar to the sessile, unawned.

Fls. & Frts. : February.

Illus. : Matthew, Ill. Fl. Tamil Nadu Carnatic 2 : t. 884 & 885. 1982.

Distrib. : Rare along water courses. Mahabaleshwar ; *Mahajan* s.n.

Ischaemum diplopogon Hook. f. Fl. Brit. India 7 : 129. 1896; Cooke, Fl. Pres. Bombay 3 : 478. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 14, t. 8. 1935 ; Bor, Grass. Ind. 178. 1960.

Herbs, suberect, 30 - 40 cm high. Leaves linear-lanceolate, 5 - 10 × 0.6 - 1.0 cm. Racemes 3.5 - 5.0 cm long ; sessile spikelets *ca* 0.45 cm long ; lower glume oblong, shortly bicuspidate ; upper glume ovate, acute, bi-lobed ; awns *ca* 0.5 cm long.

Fls. & Frts. : October - April.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Infrequent along moist ; rocky hill slopes. Lingmala, Mahabaleshwar.

I. impressum Hack. in DC. Monogr. Phan. 6 : 210. 1889 ; Hook. f. Fl. Brit. India 7 : 132. 1896 ; Blatt. & McC. Bombay Grass. 17. 1935 ; Bor, Grass. Ind. 180. 1960.

Herbs, erect or prostrate, 10 - 15 cm high. Leaves lanceolate, acute, 6 - 12 × 0.8 - 1.2 cm, hairy. Racemes *ca* 6.5 cm long ; sessile spikelets : lower glume oblong, obtuse, *ca* 0.6 cm long, winged at apex, sparsely hairy on dorsal surface ; upper glume ovate-lanceolate, *ca* 0.6 cm long ; lower lemma *ca* 0.5 cm long ; upper lemma slightly shorter than the lower.

Fls. & Frts. : September - April.

Distrib. : Common in damp areas. Lingmala, Mahabaleshwar, Old Mahabaleshwar, Panchgani, Punoli.

Notes : Though, Lisboa in his Bombay Grasses(1896) has listed this grass from the erstwhile Bombay Presidency Cooke has not included in his flora. Blatter (1927 & 1935) reported it as very abundant in Mahabaleshwar.

Ischaemum indicum (Houtt.) Merr. in J. Arnold Arbor. 19 : 320. 1938 ; Bor, Grass. Ind. 180. 1960. *Phleum indicum* Houtt. Nat. Hist. 2, 13 : 198, t. 90, f. 2. 1782. *I. ciliare* Retz. Obs. Bot. 6 : 36, 1791 ; Hook. f. Fl. Brit. India 7 : 133. 1896 ; Cooke, Fl. Pres. Bombay 3 : 481. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 18, t. 12. 1935.

Herbs ; culms tufted, erect or ascending, 17-30 cm high, nodes bearded. Leaves linear, acuminate, 3.5-5.5 × 0.5-0.7 cm, pubescent, base rounded, margins scabrid. Racemes 2-5 cm long, purplish ; sessile spikelets : oblong, 0.4-0.5 cm long ; lower glume bi-cuspidate, hairy below the middle ; upper glume lanceolate, as long as the lower, shortly awned ; lower lemma ovate-lanceolate, winged ; upper lemma oblong ; awns 1.0-1.2 cm long.

Fls. & Frts. : August-November.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Common annuals along roadsides, on hill tops in open areas. Kamalgad, Kistrude, Koyna, Shirshingi.

I. pilosum (Klein ex Willd.) Wight in Madras Lit. Sci. J. 138. 1835 (Also Repr. p. 2, t. 2) ; Hook. f. Fl. Brit. India 7 : 130. 1896 ; Cooke, Fl. Pres. Bombay 3 : 479. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 14, t. 9. 1935 ; Bor, Grass. Ind. 183. 1960. *Andropogon pilosus* Klein ex Willd. Sp. Pl. 4 : 920. 1806.

Herbs, ca 1 m high. Leaves linear, acuminate, 20-30 cm long. Racemes 5-12 cm long ; sessile spikelets lanceolate, ca 0.6 cm long ; lower glume dorsally hairy ; upper glume ovate-lanceolate ; lower lemma oblong, ciliate above.

Fls. & Frts. : September.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Rare ; found in black soil. Asara ; near Wai, 162568, Satara, Lisboa s.n.

I. ritchiei Stapf ex Bor in Kew Bull. 1951 : 449. 1952 & Grass. Ind. 184. 1960.

Herbs, ca 30 cm high. Leaves linear-lanceolate, acute, 5.5-9.0 × 0.6-1.0 cm. Racemes ca 3.5 cm long ; sessile spikelets ca 0.6 cm long ; pedicelled spikelets : lower glume glabrous with transverse ridges ; upper glume villous at base.

Fls. & Frts. : November.

Distrib. : Rare along streams. Nanal, Kochhar 154293.

Ischaemum semisagittatum Roxb. Fl. Ind. (Carey & Wall. ed.) 1 : 322. 1820; Hook. f. Fl. Brit. India 7 : 130, 1896; Cooke, Fl. Pres. Bombay 3 : 479. 1958 (Repr ed.) ; Blatt. & McC. Bombay Grass. 15, t. 10. 1935 ; Bor, Grass. Ind. 185. 1960.

Herbs, annuals, 20 - 30 cm high. Leaves lanceolate, acute, 3 - 9 × 0.6 - 1.2 cm. Racemes ca 4.5 cm long ; sessile spikelets ca 0.7 cm long ; lower glume ovate-lanceolate ; lower lemma ovate, acuminate, slightly shorter than the glume.

Fls. & Frts. : October - November.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Occasionally growing in shady places. Mahabaleshwar, Satara.

I. thomsonianum Stapf. ex C.E.C. Fischer in Gamble, Fl. Pres. Madras 1722. 1934 [3 : 1193. 1958 (Repr. ed.)] ; Bor, Grass. Ind. 185. 1960. *I. murinum* Hook. f. Fl. Brit. India 7 : 135. 1896 *non* Forst. 1786.

Herbs, ca 1 m high. Leaves lanceolate, 7 - 15 × 0.9 - 1.3 cm. Racemes ca 5 cm long ; sessile spikelets ; lower glume ca 0.4 cm long ; upper glume oblong, keeled and rounded above, with a tuft of hairs in the middle.

Fls. & Frts. : November.

Distrib. : Occasional along ghats. This is a new record for Maharashtra. Koyna. Kochhar 157723, 157929, 157937.

I. timorense Kunth, Rev. Gram. 1 : 369, t. 98. 1930 ; Hook. f. Fl. Brit. India 7 : 136. 1896 ; Blatt. & McC. Bombay Grass. 19. 1935 ; Bor, Grass. Ind. 185. 1960.

Herbs, 15 - 45 cm high. Leaves linear-lanceolate, 2 - 10 cm long, glabrous or sparsely hairy. Spikes 1 - 2 cm long, sparsely hairy ; sessile spikelets ; lower glume ovate or ovate-lanceolate, bicuspidate, subauricled at base ; lower lemma lanceolate.

Fls. & Frts. : October - December.

Distrib. : Rare, straggling perennial near forest edges in shady areas. Mahabaleshwar. Sedgwick & Bell 4503 (BLAT).

Ischaemum tumidum Stapf ex Bor in Kew Bull. 1951 : 450. 1952 & Grass. Ind. 186. 1960.

Herbs, 15 - 30 cm high. Leaves 2.5 - 5.0 × 0.7 - 1.0 cm. Racemes 2.0 - 3.5 cm long ; sessile spikelets *ca* 0.7 cm long ; pedicellate spikelets : joints hairy ; lower glume not winged, hairy.

Fls. & Frts. : November.

Distrib. : Annuals along grassy hill slopes. Koyna.

ISEILEMA Anders.

- | | | |
|---|-----|--------------------------|
| 1. Pedicels of involucre spikelets bearded at base and along margin ; glumes coriaceous | ... | <i>I. anthephoroides</i> |
| 1. Pedicels of involucre spikelets glabrous ; glumes membranous : | | |
| 2. Tubercles present on the spathes | ... | <i>I. prostratum</i> |
| 2. Tubercles not present on the spathes | ... | <i>I. laxum</i> |

Isilema anthephoroides Hack. in DC. Monogr. Phan. 6 : 683. 1889 ; Hook. f. Fl. Brit. India 7 : 219. 1896 ; Blatt. & McC. Bombay Grass. 112, t. 72. 1935 ; Bor, Grass. Ind. 187. 1960.

Herbs, 30 - 60 cm high. Leaves lanceolate, subobtuse, 2 - 5 × 0.5 cm, margins scabrid. Panicles *ca* 10 cm long ; involucre spikelets lanceolate, 0.5 - 0.6 cm long ; lower glume bicuspidate, 4-nerved, scabrid on keel ; lower lemma narrowly lanceolate, bilobed at apex ; upper lemma *ca* 0.2 cm long ; bisexual spikelets oblong, *ca* 0.6 cm long ; lower glume lanceolate, margins inflexed, 2-nerved. Grains oblong, *ca* 0.2 cm long.

Fls. & Frts. : May - September.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Occasional in drier parts of the district near fields. Dhamani, Koyna, Wai.

I. laxum Hack. in DC. Monogr. Phan. 6 : 682. 1889 ; Hook. f. Fl. Brit. India 7 : 218. 1896 ; Cooke, Fl. Pres. Bombay 3 : 516. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 113. 1935 ; Bor, Grass. Ind. 188. 1960.

Herbs, perennial, 15 - 50 cm long. Leaves linear, obtuse, 7 - 15 cm long, scaberulous above and on the margins. Panicles 6 - 13 cm long ;

spikelets oblong-lanceolate, *ca* 0.4 cm long, dimorphous, involucre spikelets 4, male ; upper bisexual ; male spikelets : lower glume 3 - 5 nerved, sparsely ciliate ; upper glume oblong-lanceolate, sparsely ciliate ; lemmas linear ; bisexual spikelets *ca* 0.5 cm long ; lower glume 3 - 5 nerved, truncate or bifid at apex ; upper glume 1-nerved, scaberulous at apex, lower lemma minute or absent ; upper lemma reduced to awn ; awns 0.8 - 1.3 cm long.

Fls. & Frts. : November - December.

Illus. : Rang. & Tad. S.I. Grass. f. 168. 1921.

Distrib. : Rare in grasslands. Mahabaleshwar-Panchgani, *Sedgwick & Bell* 4742 (BLAT).

Iseilema prostratum (L.) Anderss. in Nov. Act. Soc. Sci. Upsal. 32 : 251. 1856; Bor, Grass. Ind. 188. 1960. *Andropogon prostratus* L. Mant. Alt. 304. 1771. *I. wightii* Anderss. *op. cit.* ; Hook. f. Fl. Brit. India 7 : 218. 1896 ; Blatt. & McC. Bombay Grass. 113, t. 73. 1935 ; Cooke, Fl. Pres. Bombay 3 : 516. 1958 (Repr. ed.).

Herbs, culms prostrate, *ca* 1 m long, bearded at nodes. Leaves linear, acute, 10 - 20 cm long. Panicles linear-oblong, spreading ; involucre spikelets : male *ca* 0.3 cm long, shortly pedicelled ; lower glume with 5 raised ribs on back ; upper glume with broadly inflexed margins ; lower lemma oblong, 2 - 3 toothed ; bisexual spikelets 0.15 - 0.3 cm long, awned.

Fls. & Frts. : November.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Rare in damp situations. Panchgani, *Blatter & Hallberg* B 1294 (BLAT).

JANSENELLA Bor

Jansenella griffithiana (C. Muell.) Bor in Kew Bull. 1955 : 98. 1955 & Grass. Ind. 426, t. 45. 1960. *Danthonia griffithiana* C. Muell. in Bot. Z. 14 : 347. 1856. *Arundinella avenacea* Munro ex Thw. Enum. Pl. Zeyl. 362. 1864 ; Hook. f. Fl. Brit. India 7 : 69. 1896 ; Cooke, Fl. Pres. Bombay 3 : 520. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 191, t. 124. 1935.

Herbs, annuals ; culms slender, 15 - 30 cm long, rooting at lower nodes. Leaves lanceolate, acute, 1.5 - 4.0 cm long, base auricled. Spikelets *ca* 0.7 cm long ; lower glume lanceolate, *ca* 0.3 cm long, 3-nerved ; upper glume *ca* 0.7 cm long, notched at apex with scaberulous awn in

between ; lower lemma oblong, *ca* 0.4 cm long ; upper lemma oblong, *ca* 0.4 cm long, median awn *ca* 1 cm long, geniculate.

Fls. & Frts. : October - January.

Illus. : Blatt. & McC. *op. cit.* ; Bor, *op. cit.*

Distrib. : Common in open grasslands. Koyna, Machutar forest, Mahabaleshwar, Panchgani, Rohine.

MANISURIS L.

Manisuris clarkei (Hack.) Bor in Sant. in Rec. Bot. Surv. India 16 (1) : 316. 1967 (3rd Rev. ed.) ; Bor, Grass. Ind. 191. 1960 ; Jain in Bull. Bot. Surv. India 12 : 10, f. 1. 1970. *Rottboellia clarkei* Hack. in Oestr. Bot. Z. 41 : 8. 1891 ; Hook. f. Fl. Brit. India 7 : 156. 1896 ; Cooke, Fl. Pres. Bombay 3 : 472. 1958 (Repr. ed.). *Coelorhachis clarkei* (Hack.) Blatt. & McC. in J. Bombay nat. Hist. Soc. 32 : 33. 1927 & Bombay Grass. 41, t. 29. 1935.

Herbs, 20 - 50 cm high. Leaves linear-lanceolate, acuminate, 5 - 10 × 0.7 - 1.0 cm, tubercle based hairy. Racemes 1.0 - 1.5 cm long, yellow ; sessile spikelets 0.25 - 0.30 cm long ; upper glume oblong, *ca* 0.2 cm long, 1-nerved.

Fls. & Frts. : October - November.

Illus. : Blatt. & McC. *op. cit.* ; Jain *op. cit.*

Distrib. : Rare on rocky substream along hill slopes. Koyna. Kochhar 157746 ; Rohine 169092.

MELANOCENCHRIS Nees

Melanocenchris jacquemontii Jaub. & Spatch, Ill. Pl. Or. 4 : 36, t. 325. 1851 ; Bor, Grass. Ind. 473. 1960. *Gracilea royleana* Hook. f. Fl. Brit. India 7 : 284. 1896 ; Cooke, Fl. Pres. Bombay 3 : 552. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 248, t. 165. 1935.

Herbs, 8 - 10 cm high. Leaves linear-lanceolate, 1.5 - 4.5 cm long, slender, convolute, glaberrulous ; ligule a hairy ridge. Spikelets *ca* 1 cm long ; lower glume elongate, *ca* 0.8 cm long, ciliate at base ; lower lemma chartaceous, *ca* 0.6 cm long, shortly awned ; palea bi-cuspidate ; upper lemma *ca* 0.45 cm long. Grains oblong, *ca* 0.25 cm long.

Fls. & Frts. : July - September.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Common in barren places. Dhavadi, Dhom dam near Wai, Koyna, Panchgani, Satara.

OPLISMENUS P. Beauv.

- | | | |
|--|-----|----------------------|
| 1. Awns stiff, smooth | ... | <i>O. compositus</i> |
| 1. Awns flexuous, minutely scaberulous | ... | <i>O. burmannii</i> |

Oplismenus burmannii (Retz.) P. Beauv. Ess. Agrost. 54, 168, 169. 1812 ; Hook. f. Fl. Brit. India 7 : 68. 1896 ; Cooke, Fl. Pres. Bombay 3 : 443. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 154, t. 87. 1935 ; Bor, Grass. Ind. 317. 1960. *Panicum burmannii* Retz. Obs. Bot. 3 : 10. 1783.

Herbs, 15 - 45 cm high. Leaves ovate or ovate-lanceolate, sparsely hairy. Panicles 2.5 - 6.0 cm long ; spikelets *ca* 0.25 cm long ; lower glume ovate, obtuse, silky-hairy, 3 - 5 nerved ; lower lemma broadly ovate, subobtuse, *ca* 0.25 cm long.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Rare ; included on the basis of a single collection by Woodrow from Panchgani.

O. compositus (L.) P. Beauv. Ess. Agrost. 54, 168, 169. 1812 ; Hook. f. Fl. Brit. India 7 : 66. 1896 ; Cooke, Fl. Pres. Bombay 3 : 442. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 152, t. 96. 1935 ; Bor, Grass. Ind. 317. 1960. *Panicum compositus* L. Sp. Pl. 57. 1753.

Herbs ; culms diffuse, 30 - 70 cm long. Leaves ovate-lanceolate, 3 - 11 × 1 - 2 cm. Panicles 8 - 12 cm long ; lower glume ovate-lanceolate ; lower lemma ovate, *ca* 0.3 cm long ; upper lemma oblong, shining.

Fls. & Frts. : September - November.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Common near forest edges, grows in patches. Gureghar, Machutar Forest, Panchgani, Shirshingi, Tadoshi.

ORYZA L.

Oryza rufipogon Griff. Notul. 3 : 5. 1851 ; Bor, Grass. Ind. 605. 1960.

Herbs, *ca* 1 m high, rooting at nodes. Leaves 30 - 40 cm long, ligulate. Spikelets in panicles ; awns 4 - 10 cm long.

Fls. & Frts. : November.

Distrib. : Growing as weed near rice fields and in waste places. Panchgani.

CULTIVATED SPECIES

Oryza sativa L. Sp. Pl. 333. 1753 ; Hook. f. Fl. Brit. India 7 : 92. 1896 ; Blatt. & McC. Bombay Grass. 274, t. 187. 1935 ; Cooke, Fl. Pres. Bombay 3 : 565. 1958 (Repr. ed.) ; Bor, Grass. Ind. 605. 1960.

Herbs, 30 - 35 cm high. Leaves 25 - 30 × 0.5 cm. Spikelets lanceolate, ca 0.75 cm long. Grains oblong, yellow or white.

Fls. & Frts. : May.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Common cereal, cultivated throughout the district.

OXYTENANTHERA Munro

Oxytenanthera ritcheyi (Munro) Blatt. & McC. in J. Bombay nat. Hist. Soc. 33 : 773. 1929 ; Blatt. in Indian Forester 55 : 592. 1929 & Bombay Grass. 284. 1935. *Bambusa ritcheyi* Munro in Trans. Linn. Soc. 26 : 113. 1868. *O. monostigma* Bedd. Fl. Sylv. 233. 1873 & Ic. Pl. Ind. Or. 56, t. 234. 1874 ; Gamble in Hook. f. Fl. Brit. India 7 : 402. 1896 ; Cooke, Fl. Pres. Bombay 3 : 571. 1958 (Repr. ed.).

Culms 3 - 4 m high, yellow tomentose. Leaves linear-lanceolate, unequally cordate at base. Spikelets 1-flowered ; involucre glumes 2 - 3, empty ; floral glumes lanceolate, bisexual.

Distrib. : Mahabaleshwar, *Fagan s.n.* ; Satara ghats, *Brandis s.n.* (Cooke, *op. cit.*).

Notes : R.B. Majumdar, a specialist in Indian Bamboos, feels (pers. comm.) that *Oxytenanthera* is an African genus and the Indian species described under this genus are taxonomically distinct and should be classified under a new genus *Pseudotenanthera* Majumdar. The revised nomenclature for this species—*P. ritcheyi* (Munro) Majumdar is in the process of publication, so I am tentatively retaining the epithet *Oxytenanthera ritcheyi*.

PANICUM L.

- | | | |
|--|-----|-----------------------|
| 1. Lower glume distinctly less than half as long as the spikelet | ... | <i>P. psilopodium</i> |
| 1. Lower glume more than half or sometimes as long as the spikelet | ... | <i>P. antidotale</i> |

Panicum antidotale Retz, Obs. Bot. 4 : 17. 1786 ; Hook. f. Fl. Brit. India 7 : 52. 1896 ; Cooke, Fl. Pres. Bombay 3 : 453. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 163, t. 104. 1935 ; Bor, Grass. Ind. 322. 1960.

Herbs, 60 - 70 cm high. Leaves linear, acuminate, 15 30×0.5 - 1 cm. Panicles 12 17 cm long, effuse ; spikelets ovoid, *ca* 35 cm long ; lower glume ovate, 3-nerved ; upper glume ovate-acuminate, 5 7 nerved ; upper lemma *ca* 25 cm long, elliptic.

Fls. & Frts. : December.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Rare annuals ; growing in shady places. Gureghar, Kanodia 87058.

P. psilopodium Trin. Gram. Panic. 217. 1826 ; Hook. f. Fl. Brit. India 7 : 46. 1896 ; Blatt. & McC. Bombay Grass. 158. 1935 ; Bor, Grass. Ind. 329. 1960. *P. psilopodium* var. *coloratum* Hook. f. *op. cit.* 47 ; Bor, *op. cit.* 330.

Herbs, 20 - 45 cm high. Leaves linear-lanceolate. Panicles effuse, 5 - 7 cm long. Spikelets ovate-oblong or elliptic, acute, 0.2 - 0.3 cm long ; lower glume ovate-apiculate, *ca* 0.1 cm long. Grains ellipsoid *ca* 0.2 cm long, shining.

Fls. & Frts. : September - November.

Distrib. : Root stock villous ; growing in marshy places. Koyna, Nauja, Yavateshwar.

PASPALUM L.

- | | | |
|---|-----|---------------------|
| 1. Leaves elliptic-lanceolate ; spikelets upto 0.1 cm long | ... | <i>P. canarae</i> |
| 1. Leaves linear-lanceolate ; spikelets more than 0.2 cm long | ... | <i>P. vaginatum</i> |

Paspalum canarae (Steud.) Veldk. in Blumea 21 : 72. 1973. *Panicum canarae* Steud, Syn. Pl. Glum. 1 : 58. 1853. *P. compactum* auct. non Roth, 1821 ; Hook. f. Fl. Brit. India 7 : 12. 1896 ; Cooke, Fl. Pres. Bombay 3 : 460. 1958 (Repr. ed.) ; Bor, Grass. Ind. 336, 1960. *P. compactum* var. *fimbriatum* Bor, *op. cit.*, syn. nov. *P. canarae* var. *fimbriatum* (Bor) Veldk. *op. cit.*

Herbs ; culms 10-25 cm high. Leaves 2-3 × 0.7-1.0 cm, hairy. Spikes many, horizontally spreading ; rhachis triquetrous ; upper glume broadly elliptic, fimbriate or glabrous. Grains dorsally compressed.

Fls. & Frts. : May - October.

Distrib. : Common annual throughout the district, Kas, Koyna, Lingmala, Machutar Forest, Mahabaleshwar, Mahabaleshwar-Pratapgad, Panchgani, Shirshingi.

Notes : Bor (*op. cit.*) erected a new variety *P. compactum* var. *fimbriatum* on the basis of fimbriate upper glume (glabrous in var. *compactum*). However, the above collections show both types of upper glumes in one and the same plant. Therefore, I am treating it as a synonym to the type variety.

Paspalum vaginatum Swartz, Prodr. Veg. Ind. Occ. 21. 1788 ; Bor, Grass. Ind. 341. 1960.

Herbs ; culms creeping, rooting at lower nodes. Leaves 5-8 cm long. Spikes bi-ternate, shortly peduncled ; spikelets elliptic-oblong ; upper glume membranous ; lower lemma similar to the upper glume ; upper lemma concave.

Fls. & Frts. : July.

Distrib. : Rare ; in wet rice fields. Ghotil.

CULTIVATED SPECIES

P. scrobiculatum L. Mant. Pl. 29. 1767 ; Hook. f. Fl. Brit. India 7 : 10. 1896 ; Cooke, Fl. Pres. Bombay 3 : 460. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 136, t. 87. 1935 ; Bor, Grass. Ind. 340. 1960.

Herbs, ca 50 cm high. Leaves 15-30 cm long. Spikes sessile, 2.5-5.0 cm long ; spikelets orbicular, ca 0.2 cm across. Grains enclosed in hardened glumes.

Fls. & Frts. : May - July.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Occasionally cultivated. Karanjewadi, Koyna.

PENNISETUM L.C. Rich. ex Pers.

- | | | |
|---|-----|------------------------|
| 1. Lemmas homomorphous, lower entire | ... | <i>P. hohenackeri</i> |
| 1. Lemmas heteromorphous, lower 3-lobed : | | |
| 2. Spikelets persistent | ... | <i>P. pedicellatum</i> |
| 2. Spikelets deciduous | ... | <i>P. glaucum</i> |

Pennisetum glaucum (L.) R. Br. Prodr. 1 : 195. 1810 ; T.A. Cope in Nasir & Ali, Fl. Pak. 143. 234. 1982. *Panicum glaucum* L. Sp. Pl. 56. 1753. *Setaria glauca* (L.) P. Beauv. Ess. Agrost. 51, 169, 178. 1812 ; Hook. f. Fl. Brit. India 7 : 78. 1896 ; Cooke, Fl. Pres. Bombay 3 : 435. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 172. 1935 ; Bor, Grass. Ind. 630. 1960.

Herbs ; culms 30 - 50 cm high, erect or ascending. Leaves linear, acuminate, 3 - 8 cm long, margins scabrid. Panicles 1 - 5 cm long ; bristles *ca* 5 cm long ; spikelets 0.2 - 0.25 cm long, ellipsoid ; lower glume broadly ovate, *ca* 0.1 cm long, 3 nerved ; upper glume *ca* 0.18 cm long, 5-nerved ; lower lemma *ca* 0.25 cm long, 5-nerved ; upper lemma *ca* 0.2 cm long. Grains ellipsoid, *ca* 0.15 cm long, grey.

Fls. & Frts. : September - April.

Illus. : Rang. & Tad. S.I. Grass. f. 109. 1921.

Distrib. : Common along hill slopes and in plains in open situations. Dhom dam, Wai, Gureghar, Jadholi, Kistrude, Koyna, Mahabaleshwar, Old Mahabaleshwar Road, Panchgani, Shirshingi, Yavateshwar.

P. hohenackeri Hochst. ex Steud. Syn. Pl. Glum. 1 : 103. 1854 ; Bor, Grass. Ind. 344. 1960. *P. alopecuroides* Steud. Syn. Pl. Glum. 1 : 102. 1854 *non* Jacq. 1844 ; Hook. f. Fl. Brit. India 7 : 84. 1896 ; Cooke, Fl. Pres. Bombay 3 : 430. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 178, t. 113. 1935.

Herbs, 60 - 70 cm high. Leaves linear, convolute. 17 - 35 cm long. Panicles 8 - 15 cm long ; spikelets solitary, lanceolate, acute, 0.7 - 0.85 cm long ; involucre bristles free at base, scabrid, unequal ; rachilla scabrid ; lower glume suborbicular, *ca* 0.1 cm long, upper glume lanceolate, *ca* 0.18 cm long ; lemmas lanceolate, 0.65 - 0.7 cm long.

Fls. & Frts. : September - November.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Common tufted annuals along water courses growing in large patches. Kistrude, Koyna, Morgiri, Panchgani, Pirachi wadi, Wai.

Pennisetum pedicellatum Trin. in Mem. Acad. Sci. Petersb. 6, 3 : 184. 1834 ; Hook. f. Fl. Brit. India 7 : 86. 1896 ; Cooke, Fl. Pres. Bombay 3 : 431. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 180, t. 115. 1935 ; Bor, Grass. Ind. 346. 1960.

Herbs, ca 1 m high. Leaves 7-24 × 0.6-0.8 cm, flat, sparsely hairy. Panicles 4-13 cm long ; rhachis winged ; spikelets pedicelled, lanceolate, solitary, ca 0.35 cm long ; involucre bristles purple, densely villous below the middle ; lower glume about half the length of lower lemma, woolly ; upper glume oblong-lanceolate, ca 0.4 cm long ; lower lemma oblong, ca 0.3 cm long ; upper lemma ovate-oblong, shining.

Fls. & Frts. : November - December.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Occasionally found in black cotton soil or near forest clearings. Gureghar, Pirachi Wadi.

CULTIVATED SPECIES

P. americanum (L.) K. Schum. in Engl. Pflanzenr. Oest. Afr. B. 51, C. t. 4, f. A & B. 1895 ; Bor in Rech. f. Fl. Iran 70 : 503. 1970. *Panicum americanum* L. Sp. Pl. 56. 1753. *P. typhoides* (Burm.) Stapf & C.E. Hubb. in Kew Bull. 1933 : 271. 1933 ; Bor, Grass. Ind. 350. 1960. *P. typhoideum* L.C. Rich. in Pers. Syn. Pl. 1 : 72. 1805 ; Hook. f. Fl. Brit. India 7 : 82. 1896 ; Cooke, Fl. Pres. Bombay 3 : 432. 1958 (Repr. ed.). 'Bajra'.

Herbs, 20 - 30 m high. Leaves linear-lanceolate, 15 - 20 × 0.3 - 0.5 cm. Panicles 5 - 7 cm long. Spikelets oblong, ca 0.3 cm long.

Fls. & Frts. : November - December.

Distrib. : Common species under cultivation throughout the district.

P. polystachion (L.) Schult. Syst. Veg. Mant. 2 : 146. 1824 ; Bor, Grass. Ind. 346, f. 39. 1960. *Panicum polystachion* L. Syst. Nat. ed. 10 2 : 870. 1759. *Pennisetum setosum* (Swartz) L.C. Rich. in Pers. Syn. Pl. 1 : 72. 1805 ; Hook. f. Fl. Brit. India 7 : 87. 1896 ; Cooke, Fl. Pres. Bombay 3 : 431. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 180. 1935.

Herbs, 2 - 3 m high. Leaves linear, acuminate, ca 30 × 1 cm. Panicles ca 13 cm long. Spikelets solitary, sessile, ca 0.35 cm long.

Fls. & Frts. : November - April.

Illus. : Bor, *op. cit.*

Distrib. : Rarely cultivated in forest nursery. Koyna, Kochhar 157704, M.P. Nayar 153127.

POLYPOGON Desf.

Polypogon monspeliensis (L.) Desf. Fl. Atl. 1 : 67. 1798 ; Hook. f. Fl. Brit. India 7 : 245. 1896 ; Blatt. & McC. Bombay Grass. 207, t. 137. 1935 ; Bor, Grass. Ind. 403. 1960. *Alopecurus monspeliensis* L. Sp. Pl. 61. 1753.

Herbs, 15 - 40 cm high. Leaves linear, acuminate, 7 - 10 × 0.3 - 0.5 cm. Panicles ca 1 cm long ; spikelets shortly pedicelled ; glumes ca 0.2 cm long, oblong, scaberulous on keels ; awns ca 0.4 cm long ; lemmas oblong. Grains ca 0.15 cm long.

Fls. & Frts. : June.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Weed near cultivated fields. Mahabaleshwar.

PSEUDANTHISTIRIA (Hack.) Hook. f.

- | | | |
|---|-----|-----------------------|
| 1. Lower glume of sessile spikelets hispid ; spathes with hairs from minute tubercles | ... | <i>P. heteroclita</i> |
| 1. Lower glume of sessile spikelets glabrous ; spathes with hairs from large, dark coloured tubercles | ... | <i>P. hispida</i> |

Pseudanthistiria heteroclita (Roxb.) Hook. f. Fl. Brit. India 7 : 219. 1896 ; Blatt. & McC. Bombay Grass. 121, t. 75. 1935 ; Bor, Grass. Ind. 203. 1960. *Anthistiria heteroclita* Roxb. Fl. Ind. (Carey & Wall. ed.) 1 : 253. 1820.

Herbs ; culms geniculate, ca 1 m high. Leaves linear, 4.5 - 6.0 cm long, hairy with bulbous-based hairs. Panicles 15 - 20 cm long ; sessile spikelets linear-oblong, 0.3 - 0.5 cm long ; lower glume furrowed ; upper glume slightly shorter than the lower ; upper lemma awned ; awns 2.0 - 2.5 cm long ; pedicelled spikelets ca 0.6 cm long.

Fls. & Frts. : September - November.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Densely tufted herbs growing in pastures. Kelghar ghat, Koyna.

***Pseudanthistiria hispida* Hook. f.** Fl. Brit. India 7 : 219. 1896; Cooke, Fl. Pres. Bombay 3 : 512. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 120. 1935 ; Bor, Grass. Ind. 203. 1960.

Herbs, 30–50 cm high. Leaves linear, 2.5–4.0 cm long, bulbous based hairy. Panicles 5–8 cm long ; sessile spikelets ca 0.4 cm long ; lower glume oblong, truncate at apex ; upper glume oblong, obtuse ; lower lemma quadrate ; pedicelled spikelets ca 0.5 cm long.

Fls. & Frts. : September - November.

Distrib. : Common in waste places. Jadholi, Karanjewadi, Panchgani.

PSEUDODICHANTHIUM Bor

***Pseudodichanthium serrafalcoides* (T. Cooke & Stapf) Bor** in Indian Forester 66 : 272. 1940 & Grass. Ind. 204. 1960. *Andropogon serrafalcoides* T. Cooke & Stapf in Kew Bull. 1908 : 456. 1908. *Dichanthium serrafalcoides* (T. Cooke ex Stapf) Blatt. & McC. in J. Bombay nat. Hist. Soc. 32 : 426. 1928 & Bombay Grass. 95, t. 63. 1935. *A. cookei* (Stapf) Stapf. ex Woodr. in J. Bombay nat. Hist. Soc. 13 : 438. 1901 ; Cooke, Fl. Pres. Bombay 3 : 506. 1958 (Repr. ed.).

Herbs, ca 12 cm high. Leaves linear, 6.0×0.2 cm, sparsely hairy. Racemes solitary, ca 1.5 cm long ; sessile spikelets ca 0.8 cm long ; lower glume oblong, keels scaberulous ; upper glume oblong-lanceolate ; lower lemma oblong, obtuse, shorter than lower glume ; awns ca 2 cm long ; pedicelled spikelets lanceolate.

Fls. & Frts. : October.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Slender annuals in shady areas. Lingmala, Mahabaleshwar, Panchgani.

PSEUDORAPHIS Griff.

***Pseudoraphis spinescens* (R. Br.) Vickery** in Proc. Roy. Soc. Queensl. 62(7) : 69. 1952 ; Bor, Grass. Ind. 353. 1960. *Panicum spinescens* R. Br. Prodr. 193. 1810. *Chamaeraphis spinescens* (R. Br.) Poir. in Lam. Encycl. 2 : 189. 1811 ; Hook. f. Fl. Brit. India 7 : 62. 1896 ; Cooke, Fl. Pres. Bombay 3 : 437. 1958 (Repr. ed.). *P. aspera* (Koen.) Pilger in Notizbl. Bot.

Gard. Berlin 10 : 210. 1928 ; Blatt. & McC. Bombay Grass. 168, t. 109. 1935.

Herbs, floating, nodes hairy. Leaves linear-lanceolate, 2.5 - 5.0 × 1.0 - 1.5 cm. Panicles 5 - 7 cm long, effuse ; spikelets *ca* 0.7 cm long ; lower glume minute, scaly ; upper glume lanceolate, setose ; upper lemma lanceolate.

Fls. & Frts. : October.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Included on the basis of a single collection by Inamdar of Khandala from the district.

RHYNCHELYTRUM Nees

Rhynchelytrum repens (Willd.) C.E. Hubb. in Kew Bull. 1934 : 110. 1934 ; Bor, Grass, Ind. 355. 1960 ; T.A. Cope in Nasir & Ali, Fl. Pak. 143 : 176. 1982. *Saccharum repens* Willd. Sp. Pl. 1 : 322. 1798. *Tricholaena wightii* Nees ex Steud. Syn. Pl. Glum. 93. 1855 ; Hook. f. Fl. Brit. India 7 : 65. 1896 ; Blatt. & McC. Bombay Grass. 176, t. 112. 1935 ; Cooke, Fl. Pres. Bombay 3 : 441. 1958 (Repr. ed.). *Rhynchelytrum villosum* (Pari.) Chiov. in Ann. Ist. Bot. Roma 8 : 318. 1908 ; Bor, *op. cit.*

Herbs, *ca* 45 cm long. Leaves linear, acuminate, 2 - 15 cm long. Panicles 5 - 12 cm long ; branchlets and pedicels slender, flexuous ; spikelets *ca* 1 cm long ; silky-hairy ; lower glume linear, obtuse, bearded at base ; upper glume ovate-lanceolate ; upper lemma elliptic-oblong, *ca* 0.25 cm long.

Fls. & Frts. : September.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Rare along exposed hill slopes. Mahabaleshwar, *Lisboa* ; Panchgani, *Lisboa* (Blatt. & McC. *op. cit.*).

SACCIOLEPIS Nash

- | | | |
|--|-----|----------------------|
| 1. Culms floating ; panicles 9 - 15 cm long ; spikelets in interrupted fascicles | ... | <i>S. interrupta</i> |
| 1. Culms not floating ; panicles 2 cm long ; spikelets loosely arranged | ... | <i>S. indica</i> |

Sacciolepis indica (L.) A. Chase in Proc. Biol. Soc. Wash. 21. 8 : 1908 ; Blatt. & McC. Bombay Grass. 166. 1935 ; Bor, Grass. Ind. 357. 1960. *Aira indica* L. Sp. Pl. 1753, in "errata". *Panicum indicum* L. Mant. 2 : 184. 1771. *non* Mill. 1768 ; Hook. f. Fl. Brit. India 7 : 41. 1896.

Herbs, culms ascending, 15 - 50 cm high. Leaves lanceolate, 2.5 - 4.0 × 0.2 - 0.4 cm. Spikelets lanceolate, acute, 2 - 3 mm long ; green with a purple tip ; lower glume *ca* 0.15 cm long ; upper glume twice as long as the lower glume ; lower lemma narrower than the upper glume.

Fls. & Frts. : November.

Distrib. : Punoli, Kochhar 157827.

Notes : Cooke (*op. cit.*) excluded this species on the ground of unavailability from the erstwhile Bombay Presidency, though it was reported by Woodrow (1900-1901). Blatt. & McC. (*op. cit.*) established it on the basis of collection from S.M. Country from N. Kanara. There are few collections from Goa. Recently it is reported by Karthikeyan (1983) from Maharashtra on the basis of Reddy's collection from Poona District.

The above collection from Koyana is the first report of this taxon from the district.

S. interrupta (Willd.) Stapf in Prain, Fl. Trop. Afr. 9 : 757. 1920 ; Blatt. & McC. Bombay Grass. 167, t. 108. 1935 ; Bor, Grass. Ind. 358. 1960. *Panicum interruptum* Willd. Sp. Pl. 1 : 341. 1798 ; Hook. f. Fl. Brit. India 7 : 40. 1896 ; Cooke, Fl. Pres. Bombay 3 : 450. 1958 (Repr. ed.).

Herbs. Leaves linear, 15 - 25 cm long. Spikes 3.0 - 4.5 cm long ; lower glume less than half the length of the spikelet, broadly ovate ; upper glume ovate, acute.

Fls. & Frts. : December.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Perennials, in ponds. Nagthana.

SEHIMA Forssk.

- | | | |
|---|-----|------------------------|
| 1. Lower glume of sessile spikelets with a deep longitudinal slit on dorsal surface | ... | <i>S. sulcatum</i> |
| 1. Lower glume of sessile spikelets without a longitudinal slit : | | |
| 2. Annuals ; racemes upto 5 cm long ; spikelets upto 0.5 cm long | ... | <i>S. ischaemoides</i> |
| 2. Perennials ; racemes more than 5 cm long ; spikelets more than 0.5 cm long | ... | <i>S. nervosum</i> |

Sehima ischaemoides Forssk. Fl. Aeg.-Arab. 178. 1775 ; Blatt. & McC. Bombay Grass. 22. 1935 ; Bor, Grass. Ind. 218. 1960. *Ischaemum laxum* auct. non R. Br. 1810 ; Hook. f. Fl. Brit. India 7 : 136. 1896 ; Cooke Fl. Pres. Bombay 3 : 482. 1958 (Repr. ed.).

Herbs, ca 25 cm high. Leaves linear, 5 - 7 cm long. Sessile spikelets linear ; upper glume boat shaped, keeled above, hairy on the back ; lower lemma 2-nerved ; upper lemma oblong-lanceolate.

Fls. & Frts. : November.

Distrib. : Rare in open grass lands. Wai, Talbot 4486.

S. nervosum (Rottl.) Stapf in Prain, Fl. Trop. Afr. 9 : 36. 1917 ; Blatt. & McC. Bombay Grass. 21, t. 14. 1935 ; Bor, Grass. Ind. 218. 1960. *Andropogon nervosum* Rottl. in Willd. in Verh. Ges. Naturf. Freund. Berlin Neue Schr. 4 : 218. 1805. *Ischaemum laxum* R. Br. Prodr. 205. 1810 ; Cooke, Fl. Pres. Bombay 3 : 482. 1958 (Repr. ed.).

Herbs ; culms 60 - 90 m high. Leaves linear, setaceous, ca 30 cm long, scabrid. Racemes 7 - 11 cm long, slightly curved ; joints and pedicels densely ciliate along the angles ; sessile spikelets linear or lanceolate, 0.7 - 1.0 cm long ; lower glume 2-keeled ; upper glume boat-shaped, keeled above with a fine bristle at apex, ciliate, lower lemma ca 0.7 cm long ; upper lemma ca 0.5 cm long ; pedicelled spikelets 0.9 - 1.1 cm long, greenish with a purple tinge.

Fls. & Frts. : September.

Illus. : Blatt. & McC. op. cit.

Distrib. : Rare tufted herbs along the hill slopes. Panchgani, Blatter & Hallberg B 1269 (BLAT).

S. sulcatum (Hack.) A. Camus in Bull. Mus. Hist. Nat. Paris 27 : 373. 1921 ; Blatt. & McC. Bombay Grass 23, t. 15. 1935 ; Bor, Grass. Ind. 219. 1960. *Ischaemum sulcatum* Hack. in DC. Monogr. Phan. 6 : 248. 1889 ; Hook. f. Fl. Brit. India 7 : 137. 1896 ; Cooke, Fl. Pres. Bombay 3 : 483. 1958 (Repr. ed.).

Herbs ; culms slender, geniculate, ca 50 cm long. Leaves linear or lanceolate, setaceous, 10 - 20 cm long. Racemes 5 - 7 cm long ; joints and pedicels shorter than sessile spikelets, ciliate ; sessile spikelets ca 1 cm long ; lower glume lanceolate ; pedicelled spikelets smaller than sessile, unawned ; lower glume not furrowed.

Fls. & Frts. : October.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Rare ; included on the basis of a single collection by Lisboa from Satara.

SETARIA P. Beauv.

- | | | |
|---|-----|----------------------|
| 1. Perennials ; leaves plicate | ... | <i>S. plicata</i> |
| 1. Annuals ; leaves not plicate : | | |
| 2. Leaves with bulbous based hairs ; panicles interrupted | ... | <i>S. intermedia</i> |
| 2. Leaves glabrous or sparsely hairy ; panicles compact | ... | <i>S. pumila</i> |

Setaria intermedia R. & S. Syst. Veg. 2 : 489. 1817 ; Hook. f. Fl. Brit. India 7 : 79. 1896 ; Cooke, Fl. Pres. Bombay 3 : 436. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 174. 1935 ; T.A. Cope in Nasir & Ali, Fl. Pak. 143 : 183. 1982. *Panicum tomentosum* Roxb. Fl. Ind. (Carey & Wall. ed.) 1 : 303. 1820. *S. tomentosa* (Roxb.) Kunth, Rev. Gram. 1 : 47. 1829 ; Bor, Grass. Ind. 365. 1960.

Herbs, ca 1 m high, rooting at lower nodes. Leaves linear-lanceolate, 10 - 20 cm long. Panicles 5 - 12 cm long ; spikelets ovoid, ca 0.2 cm long ; lower glume orbicular ; upper glume broadly ovate, ca 0.15 cm long ; upper lemma broadly ovate, ca 0.2 cm long.

Fls. & Frts. : September - November.

Illus. : Rang. & Tad. S.I. Grass. f. 110. 1921.

Distrib. : Common annuals near cultivated fields in wet places. Koyna, Panchgani, Phaltan, Wai, Yavteshwar.

S. plicata (Lam.) T. Cooke, Fl. Pres. Bombay 2 : 919. 1908 (3 : 434. 1958 ; Repr. ed.) ; Blatt. & McC. Bombay Grass. 171. 1935 ; Bor, Grass. Ind. 364. 1960. *Panicum plicatum* Lam. Encycl. 4 : 736. 1797.

Herbs, ca 2 m high. Leaves linear-lanceolate, 15 - 25 × 2 - 3 cm. Panicles effuse, spreading, 15 - 25 cm long ; rhachis angular, scabrid ; spikelets ovoid, 0.3 - 0.35 cm long ; lower glume orbicular-ovate, ca 0.1 cm long, 5-nerved ; upper glume broadly ovate, ca 0.25 cm long, 7-nerved, tinged with purple ; upper lemma 0.35 cm long.

Fls. & Frts. : October - November.

Distrib. : Frequent in moist shady places ; sometimes cultivated as an ornamental plant. Lingmala, Mahabaleshwar, Panchgani.

Setaria pumila (Poir.) R. & S. Syst. Veg. 2 : 891. 1817. *Panicum pumilum* Poir. in Lam. Encycl. 4 : 273. 1816. *S. pallide-fusca* (Schumach.) Stapf & C.E. Hubb. in Kew Bull. 1930 : 259. 1930 ; Bor, Grass. Ind. 363. 1960.

Herbs, 30 - 60 cm high. Leaves linear-lanceolate, $9 - 15 \times 0.3 - 1.0$ cm. Panicles 3 - 6 cm long ; spikelets *ca* 0.25 cm long ; lower glume less than half the length of the spikelets, orbicular ; upper glume ovate, shorter than upper lemma.

Fls. & Frts. : August - September.

Distrib. : Common near cultivated fields and in grass lands. Kistrude, Koyna, Shirshingi.

SORGHUM Moench

Sorghum halepense (L.) Pers. Syn. Pl. 1 : 101. 1805 ; Blatt. & McC. Bombay Grass. 55, t. 37. 1935 ; Bor, Grass. Ind. 222. 1960. *Holcus halepensis* L. Sp. Pl. 1047. 1753. *Andropogon halepensis* (L.) Brot. Fl. Lusit. 1 : 89. 1804 ; Hook. f. Fl. Brit. India 7 : 182. 1896 ; Cooke, Fl. Pres. Bombay 3 : 502. 1958 (Repr. ed.).

Herbs, 3 - 5 m high. Leaves linear-lanceolate, $35 - 45 \times 2 - 3$ cm, margins scabrid. Panicles 20 - 25 cm long ; sessile spikelets ; lower glume ovate, *ca* 0.55 cm long, silky hairy ; upper glume lanceolate, shining ; lower lemma elliptic-oblong, *ca* 0.55 cm long, ciliate ; upper lemma oblong, *ca* 0.2 cm long, ciliate ; pedicelled spikelets, lanceolate, narrow, *ca* 0.65 cm long.

Fls. & Frts. : September - December.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Tall perennials, common near cultivated fields. Khambil-Chorghe ghat, Padolshi, Panchgani, Vasola.

SPODIOPOGON Trin.

Spodiopogon rhizophorus (Steud.) Pilger in Engl. & Prantl Pflanzenf. Aufl. 2. 14 e, 119. 1940 ; Bor, Grass. Ind. 246. 1960. *Andropogon rhizophorus* Steud. Syn. Pl. Glume, 1 : 381. 1854. *Spodiopogon albidus* Bth.

in J. Linn. Soc. 19 : 66. 1881 ; Hook. f. Fl. Brit. India 7 : 108. 1896 ; Cooke, Fl. Pres. Bombay 3 : 464. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 51, t. 34. 1935.

Herbs, *ca* 1.5 m high. Leaves oblong-lanceolate, acuminate, 6 - 14 × 1.3 cm, hairy. Panicles narrowly compressed, 5 - 10 cm long ; rhachis ciliate ; spikelets lanceolate, *ca* 0.55 cm long, silky villous ; pedicels spathulate, flattened ; glumes ovate-lanceolate, finely mucronate, hairy ; lower lemma truncate, apex erose ; upper lemma *ca* 0.35 cm long.

Fls. & Frts. : October - January.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Common tufted annuals near forest edges ; growing in large patches. Karanjewadi, Mahabaleshwar, Mahabaleshwar-Pratapgh. Nauja.

SPOROBOLUS R. Br.

- | | | |
|--|-----|--|
| 1. Lower glume minute ; stamens 3 | ... | <i>S. coromandelianus</i> |
| 1. Lower glume two-third or as long as the spikelets ; stamens 2 ; | | |
| 2. Leaves radical, scabrid on margin | ... | <i>S. piliferus</i> |
| 2. Leaves cauline, smooth | ... | <i>S. indicus</i>
var. <i>diander</i> |

Sporobolus coromandelianus (Retz.) Kunth, Rev. Gram. 1 : 68. 1829 ; Hook. f. Fl. Brit. India 7 : 252. 1896 ; Cooke, Fl. Pres. Bombay 3 : 542. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 228. t. 153. 1935 ; Bor, Grass. Ind. 627. 1960. *Agrostis coromandelianus* Retz. Obs. Bot. 4 : 19. 1786.

Herbs, 10 - 15 cm long. Leaves linear-lanceolate, 2 - 5 cm long. Panicles effuse, 3 - 4 cm long ; spikelets shortly pedicellate, *ca* 0.13 cm long ; upper glume lanceolate, acute, *ca* 0.12 cm long, 1-nerved ; lemmas oblong, obtuse, *ca* 0.1 cm long. Grains broadly ellipsoid, reddish brown.

Fls. & Frts. : September - October.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Tufted annuals. Koyna, Wai.

Sporobolus indicus (L.) R. Br. var. *diander* (Retz.) Jovet & Guedes in Bull. Centre & Rech. Sci. Biarritz 7 : 65. 1968 & in Taxon 22 : 163. 1973. *Agrostis diandra* Retz. Obs. Bot. 5 : 19. 1789 ; *S. diander* (Retz.) P. Beauv. Ess. Agrost. 26 : 147, 178. 1812. Hook. f. Fl. Brit. India 7 : 247. 1896 ; Cooke, Fl. Pres. Bombay 3 : 539. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 221. t. 148. 1935 ; Bor, Grass. Ind. 629. 1960.

Herbs, erect or ascending, 20 - 30 cm high. Leaves linear, convolute, 6 - 10 cm long. Panicles narrow, 9 - 25 cm long ; spikelets pedicellate, lanceolate, *ca* 0.15 cm long ; lower glume oblong, *ca* 0.05 cm long ; upper glume elliptic-oblong *ca* 0.07 cm long ; lemmas ovate-oblong, *ca* 0.15 cm long, subacute. Grains obovoid, obtusely quadrangular, *ca* 0.15 cm long, reddish-brown, rugulose.

Fls. & Frts. : September - November.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Frequent in grasslands. Panchgani, Yavteshwar.

S. piliferus (Trin.) Kunth, Enum. Pl. 1 : 211. 1833 ; Hook. f. Fl. Brit. India 7 : 251. 1896 ; Cooke, Fl. Pres. Bombay 3 : 541. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 226, t. 151. 1935 ; Bor, Grass. Ind. 632. 1960. *Vilfa pilifera* Trin. Diss. Bot. 157. 1824.

Herbs ; culms tufted, 7 - 30 cm high. Leaves 2 - 10 cm long, flat or convolute. Panicles 2.5 - 7.5 cm long, interrupted ; spikelets 0.15 - 0.2 cm long, pale brown ; lower glume ovate-lanceolate, *ca* 0.12 cm long ; upper glume oblong-lanceolate, *ca* 0.2 cm long, 1-nerved ; lemma solitary, *ca* 0.16 cm long. Grains ellipsoid, reddish-brown.

Fls. & Frts. : September - October.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Annuals along the hill slopes. Panchgani.

THELEPOGON Roth ex R. & S.

Thelepogon elegans Roth ex R. & S. Syst. Veg. 2 : 788. 1817 ; Hook. f. Fl. Brit. India 7 : 148. 1896 ; Cooke, Fl. Pres. Bomby 3 : 490. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 27, t. 18. 1935 ; Bor, Grass. Ind. 247. 1960.

Herbs, erect or ascending *ca* 1 m high. Leaves lanceolate, acuminate, 9 - 13 × 0.5 - 1.0 cm base cordate, amplexicaul, hispid with bulbous-based hairs. Racemes 4 - 5 × 2 - 6 cm long ; rhachis scabrid ; spikelets yellow,

ovoid, 0.4 - 0.6 cm long ; lower glume, ovate, acuminate, 2-toothed ; upper glume lanceolate, longer than the lower ; lower lemma awned, awns ca 2.5 m long.

Fls. & Frts. : September - November.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Common annuals in marshy places. Dhawadi, Kamalgad, Panchgani, Shirgaon ghat.

THEMEDA Forssk.

- | | | |
|--|-----|------------------------|
| 1. Involucral spikelets inserted at the same level | ... | <i>T. quadrivalvis</i> |
| 1. Involucral spikelets inserted at different levels | ... | <i>T. triandra</i> |

Themeda quadrivalvis (L.) O. Ktze. Rev. Gen. Pl. 2 : 794. 1891; Blatt. & McC. Bombay Grass. 118. 1935 ; Bor, Grass. Ind. 252. 1960. *Andropogon quadrivalvis* L. in Murr. Syst. Veg. ed. 13 : 758. 1774. *Anthistiria ciliata* L. f. Suppl. 113. 1781 ; Hook. f. Fl. Brit. India 7 : 213. 1896. *Themeda ciliata* (L.f.) Hack. in DC. Monogr. Phan. 6 : 664. 1889 ; Cooke, Fl. Pres. Bomby 3 : 514. 1958 (Repr. ed.).

Herbs, erect or ascending, ca 1 m high. Leaves linear-acute, 14 - 20 cm long, margins scabrid. Panicles dense, ca 6 cm long ; spathes linear, 2.5 - 5.0 cm long, sparsely hairy ; involucral spikelets linear-lanceolate, ca 0.5 cm long ; pedicelled spikelets narrow, ca 0.45 cm long ; sessile spikelets ca 0.5 cm long, brown.

Fls. & Frts. : October - November.

Distrib. : Common annual near cultivated fields and in grasslands. Jadholi, Koyna, Kumbharli ghat, Mahabaleshwar, Mahabaleshwar-Pratapgad, Panchgani, Shirgaon ghat.

T. triandra Forssk. Fl. Aeg.-Arab. 123 & 178. 1775 ; Blatt. & McC. Bombay Grass. 115, t. 74. 1935 ; Bor, Grass. Ind. 254, f. 27. 1960. *Anthistiria imberbis* Retz. Obs. Bot. 3 : 11. 1783 ; Hook. f. Fl. Brit. India 7 : 211. 1896. *Themeda imberbis* (Retz.) T. Cooke, Fl. Pres. Bombay 2 : 993. 1908 [3 : 513. 1958 (Repr. ed.)].

Herbs, ca 50 cm high. Leaves linear, acuminate, 15 - 20 cm long ; margins scabrid. Panicles much branched, 7 - 10 cm long ; spathes lanceolate, ca 2 cm long with sparse tubercle based hairs ; involucral spikelets lanceolate, 0.6 - 0.7 cm long, with bulbous based hairs ; pedicelled

spikelets linear-lanceolate, *ca* 0.5 cm long ; sessile spikelets *ca* 0.6 cm long with brown hairs ; lower glume dark brown, hispid at the apex.

Fls. & Frts. : October - January.

Illus. : Blatt. & McC. *op. cit.* ; Bor, *op. cit.*

Distrib. : Common tufted annuals growing in large patches. Dicholi, Gureghar, Karanjewadi, Mahabaleshwar, Panchgani.

TRILOBACHNE Schenck ex Henr.

Trilobachne cookei (Stapf) Schenck ex Henr. in Meded. Rijks Herb. Leiden 67 : 4. 1931 ; Bor, Grass. Ind. 268, f. 31. 1960. *Polytoca cookei* Stapf. in Hook. Ic. Pl. t. 2333. 1894 ; Hook. f. Fl. Brit. India 7 : 101. 1896 ; Cooke, Fl. Pres. Bombay 3 : 518. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 5, t. 2. 1935.

Herbs, *ca* 1 m high. Leaves linear-lanceolate, 40 - 60 cm long, hispid with bulbous based hairs. Spikelets in axillary fascicles ; male panicles *ca* 7.5 cm long ; spikelets in pairs, *ca* 0.8 cm long ; sessile shortly pedicelled ; female spikelets as long as the male spikelets ; lower glume oblong, 3-lobed at apex ; lower lemma shortly apiculate ; upper lemma bi-fid at apex.

Illus. : Blatt. & McC. *op. cit.* ; Bor, *op. cit.*

Distrib. : Rare annuals included on Cooke & Woodrow's report from Mahabaleshwar (Cooke, *op. cit.*).

TRIPOGON R. & S.

1. Lemmas 4-lobed :

- | | | |
|--|-----|----------------------|
| 2. Median awn equal or shorter than the lemmas | ... | <i>T. bromoides</i> |
| 2. Median awn twice the length of the lemmas | ... | <i>T. filiformis</i> |

1. Lemmas 2-lobed :

3. Awns as long as or longer than lemmas :

- | | | |
|--|-----|----------------------|
| 4. Awns capillary, much longer than lemmas | ... | <i>T. capillatus</i> |
| 4. Awns not capillary, slightly longer than the lemmas | ... | <i>T. trifidus</i> |

3. Awns shorter than lemmas :

- | | | |
|--|-----|------------------------|
| 5. Leaves 30 - 40 cm long ; spikelets 4 - 6-flowered | ... | <i>T. lisboae</i> |
| 5. Leaves 15 - 20 cm long ; spikelets 10 - 14-flowered | ... | <i>T. Jacquemontii</i> |

Tripogon bromoides R. & S. Syst. Veg. 2 : 600. 1817 ; Hook. f. Fl. Brit. India 7 : 287. 1896 ; Blatt. & McC. Bombay Grass. 269, t. 182. 1935 ; Bor, Grass. Ind. 521. 1960.

Herbs, tufted, 15 - 50 cm high. Leaves filiform, convolute, 15 - 17 cm long. Spikes 9 - 20 cm long ; spikelets *ca* 0.6 cm long, lower glume lanceolate ; lemmas ovate, *ca* 0.25 cm long ; upper glume oblong, bearded at apex ; palea oblong-lanceolate, ciliate on keel.

Fls. & Frts. : September - November.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Frequent on rocks in shady places. Dicholi, Mahabaleshwar, Nauja.

T. capillatus Jaub. Spach, Ill. Pl. Or. 4 : 47, f. 332. 1851 ; Hook. f. Fl. Brit. India 7 : 285. 1896 ; Blatt. & McC. Bombay Grass. 267, t. 179. 1935 ; Cooke, Fl. Pres. Bombay 3 : 558. 1958 (Repr. ed.); Bor, Grass. Ind. 521. 1960.

Herbs, erect or ascending, 15 - 40 cm high. Radical leaves short or reduced to sheaths ; cauline leaves elongate, convolute, 15 - 20 cm long. Spikes filiform, 15 - 30 cm long ; spikelets distant ; lower glume *ca* 0.25 cm long, cuspidate ; upper glume *ca* 0.5 cm long ; lemmas ovate-lanceolate.

Fls. & Frts. : September - October.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Occasionally found growing on trees. Koyna, Panchgani.

T. filiformis Nees ex Steud. Syn. Pl. Glum. 1 : 301. 1854 ; Hook. f. Fl. Brit. India 7 : 269. 1896 ; Blatt. & McC. Bombay Grass. 269. 1935 ; Bor, Grass. Ind. 521. 1960.

Herbs, slender, 10 - 40 cm high. Leaves filiform, equalling the culms. Spikes *ca* 4 cm long ; spikelets 4 - 10 flowered, *ca* 0.4 cm long ; lower glume ovate ; upper glume lanceolate.

Distrib. : Rare in shady places. Wai ; Talbot 4485.

T. jacquemontii Stapf in Kew Bull. 1892 ; 85. 1892 ; Hook. f. Fl. Brit. India 7 : 286. 1896 ; Cooke, Fl. Pres. Bombay 3 : 559. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 267. 1935 ; Bor, Grass. Ind. 522. 1960.

Herbs, 30-40 cm high, rootstock woody. Leaves filiform. Spikelets oblong, ca 0.4 cm long; lower glume lanceolate; lemmas elliptic; palea lanceolate, ciliate, ca 0.07 cm long, brown.

Fls. & Frts. : October-May.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Rare, growing on old walls. Mahabaleshwar, Ansari 67648, Pratapgad, R.S. Rao 71710.

Tripogon lisboae Stapf in Kew Bull. 1892 : 84. 1892; Hook. f. Fl. Brit. India 7 : 286. 1896; Cooke, Fl. Pres. Bombay 3 : 558. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 267, t. 180. 1935; Bor, Grass. Ind. 522. 1960.

Herbs, ca 1 m high. Leaves flat. Spikes 18-28 cm long, narrow; spikelets linear-oblong, 0.6-0.8 cm long; lower glume lanceolate, cuspidate, ca 0.25 cm long; upper glume ca 0.3 cm long; lemmas ovate-lanceolate, ca 0.25 cm long; paleas narrowly winged. Grains oblong, minute.

Fls. & Frts. : October-April.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Tufted annuals in rock crevices. Mahabaleshwar, Panchgani, Tadoshi.

T. trifidus Munro ex Stapf in Kew Bull. 1892 : 85. 1892; Hook. f. Fl. Brit. India 7 : 286. 1896.

Herbs, 22-30 cm long. Leaves filiform, 12-20 cm long. Spikes 5-8 cm long, flat; spikelets 4-5 cm long, 3-4 flowered, shortly pedicelled; lower glume lanceolate, acuminate, ca 0.25 cm long; upper glume ca 0.35 cm long; lemmas lanceolate, ca 0.3 cm long. Grains oblong ca 0.15 cm long.

Fls. & Frts. : September.

Distrib. : Rare in rock crevices. Kelghar ghat, 162547.

UROCHLOA P. Beauv.

Urochloa panicoides P. Beauv. Ess. Agrost. 53, t. 11, f. 1. 1812; Bor, Grass. Ind. 372. 1960; T.A. Cope in Nasir & Ali, Fl. Pak. 143. 209. 1982. *Panicum javanicum* Poir. in Lam. Encycl. 4 : 274. 1816; Hook. f. Fl. Brit. India 7 : 35. 1896; Cooke, Fl. Pres. Bombay 3 : 450. 1958 (Repr. ed.). *U. helopus* (Trin.) Stapf in Prain, Fl. Trop. Afr. 9 : 595. 1920; Blatt. & McC. Bombay Grass. 146, t. 93. 1935.

Herbs, erect or ascending, *ca* 30 cm 30 high. Leaves linear-lanceolate, 5 - 7 × 0.3 - 0.8 cm, sparsely hairy. Racemes 3.0 - 4.5 cm long ; spikelets ovate, *ca* 0.3 cm long, pubescent ; lower glume sub-orbicular, clasping at base ; upper glume 9-nerved, pubescent ; lemma shorter than glumes, mucronate. Grains broadly elliptic, *ca* 0.2 cm long.

Fls. & Frts. : September.

Illus. : Blatt. & McC. *op. cit.*

Distrib. : Rare in cultivated fields. Kisrude, Kochhar 154134.

CULTIVATED SPECIES

Saccharum officinarum L. Sp. Pl. 54. 1753 ; Hook. f. Fl. Brit. India 7 : 118. 1896 ; Cooke, Fl. Pres. Bombay 3 : 466. 1958 (Repr. ed.) ; Blatt. & McC. Bombay Grass. 46. 1935 ; Bor, Grass. Ind. 212. 1960. 'Sugarcane' 'Us'.

Culms *ca* 0.3 m high. Leaves linear-lanceolate, 20 - 30 cm long. Panicles pyramidal, dense, silvery, *ca* 20 cm long.

Distrib. : Cultivated throughout the district.

LIST OF PTERIDOPHYTES

1. **Actiniopteris dichotoma** (Swartz) Link, Fil. Sp. 80. 1841.
2. **Adiantum capillus-veneris** L. Sp. Pl. 2, 1096. 1753.
3. **A. incisum** Forsk. Fl. Aeg. 187. 1775.
4. **A. philippense** L. Sp. Pl. 2, 1094. 1753.
5. **Anogramma leptophylla** (L.) Link, Fil. Sp. 137. 1841.
6. **Ariostegia pulchra** (D. Don) Copel. Philip. J. Sci. 34 : 241. 1927.
7. **Asplenium falcatum** Lam. Encycl. 2 : 306. 1786.
8. **A. laciniatum** D. Don, Prodr. Fl. Nepal. 8. 1825.
9. **A. lunulatum** Sw., Schrad. J. Bot. 1800/2 : 52. 1801.
10. **Athyrium falcatum** Bedd. Ferns South India t. 151. 1865.
11. **A. filix-femina** (L.) Roth, Rom. Mag. 2(1) : 106. 1799.
12. **A. hohenackerianum** (Kunze) Moore, Ind. Fil. XLIX. 1857.
13. **A. solenopteris** var. **pusillum** (Kunze) Moore, Ind. Fil. 187. 1860.
14. **Blechnidium orientale** L. Sp. Pl. 2, 1077. 1753.
15. **Bolbitis subcrenata** (Hook. & Grev.) Ching C. Chr. Ind. Fil. 3 : 50. 1934.
16. **Cheilanthes albomarginata** C.B.Cl. in Trans. Linn. Soc. Lond. II Bot. 1 : 456, t. 52. 1880.
17. **C. farinosa** (Forsk.) Kaulf. Enum. Fil, 212. 1824.
18. **C. tenuifolia** (Burm. f.) Sw. Syn. Fil. 129, 332. 1806.
19. **Christella parasitica** (L.) Lev. Fl. Kouy-tescheon 475. 1915.
20. **Diplazium esculentum** (Retz.) Sw. ex Schrad. in J. Bot. 1801 : 312. 1803.
21. **Drynaria quercifolia** (L.) J. Sm. in Hook. J. Bot. 3 : 398. 1841.
22. **Dryopteris cochleata** (D. Don) C. Chr. Ind. Fil. 258. 1905.
23. **D. serrato-dentata** (Bedd.) Hayata Icon. Pl. Femos 4 : 179. 1914.
24. **D. sparsa** (D. Don) O. Ktze Rev. Gen. Pl. 2. 613. 1891.
25. **Huperzia hamiltonii** (Sprin.) Trev. Atti. Soc. Ital. Sci. Nat. 17 : 248. 1875.
26. **Lepisorus nudus** (Hook.) Ching, Bull. Fan. Mem. Inst. Biol. Bot. 4 : 83. 1933.

27. *Lepisorus thunbergianus* (Kaulf.) Ching Bull. Fan. Mem. Inst. Biol. Bot. 4 : 88. 1933.
28. *Lindsaea ensifolia* Sw. Schrad. J. Bot. 1800(2) : 77. 1801.
29. *Leucostegia immersa* (Wall. ex Hook.) Presl, Tent. Pterid. 95, t. 4, f. 11. 1936.
30. *Lygodium flexuosum* (L.) Sw. Schrad. Journ. 1800 : 106. 1801.
31. *Marsilea quadrifolia* L. Sp. Pl. 2, 1099. 1753.
32. *Microsorium membranaceum* (D. Don) Ching. Bull. Fan. Mem. Inst. Biol. 4 : 309. 1933.
33. *Nephrolepis cordifolia* (L.) Presl, Tent. Pterid. 79. 1836.
34. *Ophioglossum vulgatum* L. Sp. Pl. 2, 1062. 1753.
35. *Osmunda regalis* L. Sp. Pl. 2, 1065. 1753.
36. *Paraleptochilus decurrens* (Bl.) Copel Gen. Fil. 198. 1947.
37. *Peranema cyatheoides* D. Don, Prodr. Fl. Nepal. 12. 1825.
38. *Pityrogramma calomelanos* (L.) Link, Handb. Erken. Gew. 3 : 20. 1833.
39. *Pteridium aquilinum* (L.) Kuhn V. Deck. Reis 3(3) : 11. 1879.
40. *Pteris biaurita* L. Sp. Pl. 2, 1076. 1753.
41. *P. pellucida* Presl, Rel. Haenk. 1 : 55. 1825.
42. *P. quadriaurita* Retz. Obs. Bot. 6 : 38. 1791.
43. *P. vittata* L. Sp. Pl. 2, 1074. 1753.
44. *Selaginella ciliaris* (Retz.) Spring, Bull. Acad. Brux. 10 : 23. 1843.
45. *S. delicatula* (Desv. ex Poir.) Alston. J. Bot. 70 : 282. 1932.
46. *S. panchghaniana* Dixit in Bull. Bot. Surv. India 25 : 226, t. 1, f. 3. 1983.
47. *Tectaria macrodonta* (Fee) C. Chr. Ind. Fil. Suppl. III. 181. 1934.
48. *T. polymorpha* (Wall. ex Hook.) Copel. Philip. J. Sci. 2C : 413. 1907.

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