

VOLUME II

ENUMERATION OF PLANTS

(ONAGRACEAE TO POACEAE)

REFERENCES AND

INDEX TO BOTANICAL NAMES

## 50. ONAGRACEAE

Ludwigia Linn.

1. Bracteoles large, persistent; placed near  
the middle of ovary .....1.L. octovalvis
1. Bracteoles small, deciduous, produced  
near the base of ovary .....2.L. perennis

1. Ludwigia octovalvis (N. Jacq.) Raven, Kew Bull. 15; 476,  
1962; Sant. 101.

Oenothera octovalvis N. Jacq., Enum. Syst. Pl. 19, 1760  
ssp. sessiliflora (Micheli) Raven, Kew Bull. 15 :  
476, 1962.

Jussiaea octonervia var. sessiliflora Micheli, in Martius,  
Fl. Bras. 13: 180, 1875.

J. suffruticosa Linn., Sp. Pl. 388, 1753; FBI. 2: 587;  
C. 1: 549; Gam. 1: 365.

A stout herb or undershrub. Leaves linear-lanceolate.  
Flowers yellow; capsule long.

Occurs in few localities on moist, damp soils near canals  
and ditches.

Flowers and fruits : October - February.

JVJ 1268, 1580.

2. Ludwigia perennis Linn., Sp. Pl. 119, 1753; Sant. 101; M. 164.

Jussiaea perennis (L.) Brenan, in Kew Bull. 163, 1953.

Ludwigia parviflora Roxb., Fl. Ind. 1: 440, 1820; FBI. 2: 588; C. 1: 550; Gam. 1: 365.

An erect, glabrous herb. Leaves linear-lanceolate to linear-oblong. Flowers yellow.

Occasionally along the margins of ditches and canals; also on moist, damp soils of river bed.

Flowers and fruits : August - November.

JVJ 176, 370, 948.

#### 51. TRAPACEAE

##### Trapa Linn.

Trapa natans Linn., Sp. Pl. 120, 1753. var. bispinosa (Roxb.) Makino, in Iinuma, Somoku-Dzusesetsu ed. 3, 1: 137, 1907; Brenan, Fl. Trop. E. Africa (Trapac.) 3: 1953; Sant. & Wagh, Bull. BSI. 5: 109, 1963.

T. bispinosa Roxb., Pl. Cor. t. 234, 1815; FBI. 2: 590; C. 1: 551; Gam. 1: 336; M. 164.

An aquatic floating herb. Leaves ovate-rhomboid, cuneate. Flowers white. Fruits obovoid angular nuts with spinous horn at either side.

Noted once in water tanks near Katargam and Dumas.

Local name : Singoda.

English name : Water chestnut.

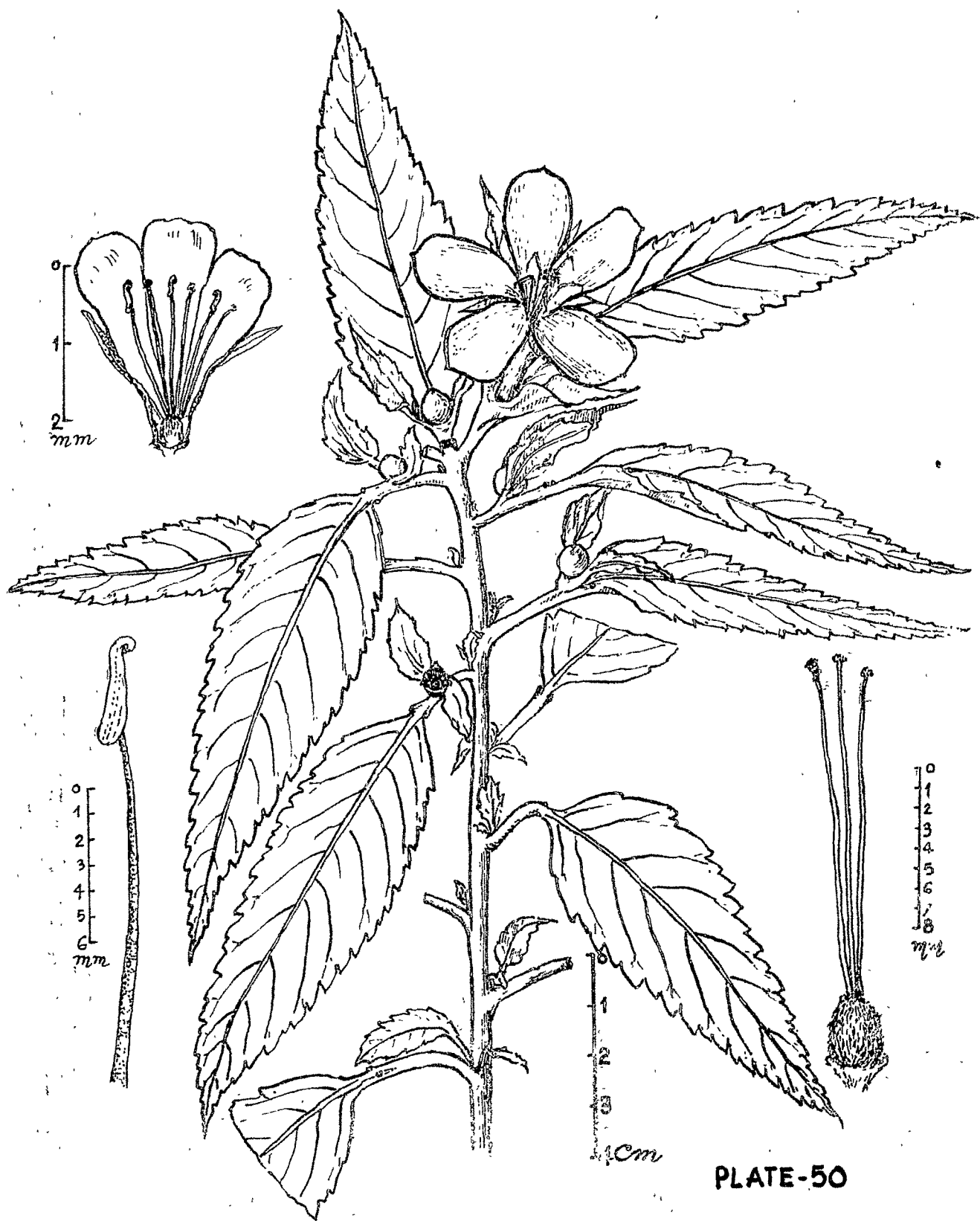


PLATE-50

*Turnera ulmifolia* Linn.

Uses : Fruits are edible.

Flowers and fruits : October - March.

JVJ 1330.

## 52. TURNERACEAE

### Turnera Linn.

Turnera ulmifolia Linn., Sp. Pl. 271, 1753; Gam. 1: 369; Haines, 2: 401; Bailey, Stad. Cycl. Hort. (17th Print) 3: 3403, 1958; Backer, in Fl. Males. (Ser. I) 4(3): 237, 1951; Bhopal, 178.

A perennial herb or undershrub. Leaves elliptic-lanceolate, coarsely serrate. Flowers bright yellow. Capsule sub-globose-oblong.

Cultivated in the gardens for its showy flowers.

Flowers and fruits : July - January.

JVJ 159, 722.

Plate : 50.

## 53. PASSIFLORACEAE

### Passiflora Linn.

1. Bracts pinnatisect; plant foetid; wild.....2. P. foetida

1. Bracts not pinnatisect; plant not  
foetid; cultivated .....1. P. edulis

1. Passiflora edulis Sims., Bot.Mag. t. 1989, 1818; Bor & Raizada, 254; Bailey, 691; Saur. 1: 238.

A large climber with axillary, simple tendrils. Leaves deeply 3-lobed. Flowers white-tinged with purple; corona in several series, white above and purple below.

Cultivated in gardens for its beautiful flowers.

Local name : Krishna Kamal. English name : Passian flower.

Flowers and fruits : August -December.

JVJ 2075.

2. Passiflora foetida Linn., Sp. Pl. 959, 1753; C. 1: 557; Haines, 2: 402; Bor & Raizada, 258; Saur. 1: 238.

A slender, herbaceous climber with simple tendrils. Leaves 3-lobed; terminal lobe larger, ciliate and denticulate. Flowers greenish-white tinged with lilac. Fruits smooth, globose.

Occasionally seen growing in hedges and on the walls of old abandoned houses.

Flowers and fruits : November - March.

JVJ 1350.

#### 54. CARICACEAE

##### Carica Linn.

- Carica papaya Linn., Sp. Pl. 1036, 1753; FBI. 2: 599; C. 1: 557; Gam. 1:371; Bailey, 692; Sant. 102; M. 164.

A small, soft-wooded, unbranched tree with succulent trunk and milky sap. Leaves large, palmately lobed. Flowers creamy-white, dioecious; male in long drooping panicles; female in short clusters. Fruits large, succulent, many-seeded.

Extensively cultivated in gardens and fields throughout the area.

Local name : Papaiya.

Uses : Fruits are edible.

Flowers and fruits : Almost all the year round.

JVJ 1346.

## 55. CUCURBITACEAE

1. Flowers white :

2. Petals fimbriate .....10. Trichosanthes

2. Petals entire :

3. Tendrils simple ..... 2. Coccinia

3. Tendrils branched ..... 6. Lagenaria

1. Flowers yellow :

4. Anther cells straight ..... 9. Mukia

4. Anther cells flexuose or conduplicate :

5. Corolla divided nearly to the base :

6. Stamens inserted on the mouth of  
calyx tube ..... 7. Luffa
6. Stamens inserted below the mouth  
of calyx tube :
7. Tendrils simple :
8. Male flowers in racemes ..... 8. Momordica
8. Male flowers in small clusters  
or solitary ..... 3. Cucumis
7. Tendrils branched :
9. Pollens muriculate ..... 5. Diplocyclos
9. Pollens smooth ..... 1. Citrullus
5. Corolla divided to the middle ..... 4. Cucurbita
1. Citrullus Schrad. (nom. cons.)
1. Tendrils simple; fruit 5-10 cm in diam. ...1. C. colocynthis
1. Tendrils branched; fruit more than  
15 cm. in diam. ....2. C. lanatus
1. Citrullus colocynthis (L.) Schrader, in Linnaea 12:414,  
1838; Wt. Icon. t. 498; FBI. 2: 620; C. 1: 571;  
Gam. 1: 378.
- Cucumis colocynthis Linn., Sp. Pl. (ed. 1): 1011, 1753.

Colocynthis vulgaris Schrader, Ind. Sem. Hort. Gotting

2: 1833; Chakravarty, in Sci. & Cult. 11: 31, 1949 &  
in RBSI. 17(1): 113, 1959; Saur. 1: 251.

A trailing herb. Leaves deeply 3-lobed, middle lobe larger, each lobe pinnatifid. Flowers yellow. Fruit globose, green, striped with dark green and white bands.

Occasional on dry sandy river bed of Ved and Variav, also on dry, sandy sea-shore of Hajira and Dumas.

Local name : Indravarna.

Flowers and fruits : August - March.

JVJ 907, 1517, 2006.

2. Citrullus lanatus (Thunb.) Matsu. & Nakai, in Cat. Sem. Hort. Bot. Univ. 38: 1920.

Cucurbita citrullus Linn., Sp.Pl. 1010, 1753.

Momordica lanata Thunb. Prodr. Pl. Cap. 13, 1794.

Citrullus vulgaris Schrad., in Eclon. & Zeyher, Enum. Pl.

Afr. Aust. Extra Trop. 279, 1836; FBI. 2: 621; C. 1: 571; Gam. 1: 379; Oza, in Taxon 11: 114, 1962.

A trailing annual. Leaves variously lobed, central one the longest. Flowers yellow. Fruit large, oblong or ellipsoid; pulp white to deep red, edible. Seeds black.

Frequently cultivated near Variav.

Local name : Tarbuch.

English name : Water melon.

Uses : Fruits are edible.

Flowers and fruits : March - May.

JVJ 2049.

## 2. Coccinia Wt. & Arn.

Coccinia grandis (L.) Voigt., Hort. sub. Cal. 59, 1845;

Saur. 1: 241.

Bryonia grandis Linn. Mant.1: 126, 1767.

Coccinia indica Wt. & Arn. Prodr. 347, 1833; FBI. 2: 572;

Gam. 1: 379.

C. cordifolia (L.) Cogn., in DC. Monog. Phan. 3: 529, 1881;

Chakravarty, loc. cit. 117; M. 171.

Bryonia cordifolia Linn., Sp. Pl. 1012, 1753.

Coccinia indica Wt. & Arn. Prodr. 347, 1834; C. 1: 572.

A twining or spreading, dioecious perennial. Leaves 3-5-lobed, cordate. Flowers white. Fruits ovoid, elongate, greenish-white with irregular, white stripes.

Extensively cultivated at Ved, Katargam and Ichhapor villages, also runs wild on hedges throughout the area.

Local name : Ghiloda or Tindora.

Uses : Fruits are used as vegetable.

Flowers and fruits :

JVJ 54, 883, 1294.

3. Cucumis Linn.

1. Fruits polymorphous, glabrous or pubescent,  
pulp pale-orange :
2. Fruits cylindric or oval, bursting  
spontaneously ..... 2. C. melo  
var. momordica
2. Fruits never bursting :
3. Fruits oval or rounded,  
muricated ..... 1. C. melo
3. Fruits elongated or cylindrical,  
smooth-surfaced ..... 3. C. melo  
var. utilissimus
1. Fruits cylindric or elongated, green  
to greenish-yellow, pulp white ..... 4. C. sativus

1. Cucumis melo Linn., Sp. Pl. 1011, 1753; FBI.2: 620;  
C. 1: 570; Gam. 1: 378; M. 169.

A creeping, hispid, monoecious herb. Leaves 5-angled or lobed. Flowers yellow.

Occasionally cultivated on sandy river-bed near Ved, Variav, Rander and Nana Varachha.

Local name : Sakkar tetti or Kharbuch.

Uses : Fruits are edible.

Flowers and fruits : March - May.

JVJ 1532.

2. Cucumis melo L. var. momordica Cogn. in DC. Mon. Phan. 3: 484, 1881; Duthie et Fuller, Garden & Field Crops 2: 50, t. 49, 1883; M. 170; Bhandari, 168.

A prostrate, branched herb. Leaves 3-7-lobed. Flowers yellow. Fruit pulp pale-orange.

Cultivated in the Gorat areas near Rander.

Local name : Phut.

Uses : Unripe fruits are used as vegetable, ripe fruits are eaten wholesome.

Flowers and fruits : August - December.

JVJ 1575.

3. Cucumis melo L. var. utilissimus Duthie & Fuller, op. cit. 2: 55, tt. 53, 54, 1883; FBI.2: 620; C. 1: 570; M.170.

C. utilissimus Roxb., Fl. Ind. 3: 721, 1832.

It is less common than previous taxon, although it is occasionally cultivated on the sandy river-bed near Variav. The fruits are oval or cylindrical, green or whitish-green becoming pale-orange on ripening.

Local name : Moti Kakadi.

Uses : Eaten raw or as vegetable.

Flowers and fruits : October - January.

JVJ 1518.

4. Cucumis sativus Linn., Sp. Pl. 1012, 1753; FBI. 2: 620;  
C. 1: 570; Gam. 1: 378; Chakravarty, loc. cit. 105;  
M. 170.

A trailing or climbing hispidly hairy herb. Leaves 3-5-lobed, cordate. Flowers yellow. Fruits cylindric elongated, smooth.

The local variety known as 'Surati Kakadi' is well known in Gujarat; extensively cultivated throughout the area.

Local name : Kakadi.                      English name : Cucumber.

Uses : Fruits are eaten as such, or used as vegetable.

Flowers and fruits : Throughout the year but abundant during winter.

JVJ 580.

#### 4. Cucurbita Linn.

- Cucurbita maxima Duch. in Lamk. Encycl. 2: 151, 1786; FBI. 2: 622;  
C. 1: 582; Gam. 1: 383; Saur. 1: 252; M. 172.

A large trailing herb. Flowers large, yellow. Fruits very large and heavy.

Occasionally cultivated.

Local name : Kolu.                      English name : Red-gourd.

Uses : Fruits are used as vegetable.

Flowers and fruits : August - March.

JVJ 926.

5. Diplocyclos (Endl.) Von Post & Kuntze

Diplocyclos palmatus (L.) Jeffrey, in Kew Bull. 15: 352, 1962;  
Maheshwari, in B.BSI. 5(2): 128, 1963; Raizada, in Ind.  
For. 92(5): 308, 1966.

Bryonia palmata Linn., Sp. Pl. 1012, 1753 (excl. syn.).

B. laciniosa sensu Wt. Icon. t. 500, 1841; FBI. 2: 622.

Bryonopsis laciniosa auct. non (L.) Naudin; C. 1: 568;

Gam. 1: 377; Chakravarty, loc. cit. 135; Saur. 1: 247.

An extensive, branched, monoecious, climbing herb. Leaves 3-7-lobed, denticulate. Flowers small, greenish-yellow. Fruits ovoid, conical, green with white vertical lines.

Noted on hedges.

Flowers and fruits : October - March.

JVJ 695.

6. Lagenaria Ser.

Lagenaria siceraria (Mol.) Standl., in Publ. Field Mus. Bot.

(Ser. 3, non 279) 435, 1930; Meeuse, in Bothalia, 8:  
83, 1962.

Cucurbita siceraria Mol. Sagg. Storia Nat. Chile 133, 1782.

Lagenaria vulgaris Ser. Mem. Soc. Phys. Hist. Nat. Geneve

3: 25, 1825; t. 2; FBI. 2: 613; C. 1: 581; Saur. 1: 252.

A trailing or climbing herb. Leaves large, lobed. Flowers white. Fruits vary in shape and size.

Extensively cultivated throughout the area.

Local name : Dudhi.                      English name : Bottle gourd.

Uses : Fruits are used as vegetable.

Flowers and fruits : August - April.

JVJ 1359, 1551.

#### 7. Luffa Adans.

1. Stamens 3; fruits sharply 10-ridged .....1. L. acutangula

1. Stamens 5; fruits not ridged .....2. L. cylindrica

1. Luffa acutangula (L.) Roxb., Fl. Ind. 3: 713, 1832; FBI. 2: 615; C. 1: 532; Gam. 1: 377; M. 168; Chakravarty, loc. cit. 81.

Cucumis acutangula Linn., Sp. Pl. 1011, 1753.

A large, herbaceous climber. Stems 5-angled. Leaves 5-7-angled or sub-lobate. Flowers yellow. Fruits clavate-oblong, strongly 10-ribbed.

Cultivated throughout the area during monsoon.

Local name : Turia.

Uses : Fruits are used as vegetable.

Flowers and fruits : August - October.

JVJ 947.

- 1 a. Luffa acutangula var. amara (Roxb.) Clarke, in FBI. 2: 615; Chakravarty, loc. cit. 81; Bhandari, 171.

L. amara Roxb., Fl. Ind. 3: 715, 1832.

A wild variety of L. acutangula which can be distinguished by whitish-yellow flowers, smaller leaves and bitter fruits.

Rare; seen in hedges, during monsoon.

Local name : Kadava or Jangali Turiya.

Flowers and fruits : During monsoon.

JVJ 1409.

2. Luffa cylindrica (L.) Roem. Syn. Roem. Syn. Pepon. 63, 1846; Chakravarty, loc. cit. 75; Jeffery, in Kew Bull. 15: 355, 1962; Saur. 1: 246; M. 168.

Momordica cylindrica Linn., Sp. Pl. 1009, 1753.

Luffa aegyptiaca Mill. Gard.Dict. 1768; FBI. 2: 614; C. 1: 565; Gam. 1: 376.

A climbing or trailing, scabrous, annual. Leaves palmately 5-7-lobed or angled. Flowers yellow. Fruits cylindrical or fusiform, obscurely 10-ribbed, not ridged.

Fairly cultivated throughout the area during monsoon season.

Local name : Galka.

Uses : Fruits are used as vegetable.

Flowers and fruits : August - December.

JVJ 1408.

8. Momordica Linn.

1. Plants monoecious; fruits tubercled ..... 1. M. charantia

1. Plants dioecious; fruits densely  
echinate with soft spines ..... 2. M. dioica

1. Momordica charantia Linn., Sp. Pl. 1009, 1753; FBI. 2: 616;  
C. 1: 562; Gam. 1: 375; Chakravarty, loc. cit. 88-89;  
Saur. 1: 243; M. 169.

A climbing or trailing annual. Leaves deeply lobed. Flowers yellow. Fruits oval or fusiform, tubercled.

Cultivated; also found on hedges during monsoon.

Local name : Karela.

Uses : Fruits are used as vegetable.

Flowers and fruits : Monsoon and post-monsoon months.

JVJ 489.

2. Momordica dioica Roxb. ex Willd., Sp. Pl. 4: 605, 1805;  
Wt. Icon. tt. 505-506; FBI. 2: 617; C. 1: 563; Gam. 1:  
375; Chakravarty, loc. cit. 91; Saur. 1: 244; M. 169.

A climber with simple, filiform tendrils. Leaves 3-5-lobed, membranous. Flowers yellow; male flower with a conspicuous, inflated bracts; female flower with a small bract. Fruits densely echinate.

Cultivated during monsoon, also runs wild on the hedges.

Local name : Kantola or Kankoda.

Uses : Fruits are used as vegetable.

Flowers and fruits : August - November.

JVJ 82, 974.

#### 9. Mukia Arnott

Mukia maderaspatana (L.) M. Roemer, Syn. Pep. 47, 1846; Sant. 104.

Cucumis maderaspatanus Linn., Sp. Pl. 1012, 1753.

Mukia scabrella (L. f.) Arn., J. Bot. (Hooker) 3: 276, 1841;

Clarke, in FBI. 2: 623.

Melothria maderaspatana (L.) Cogn. in A. & C. DC., Monogr.

Phan. 3: 623, 1881; C. 1: 573; Gam. 1: 381; Chakravarty,

loc. cit. 141, 1959; Saur. 1: 244; M. 166.

A slender climber with simple tendrils. Leaves ovate, serrate, 3-5-lobed. Flowers yellow. Fruits globose, small, red with age.

Occasionally noted on hedges.

Local name : Chana-chibhadi.

Flowers and fruits : July - November.

JVJ 26, 1022.

#### 10. Trichosanthes Linn.

1. Male flowers solitary; fruits oblong .... 2. T. dioica

1. Male flowers in racemes;

fruits ovoid, conical ..... 1. T. cucumerina

1. Trichosanthes cucumerina Linn., Sp. Pl. 1008, 1753; FBI. 2: 609; C. 1: 560; Chakravarty, loc. cit. 31; Saur. 1: 241; M. 167.

A climbing herb. Leaves deeply-3-lobed. Flowers white, dioecious. Fruits ovoid-conical, green and striped with white lines; bright orange when mature.

Occasionally noted in hedges.

Local name : Kadava or Jangali parval.

Flowers and fruits : August - October.

JVJ 482.

2. Trichosanthes dioica Roxb. ex Willd. Sp. Pl. 4: 605, 1805; FBI. 2: 617, excl. syn.; C. 1: 560; Saur. 1: 244; M. 166.

A dioecious, perennial climbing herb. Leaves ovate-oblong, cordate. Flowers white, dioecious. Fruits oblong.

Extensively cultivated throughout the area.

Local name : Parval.

Uses : Fruits are used as vegetable.

Flowers and fruits : August - January.

JVJ 55.

## 56. BEGONIACEAE

Begonia Linn.

Begonia picta Sm. Exat. Bot. 2: 81, t. 101; FBI. 2: 638;

Gam. 1: 385; Haines, 2: 418; Bhopal, 189.

A small succulent herb. Leaves variegated, broadly ovate-cordate. Flowers showy-pink.

Grown in gardens.

Flowers : During winter season.

JVJ 1592.

Several varieties of Begonia have been recently introduced in cultivation in many gardens.

## 57. CACTACEAE

Opuntia Mill.

Opuntia elatior Mill. Gard. Dict. (ed. 8) No. 4, 1768;

Burkill, in RBSI. 4: 313, 1911; Sant. 107; Saur. 1: 253; M. 173.

O. dillenii Graham, Cat. 546, 1839; FBI. 2: 657, pro parte;

D. & G. Suppl. 39.

A tall, much-branched armed shrub. Phylloclades, obovate, flattened, light green with dark coloured spines. Leaves small, deciduous. Flowers yellowish-pink. Berries red.

Observed in hedges. Grows gregariously at Dumas, Hajira, Udhana and Ved.

Local name : Fafado or Hathio thor.

Flowers and fruits : October - February.

JVJ 1465.

# 58. AIZOACEAE ( FICOIDACEAE )

1. Stamens more than 10 :

2. Styles 3; leaves linear-oblong ..... 1. Sesuvium

2. Style 1; leaves broadly obovate ..... 2. Trianthema

1. Stamens less than 10 ..... 3. Zaleya

1. Sesuvium Linn.

Sesuvium portulacastrum Linn., Syst. 10: 1058, 1759; FBI. 2: 650; Gam. 1: 388; Saur. 1: 232; Backer, in Fl. Males. (Ser. I) 4(3): 272, 1951.

A prostrate, succulent herb. Leaves linear-oblong or spatulate-oblong. Flowers greenish-white; petals 0. Capsule 3-5-celled, circumscissile.

Fairly common along the saline, muddy sea-coast near Abhava, Bhimpor and Hajira.

Flowers and fruits : August - October.

JVJ 859.

2. Trianthema Linn.

Trianthema portulacastrum Linn., Sp. Pl. 223, 1753; Gam. 1: 389; Backer, in Fl. Males. (Ser. I) 4(3): 274, 1951; Jeffrey, in Fl. Trop. E. Afr. 27, 1961; Saur. 1: 229; M. 176.

I. monogyna Linn., Mant. 1: 69, 1767; FBI. 2: 660; C.1: 389.

A prostrate, succulent herb. Stems and leaf margins reddish-purple. Leaves unequal, obliquely opposite; petioles dilated into a triangular pouch at the base. Flowers pinkish-white. Capsule circumscissile.

Fairly common in all localities but more in wet places.

Flowers and fruits : July - April.

JVJ 48, 1033.

3. Zaleya Burm. f.

Zaleya govindia (Buch.-Ham. ex G. Don) Nair, in Bull. Bot. Surv. India 8: 88, 1966.

Trianthema govindia Buch.-Ham. ex G. Don, Gen. Syst. 3: 72, 1834; Melville, in Kew Bull. 264, 1952; Saur. 1: 232; M. 175.

I. pentandra Linn., Mantiss, 70: 1767; FBI. 2: 660; C. 1: 590.

A prostrate, branched herb. Leaves elliptic-obovate. Flowers in axillary clusters, pinkish white. Capsule exerted.

Rare; noted along with grasses from the campus of Govt. Medical College.

Flowers and fruits : July - September.

JVJ 742.

Jeffrey (Kew Bull. 14(2): 237, 1960) proposed the transfer of the digynous plants to genus Zaleya Burm. f. Nair (loc. cit.) therefore, made this combination. He has also enumerated the characters to separate the two genera viz. Trianthema and Zaleya.

#### 59. MOLLUGINACEAE

1. Seeds with a distinct, elongate, curved  
appendage; flowers in axillary fascicles ..... 1. Glinus
1. Seeds with or without a very short  
appendage; flowers in terminal cymes ..... 2. Mollugo

#### 1. Glinus Linn.

1. Prostrate, stellately hairy herb;  
tepals hairy ..... 1. G. lotoides
1. Erect or sub-erect, glabrous herb;  
tepals glabrous ..... 2. G. oppositifolius

1. Glinus lotoides Linn., Sp. Pl. 463, 1753; Backer, in Fl. Males. (Ser. I) 4(3): 269, 1951; Jeffrey, in Fl. Trop. E. Afr. 15. t. 5, 1961 (under Aizoaceae); Saur. 1: 232; M. 173.

Mollugo lotoides O. Kuntze, Rev. Gen. Pl. 264, 1891;

Gam. 1: 390.

M. hirta Thunb. Prodr. Fl. Cap. 24, 1794; FBI. 2: 662;

C. 1: 593.

A prostrate or sub-erect, stellately-hairy herb. Leaves orbicular-obovate, cuneate. Flowers white. Capsule ovoid, many-seeded.

Fairly common on the hard soils of dried ditches along with the species of Heliotropium, Polygonum and Grangea.

Flowers and fruits : October - May.

JVJ 546, 2050.

2. Glinus oppositifolius (L.) DC., in Bull. Herb. Boissier

Ser. 2, 1: 559, 1901; Backer, loc. cit. 270, t. 1;

Saur. 1: 233; M. 174.

Mollugo oppositifolia Linn., Sp. Pl. 89, 1753; C. 1: 593;

Gam. 1: 390.

M. spargula Linn., Syst. 881, 1759; FBI. 2: 662.

A diffuse, branched, glabrous herb. Leaves obovate-spathulate, unequal, usually in whorls. Flowers white. Capsule 3-celled, many-seeded.

Occasional in moist, shaded places, also along the margins of ponds and puddles.

Flowers and fruits : July - March.

JVJ 1545.

2. Mollugo Linn.

1. Leaves all radical ..... 2. M. nudicaulis

1. Leaves radical and/or cauline, in whorls :

2. Flowers in axillary clusters;

seeds smooth ..... 1. M. cerviana

2. Flowers in racemes; seeds tuberculate.. 3. M. pentaphylla

1. Mollugo cerviana (L.) Ser. in DC. Prodr. 1: 392, 1824;

FBI. 2: 663; C. 1: 594; M. 174.

Pharnaceum cerviana Linn., Sp. Pl. 272, 1753.

A small, wiry herb with filiform branches. Leaves radical and cauline, spatulate, basal rosetted, cauline whorled. Flowers greenish-white. Capsule globose with numerous seeds.

Rare; found on dry sandy soils of upper belt of river Tapi near Variav; also noted as a weed.

Flowers and fruits : September - February.

JVJ 2 39, 1211.

2. Mollugo nudicaulis Lamk., Encycl. 4: 234, 1797; FBI. 2: 663;

Gam. 1: 390; Saxton, in RBSI. 9(3): 254, 1912; Saur. 1: 234; Bhandari, 182.

A delicate, tiny herb, measuring upto 15 cm. Leaves oblong-spatulate, forming a rosette. Flowers white on slender, wiry scapes. Capsule brown; seeds many.

A rare plant, collected once from wet muddy soils of Hari Nursery.

Flowers and fruits : August - September.

JVJ 649.

3. Mollugo pentaphylla Linn., Sp. Pl. 89, 1753; C. 1: 594;  
Gam. 1: 390; Sant. 97; Saur. 1: 234.

M. stricta Linn., Sp. Pl. (ed. 2) 131, 1762; FBI. 2: 663.

An erect herb, branching from the base. Leaves linear-lanceolate, whorled. Flowers white. Capsule many-seeded.

Occasionally found in the wet soil of river bank, also noted as a weed of cultivated ground.

Flowers and fruits : August - October.

JVJ 978, 1282.

#### 60. APIACEAE ( UMBELLIFERAE )

1. Leaves simple; flowers in simple umbels ..... 2. Centella

1. Leaves compound; flowers in compound umbels :

2. Flowers yellow :

3. Fruits dorsally compressed and  
narrowly winged ..... 1. Anethum

3. Fruits oblong or ellipsoid; ribs  
not winged ..... 5. Foeniculum

2. Flowers white or pink purple :

4. Roots tuberous, conical;

fruits bristly ..... 4. Daucus

4. Roots not tuberous; fruits glabrous.. 3. Coriander

1. Anethum Linn.

Anethum graveolens Linn., Sp. Pl. 263, 1753; Saur. 1: 254;

M. 117; Shah, in Ind. For. 89(4): 289, 1963.

Peucedanum graveolens Hiern, in Oliver, Fl. Trop. Afr. 3:

19, 1871; FBI. 2: 709; C. 1: 606.

A small, glabrous, strongly scented herb with green stems and branches. Leaves finely dissected into many segments. Flowers yellow. Cremocarps compressed and narrowly winged.

Occasionally seen on moist, wet soils of irrigated fields and along the bank of canals, also cultivated to some extent during monsoon.

Local name : Suva.

English name : Dill.

Uses : Entire shoots are used as vegetable; fruits are used medicinally.

Flowers and fruits : August - January.

JVJ 1351, 1360.

2. Centella Linn.

Centella asiatica (Linn.), Urban, in Mart. Fl. Bras. 11: 287,

1879; Gam. 1: 392; Fyson, Fl. Nilgiri & Pulney Hill Tops.  
3: 346; Sant. 109; Saur. 1: 253; M. 176.

Hydrocotyle asiatica Linn., Sp. Pl. 234, 1753; FBI. 2: 669;  
Wt. Icon. t. 565; C. 1: 598.

A creeping herb; rooting at nodes. Leaves reniform or fan-shaped, 1-4 from each node. Flowers pink to rosy coloured. Cremocarp ovoid with thickened pericarp.

Occasionally seen on moist soils along the irrigation canals and in cultivated fields.

Local name : Brahmi.

Flowers and fruits : December - February.

JVJ 573.

### 3. Coriandrum Linn.

Coriandrum sativum Linn., Sp. Pl. 256, 1753; FBI. 2: 717;  
C. 1: 609; Saur. 1: 256; M. 178.

A glabrous annual herb. Leaves pinnately dissected decompound. Flowers pinkish-white or white. Cremocarp ribbed, sub-globose.

Cultivated everywhere.

Local name : Kothmir - Dhana. English name : Coriander

Uses : Leaves and tender branches are used for flavouring vegetables and daal. The dried fruits are used as condiment and spice.

Flowers and fruits : Throughout the year.

JVJ 292.

#### 4. Daucus Linn.

Daucus carota Linn. var. sativa DC. Prodr. 4: 211, 1830;

Saur. 1: 255.

D. carota Linn., Sp. Pl. 242, 1753, pro parte; FBI. 2: 718;

C. 1: 609.

A biennial, hispid herb with conical, tuberous reddish-orange coloured roots. Leaves pinnately decompound. Flowers pale-white. Cremocarps bristly along the ridges.

Frequently cultivated at Ved, Rander, Variav and Katargam. It should be cultivated as a potted plant in a home garden.

Local name : Gajar. English name : Carrot.

Uses : Roots are edible as such or after cooking; also used as fodder.

Flowers and fruits : October - March.

JVJ 1312.

#### 5. Foeniculum Adans.

Foeniculum vulgare Mill. Gard. Dict. (ed. 8) n. 1, 1768;

FBI. 2: 695; C. 1: 609; Bailey, 751; M. 177.

A small, glabrous herb. Leaves much-divided. Flowers yellow.

Cremocarps oblong-ellipsoid, not winged but ribbed.

Occasionally cultivated.

Local name : Variyali.      English name : Fennel.

Uses : Fruits are used as condiment and masticatory.

JVJ 1280.

#### 61. ALANGIACEAE

Alangium Lamk. ( nom. cons. )

Alangium salvifolium (Linn. f.) Wang, in Engl. Pfreich.

Alangiac, 41: 9, 1910; Gam. 1: 404; Saur. 1: 256.

Grewia salvifolia Linn. f. Suppl. 409, 1781.

Alangium lamarekii Thw. Enum. 133, 1859; FBI. 2: 741;

C. 2: 1; D. & G. 109; Talb. 2: 79, t. 333.

A. decapetalum Lamk., Encycl. 1: 174, 1783; Gr. 72;

Wt. Icon. t. 194.

A medium-sized, deciduous tree. Leaves narrowly oblong-acute. Flowers white on leafless branches. Berry sub-globose.

Noted in hedges along roadsides and along the borders of fields; should be introduced in garden for its beautiful foliage.

Local name : Ankoli.

Flowers and fruits : February - April.

JVJ 648.

## 62. CAPRIFOLIACEAE

Lonicera Linn.

Lonicera japonica Thunb., Fl. Jap. 1784; Bailey, 942; Bailey Stand. Cyclo. Hort. Vol. II (17th Reprint. ed.) 1910, t. 2204; 1910, 1958; Bor & Raizada, 159, 1954.

A climbing twiner. Leaves ovate-oblong. Flowers creamy-white, in axillary pedunculate pairs. ☉

Occasionally grown in gardens.

Flowers : January - March.

Fruits : Not seen.

JVJ 1753.

## 63. RUBIACEAE

## 1. Herbs :

2. Fruits densely and coarsely hairy ..... 2. Dentella

2. Fruits more or less pubescent :

3. Flowers in whorls or in axillary

heads, seed one in each cell of ovary..1. Borreria

3. Flowers in paniculate cyme, seeds

numerous in each cell of ovary :

4. Calyx teeth contiguous on

the capsule .....5. Hedyotis

4. Calyx teeth distant on  
the capsule ..... 7. Kohautia

1. Shrubs or trees :

5. Flowers in dense, globose heads :

6. Fruit a sorosis ..... 9. Morinda

6. Fruit a globose, warty capsule ..... 8. Mitragyna

5. Flowers not in globose heads :

7. Flowers large, solitary ..... 3. Gardenia

7. Flowers small :

8. Flowers in polychasial, helicoid  
cymes ..... 4. Hamelia

8. Flowers in corymbose cymes :

9. Flowers with one calyx lobe  
expanded into white leaf-like  
structure ..... 10. Mussaenda

9. Flowers without expanded  
calyx lobe ..... 6. Ixora

1. Borreria G.F.W. Mey (nom. cons.)

1. Decumbent or prostrate herb; capsels

- indehiscent, seeds granulate ..... 1. B. articularis

1. Erect herb; capsels dehiscent;

seeds polished and shining ..... 2. B. pusilla

1. Borreria articularis (Linn. f.) F.N.Will. in Bull. Herb.

Boiss. II, Ser. 5: 956, 1905; Saur. 1: 261; Sant. &

Merchant, in Bull. BSI. 3(2): 107, 1962; Sant. 121.

Spermacoce hispida Linn., Sp. Pl. 102, 1753; FBI. 3:

200; C. 2: 53.

S. articularis Linn. f. Suppl. 119, 1781 (excl.

Syn. Rumph.)

Borreria hispida (L.) K. Schum. in Engler & Prantl.,

Pflanzenf. IX. 4(4): 144, 1891, non Spruce ex K.Schum.,

1888; Gam. 2: 461.

A decumbent or prostrate herb with square, hispid stems. Leaves elliptic-oblong; stipules membranous, hispid. Flowers pale-purple to white. Capsule oblong, hairy.

Not so common as B. stricta; observed as a weed on moist soil; also seen along the railway-line between Surat and Bhestan.

Flowers and Fruits : August - March.

JVJ 198, 1637.

2. Borreria pusilla (Wall.) DC., Prodr. 4: 543, 1830;

Hassan, 574.

Spermacoce pusilla Wall. in Roxb., Fl. Ind. 1: 379, 1820.

S. stricta L. f. Suppl. 120, 1781; FBI. 3: 200; C. 1: 52.

S. brachystema R. Br. ex Benth. Fl. Austral. 3: 439, 1867.

Borreria stricta (L. f.) K. Schum., in Engl. & Prantl,

Pflanzenf. IX 4(4): 143, 1891, non Meyer, 1818;

Gam. 2: 461; Saur. 1: 262; M. 180.

An erect herb with quadrangular stem. Leaves linear-oblong to linear-lanceolate; stipules hairy with filiform bristles. Flowers white. Capsule dehiscent ventrally.

Common in drier localities of Bhimpor, Dumas and Hajira.

Flowers and fruits : August - March.

JVJ 479, 849, 1286.

## 2. Dentella Forster

Dentella repens (L.) Forst. Charact. 26, t. 13, 1776; FBI. 3:

42; C. 2: 12; Gam. 2: 416; Saur. 1: 260.

Oldenlandia repens Linn., Mant. 1: 40, 1767 (non Burm. f. 1768).

A slender, prostrate, herb. Leaves small, elliptic-lanceolate. Flowers white, minute. Capsule coarsely hairy.

Occasionally seen in moist crevices along the river banks; also on wet beds of ditches.

Flowers and fruits : July - March.

JVJ 5, 713.

3. Gardenia J. Ellis (nom. cons.)

Gardenia resinifera Roth, Nov. Pl. Sp. 150, 1821; Saur. 1: 267; Hassan, 577.

G. lucida Roxb., Fl. Ind. 2: 553, 1824; Wt. Icon. t. 575; FBI. 3: 115; C. 2: 30; Gam. 2: 436.

A large shrub. Leaves elliptic-oblong. Flowers large, fragrant, white. Berry elliptic.

Cultivated in few gardens.

Local name : Dikamali.

Flowers and fruits : August - October.

JVJ 1113.

4. Hamelia Jacq.

Hamelia patens Jacq., Enum. Pl. Carib. 16, 1760; Bor & Raizada, 96, f. 61, Pl. 32; Bailey, 932; Saur. 1: 269; M. 182.

A large, handsome shrub. Leaves elliptic, obovate or oblanceolate. Flowers orange-red in polychasial and ultimately helicoid cymes.

Planted in a number of gardens.

Flowers and fruits : December - March.

JVJ 1318.

5. Hedyotis Linn.

1. Leaves linear; base of calyx lobes not touching in fruit .....1. H. corymbosa

1. Leaves elliptic; base of calyx lobes touching in fruit .....2. H. pumila

1. Hedyotis corymbosa (L.) Lamk., Encycl. 1: 272, 1792; Rao & Hemadri, in Ind. For. 99(6): 375, 1973; Bhandari, 189.  
Oldenlandia corymbosa Linn., Sp. Pl. 119, 1753; FBI. 3: 64; C. 2: 15; Gam. 2: 423; Saur. 1: 263; M. 180.

A straggling herb. Stems terete. Leaves linear, acute; stipules membranous with few short bristles. Flowers white. Capsule globose.

A weed of cultivated fields; also growing along the railway track.

Flowers and fruits : August - February.

JVJ 495, 1034, 1923.

2. Hedyotis pumila Linn. f. Suppl. 119, 1781; Backer & Bakhuizen, in Fl. Java 2: 285, 1965; Rao & Hemadri, loc. cit. 377.

Oldenlandia pumila (Linn. f.) DC. Prodr. 4: 425, 1830; Saur. 1: 264.

O. crystallina Roxb. Fl. Ind. 1: 422, 1820; FBI. 3: 65; C. 2: 16; Gam. 2: 424.

A small, sub-erect herb. Leaves elliptic-lanceolate, sub-acute. Flowers white. Capsule glabrous, ribbed.

Noted from the wet-muddy soils of river bed; also found as a weed.

Flowers and fruits : August - December.

JVJ 943, 1368, 1452.

#### 6. Ixora Linn.

1. Flowers white .....1. I. arborea

1. Flowers scarlet red or yellow .....2. I. coccinea

1. Ixora arborea Roxb. ex Smith. in Rees, Cycl. 19: no. 5, 1811; Saur. 1: 269.

I. parviflora Vahl, Symb. 3: 11, t. 52, 1794 (non Lamk.);  
Wt. Icon. t. 711; FBI. 3: 142; C. 2: 39; Gam. 2: 465;  
Bailey, 929.

A large shrub. Leaves oblong-elliptic. Flowers white, fragrant, in sub-globose clusters.

A common garden plant, grown for its shining green foliage and fragrant flowers.

Local name : Nevri.

Flowers : December - April.

JVJ 1319, 1541.

2. Ixora coccinea Linn. Sp. Pl. 110, 1753; FBI. 3: 145; Wt. Icon. t. 153; C. 1: 40; Bor & Raizada, Some Beaut. Climb. & Shrubs 96, t. 20; Bailey, 929; Saur. 1: 268; M. 183.

A small, glabrous, shrub. Leaves elliptic-ovate or obovate, coriaceous, base amplexicaul. Flowers scarlet red in compact corymbs.

Planted in most of the gardens.

Local name : Rati nevri.

Flowers : November - April.

JVJ 679, 1547.

7. Kohautia Cham. & Schlecht.

Kohautia aspera (Heyne ex Roth) Bremekamp, in Verh. Kon. Ned. Akad. Wet. Afd. Natuurk. Sect. 11 48(2): 113, 1952; Bhandari, 189.

Hedyotis aspera Heyne ex Roth, Nov. Pl. Sp. 94, 1821 (non Bedd. 1868).

Oldenlandia aspera DC. Prodr. 4: 428, 1830; FBI. 3: 68; C. 2: 18; Gam. 2: 424; Saur. 1: 265.

An erect herb. Leaves linear-lanceolate, sub-sessile; stipules membranous, bristles minutely ciliate. Flowers white. Capsule somewhat didymous, scabrid with white points.

Not common in all localities; occasionally seen as a

weed on moist soils of irrigated fields.

Flowers and fruits : August - December.

JVJ 721, 1283, 1640.

#### 8. Mitragyna Korth.

Mitragyna parvifolia (Roxb.) Kunth, Obs. Naocl. Ind. 19, 1839;

C. 2: 8; Gam. 2: 413; Saur. 1: 259; M. 181.

Nauclea parvifolia Roxb., Pl. Cor. 1: 40, t. 52, 1795.

Stephegyne parvifolia Korth. Verh. Nat. Ges. Bot. 161, 1840;

FBI. 3: 25; Talb. 2: 86-87, t. 335.

A medium-sized, deciduous tree. Leaves elliptic-obovate; stipules large, foliaceous, caducous. Flowers greenish-yellow in globose heads. Capsule oblong.

Occasionally planted in gardens and near Shiva temples.

Local name : Dhara Kadam.

Flowers and fruits : April - September.

JVJ 1317.

#### 9. Morinda Linn.

Morinda tomentosa Heyne ex Roth, Nov. Pl. Sp. 147, 1821;

D. & G. 114; Saur. 1: 258; Sant. & Merchant, in Bull.

BSI. 3(2): 108, 1962.

M. tinctoria Roxb. var. tomentosa Hook. f. FBI. 3: 156;

C. 2: 43; Gam. 2: 459.

A medium-sized tree with corky bark and tomentose, young branches. Leaves broadly elliptic or oblong-lanceolate. Flowers white, pleasant smelling, in globose heads. Fruits spherical or globular sorosis with polygonal markings.

Planted along roadsides near Majura gate; also on the way to Althan and Ved.

Local name : Aal.

Flowers and fruits : August - December.

JVJ 490, 1467.

#### 10. Mussaenda Linn.

Mussaenda luteola Delile, Cent. Pl. Meroe 65, t. 62, 1826;

Bor & Raizada, 80, f. 50; M. 181.

A small shrub. Leaves ovate to elliptic. Flowers yellow in terminal cymes.

Planted in the botanical gardens of P. T. Science College.

Flowers and fruits : August - February.

JVJ 1442.

#### 64. ASTERACEAE ( COMPOSITAE )

Artificial key presented here leads directly to the species and is based on simple characters. Most commonly cultivated plants have been included in the key, while the seasonal, ornamental plants are enlisted at the end of the

PLATE 51. ILLUSTRATIONS OF MORPHOLOGICAL TERMS OF THE  
FAMILY ASTERACEAE.

1. Ligulate (ray) Floret.
2. Tubular (disc) Floret.
3. Homogamous head.
4. Heterogamous head.
5. Paleaceous receptacle.
6. Sagittate anther base.
7. Subentire anther base.
8. Ribbed achene.
9. Achene of Sclerocarpus africanus.
10. Pappus of Synedrella nodiflora.
11. Disc floret of Blainvillea acmella.
12. Sessile head of Caesulia axillaris.
13. Head of Oligocheeta ramosa.
14. Winged stems and globose head of  
Sphaeranthus indicus.
15. Globose, spinous head of Echinops echinatus.
16. Capsule of Xanthium strumarium.
17. Achene of Acanthospermum hispidum.
18. Syngenesious anthers.
19. Glandular achene of Grancea maderaspatana.

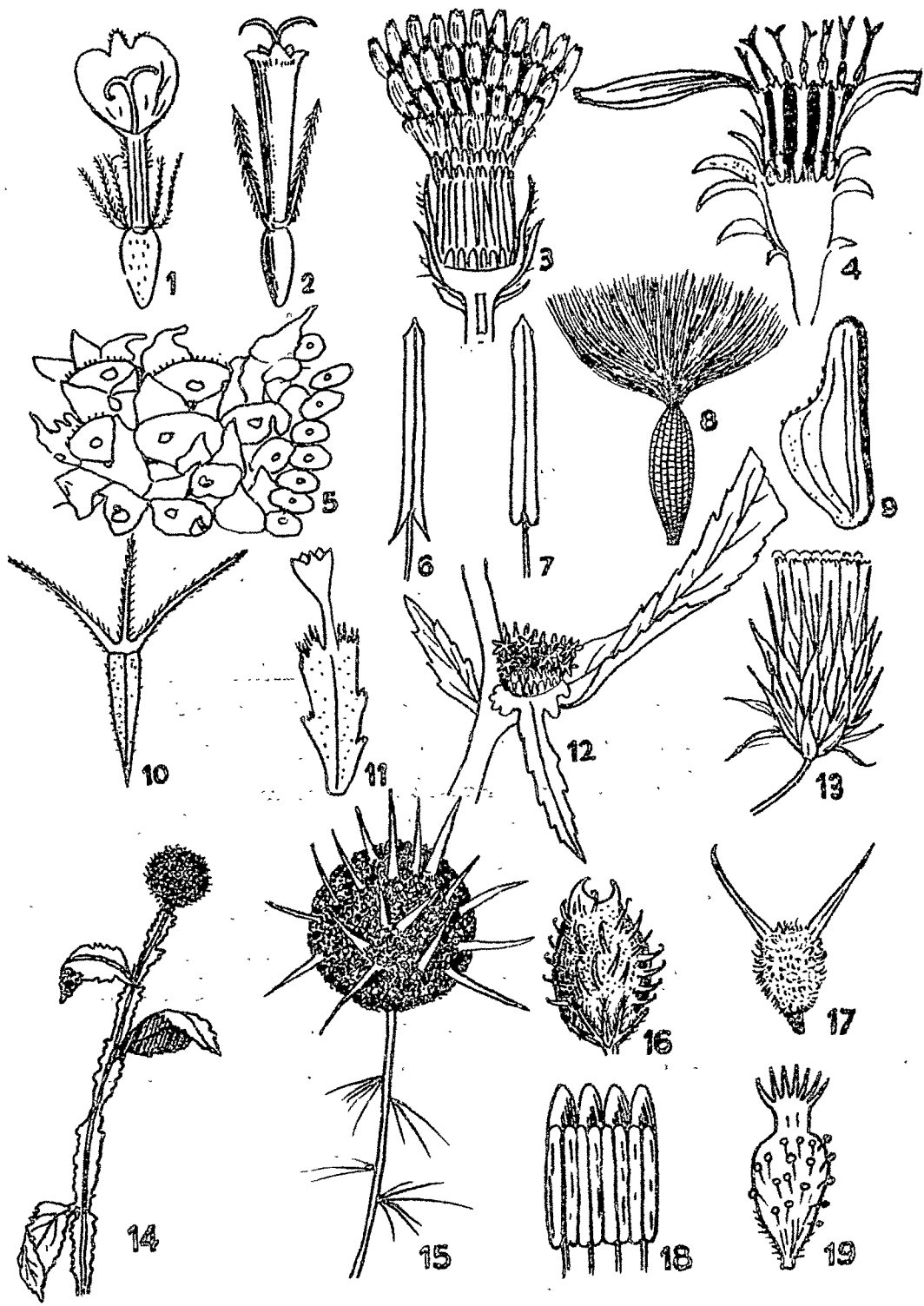


PLATE-51

enumeration of this family and are not included in the key.

Plate No. 51 illustrates the more important morphological terms used in the key.

1. Florets yellow, pale-yellow, orange-yellow, greenish-yellow, whitish-yellow or straw-coloured :
2. Heads more than 10 cm in diameter ...Helianthus annuus
2. Heads less than 10 cm in diameter :
3. Florets all : ligulate; milky juice often present :
4. Heads cylindrical, achenes columnar, truncate at both ends; plants with yellow latex .....Launaea procumbens
4. Heads campanulate, achenes compressed; plants with milky latex :
5. Involucral bracts and peduncles not glandular, achenes not transversely rugose .....Sonchus asper
5. Involucral bracts and peduncles glandular; achenes transversely rugose .....Sonchus oleraceus

3. Florets both - ligulate and tubular;  
milky juice often absent :
6. Leaves divided or pinnatisect :
7. Receptacle paleate; achenes  
4-angular; pappus of 2-4 hispid  
bristles ..... Bidens biternata
7. Receptacle not paleate; achenes  
not 4-angular :
8. Involucre cylindric; pappus of  
4-5 unequal paleae :
9. Heads 4-6 cm in diameter,  
deep or golden-yellow .....Tagetes erecta
9. Heads 2-4 cm in diameter,  
bright yellow .....Tagetes patula
8. Involucre campanulate; pappus  
absent or of hyaline cupular  
palea .....Chrysanthemum indicum
6. Leaves entire or slightly lobed,  
not pinnatisect :
10. Achenes with a pair of  
horn-like spines .....Acanthospermum hispidum
10. Achenes without spines :

11. Anther-base sagittate or tailed :

12. Head solitary, radiate :

13. Achenes glabrous; leaves

alternate, auriculate .....Vicoa indica

13. Achenes silky villous; leaves

opposite, not auriculate.....Tridax procumbens

12. Heads many, not radiate :

14. Plants densely woolly :

15. Heads in leafy-spikes ...Gnaphalium polycaulon

15. Heads in corymbs, <sup>or</sup> <sub>leafless</sub>

clusters .....Gnaphalium luteo-album

14. Plants glabrous or pubescent :

16. Heads in unilateral racemes

forming a panicle, plants

cultivated .....Solidago canadensis

16. Heads not as above;

plants wild :

17. A prostrate herb;

leaves white woolly on

the undersurface ....Blumea oxyodonta

17. Erect herbs; leaves

neither woolly nor white :

18. Heads many, upper leaves not  
cordate and clasping the stem :
19. Heads in lax pedunculate  
panicles; leaves not viscid...Blumea membranacea
19. Heads in corymbs, not  
panicled; leaves viscid.....Blumea lacera
11. Anther-base not sagittate but blunt  
or sub-entire :
20. Leaves alternate (rarely lower opposite):
21. Heads few :
22. Heads solitary or 2-nate,  
globose; achenes  
glandular .....Grangea maderaspatana
22. Heads in terminal cymes  
or in the forks or  
leaf-opposed :
23. Pappus 0; achenes  
ribbed and beaked...Sclerocarpus africanus
23. Pappus of 2-5 unequal  
bristles; achenes not  
ribbed .....Blainvillea acmella
21. Heads many :

- 24. Heads in terminal and axillary  
racemes; capsule armed with  
glochidiate spines ..... Xanthium strumarium
- 24. Heads in terminal corymbs, fruits  
without arms ..... Conyza stricta
- 20. Leaves opposite :
- 25. Pappus 0 :
- 26. Head solitary on a long  
peduncle, achenes not ribbed.. Spilanthes paniculata
- 26. Heads sessile in the forks of  
branches; achenes ribbed ..... Flaveria trinervia
- 25. Pappus of 2 slender awns ..... Synedrella nodiflora
- 1. Florets other than yellow :
- 27. Florets white or whitish-creamy :
- 28. Heads homogamous :
- 29. Heads sessile ..... Caesulia axillaris
- 29. Heads on peduncles :
- 30. Leaves deeply pinnatisect.. Parthenium  
hysterophorus
- 30. Leaves not as above :
- 31. Involucral bracts connate;  
pappus of short fine  
white hairs ..... Lagascea mollis

- 31. Involucral bracts not connate;  
pappus of 5 scales .....Ageratum conyzoides
- 28. Heads heterogamous :
  - 32. Pappus 0; leaves sessile ...Eclipta alba
  - 32. Pappus present; leaves  
petiolate :
    - 33. Pappus bristles plumose..Tridax procumbens
    - 33. Pappus bristles  
retrorsely barbellate....Blainvillea acmella
- 27. Florets pale or bright blue, pink  
or rosy-pink, lilac or purplish :
  - 34. Plants armed :
    - 35. Heads 1-flowered, globose,  
spinous clusters .....Echinops echinatus
    - 35. Heads many-flowered .....Oligochaeta ramosa
  - 34. Plants unarmed :
    - 36. Heads homogamous :
      - 37. Leaves opposite; pappus  
of 5 scales .....Ageratum conyzoides
      - 37. Leaves alternate; pappus  
of several hairs or  
paleaceous :

38. Anther base obtuse :
39. Leaves broadly-elliptic or lanceolate; not lyrate-lobed; corolla purplish-violet .....Vernonia cinerea
39. Leaves variable; amplexicaul and auricled, lyrate-lobed; corolla purplish-pink .....Emilia sonchifolia
38. Anther base sagittate :
40. Leaves linear-oblong or oblong-ovate; achenes ribbed, florets pink-rosy .....Goniocaulon indicum
40. Leaves variable; achenes glabrous; florets bright blue.Cichorium intybus
36. Heads heterogamous :
41. Heads globose; stems winged .....Sphaeranthus indicus
41. Heads disciform or spiciform but not globose; stems not winged :
42. Leaves pinnatifid, segments irregularly serrate; pappus 0. Cyathocline purpurea
42. Leaves variable but not pinnatifid; pappus present :

43. Anther-base sagittate;

achenes 4-5-angled ..... Blumea mollis

43. Anther-base obtuse;

achenes compressed ..... Erigeron asteroides

Acanthospermum Schrank.

Acanthospermum hispidum DC., Prodr. 5: 522, 1836; Gam. 2: 495;

Santapau, in JBNHS. 45: 445, 1944-45; Sant. 139;

Pavagadh, 132.

A rigid, hairy, erect, dichotomously branched herb. Leaves obovate-lanceolate. Heads solitary, small, heterogamous, placed at the base of the forking branches, florets minute, pale-yellow. Achenes spinescent, with 2 long, horn-like spines at the top.

Occasionally seen along the railway-track between Surat and Udhana, also noted from the upper part of river banks and on open waste lands.

Flowers and fruits : September - March.

JVJ 1219.

Ageratum Linn.

Ageratum conyzoides Linn., Sp. Pl. 839, 1753; FBI. 3: 243;

C. 2: 70; Gam. 2: 476; Sant. 124; M. 190.

An erect, hairy, odoriferous annual herb. Leaves

petiolate, broadly ovate, crenate. Heads in terminal corymbs. Florets white to pale-blue, odorous. Achenes black; pappus of 5 scales.

A common weed, occurs throughout the area; occasional on wet, muddy soils of river beds; also found under the shade of trees.

Local name : Ajagandha.

Flowers and fruits : August - April.

JVJ 214, 1304, 1870.

Bidens Linn.

Bidens biternata (Lour.) Merrill & Sherff. ex Sherff, Bot.

Gaz. 88: 293, 1929; Backer & Bakh. f., Fl. Java 2: 413, 1965.

Coreopsis biternata Lour., Fl. Cochinch. 508, 1790.

Bidens pilosa auct. (non Linn.) FBI. 3: 309; C. 2: 101;

Gam. 2:

A tall erect, glabrous herb. Stems grooved. Leaves variable, variously lobed, pinnately divided, basal leaflets may be compound (tri-partite). Flower-heads yellowish-white, heterogamous. Achene black, ribbed; pappus of 2-4 retrorsely hispid, slightly spreading awns.

Occasionally seen on wet, wasteland, under the shadow of trees, often mixed with grasses.

Flowers and fruits : August - October.

JVJ 162, 340, 795.

Blainvillea Cass.

Blainvillea acmella (L.) Philipson, in Blumea 6(2): 350,  
f. 1, 1950; Raizada, in Ind. For. Rec. 5(1): 7, (N.S.)  
Botany, 1958; Pavagadh, 125.

Verbesina acmella Linn., Sp. Pl. 901, 1753.

Blainvillea rhomboidea Cass., in Dict. Sc. Nat. 29: 294,  
1823; C. 2: 97; Gam. 2: 496.

B. latifolia DC. in Wight's Contrib. 17, 1834; FBI. 3: 305;  
M. 198.

An erect, small, rigid, hispid, apparently dichotomously  
branched herb. Leaves ovate-lanceolate or ovate-rhomboid.  
Flower heads white or whitish-yellow. Achenes triquetrous.

Frequently found on open, wet soils and under the shade  
of trees.

Flowers and fruits : August - December.

JVJ 215, 796, 1305.

Blumea DC. (nom. cons.)

Blumea lacera (Burm. f.) DC. ex Wight, Contrib. Bot. Ind.  
14: 1834; FBI. 3: 263; C. 2: 76; Gam. 2: 483; Randeria,  
in Blumea 10(1): 264, 1960; Sant. 127; M. 195.

Conyza lacera Burm. f. Fl. Ind. 180, 1768.

An erect, annual herb with an odour of turpentine. Leaves oval to ovate, dentate or serrate, not lobed. Heads yellow in spiciform, axillary cymes or terminal panicles. Achenes not ribbed; pappus white.

Fairly common on the upper part of river banks, on waste fallow lands and also along the railway track.

Local name : Kalhar.

Flowers and fruits : August - April.

JVJ 576, 977, 1565.

Blumea membranacea DC. Prodr. 5: 440, 1836; FBI. 3: 265;

C. 2: 77; Gam. 2: 483; Sant. 128; Randeria, in Blumea 10(1): 269, 1960.

A tall erect herb. Leaves membranous, pubescent, obovate or ob-lanceolate, coarsely toothed. Heads yellow, in terminal, peduncled corymbs; pappus white. Achenes angled, hairy.

Occasional on old walls and crevices of embankments; also seen in waste localities.

Flowers and fruits : October - March.

JVJ 1989.

Blumea mollis (D. Don) Merr. in Philip. Jour. Sci. (Bot.) 5:

395, 1910; Sant. 127; M. 195; Randeria loc. cit. 279.

Erigeron molle D. Don, Prodr. 172, 1825.

Blumea wightiana DC., in Wight, Contrib. 14, 1834; FBI. 3: 261; C. 2: 75; Gam. 2: 483.

An erect, branched, villous herb. Leaves variable; upper leaves sessile, irregularly toothed or serrate; lower petioles, ovate-lanceolate. Heads purple in terminal, spiciform cymes. Achenes not ribbed, angular.

Occasional on dry, soil along the railway track in fallow fields.

Flowers and fruits : August - March.

JVJ 976, 1186, 1972.

Blumea obliqua (L.) Druce, in Rep. Bot. Exch. Club. Brit.

Isles. 4: 609, 1917; Randeria, loc. cit. 286; M. 195.

Erigeron obliquum Linn. Mant. 573, 1771.

Blumea amplexens DC., in Wight, Contrib. 13: 1834; FBI. 3:

260; C. 2: 75; Gam. 2: 482.

A decumbent, annual herb; branches densely villous. Leaves sessile, oblong, often dentate, semi-amplexicaul. Heads yellow, usually solitary terminal; involucre bracts tipped with long bristles. Achenes oblong, hairy.

Commonly found on waste fallow lands.

Local name : Kapurio Kalhar.

Flowers and fruits : July - February.

JVJ 251, 287, 1805.

Blumea oxyodonta DC., in Wight, Contrib. 15, 1834; FBI. 3: 266; C. 2: 77; Gam. 2: 482; Sant. 128; Randeria, loc. cit. 279.

A prostrate, slender, hairy annual with typical strong odour. Leaves small, silky-pubescent, especially the lower ones. Head yellow, solitary or in corymbs. Achenes slightly hairy.

Rare; observed on unused, fallow dry land near Althan.  
Flowers and fruits : October - December.  
JVJ 1495.

Caesulia Roxb.

Caesulia axillaris Roxb., Pl. Cor. 1: 64, t. 93, 1795;  
FBI. 3: 291; Wt. Icon. t. 1102; C. 2: 92; Gam. 2: 494;  
Sant. 132; Bhandari, 195.

A sub-erect, succulent herb. Leaves linear-lanceolate, shallowly serrate, narrowed towards base and ultimately dilated, embracing the flower clusters. Heads homogamous; florets white. Achene flat, ovoid-winged.

A marsh-loving plant, always found on wet soils of canals, ponds, near ditches; also found as a weed in waterlogged, rice fields.

Flowers and fruits : August - February.  
JVJ 175, 238, 334.

Cichorium Linn.

Cichorium intybus Linn., Sp. Pl. 813, 1753; FBI. 3: 391;

C. 2: 127; Bailey, 983; M. 188; Pavagadh, 126.

An erect, hispid herb with white latex. Leaves variable; lower usually pinnately lobed or runcinate; upper oblanceolate or broad-lanceolate, amplexicaul. Heads homogamous, sessile, bright blue. Achenes glabrous, pappus short, scaly.

Not common; noted as a weed from irrigated wheat-fields, never cultivated in the area.

English name : Chicory.

Flowers and fruits : January - April.

JVJ 285, 1838.

Plate 27A

Conyza Less. (nom. cons.)

Conyza stricta Willd., Sp. Pl. 3: 1922, 1803; FBI. 3: 258;

C. 2: 73; Gam. 2: 480.

An erect annual herb; stems densely hairy. Leaves various; obovate-cuneate or spathulate. Heads in panicles; florets yellow, pappus 1-seriate. Achenes compressed, hairy.

Occasionally seen on waste lands and fallow fields.

Flowers and fruits : December - February.

JVJ 584, 1652.

Cyathocline Cass.

Cyathocline purpurea (Ham. ex D. Don) Kuntze, Rev. Gen. Pl.  
338, 1891; Sant. 124.

Tanacetum purpureum Don, Prodr. 181, 1825.

Cyathocline lyrata Cass., in Ann. Soc. Sci. Nat. (Ser. I)  
17: 420, 1829; FBI. 3: 246; Wt. Icon. t. 1098; C. 2: 71;  
Gam. 2: 478.

A small, slender, erect herb. Leaves small, sessile, pinnatifid, segments toothed, more or less hairy. Heads purple or rose-purple, in corymbose panicles. Achenes small, smooth; pappus absent.

Commonly observed on wet river-beds; also noted in wet shaded localities.

Flowers and fruits : August - May.

JVJ 303, 715, 1552, 1987.

Echinops Linn.

Echinops echinatus Roxb., Fl. Ind. 3: 447, 1832; FBI. 3: 358;  
C. 2: 112; Gam. 2: 509; M. 200; Pavagadh, 123.

A rigid, much-branched herb with white, cottony hairs. Leaves pinnatifid, oblong, sessile, lobes ending in rigid spines. Heads white, solitary, terminal, spiny, globose. Achenes obconic, densely villous.

Occasionally seen on dry wasteland; gregarious on sandy soil near Hajira.

Flowers and fruits : December - April.

JVJ 647, 2009.

Plate 19B

Eclipta Linn. (nom. cons.)

Eclipta alba (L.) Hassk., Pl. Jav. Rar. 528, 1848; FBI. 3: 304;  
Gam. 2: 496; Hassan, 612.

Verbesina alba Linn., Sp. Pl. 902, 1753.

V. prostrata Linn., Sp. Pl. 902, 1753.

Eclipta prostrata (L.) Linn., Mant. Alt. 286, 1771; Sant.  
133; M. 197.

An erect or sub-erect herb. Leaves oblong-lanceolate, sub-entire with thick-based white hairs. Heads white. Achenes compressed with a narrow wing.

Frequently found on the margins of ditches, in waterlogged situations of rice fields.

Local name : Safed Bhangaro.

Uses : The plant is cooling and is mixed with oil to keep hair black.

Flowers and fruits : Almost throughout the year.

JVJ 798, 1759.

Emilia Cass.

Emilia sonchifolia (L.) DC., ex Wight, Contrib. 24, 1834 &  
 Prodr. 6: 302, 1825; FBI. 3: 336; C. 2: 107; Gam. 2: 503;  
 Sant. 135; Pavagadh, 128.

Cacalia sonchifolia Linn., Sp. Pl. 835, 1753.

A small, slender, glabrous herb. Leaves variable, the upper amplexicaul and auricled, lyrate, pinnatifid. Heads purplish-pink in lax corymbs. Achenes 5-ribbed, scabrid on the ribs, pappus copious.

Rare; found in wet, sandy soils of river-beds near Variav and Ved.

Flowers and fruits : August - March.

JVJ 1230, 1273, 1879.

Plate 52.

Erigeron Linn.

Erigeron asteroides Roxb., Fl. Ind. 3: 432, 1832; FBI. 3: 254; C. 1: 73; Gam. 2: 479.

A prostrate or ascending herb clothed with spreading hairs. Leaves oblong or obovate-oblong. Heads purplish-white. Anther-base obtuse. Achenes angled, sparsely hairy.

Found in waste places along the banks of river Tapi near Ved and Jahangirpura.



*Emilia sonchifolia* (L.) DC.

Flowers and fruits : October - February.

JVJ 1281, 1868.

Flaveria Juss.

Flaveria trinervia (Spreng.) C. Mohr. Contr. U.S. Nat. Herb.

6: 180, 1901; Rydberg, N. Amer. Fl. 34(2): 143, 1953;

Raizada et Sharma, Ind. For. 88(5): 363, 1962;

Bhandari, 199.

Oedera trinervia Spreng., Bot. Gart. Halle. 63, 1800.

An annual herb with dichotomous branches. Leaves opposite, elliptic-lanceolate or broadly elliptic oblanceolate, acute at apex, margins coarsely serrate, veins 3 from base, more or less parallel. Heads sessile in the forks; florets yellow. Achenes ribbed, compressed; pappus 0.

Rare plant; collected once from the wet crevices of river banks near Dumas.

Flowers and fruits : August - September.

JVJ 50.

Plate 54.

Gnaphalium Linn.

Gnaphalium polycaulon Pers., Syn. 2: 421, 1807; Grierson,

Notes Roy. Bot. Gard. Edinburgh 31: 137, 1972; Bhandari, 201; Hassan, 616.

G. indicum auct. non L., FBI. 3: 289; C. 2: 87; Gam. 2: 491;

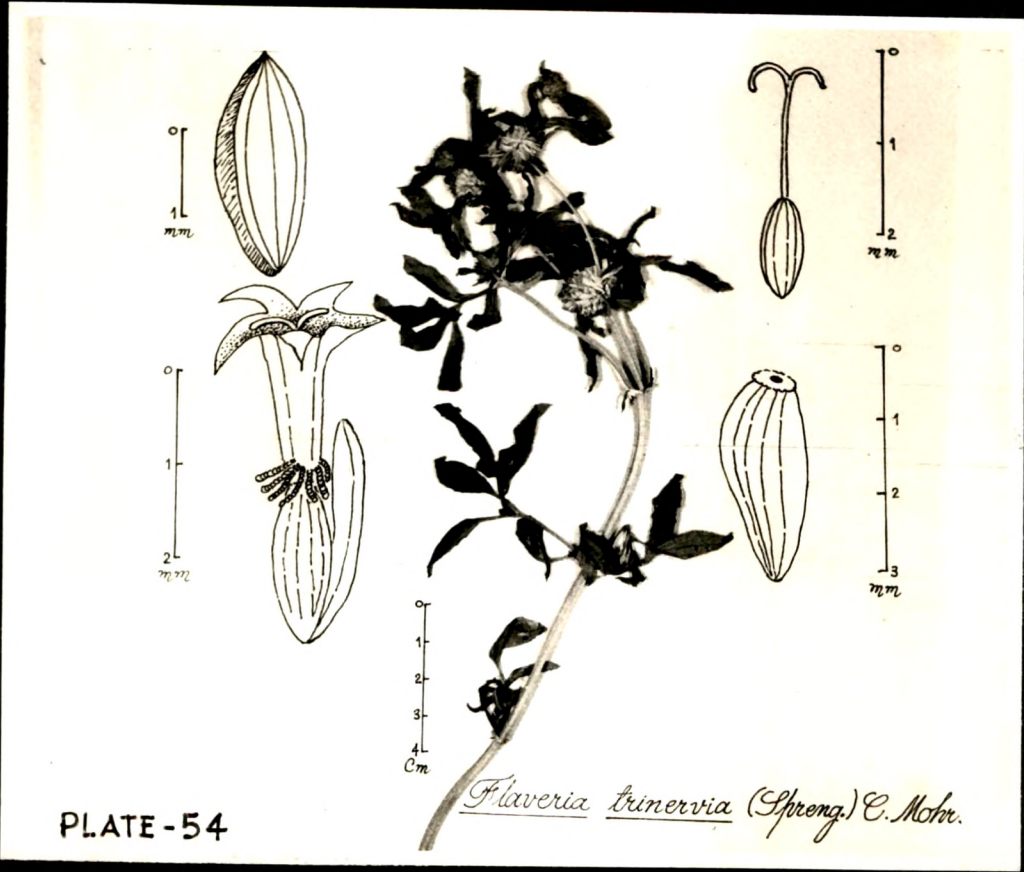


PLATE-54

Sant. 131; M. 194.

An erect or sub-erect herb covered with white-woolly hairs. Leaves linear-obovate. Heads in leafy, terminal spikes, white or straw-coloured. Achenes ovoid, hairy.

Occasional on drying river beds and in drying ditches; often associated with Glinus oppositifolius, Aerva lanata, Grangea maderaspatana and Chrozophora prostrata.

Flowers and fruits : September - March.

JVJ 333, 401, 1960.

Gnaphalium luteo-album Linn., Sp. Pl. 851, 1753; FBI. 3:

288; C. 2: 86; Gam. 2: 491; Sant. 131.

An erect, ascending or decumbent herb covered with white-woolly-pubescent. Leaves linear-oblong, amplexicaul, woolly on both surfaces. Heads whitish-yellow or straw-coloured. Achenes oblong, papillose.

Rare; noted from the wet soils of river beds; also from drying, exposed soils of ditches.

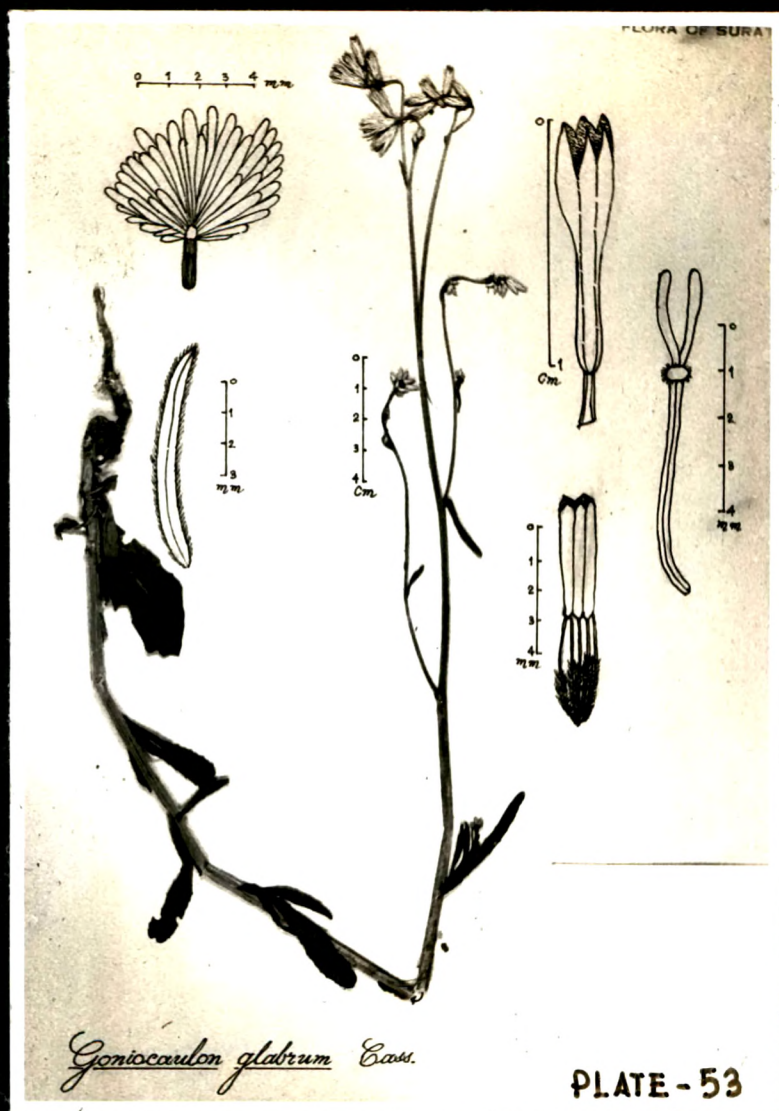
Flowers and fruits : September - February.

JVJ 1244, 1453.

#### Goniocaulon Cass.

Goniocaulon indicum (Klein ex Willd.) Clarke, Comp. Ind. 236,

1876; Jeffrey, in Kew Bull. 22: 134, 1968.



Serratula indica Klein ex Willd., Sp. Pl. 3: 1642, 1803.

Goniocaulon glabrum Cass. in Bull. Soc. Philom. 1817: 34;

FBI. 3: 377; C. 2: 55; Gam. 2: 510; Sant. & Janardhanan,

BBSI. 8(Suppl.1): 28, 1967 & 69(2): 444-449, 1972.

Amberboa indica DC. Prodr. 6: 558; D. & G. 131; Wt. Icon.

t. 479.

A tall, erect herb or undershrub with angled, glabrous stem. Leaves sessile, linear-oblong or oblong-ovate, toothed or serrate, dotted with black spots on both the sides. Heads pinkish-rosy, in compound corymbs; involucral bracts more or less white. Achenes closely ribbed.

Frequently seen growing as a weed in irrigated fields of Sugar-cane and Sorghum, fairly common in fallow fields.

Flowers and fruits : December - April.

JVJ 639, 1862, 2022.

Plate 53.

#### Grangea Adans.

Grangea maderaspatana (L.) Poir, in Lam. Encycl. Suppl. 2:

825, 1811; FBI. 3: 243; Wt. Icon. t. 1097; C. 2: 72;

Gam. 2: 478; Sant. 126; M. 191; Pavagadh, 131.

Artemisia maderaspatana Linn., Sp. Pl. 849, 1753.

A prostrate or erect, spreading herb. Leaves sinuately-pinnatifid. Heads yellow, disciform. Achenes glandular,

pappus a short tube with fimbriate mouth.

Occasionally seen on wet, sandy soil of river beds, on drying-exposed soils of ditches along with Glinus lotoides, Chrozophora prostrata, Gnaphalium polyclaulon.

Flowers and fruits : September - April.

JVJ 206, 292, 463, 1664, 1973.

Helianthus Linn.

Helianthus annus Linn., Sp. Pl. 904, 1753; C. 2: 124; Sant. 138.

A number of varieties of this taxon have been cultivated for their attractive, yellow capitula.

Local name : Suryamukhi. English name : Sunflower.

Flowers and fruits : almost throughout the year.

JVJ 761.

Lagascea Cav.

Lagascea mollis Cav., in Anal. Cienc. Nat. 6: 332, t. 44, 1803; C. 2: 93; Gam. 2: 494; Sant. 118.

An erect, branched, glutinous herb. Leaves ovate, acute or acuminate, crenate, densely silky-hairy beneath. Heads white, terminal; involucral bracts connate. Achenes slightly compressed with a short cup-like pappus.

Rare; found at Rander, Hajira and along the railway track between Surat - Bhestan.

Flowers and fruits : October - January.

JVJ 302, 1622.

Launaea Cass.

Launaea procumbens (Roxb.) Ramayya & Rajgopal, in Kew Bull.  
23(3): 463, 1969; Bhandari, 204.

Prenanthus procumbens Roxb., Fl. Ind. 3: 404, 1832.

Chondrilla nudicaulis Linn., Mant. 273, 1767.

Launaea nudicaulis Hook. f. in FBI. 3: 416, 1881 (non  
Less. 1832); C. 2: 122; Sant. 137; M. 189.

An erect or sub-erect herb. Leaves radical, lobed or pinnatifid, ovate-oblong. Heads pale yellow, more or less sub-racemose. Achenes ribbed, pappus hairy.

Fairly common throughout the area, noted in waste lands as a weed; on the roofs of abandoned houses and crevices of old walls.

Local name : Bhonyapatri.

Flowers and fruits : August - May.

JVJ 85, 719, 1872, 2097.

Oligochaeta (DC.) C. Koch.

Oligochaeta ramosa (Roxb.) Wagen., in Verroffent. Geobot.  
Inst. 37, 323, 1962; Bhandari, 206.

Carduus ramosus Roxb., Fl. Ind. 3: 407, 1832.

Tricholepis procumbens Wt. Icon. t. 1139, 1846.

Volutarella divaricata Benth., in Benth. et Hook. Gen. Pl.

2: 476, 1873 (pro parte); FBI. 3: 383; C. 2: 115;

Gam. 2: 511.

Amberboa divaricata (DC.) O. Kuntze, Rev. Gen. Pl. 1:305, 1891.

Volutarella ramosa (Roxb.) Santapau, in Pl. Saur. 22: 1953;

& Fl. Purandhar, 71.

Amberboa ramosa (Roxb.) Jafri, Scientist 3: 29, 1959.

An erect, dichotomously branched, glabrous or scaberulous herb. Leaves oblong-obovate, pinnatifid with mucronulate lobes. Heads purplish-rose; involucral bracts with long, recurved, spreading spines; pappus paleaceous, many-seriate. Achenes obovoid, oblong, ribbed.

Occasionally seen on dry, sandy beds and on upper belt of river Tapi.

Flowers and fruits : November - March.

JVJ 240, 355, 1242.

### Parthenium Linn.

Parthenium hysterophorous Linn., Sp. Pl. 988, 1753; Adams.

Fl. Pl. Jamaica 751, 1972; Rao, R.S., JBNHS 54(1):

218-220, 1956.

An annual herb or undershrub. Leaves pinnatifid; lower leaves large and dissected; upper smaller. Heads white,

PLATE 55. PARTHENIUM HYSTEROPHORUS L.



PLATE-55

4-5 mm in diameter, on axillary and terminal profusely branched peduncles.

A garden weed, noted from waste places of Nehru garden, also seen along the roadsides; not so common.

Local name : Congress grass.

Flowers and fruits : October - March.

JVJ 1463, 1795.

Plate 55.

Sclerocarpus Jacq.

Sclerocarpus africanus Jacq. Icon. Pl. Rar. 1: 17, t. 176, 1782; FBI. 3: 305; C. 2: 96; Gam. 2: 496; Pavagadh, 132.

An erect, hispid herb with terete stems and branches. Leaves ovate, acute, dentate; clothed with appressed hairs. Heads yellow, terminal or leaf-opposed; involucre bracts foliaceous, hairy. Achenes ribbed and beaked.

Rare; on wet fallow lands of the slope of river Tapi, near Nana Varachha and Rander. Often grows under the shade of trees.

Flowers and fruits : October - March.

JVJ 453, 1918.

Solidago Linn.

Solidago canadensis Linn., Sp. Pl. 878, 1753; Bailey, 1005; M. 191.

A woody undershrub. Leaves lanceolate, scabrous, hairy. Heads golden-yellow, in dense, unilateral, recurved, axillary racemes forming a panicle.

Cultivated in most of the gardens for its attractive flowers.

English name : Golden rod.

Flowers and fruits : November - February.

JVJ 386, 651.

Sonchus Linn.

Sonchus asper Fig. Pl. Anim. Med. 4: 332, t. 565, 1767; Hill, Brit. Herbal 1: 47, 1769; FBI. 3: 41; C. 2: 120; Jackson, in Kew Bull. 344: 1937; Sant. 137; M. 190; Bhandari, 211.

A glabrous herb. Leaves sessile, cauline leaves elliptic-oblong, pinnatifid, half-amplexicaul with rounded adpressed auricles. Heads yellow, pappus very slender, white. Achenes much-compressed, elliptic, longitudinally 5-ribbed.

Occasionally growing as a weed in the irrigated wheat fields.

Flowers and fruits : October - April.

JVJ 201, 1837, 1997, 2076.

Sonchus oleraceus Linn., Sp. Pl. 794, 1753; FBI. 3: 414; C. 2: 119; Gam. 2: 514.

S. ciliatus Lamk., Fl. France 287, 1805; Wt. Icon. t. 1141.

A glabrous annual herb. Leaves sessile, oblong or obovate, amplexicaul with spreading, acute auricles. Heads yellow, pappus copious, white. Achenes compressed, narrowly obovoid, longitudinally ribbed, minutely transversely muricate.

Rare; found as a winter weed.

Flowers and fruits : December - March.

JVJ 557, 1644, 1840.

Sphaeranthus Linn.

Sphaeranthus indicus Linn., Sp. Pl. 927, 1753; FBI. 3: 275;

C. 2: 84; Gam. 2: 487; Sant. 130; Pavagadh, 126.

S. hirtus Willd., Sp. Pl. 3: 2395, 1804; Wt. Icon. t. 1094.

A prostrate, erect or sub-erect, branched, aromatic herb; branches divaricate with toothed wings, hairy. Leaves obovate-oblong, decurrent, glandular hairy. Heads purple, globose. Achenes glabrous, angular.

Fairly common throughout the area, on hard, dry, exposed soil of ditches, or river banks or along the sides of canals.

Local name : Bodiyo Kalhar.

Flowers and fruits : October - March.

JVJ 1567, 1798, 1873.

Spilanthes N. Jacquin

Spilanthes paniculata Wall. ex DC. Prodr. 5: 625, 1836;

Koster & Philipson, in Blumea 6(2): 350, 1950; Backer  
& Bakh. f., Fl. Java 2: 408, 1965; Raizada, in Ind.  
For. 92(5): 324, 1966.

S. acmella (non Linn.) Murr. Syst. Veg. (ed. 13) 610,  
1774; FBI. 3: 307; C. 2: 99.

A small, erect, hispid herb. Leaves ovate, acute,  
glabrous. Heads yellow on long peduncles. Achenes oblong,  
truncate, glabrous.

Rare; noted once from moist, clayey soils of river-beds  
near Ved.

Local name : Akkalgaro.

Flowers and fruits : September onwards.

JVJ 1265.

Synedrella Gaertn. (nom.cons.)

Synedrella nodiflora (L.) Gaertn., Fruct. 2: 456, 1791;

FBI. 3: 308; Gam. 2: 498; Hassan, 624.

Verbesina nodiflora Linn., in Juslenius, Cent. I. Pl. 28,  
1755.

An annual herb. Stems terete, grooved, hairy. Leaves  
broadly ovate-elliptic, acute, sparsely hairy. Heads yellow.  
Achenes black.

Occasional in wastelands; often grows under the shade of trees.

Flowers and fruits : August - September.

JVJ 756, 1401.

Tagetes Linn.

Tagetes erecta Linn., Sp. Pl. 887, 1753; Duthie, 451.

An undershrub. Leaves much divided. Heads orange-gold or deep yellow.

Cultivated in gardens as well as in a few fields for its attractive flowers and foliage. Flowers are used for preparing garlands.

Local name : Galgota.      English name : African Marigold.

Flowers and fruits : October - March.

JVJ 653.

Tagetes patula Linn., Sp. Pl. 887, 1753.

A small herb. Heads bright yellow, smaller than T. erecta.

Cultivated everywhere in gardens, also seen as an escape.

Local name : Hajari Galgota.      English name : French Marigold.

Flowers and fruits : October - March.

JVJ 655.

Tridax Linn.

Tridax procumbens Linn., Sp. Pl. 900, 1753; FBI. 3: 311;

C. 2: 102; Gam. 2: 500; Sant. 134; M. 199; Pavagadh, 130.

A straggling herb with spreading, sub-erect branches. Leaves ovate or lanceolate, shallowly or deeply dentate. Heads yellowish-white, solitary on long slender peduncles. Achenes oblong, silky hairy.

Fairly common on open waste places, on lawns, in the shade of hedges, along the bank of canals, borders of cultivated fields and on the old walls.

Local name : Pardesi Bhangaro.

Flowers and fruits : Almost round the year but more profusely during rainy and winter seasons.

JVJ 245, 539, 720.

Vernonia Schreb. (nom. cons.)

Vernonia cinerea (L.) Less, in Linnaea 4: 291, 1829; FBI. 3:

233; C. 2: 65; Gam. 2: 475; Sant. 122; M. 190.

Conyza cinerea Linn., Sp. Pl. 862, 1753.

An erect, branched herb, variable in size. Leaves ovate-lanceolate, irregularly toothed. Heads purplish-violet, pappus white. Achene hairy, terete, not ribbed.

Fairly common throughout the area, a weed of wasteland,

cultivated and fallow fields and also seen growing on the old walls.

Local name : Sahadevi.

Flowers and fruits : July - April.

JVJ 402, 547, 741, 1026.

Vicoa Cass.

Vicoa indica (L.) DC., in Wight, Contrib. Bot. Ind. 10: 1834;

Wt. Icon. t. 1184; Gam. 2: 493; Sant. 132; M. 193;

Pavagadh, 133.

Inula indica Willd., Sp. Pl. 3: 2092, 1804.

Vicoa auriculata Cass., in Ann. Sc. Nat. (Ser. 1) 17: 418,

1829; FBI. 3: 297; C. 2: 88.

An erect, rigid herb. Leaves linear-lanceolate, rough or scabrid on both the surfaces, auricled at the base. Heads yellow, heterogamous; pappus of ray-florets absent and of disc-florets of few, slender hairs. Achenes terete, sparsely hairy.

Fairly common throughout the area, especially on the bank of canals, river-banks, on fallow wastelands; also noted as a winter weed.

Local name : Sonsali.

Flowers and fruits : August - May (fairly long flowering period).

JVJ 254, 548, 1921, 2081.

Xanthium Linn.

Xanthium strumarium Linn., Sp. Pl. 987, 1753; FBI. 3: 303;

C. 2: 94; Gam. 2: 494; Sant. 132; M. 196; Pavagadh, 128.

X. indicum Koen. ex Roxb., Fl. Ind. 3: 601, 1832; Wt. Icon. t. 1104.

An erect, scabrid herb or undershrub. Leaves trilobed, broadly triangular-ovate or sub-orbicular. Heads bisexual, yellowish-green. Fruiting involucre clothed with hooked prickles. Achenes oblong or ovoid.

A very common omnipresent weed, usually found in association with Cassia tora, C. occidentalis and Crotalaria medicaginea.

Local name : Gadariyun.

Flowers and fruits : August - May.

During summer fruits are scattered over the sandy shore near Dumas and Hajira, making it difficult to walk. The spiny fruits stick to the fur of the passing animals thereby helping dispersal.

JVJ 163, 368, 1027, 1871.

The following composites are grown in gardens as seasonal ornamentals for their attractive capitula.

Aster amellus Linn., Calendula officinalis Linn., Centaurea cyanus Linn., C. imperiales Linn., Cosmos

bipinnatus Cav., Dahlia variabilis Desf., Eupatorium triplinerve Vahl, Gaillardia pulchella Foug., Zinnia elegans Jacq.

## 65. PLUMBAGINACEAE

### Plumbago Linn.

1. Flowers blue; cultigen ..... 1. P. capensis
1. Flowers white; wild plant ..... 2. P. zeylanica
1. Plumbago capensis Thunb., Prodr. Capen. 33, 1794; C. 2: 137; Duthie 1: 458; Haines 2: 529; Bailey, 786; Bor & Raizada, 163, Pl. 58 & 59.

A glabrous, erect, herb. Leaves lanceolate-oblong. Flowers blue, in terminal spiciform racemes.

A beautiful garden plant cultivated in the gardens. Flowers : Summer and rainy seasons.

JVJ 668.

2. Plumbago zeylanica Linn., Sp. Pl. 151, 1753; FBI. 3: 480; C. 2: 136; Gam. 2: 524; Bailey, 786; Bor & Raizada, 162, f. 102; M. 203.

A straggling, perennial undershrub. Stems and branches terete, striate, glabrous. Leaves ovate, thin, entire. Flowers white, sweet-scented, calyx densely glandular, persistent. Capsule oblong.

Wild within the area, growing amongst hedge plants on the way to Ved, Katargam, Udhana and Rander; occasionally planted in gardens.

Flowers and fruits : August - November.

JVJ 913, 1451.

#### 66. PRIMULACEAE

##### Anagallis Linn.

Anagallis arvensis Linn., Sp. 148, 1753; FBI. 3: 506; C. 2: 139; Gam. 2: 525; M. 203.

A. coerulea Lamk., Fl. Frans. ed. 1. 2: 285, 1778.

A. latifolia Linn., Sp. Pl. 149, 1753; Wt. Icon. t. 1205.

A procumbent or sub-erect herb. Leaves ovate-lanceolate, sessile, cordate, acute, palmately 3-veined. Flowers bright blue, long-peduncled. Capsule circumscissile with many, smooth seeds.

Rare; collected once from the irrigated fields near Fulpada.

Flowers and fruits : December - January.

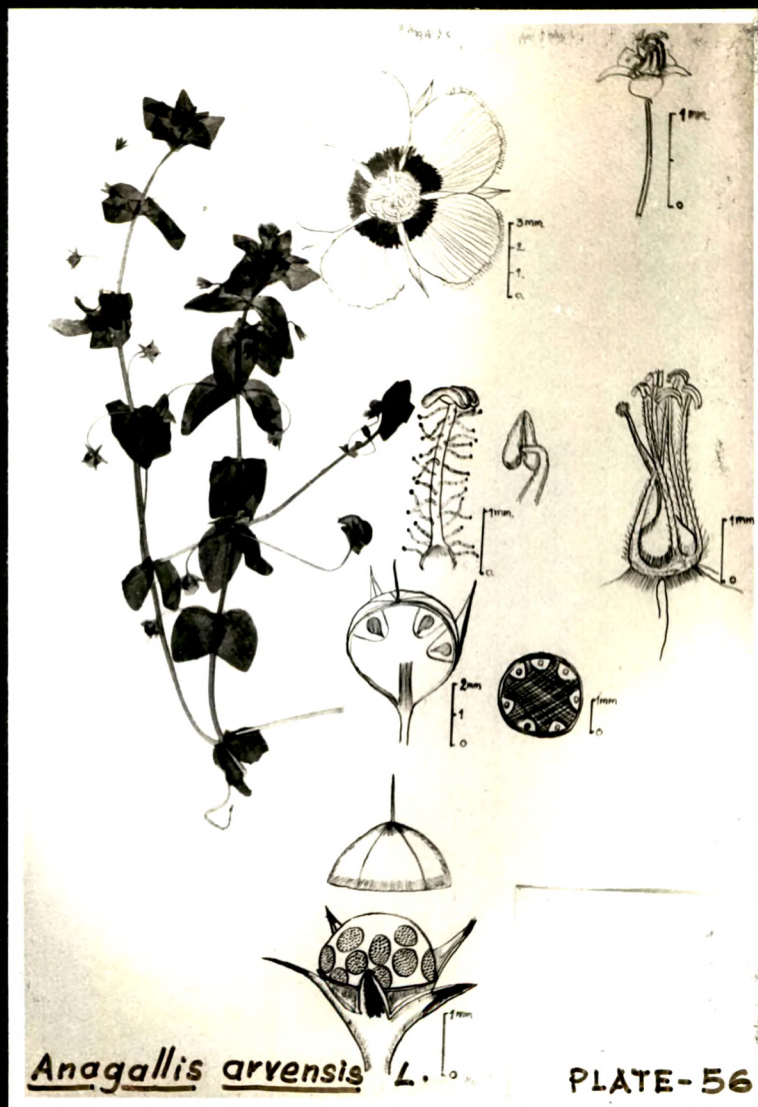
JVJ 1649.

Plate 56.

#### 67. MYRSINACEAE

##### Ardisia Swartz. (nom. cons.)

Ardisia solanacea Roxb., Pl. Cor. t. 27, 1795; C. 2: 146;



Gam. 2: 531.

A. humilis sensu Wt. Icon. t. 1212; D. & G. 137; FBI. 3: 529; Talb. 204.

A shrub. Leaves obovate-oblong, acute, cuneate, coriaceous, gland-dotted. Flowers rosy. Pink, in racemes. Drupe globose, becoming black with age.

A rare plant - planted in the Botanical garden of P. T. Science College.

Flowers and fruits : December - February.

JVJ 1610.

#### 68. SAPOTACEAE

1. Calyx segments 4-5; staminodes none :

2. Calyx segments 4; stamens more than 20 ..2. Madhuca

2. Calyx segments 5; stamens 5 .....1. Chrysophyllum

1. Calyx segments more than 5; staminodes present :

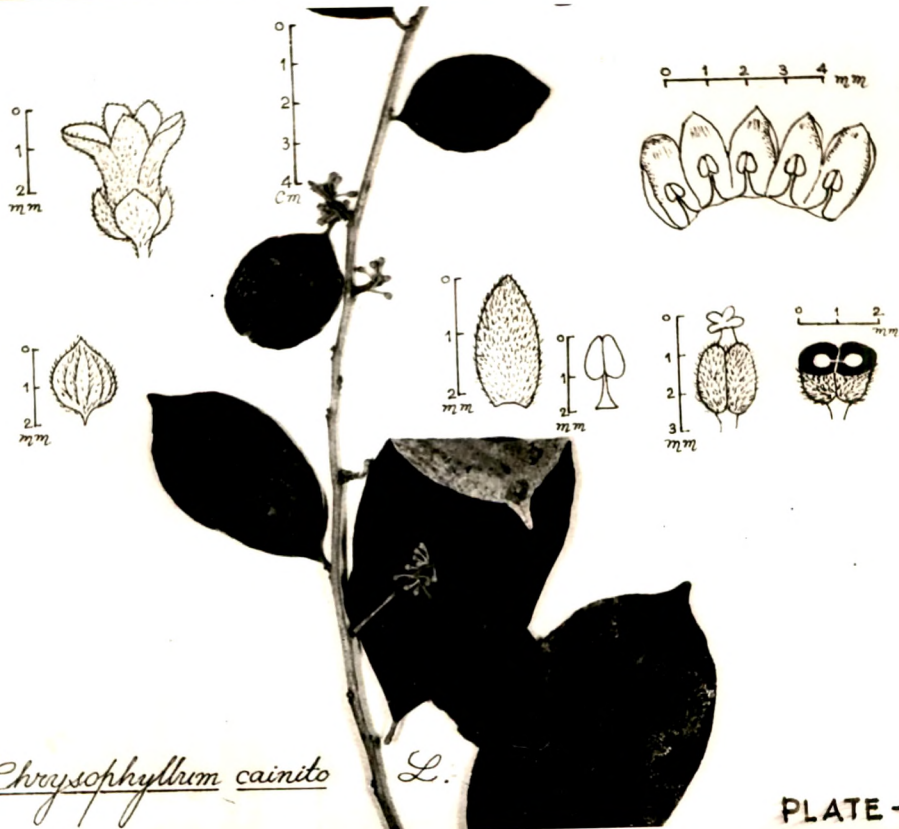
3. Petals many; sepals 8; stamens 8 .....4. Mimusops

3. Petals 6; sepals 6; stamens 6 .....3. Manilkara

1. Chrysophyllum Linn.

Chrysophyllum cainito Linn., Sp. Pl. 192, 1753; C. 2: 149;

Gam. 2: 533; Bailey, 791.



*Chrysophyllum cainito* L.

A small evergreen tree. Leaves oval-oblong; covered beneath with silky golden-brown tomentum. Flowers creamy-white. Berries globose.

Planted in the botanical gardens of P. T. Science College.  
Flowers and fruits : January - March.

JVJ 2101.

Plate 57-

## 2. Madhuca Gmelin.

Madhuca indica Gmelin, Syst. Nat. 2: 799, 1791; Merrill, in JAA. 29: 190, 1948; Sant. 141; M. 240.

Bassia latifolia Roxb., Pl. Cor. 1: 20, t. 19, 1795;

FBI. 3: 544; C. 2: 152; Talb. 2: 156, f. 372; Gam. 2: 536.

Madhuca latifolia (Roxb.) Macbride, in Contrib. Gray Herb. (N.S.) 3(53): 17, 1918.

A large, deciduous tree. Leaves elliptic, ovate, acute, clustered at the end of branches. Flowers creamy-white, in dense fascicles near the end of the leafless branches. Berry ovoid, fleshy.

Planted in the botanical gardens of P. T. Science College and in private premises at Rander.

Local name : Mahuda.

Flowers and fruits : February - April.

JVJ 684.

3. Manilkara Adans. (nom. cons.)

1. Berries 3.5 X 6 cm. globose, rusty-brown;  
seeds more than 1 .....1. M. achras
1. Berries 1.5 X 1 cm. ovoid, yellow,  
1-seeded .....2. M. hexandra
1. Manilkara achras (Mill.) Fosberg, in Taxon 13: 295, 1964;  
Raizada, in Ind. For. 92(5): 316, 1966.
- M. zapota (Linn.) Van Royen, in Blumea 7: 410, 1953.
- Sapota achras Mill., Gard. Dict. ed. 8, 1768.
- Achras zapota Linn., Syst. Nat. (ed. 10) 2: 988, 1759;  
M. 205; Bailey, 790; Bor, Man. Ind. For. Bot. 233.
- A. sapota Linn., Sp. Pl. (ed. 2) 469, 1762; FBI. 3:  
534; C. 2: 156.

An evergreen, large shrub or a medium-sized tree. Leaves oblong-lanceolate. Flowers creamy-white.

Cultivated extensively throughout the area for its edible fruit.

Local name : Chiku. English name : Sapodilla plum.

Uses : Fruits are edible.

Flowers and fruits : October - April.

JVJ 686, 1841.

2. Manilkara hexandra (Roxb.) Dubard, in Ann. Mus. Col.

Marseille (Ser. 3) 3: 9, 1915; Bor, Man. Ind. For.

Bot. 235; M. 205; Pavagadh, 135.

Mimusops hexandra Roxb., Pl. Cor. 1: 16, t. 15, 1795;

FBI. 3: 549; C. 2: 155; Gam. 2: 538.

A tree with dense, evergreen crown and greyish, furrowed bark. Leaves obovate, shining above, coriaceous. Flowers dirty-white.

Cultivated in private premises for its edible fruit.

Local name : Rayan or 'Amadavadi Mevo'.

Flowers : November - January.

Fruits : March - May.

JVJ 559.

4. Mimusops Linn.

Mimusops elengi Linn., Sp. Pl. 349, 1753; Wt. Icon. t. 1586;

FBI. 3: 548; C. 2: 155; Gam. 2: 538; M. 205.

A medium-sized, evergreen tree with dark grey bark. Leaves elliptic, ovate-lanceolate, acute. Flowers dirty-white, fragrant, solitary or clustered. Berries yellow when ripe.

Mostly cultivated throughout the area for its shade and scented flowers.

Local name : Bakul or Borsali.

Flowers and fruits : February - June.

JVJ 638, 1540.

## 69. EBENACEAE

Diospyros Linn.

Diospyros chloroxylon Roxb., Cor. Pl. 1: 38, t. 49, 1795;

FBI. 3: 560; C. 2: 166; Talb. 212; Gam. 2: 546; Duthie,  
1: 471; Prain, 653.

D. capitulata Wt. Icon. tt. 1224, 1588.

A medium-sized tree with ashy-cracked bark. Leaves elliptic or obovate-oblong, more or less pubescent above, rusty tomentose beneath. Flowers whitish-green; male flowers in sub-sessile clusters; female solitary, sessile. Berry small, globose, 2-3-seeded.

Not so common; seen only in hedges and along the roadsides towards Ved and Katargam. Earlier collections of Dalzell & Gibson from the same localities have been cited by Cooke (loc. cit.).

Local name : Nanu Timaru.

Flowers and fruits : September - January.

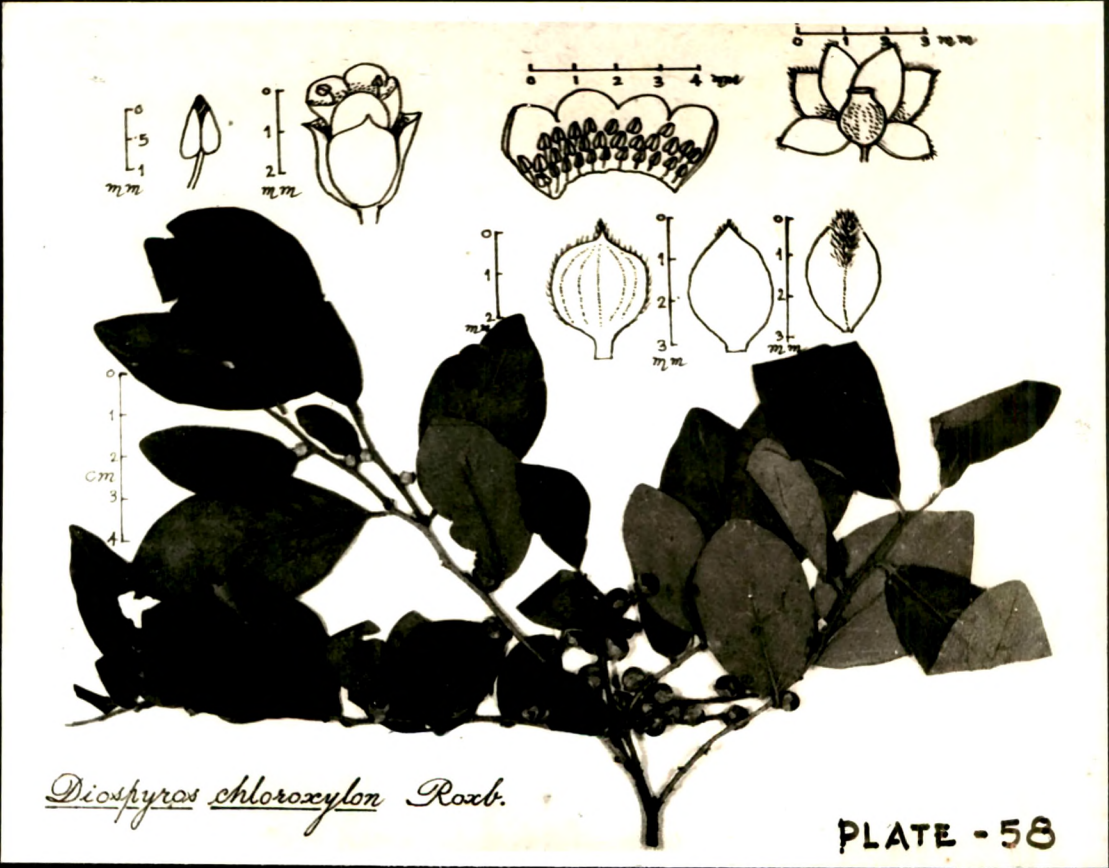
JVJ 600, 912.

Plate 58.

## 70. OLEACEAE

Jasminum Linn.

1. Leaves 1-foliolate :



*Diospyros chloroxylon* Roxb.

2. Calyx-lobes 1 cm. long ..... 2. J. multiflorum

2. Calyx-lobes less than 1 cm. long ... 4. J. sambac

1. Leaves 3- or multi-foliolate :

3. Leaves 3-foliolate; 2 lower leaflets

very small and often absent ..... 1. J. auriculatum

3. Leaves pinnately compound with 5-7

leaflets; terminal leaflets much

larger than others ..... 3. J. officinale

1. Jasminum auriculatum Vahl, Symb. Bot. 3: 1, 1794; FBI. 3: 600; C. 2: 174; Gam. 2: 555; M. 208.

A bushy shrub. Leaves 3-foliolate, the basal two lateral leaflets very small, forming auricles, on either side of the big, terminal leaflet, frequently the lateral leaflets are wanting. Flowers white, sweet-scented in dichasial cyme.

Frequently cultivated in the gardens for its fragrant flowers.

Local name : Jai.

Flowers : June onwards.

JVJ 1708.

2. Jasminum multiflorum (Burm. f.) Andr. Bot. Rep. t. 496, 1801; FBI. 3: 592; Sant. 144; Bailey, 799; M. 208.

Nyctanthes multiflorum Burm. f. Fl. Ind. 5, t. 3,  
f. 1, 1768.

Jasminum pubescens Willd., Sp. Pl. 1: 37, 1797; FBI. 3:  
592; C. 2: 175; Bor & Raizada, 219, f. 129, Pl. 78.

A scandent shrub. Leaves simple, ovate. Flowers white,  
fragrant; calyx lobes very long.

Cultivated in gardens.

Local name : Ran Mogaro.

Flowers : December - April.

JVJ 599.

3. Jasminum officinale Linn., Sp. Pl. 7, 1753; FBI. 3: 603;  
C. 2: 175; Bailey, 798; Bor & Raizada, 222, f. 132;  
M. 208.

A climbing shrub with striate branches. Leaflets 5-7,  
elliptic, ovate or rhomboid oblong. Flowers white, fragrant.

Cultivated in a number of private and public gardens.

Local name : Chambeli.

Flowers : October - March.

JVJ 1710.

4. Jasminum sambac (L.) Ait. Hort. Kew 1: 8, 1789; C. 2: 172;  
Gam. 2: 554; Bailey, 798; Bor & Raizada, 218, f. 128;  
M. 208.

An erect, bushy shrub. Leaves opposite, broadly ovate or elliptic, glabrous. Flowers white, fragrant; corolla many-whorled.

Grown in gardens.

Local name : Mogaro.

Flowers : December - May.

JVJ 822.

#### 71. SALVADORACEAE

##### Salvadora Linn.

Salvadora persica Linn., Sp. Pl. 122, 1753; FBI. 3: 620; C. 2: 184; Gam. 2: 562; M. 209.

A small or medium-sized, crooked tree with whitish-grey bark. Leaves thick, coriaceous, variable in shape but mostly ovate to ovate-lanceolate. Flowers greenish white in axillary and terminal panicles. Drupes globose, becoming pink, dark pink and finally red when ripe, translucent, juicy.

Fairly common throughout the area, seen in hedges, along roadsides, along the border of fields; also noted from the coastal regions of Dumas and Hajira.

Local name : Piludi.

Flowers and fruits : August - April.

JVJ 822.

Verdcourt in Kew Bulletin (19: 153-54) recognises a number of varieties of Salvadora persica L. and mentions Salvadora persica L. proper as occurring in Africa, Middle-East and India.

## 72. APOCYNACEAE

1. Leaves whorled :

2. Shrubs or undershrubs :

3. Leaves linear-lanceolate; corolline

corona present ..... 6. Nerium

3. Leaves ovate-oblong; corolline

corona absent ..... 8. Rauvolfia

2. Small tree ..... 3. Alstonia

1. Leaves alternate or opposite :

4. Leaves alternate :

5. Corolla campanulate, pale or

bright yellow ..... 10. Thevetia

5. Corolla hypocrateriform or salver-

shaped, white with a yellow centre.... 7. Plumeria

4. Leaves opposite :

6. Plants with long sharp spines ..... 4. Carissa

6. Plants without spines :

7. Habit erect :

8. Herbs or undershrubs; flowers 1-2

in axils; calyx without glands .....5. Catharanthus

8. Shrubs; flowers in terminal cymes;

calyx with glands .....9. Tabernaemontana

7. Habit climbing, trailing or twining :

9. Anthers exerted .....11. Vallaris

9. Anthers included :

10. Corolla yellow; campanulate .... 2. Allamanda

10. Corolla creamy-white;

salver-shaped ..... 1. Aganosma

1. Aganosma G. Don

Aganosma caryophyllata (Roxb. ex Sims.) G. Don, Gen. Syst.

4: 77, 1837; FBI. 3: 664; C. 2: 203.

A large, climbing shrub. Leaves ovate-oblong. Flowers creamy-white, scented.

Occasionally cultivated in the gardens.

Flowers : August - onwards.

JVJ 898.

2. Allamanda Linn.

Allamanda cathartica Linn., Mant. 2: 215, 1771; C. 2: 207;

Bor & Raizada, 196, f. 117; Bailey, 810.

A scandent or climbing shrub with milky latex. Leaves obovate-lanceolate, acuminate. Flowers yellow.

Commonly cultivated in all private and public gardens for its attractive flowers.

Flowers : Almost throughout the year.

JVJ 645.

### 3. Alstonia R. Br. (nom. cons.)

Alstonia scholaris (L.) R. Br., in Mem. Wern. Nat. Hist. Soc.

1: 76, 1810; FBI. 3: 642; C. 2: 194; Benthall, 310; M. 215.

Echites scholaris Linn., Mant. 55, 1767.

A medium-sized or small evergreen tree. Leaves oblong-lanceolate or obovate, thick, shining. Flowers greenish-white. Follicles cylindric.

Planted in the botanical garden of P. T. Science College.

Local name : Saptaparni.

Flowers and fruits : August - February.

JVJ 662.

### 4. Carissa Linn. (nom. cons.)

Carissa congesta Wt. Icon. t. 1289, 1848; Gam. 2: 565;

Sant. 129; Pavagadh, 136.

C. carandus Graham, Cat. 116, 1839; FBI. 3: 630; (pro parte);  
C. 2: 186 (non Linn.); M. 213.

C. carandas var. congesta Bedd. For. Man. Fl. Syl. 157,  
1869; FBI. 3: 631.

An armed shrub with dichotomously spreading branches.  
Leaves elliptic-oblong. Flowers sweet-scented, white with a  
little rosy tinge. Berries 4-seeded; spherical to ellipsoid,  
dark purple on ripening.

Fairly common in hedges along the roadsides between  
Surat - Ved and Ved - Katargam; also planted in a few gardens.

Local name : Karmada.

Uses : Fruits are edible.

Flowers and fruits : February - April.

JVJ 680, 1995.

##### 5. Catharanthus G. Don

1. Stems 4-angled; leaves linear-lanceolate;  
corolla small, about 1 cm long, white ...1. C. pusillus

1. Stems not 4-angled; leaves oblong,  
mucronate; corolla more than 1 cm long,  
white or rosy-purple .....2. C. roseus

1. Catharanthus pusillus (Murr.) D. Don, Gen. Syst. 4: 95,  
1837; M. 211; Raizada, in Ind. For. 92(5):304, 1966.

Vinca pusilla Murr., in Act. Goett. 3: 66, t. 2, f. 1, 1773;  
FBI. 3: 640.

Lochnera pusilla K. Schum. in Pfam. 4(2): 145, 1895;  
C. 2: 191; Gam. 2: 568; Raizada, in Ind. For. Rec.  
(N.S.) Botany 5(1): 28.

A small, branched, erect, glabrous herb. Stems 4-angled.  
Leaves linear-lanceolate with subulate stipular glands.  
Flowers white. Follicles straight, slender. Seeds black.

Rare; noted as a weed from fallow land of Sanatorium  
at Dumas.

Flowers and fruits : August - October.

JVJ 813.

2. Catharanthus roseus (Linn.) G. Don, Gen. Syst. 4: 95, 1837;  
Raizada, in Ind. For. 92(5): 304, 1966.

Vinca rosea Linn. Syst. Nat. (ed. 10) 944, 1759; Bor &  
Raizada, 200, f. 119.

Lochnera rosea Reicheb. Consp. Regn. Veg. 134, 1828;  
C. 2: 192; Gam. 2: 569; Sant. 131; Raizada, in  
Ind. For. Rec. (N.S.) Botany 5(1): 28.

An erect, ever-blooming garden herb or undershrub. Leaves  
oblong with mucronate apex. Flowers white or rosy-purple;  
corolla hypocrateriform. Follicles cylindric. Seeds many.

Commonly planted in all gardens for its beautiful flowers.

Local name : Barmasi.

Flowers and fruits : All round the year.

JVJ 814.

#### 6. Nerium Linn.

Nerium indicum Mill., Gard. Dict. n. 2, 1768; Sant. 133; M. 215.

N. odorum Soland., in Ait. Hort. Kew 1: 297, 1789; FBI. 3: 655; C. 2: 206; Gam. 2: 577; Bor & Raizada, 199, f. 118.

A large, evergreen, shrub. Leaves linear-lanceolate, dark green above. Flowers white, rose or red, fragrant; corolline corona present. Follicles long, cylindric. Seeds comose.

Noted in cultivation throughout the area.

Local name : Karen.

Flowers : Throughout the year.

JVJ 699, 1704.

#### 7. Plumeria Linn.

Plumeria rubra L. forma acuminata (Ait.) Sant. & Irani ex Shah, in J. Univ. Bomb. 30: 35, 1961-62; Raizada, in Ind. For. 92(5): 301, 1966.

P. acuminata Ait. Hort. Kew (ed. 2) 2: 70, 1811; Sant. 149.

P. rubra L. forma acutifolia (Poir.) Woodson, in Ann. Miss. Bot. Gard. 25: 211, 1938; M. 214.

P. acutifolia Poir, in Lamk. Encycl. Suppl. 2: 667, 1811;  
FBI. 3: 641; C. 2: 205; Gam. 2: 577.

A small tree with apparently dichotomous branching.  
Flowers white with a yellow centre.

Cultivated for its fragrant flowers.

Local name : Champo.

Flowers : April - October.

JVJ 682, 1702.

#### 8. Rauvolfia Linn.

Rauvolfia tetraphylla Linn. Sp. Pl. 208, 1753; Raizada, in  
Ind. For. 92(5): 322, 1966.

Rauvolfia canescens Linn., Sp. Pl. (ed. 2) 303, 1762;  
D. & G. 53; C. 2: 190; Gam. 2: 568.

An erect, branched, undershrub. Leaves oblong, whorled,  
of unequal sizes. Flowers small, greenish-white, in  
corymbose cymes. Drupes red purple at maturity.

Occasionally seen in shady, moist places, at Ved, Rander  
and Surat.

Flowers and fruits : August - March.

Uses : It is as important as 'Sarpagandha' medicinally, but  
the local people are possibly not aware of it.

JVJ 605, 894.

Plate 59.

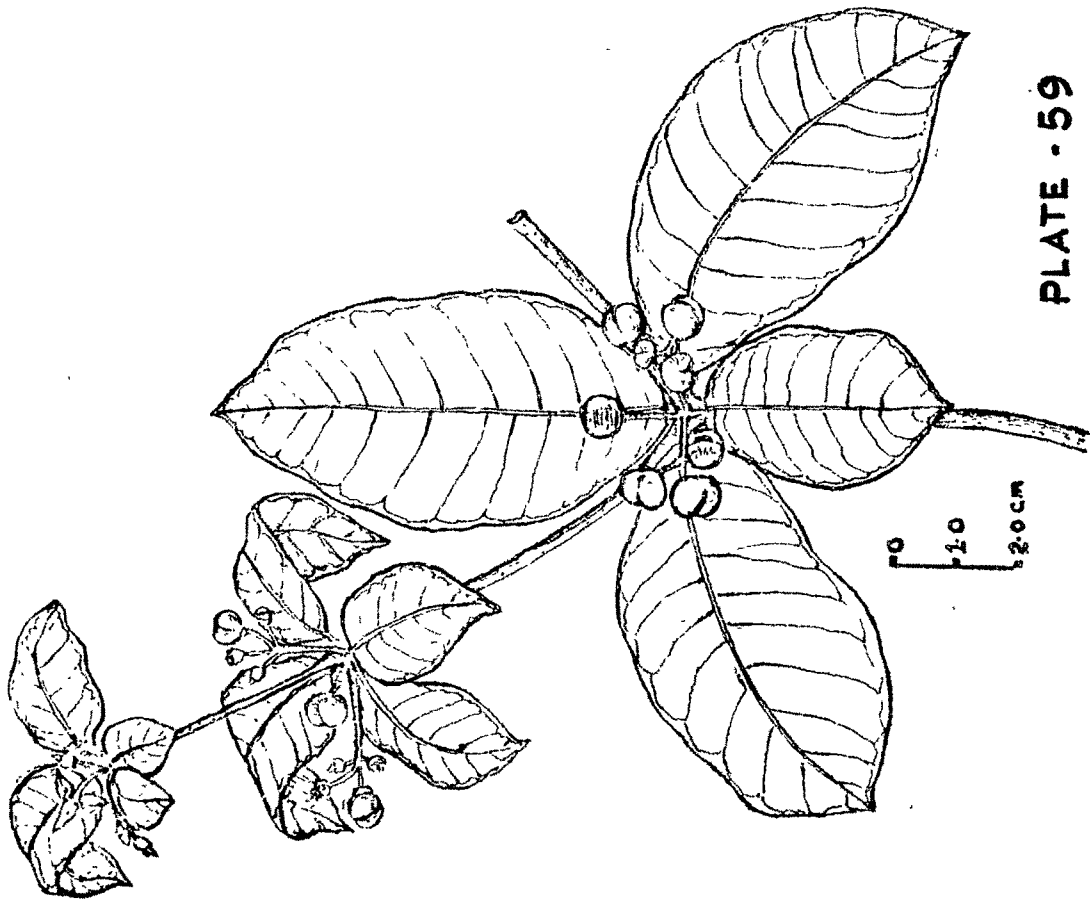


PLATE - 59

*Rauwolfia tetraphylla* L.

9. Tabernaemontana Linn.

Tabernaemontana divaricata (L.) R. Br. in Roem. & Schult.

Syst. 4: 427, 1819; Merr. in Contr. Arn. Arb. 8: 140,  
1934; Sant. 131; M. 215.

Nerium divaricatum Linn., Sp. Pl. 209, 1753.

Tabernaemontana coronaria Willd. Enum. Hort. Berol. 275,  
1809; FBI. 3: 646; Wt. Icon. t. 477; Bor & Raizada, 205.

Ervatamia coronaria Stapf, in This.-Dyer, Fl. Tropical  
Africa 4: 127, 1902; C. 2: 197; Gam. 2: 571; Bailey, 813.

An evergreen shrub. Leaves oblong to lanceolate, shining,  
acuminate, glabrous. Flowers pure white, in few-flowered cymes.

Cultivated in all private and public gardens.

Local name : Chandani, Tagar.

Flowers. : Throughout the year.

JVJ 1701.

10. Thevetia Linn. (nom. cons.)

Thevetia peruviana (Pers.) Merr., in Philip. Jour. Sci. (Bot.)  
9: 130, 1914 & Enum. 3: 331; Benthall, 302; Bailey, 809;  
M. 214.

Cerbera peruviana Pers. Syn. 1: 267, 1805.

C. thevetia Linn., Sp. Pl. 209, 1753.

Thevetia neriifolia Juss. ex Steud. Nom. 2: 680, 1841; C. 2:  
207; Gam. 2: 577; Bor & Raizada, 193, f. 194.

An evergreen shrub or a small tree. Leaves linear, alternate, dark green above, paler beneath with revolute margins. Flowers yellow, f in axillary or sub-terminal few-flowered cymes. Drupes four-angled with two ridges.

Commonly cultivated in public as well as private gardens; also planted in hedges.

Local name : Pilikaren. English name : Lucky nut;  
Yellow Oleander.

Flowers and fruits : Throughout the year.

JVJ 700, 1703.

#### 11. Vallaris Burm.

Vallaris solanacea (Roth) Kuntze, Rev. Gen. 2: 417, 1891;

Gam. 2: 573; Bor, Man. Ind. For. Bot. 284; M. 212.

Peltanthera solanacea Roth, Nov. Pl. Sp. 132, 1821.

Vallaris heynei Spreng., Syst. 1: 635, 1824; FBI. 3: 650;

C. 2: 199; Bor & Raizada, 208, f. 123.

Vallaris dichotoma Wall. Cat. 1621, nom. nud.; Wt. Icon.

t. 438.

A twining, spreading or straggling shrub. Leaves oblong-ovate or elliptic, sub-acuminate. Flowers white, in axillary cymes, fragrant; anthers exerted.

Occasionally planted on hedges in gardens.

Flowers : January - April.

JVJ 572, 1601.

## 73. ASCLEPIADACEAE

## 1. Plants erect :

2. Flowers reddish-yellow; stems and  
leaves glabrous; leaves lanceolate.....1. Asclepias

2. Flowers whitish-purple; stems and  
leaves fugaciously cottony-pubescent;  
leaves broadly ovate .....2. Calotropis

## 1. Plants trailing or twining or straggling :

3. Anthers without a membranous appendage..3. Leptadenia

## 3. Anthers with a membranous appendage :

4. Follicles softly echinulate .....5. Pergularia

## 4. Follicles not echinulate :

## 5. Pollen masses pendulous :

6. Corolla divided half-way down;  
leaves linear; flowers showy...6. Sarcostemma

6. Corolla divided nearly to the  
base; flowers not showy, small..4. Pentstemon

## 5. Pollen masses erect or horizontal :

7. Pollen masses erect; corona-lobes  
with a subulate process on the  
inner face .....7. Telosma

7. Pollen masses horizontal;

corona-lobes tubercle-like...8. Tylophora

1. Asclepias Linn.

Asclepias curassavica Linn., Sp. Pl. 215, 1753; FBI. 4: 18;

C. 2: 245; Gam. 2: 585; Sant. 140; Bailey, 815;

Santapau & Irani, in Bot. Mem. Univ. Bomb. 4: 17, 1962.

An erect shrub. Leaves lanceolate. Flowers orange-yellow or reddish-yellow, showy, in extra-axillary, umbellate cymes.

Cultivated in private and public gardens.

Flowers and fruits : December - July.

JVJ 687, 1747.

2. Calotropis R. Br.

1. Coronal scales shorter than the staminal

column, with two obtuse auricles just

below the apex ..... 1. C. gigantea

1. Coronal scales equalling or exceeding

the staminal column, without auricles

below the apex ..... 2. C. procera

1. Calotropis gigantea (L.) R. Br., in Ait. Hort. Kew (ed. 2)

2: 78, 1811; FBI. 4: 17; C. 2: 214; Gam. 2: 585;

Sant. 151; Santapau & Irani, loc. cit. 4: 17, 1962.

Asclepias gigantea Linn., Sp. Pl. 214, 1753.

A tall, much-branched shrub covered with soft, cottony hairs. Leaves broadly-ovate, decussate. Flowers purplish-white, in lateral, umbellate or sub-corymbose cymes; coronal scales shorter than the staminal column. Follicles in pairs; seeds comose.

Not common, a weed of waste and fallow lands along the roadsides or near hedges.

Local name : Moto Aankado.

Flowers : All round the year.

Fruits : February - May.

JVJ 1515.

2. Calotropis procera (Ait.) R. Br., in Ait. Hort. Kew (ed. 2) 2: 78, 1811; FBI. 4: 18; Wt. Icon. t. 1278; C. 2: 215; Gam. 2: 585; Santapau & Irani, loc. cit. 19; M. 218.

Asclepias procera Ait. Hort. Kew (ed. 1) 1: 305, 1789.

An erect shrub covered with white, cottony tomentum. Leaves ovate or oblong-obovate, acute. Flowers whitish-pink or white, in umbellate cymes; coronal scales equalling or longer than the staminal column. Follicles in pairs; seeds comose.

More common than the preceding species; noted on waste, fallow grounds; abundant on the upper storey of river bank at Rander and Singanpor; also seen on dry, sandy river bed, along the roadsides and railway track.

Local name : Aankado.

Flowers : Almost throughout the year.

Fruits : March onwards.

JVJ 86, 549, 775.

### 3. Leptadenia R. Br.

Leptadenia reticulata (Retz.) Wight & Arn., in Wight Contrib.

47, 1834; Wt. Icon. t. 350; FBI. 4: 63; C. 2: 237;

Gam. 2: 598; Bullock, in Kew Bull. 291, 1955; Santapau

& Irani, loc. cit. 60.

Cynanchum reticulatum Retz., Obs. Bot. 2: 15, 1781.

A twining shrub. Leaves thick, sub-coriaceous, ovate or ovate-lanceolate, densely pubescent on the lower side, less so on the upper. Flowers small, greenish-yellow, in lateral umbellate cymes. Follicle solitary, oblong or broadly lanceolate with a thick, curved beak; seeds comose.

A common climber on hedges or on small bushy trees or trailing on grounds.

Local name : Nani Dodi.

Uses : Tender shoots and leaves are used as 'Bhaji' by the rural people of Dumas and Hajira.

Flowers and fruits : August - April.

JVJ 81.

4. Pentatropis Wight & Arn.

Pentatropis spiralis (Forsk.) Decaisne, in Ann. Sc. Nat.

(Ser. 2) 9: 327, t. 11. E, 1838; FBI. 4: 19; Bullock, in Kew Bull. 284, 1955; Sant. & Irani, loc. cit. 70; Pavagadh, 141.

Asclepias spiralis Forsk., Fl. Aegypt.-Arab. 49, 1775.

Pentatropis cynanchoides R. Br., in Salt. Voy. Abyss. App. 64, 1814; C. 2: 218.

A slender twiner. Leaves ovate, oblong or elliptic. Flowers greenish-yellow, small; corolla lobes with long, linear tails; corona lobes rounded at the base. Follicles glabrous, lanceolate.

Rare; noted on hedges during rainy season at Dumas and Hajira.

Flowers and fruits : July - December.

Uses : Tender shoots and flowers are used as vegetable.

JVJ 745, 823.

5. Pergularia Linn.

Pergularia daemia (Forsk.) Chiov. Result. Sc. Miss. Somal.

Ital. 1: 115, 1916; Blatter & McCann, in JBNHS. 36: 528, 1933; Santapau & Irani, loc. cit. 74; Pavagadh, 140.

Asclepias daemia Forsk., Fl. Aeg.-Arab. 51, 1775.

Daemia extensa (Jacq.) R. Br., in Mem. Wern. Soc. 1: 50,  
1809; FBI. 4: 21; Wight, Contrib. 59 & Icon. t. 596;  
C. 2: 219.

A perennial twiner with terete stem, woody at the base.  
Leaves ovate, acuminate, deeply cordate, pubescent on lower  
surface. Flowers yellowish white or creamy-yellow, in  
umbellate cymes. Follicles in pairs, reflexed, slightly  
curved, softly echinate all over; seeds comose.

Commonly noted on hedges during monsoon and post-monsoon  
periods.

Local name : Varsha Dodi.

Flowers and fruits : April - December.

JVJ 71, 1955.

# 6. Sarcostemma R. Br. emend. Holm.

Sarcostemma secamone (L.) Bennet, in Ind. For. 95(10):  
692, 1969.

Periploca secamone Linn., Mint. 2: 216, 1771.

P. esculenta Linn. f. Suppl. 168, 1781.

Sarcostemma esculentum (L. f.) Holm, in Ann. Miss. Bot.

Gard. 37: 482, 1950; Backer & Brink, Fl. Java 2:259, 1965.

Oxystelma esculentum (L. f.) R. Br. ex Schult. Syst. Veg.

4: 89, 1820; FBI. 4: 17; C. 2: 216; Gam. 2: 586.

O. secamone (L.) Karst., Dent. Fl. 1031, 1880-1883;

Santapau & Irani, loc. cit. 67.

A slender, glabrous twiner. Leaves thin, narrow, linear-lanceolate, deciduous. Flowers cream or yellow with white-purple patches, in drooping, few-flowered cymes. Follicles glabrous, ovoid-lanceolate, pointed. Seeds many, minute, comose.

Occasional in roadside ditches; always twines on spiny plants like Prosopis juliflora; not common; nor abundant.

Flowers and fruits : August - February.

JVJ 40, 483, 822, 1067.

#### 7. Telosma Coville

Telosma pallida (Roxb.) Craib, in Kew Bull. 418, 1911;

G. 844; Santapau & Irani, loc. cit. 83; Pavagadh, 142.

Asclepias pallida Roxb. Fl., Ind. 2: 48, 1832.

Pergularia pallida Wt. & Arn. in Wight, Contrib. 42, 1834;

FBI. 4: 38; Wt. Icon. t. 585; C. 2: 229.

A slender, twining, pubescent undershrub. Leaves ovate, shortly acuminate, cordate, darker above, pale green beneath. Flowers pale-yellow, in many-flowered, lateral umbellate cymes. Follicles woody, lanceolate.

Rare; noted on hedges.

Local name : Varsha Dodi.

Uses : Flowers are used as vegetable.

Flowers and fruits : August - December.

JVJ 90, 512, 949.

8. Tylophora R. Br.

Tylophora indica (N. Burman) Merrill, Philipp. J. Sci. Bot.

19: 373, 1921; Sant. & Irani, loc. cit. 88; Hassan, 454.

Cynanchum indicum N. Burman, Fl. Ind. 70, 1768.

Asclepias asthmatica L. f. Suppl. 171, 1781.

Tylophora asthmatica (L. f.) Wight & Arn. in Wight, Contrib.

Ind. Bot. 51: 1834; Wt. Icon. t. 1277; C. 2: 228;

Gam. 2: 593.

A perennial twiner. Leaves elliptic-ovate. Flowers greenish-yellow in umbellate to paniculate cymes. Follicles smooth, acuminate.

Seen under cultivation in some private gardens.

Flowers and fruits : November - March.

Uses : The leaves are used to cure some types of asthma.

JVJ 510.

## 74. PERIPLOCACEAE

1. Flowers large, more than 2 cm,

pinkish-purple, showy ..... 1. Cryptostegia

1. Flowers small, less than 1 cm, not showy.. 2. Gymnema

1. Cryptostegia R. Br.

Cryptostegia grandiflora R. Br., in Bot. Reg. 5: t. 435, 1819;

Wt. Icon. t. 832; FBI. 4: 6; C. 2: 245; Gam. 2: 578;  
Bailey, 816; Santapau & Irani, loc. cit. 93; M. 217.

A woody, sub-erect or climbing shrub; branches terete, whip-like, sarmentose. Leaves elliptic-oblong, glabrous. Flowers pinkish-purple, large; coronaa lobes 1-1.2 cm long, each divided into two long, filiform segments. Follicles 3-winged, ovate, glabrous; seeds comose.

Mostly seen in a wild state, especially in hedges; perhaps cultivated near Athava-gate police gate.

Local name : Rubber vel.

Flowers and fruits : December - June.

JVJ 626, 717.

## 2. Gymnema R. Br.

Gymnema sylvestre (Retz.) R. Br. ex Schultes, in Roem. &

Schult. Syst. Veg. 6: 57, 1819; Wt. Icon. t. 349; FBI. 4: 29; C. 2: 224; Gam. 2: 590; Sant. 135; Santapau & Irani, loc. cit. 47.

Periploca sylvestris Retz., Obs. Bot. 2: 15, 1781.

A much-branched, twining shrub. Leaves ovate-elliptic. Flowers small, greenish-yellow in lateral corymbs. Follicles beaked.

Planted in private gardens; not at all wild.

Local name : Madhunashi.

Flowers : March - August.

JVJ 1410.

## 75. NYCTANTHACEAE

### Nyctanthes Linn.

Nyctanthes arbor-tristis Linn., Sp. Pl. 6, 1753; FBI. 3: 603;

C. 2: 176; Gam. 2: 556; Sant. 144, M. 279.

An erect, shrub or small tree with square stems, covered with stiff hairs. Leaves ovate, acute-acuminate, scabrous. Flowers creamy-white; corolla tube orange. Capsule orbicular, compressed, glabrous.

Planted in public and private gardens, and near the temples for its fragrant flowers.

Local name : Parijatak.

Uses : Flowers are made into garlands and used for worship. Orange coloured dye is obtained from corolla tube.

Flowers and fruits : August - January.

JVJ 698.

The taxonomic position of the genus is controversial. The genus is now suggested as a part of the Oleaceae, after a critical numerical evaluation of its taxonomic status by Daniel and Sabnis (unpublished paper).

## 76. SPIGELIACEAE

Cynoctonum J. F. Gmel.

Cynoctonum mitreola (L.) Britton, in Mem. Torrey Bot. Club  
5: 258, 1894; Sant. 158; Sant & Wagh, in BBSI. 5: 106,  
1963; Raizada, in Ind. For. 92(5): 307, 1966.

Ophiorhiza mitreola Linn., Sp. Pl. 150, 1753.

Mitreola oldenlandioides Wall. ex DC., Prodr. 9: 9, 1845;  
FBI. 4: 79; C. 2: 246; Gam. 2: 607.

A small annual. Leaves ovate or ovate-oblong, acuminate.  
Flowers whitish-green. Capsule laterally compressed,  
obcordate, 2-horned.

A rare plant, noted from the sandy river beds near Variav  
and Ved.

Flowers and fruits : August - October.

JVJ 1214.

Plate 60.

## 77. GENTIANACEAE

1. Flowers regular; stigma capitate :

2. Flowers creamy-white; in axillary,  
sessile, clusters; ovary 1-celled.....2. Enicostema

2. Flowers purplish-blue, in terminal,  
branched cymes; ovary 2-celled.....3. Exacum

0  
1  
2  
3  
4  
mm



0  
1  
2  
3  
mm



0  
1  
2  
3  
4  
cm



*Eynoectionum mitreola* (L.) Britton

PLATE - 60

THE MAHARAJA SAYAJIRAO U  
BRITANNIA

1. Flowers irregular; stigma not capitate :

3. Flowers yellow; stigma scarcely lobed.....4. Hoppea

3. Flowers pink; stigma deeply 2-lobed .....1. Canscora

1. Canscora Lamk.

1. Calyx strongly 4-winged .....1. C. concanensis

1. Calyx not winged .....2. C. diffusa

1. Canscora concanensis C. B. Clarke, in FBI. 4: 104, 1885;  
C. 2: 258; Bedi & Sabnis, Indian For. 95(10): 679-680,  
1969.

A small, slender annual; stems obscurely quadrangular.  
Leaves ovate, sessile, 3-nerved. Flowers pink in terminal  
paniculate cymes. Capsule cylindric, seeds many.

A rare plant, collected once on the wet slope of river  
Tapi near Sidh Kutir.

Flowers and fruits : October - November.

JVJ 452.

Plate 61.

2. Canscora diffusa (Vahl) R. Br. Prodr., 451 in Obs. 1810;  
FBI. 4: 103; C. 2: 257; Gam. 2: 617; Sant. 161.

Gentiana diffusa Vahl, Symb. Bot. 3: 47, 1794.

Canscora lawii Wt. Icon. t. 1327, 1848.



PLATE-61 *Canscora concanensis* C.B. Clarke

An erect, branched herb. Leaves elliptic-lanceolate, thin, membranous. Flowers pink-rose. Capsule membranous, narrowly oblong.

Occasionally seen along the elevated river banks of Tapi.  
Flowers and fruits : October - April.

JVJ 202, 1276, 1800, 1812.

## 2. Enicostema Blume (nom. cons.)

Enicostema hyssopifolia (Willd.) Verdoon, in Bothalia 7: 462, 1961; Backer & Bakh., f. Fl. Java 2 : 439, 1965.

Exacum hyssopifolium Willd., Sp. Pl. 1: 640, 1768.

Gentiana verticillata Linn. f. Suppl. 174, 1781 (non Linn. 1759).

Enicostemma littorale Blume, Bijdr., 848, 1826; FBI. 4: 101; C. 2: 255; Gam. 2: 615.

E. verticillatum (L.) Engl. Pflanzenw. Ost. Aft. C. 313, 1895; Engl. & Prantl. Nat. Pfam. 4: 67, f. 31, 1890; M. 223.

An erect or decumbent herb with square stems. Leaves opposite, sessile, linear-lanceolate. Flowers creamy-white. Capsule sub-globose. Seeds minute, brown.

Fairly common during monsoon along the margins of ditches, canals, slope of river bank; often mixed with grasses.

Local name : Kadavi nai.

Flowers and fruits : August - April.

JVJ 30, 776, 925.

### 3. Exacum Linn.

1. Corolla 2 cm. long .....1. E. bicolor

1. Corolla less than 1 cm. long .....2. E. pedunculatum

1. Exacum bicolor Roxb., Fl. Ind. 1: 413, 1820; Wt. Icon. t. 1321; FBI. 4: 96; C. 2: 96; Gam. 2: 614.

An erect herb with quadrangular stems. Leaves ovate or elliptic-lanceolate. Flowers bluish-white, showy. Capsule smooth, ellipsoid.

Occasional on the wet soils of river banks, near Jahangirpura and Aswanikumar.

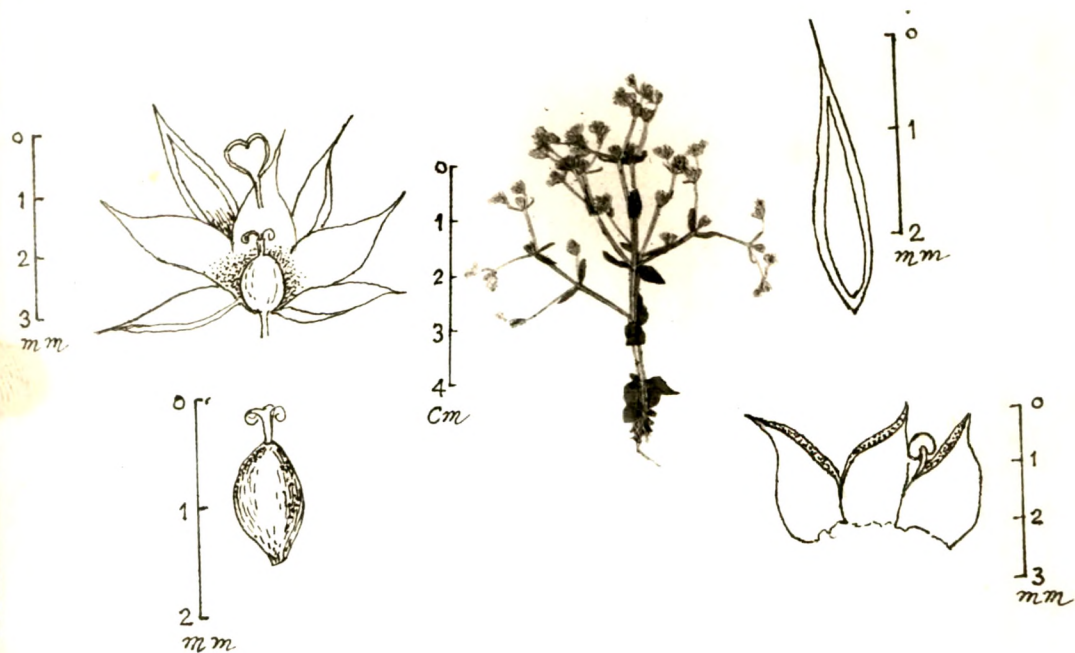
Flowers and fruits : August - October.

JVJ 1858, 2041.

2. Exacum pedunculatum Linn., Sp. Pl. 112, 1753; FBI. 4: 97; Wt. Icon. t. 336; C. 2: 253; Gam. 2: 614.

E. pedunculare Arn. in Ann. Sc. Nat. Ser. 2, 11: 176, 1839; Wt. Icon. t. 336.

An erect, branched, glabrous annual herb with four-angled stems. Leaves elliptic-lanceolate. Flowers bluish-violet, in terminal, much-branched cymes. Capsule globose.



Hoppea dichotoma Willd.

Not common; noted near the margins of nala; also on moist soils of river bed often mixed with grasses.

Flowers and fruits : September - February.

JVJ 1454, 1549.

#### 4. Hoppea Willd.

Hoppea dichotoma Willd., in Ges. Naturf. Fr. Neue Schr. 3:

434, 1801; FBI. 4: 100; C. 2: 256; Gam. 2: 426; Fl.

Dang, 60.

A small, erect, tiny annual herb. Stem quadrangular, winged. Leaves small, ovate-acute. Flowers pale-yellow, small, in lax, dichotomous cymes. Stamens 1 fertile and 3 barren.

A rare plant of soft, muddy margins of ditches and moist muddy, exposed soil of river bed.

Flowers and fruits : October - November.

JVJ 1365, 1550.

Plate 62.

### 78. MENYANTHACEAE

#### Nymphoides Medic.

1. Corolla lobes entire, with a longitudinal crest down the middle; seeds few, large with prominent, glochidiate tubercles...1. N. cristatum

1. Corolla lobes fimbriate, without a longitudinal crest; seeds many, smooth or minutely tuberculate .....2. N. indicum

1. Nymphoides cristatum (Roxb.) O. Kuntze, Rev. Gen. Pl. 429, 1891; Subramanyam, in Aqua. Angios. 24, f. 16; Sant. 162; M. 224.

Menyanthes cristata Roxb., Pl. Cor. 2: 3, t. 105, 1798.

Limnanthemum cristatum Griseb. Gen. & Spec. Gent. 342, 1839; FBI. 4: 131; C. 2: 261; Gam. 2: 620; Sant. 145.

A free-floating hydrophyte. Leaves sub-orbicular, deeply cordate, purplish beneath. Flowers white, in dense clusters at the base of petiole; corolla lobes entire with a longitudinal crest.

Rare; collected from Dhobi talav, Rander.

Flowers and fruits : November - April.

JVJ 2058.

2. Nymphoides indicum (Linn.) O. Kuntze, Rev. Gen. Pl. 429, 1891; Subramanyam, in Aquat. Angios. 24, f. 17, Pl. II; Bailey, 808; Sant. 163.

Menyanthes indica Linn. Sp. Pl. 145, 1753.

Limnanthemum indicum (Linn.) Griseb. emend. Thw. Enum. Pl. Zeyl. 205, 1860; FBI. 4: 131; C. 2: 261; Gam. 2: 621; Sant. 144.

A larger plant than preceding species. Leaves orbicular,

deeply cordate. Flowers white with a yellow centre; corolla fimbriate, cottony, pubescent.

Occasionally in the ponds at Dumas and Hajira.

Flowers and fruits : November - March.

JVJ 1954.

#### 79. POLEMONIACEAE

##### Phlox Linn.

Phlox drummondii Hook., Bot. Mag. t. 3441, 1835; Bailey, Cycl. Hort. 3: 2587, f. 2909 & Man. Cult. Pl. 826.

An erect, branching, glabrous, annual herb. Leaves broad-ovate to oblong-lanceolate. Flowers rose-white, pink or a variety of colours, showy.

Commonly cultivated in many gardens as a seasonal ornamental plant.

Flowers : January - April.

JVJ 951.

#### 80. EHRETIACEAE

##### Cordia Linn.

1. Flowers large, bright scarlet to orange-red .....
3. C. sebestena

1. Flowers small, white :
2. Leaves alternate, broadly ovate,  
elliptic to sub-orbicular; 3-5-nerved  
at the base .....1. C. dichotoma
2. Leaves sub-opposite, oblong to  
oblanceolate, with no distinct,  
basal nerves .....2. C. gharaf

1. Cordia dichotoma Forst. f. Prodr. 18, 1786; Sant. 163;  
M. 227; Pavagadh, 145.

C. obliqua Willd. Phytogr. 4, t. 4, 1794; FBI. 4: 137  
excl. vars.; Gam. 2: 623.

C. myxa auct. plur.; C. 2: 265 (non Linn.).

A medium-sized tree. Leaves broadly ovate to sub-orbicular, glabrous, 3-5-nerved at the base. Flowers white, in lax terminal or axillary cymes. Berry ovoid, greenish-yellow, supported by accrescent, 5-10-lobed calyx.

Often cultivated along the border of fields, also found along the river bank and in hedges.

Local name : Mota gunda.

Uses : Unripe fruits are sold as vegetable and also pickled.

Ripe fruits are eaten.

JVJ 427, 744.

2. Cordia gharaf (Forsk.) Ehrenb. & Asch., in Bitzung. Bericht

Ges. Naturf. Fl. Berl. 46, 1879; Johnston, in  
Journ. Arn. Arb. 37: 297, 1956; Raizada, in Ind.  
For. 92(5): 307, 1966; Kazami, in Journ. Arn. Arb.  
51(2): 140, 1970.

Cornus gharaf Forsk., Fl. Aeg.-Arab. 94, 1775.

Cordia rothii Roem. & Schult. Syst. 4: 798, 1819; FBI. 4:  
138; Wt. Icon. t. 1379; C. 2: 268; Gam. 2: 624; M. 228.

A small tree. Leaves oblong-lanceolate, sub-opposite,  
rounded at the apex, feather nerved. Flowers small, white  
in pedunculate cymes. Drupes orange-yellow, ovoid, 1-seeded.

Occasionally planted near habitation or in the fields.

Local name : Gundi, Nana gunda.

Uses : Fruits are edible.

JVJ 908, 1347.

3. Cordia sebestena Linn., Sp. Pl. 190, 1753; C. 2: 268;  
Gam. 2: 625; Bailey, 839.

A large shrub or small tree. Leaves large, cordate,  
entire or undulate, rough hairy, with conspicuous veins.  
Flowers bright scarlet or orange-red in large, open, terminal  
cymes. Berries white.

Occasionally seen in cultivation in the gardens of  
ERC (Udhana).

Flowers : February - April.

JVJ 1822.

## 81. BORAGINACEAE

- 1. Styles terminal; ovary not vertically lobed :
  - 2. Styles 2; flowers axillary, solitary ... 1. Coldenia
  - 2. Style 1; flowers in scorpioid cymes .... 2. Heliotropium
- 1. Styles inserted between the lobes of the
  - ovary; ovary vertically 4-lobed ..... 3. Trichodesma

1. Coldenia Linn.

Coldenia procumbens Linn. Sp.<sup>pl</sup> Pl. 125, 1753; FBI. 4: 144;

C. 2: 271; Gam. 2: 627; Sant. 164; M. 225; Pavagadh, 147.

A prostrate, hairy herb with radiating branches. Leaves obovate-oblong, crisped on the margins, hairy on both sides, shortly cuspidate at the apex, dirty green, lateral nerves very clear. Flowers pale-yellow, solitary axillary. Drupes pyramidal, separating into 4, 1-seeded pyrenes.

Fairly common on dry beds of ditches and ponds during summer; often seen in association with Chrozophora prostrata, Glinus lotoides, Heliotropium supinum and Cressa cretica.

Local name : Lilo okhrad.

Flowers and fruits : January - June.

JVJ 570, 702, 1672.

2. Heliotropium Linn.

- 1. Fruits 4-beaked; leaves more than 6 cm. long... 1. H. indicum

1. Fruits not beaked; leaves less than 5 cm. long :

2. Anthers free, not connected by their  
connectives :

3. Calyx-lobes short, less than  $\frac{1}{3}$  the  
length of the calyx tube; nutlets  
rounded ..... 5. H. supinum

3. Calyx-lobes long, more than  $\frac{1}{3}$  the  
length of the calyx tube; nutlets  
acute at the apex ..... 3. H. ovalifolium

2. Anthers connate by their produced  
connectives :

4. Erect, sub-erect herbs; inflorescence  
reaching 6 cm. long ..... 4. H. paniculatum

4. Prostrate herbs; inflorescence  
less than 5 cm. long ..... 2. H. marifolium

1. Heliotropium indicum Linn., Sp. Pl. 130, 1753; FBI. 4: 152;  
C. 2: 273; Gam. 2: 630; Sant. 164.

An annual herb, stems and branches more or less densely  
hirsute. Leaves ovate or ovate-oblong. Flowers pale-violet  
to blue-white.

Rare; collected once from the sandy-salty soils near  
Hajira.

Flowers and fruits : February - March.

JVJ 1976, 2017.

2. Heliotropium marifolium Retz., Obs. 2: 8, 1810; FBI. 4:

152; Wt. Icon. t. 1390; C. 2: 280; H. Riedl. Wien.  
in Fl. Iranica 15(48): 16, 1967.

H. marifolium var. wallichii C. B. Clarke in FBI. 4: 152,  
1883; Wt. Icon. t. 1930.

H. scabrum Retz., Obs. 2: 8, 1781; Santapau, Pl. Saur. 25;  
Pavagadh, 148.

A much-branched, decumbent, hairy herb, woody at base.  
Leaves ovate-lanceolate, clothed with appressed hairs. Flowers  
white, in spike-like cymes.

Rare; collected once from a fallow field near Hajira.

Flowers and fruits : August - October.

JVJ 454.

3. Heliotropium ovalifolium Forsk., Fl. Aeg.-Arab. 38, 1775;

FBI. 4: 150; C. 2: 278; Gam. 2: 629; Sant. 165; Shah,  
in Ind. For. 89(4): 289, 1963; Pavagadh, 147-148.

A decumbent, hairy herb. Leaves obovate, spatulate,  
obtuse, clothed with soft hairs. Flowers white, in ebracteate  
pairs of spikes. Nutlets acute at the apex.

Common throughout the area; seen on hard, exposed soils  
of dried ditches; also noted as a weed in field crops.

Flowers and fruits : September - February.

JVJ 295, 601, 1674.

4. Heliotropium paniculatum R. Br. Prodr. 494, 1810; FBI. 4: 151; C. 2: 279.

H. linifolium Lehm. Asperifol. 35, 1818; Wt. Icon. t. 1391.

An erect, branched herb. Leaves linear or narrowly oblong. Flowers in elongate racemes, dull-white. Nutlets globose.

Occasionally occur on sandy, wet soils of sea-shore near Hajira.

Flowers and fruits : September - November.

JVJ 1036.

5. Heliotropium supinum Linn. Sp. Pl. 130, 1753; FBI. 4: 149; Wt. Icon. t. 1387; C. 2: 275; Gam. 2: 629; Sant. 165; M. 225; Pavagadh, 147.

A prostrate or decumbent, hairy herb. Leaves elliptic-ovate or sub-orbicular. Flowers whitish-green in short scorpioid cymes. Fruit ovate to sub-globose, enclosed by the persistent calyx.

A common weed of dry beds of ponds, ditches and puddles; often in association with Chrozophora prostrata, Glinus lotoides, Polygonum plebejum and Coldenia procumbens.

Local name : Hathi Sundha.

Flowers and fruits : December - April.

JVJ 300, 1673, 2019.

3. Trichodesma R. Br. (nom. cons.)

1. Calyx rounded at the base; leaves  
not amplexicaule ..... 2. T. zeylanicum
1. Calyx cordate or hastate at the base;  
leaves amplexicaule ..... 1. T. indicum var.  
amplexicaule

1. Trichodesma indicum var. amplexicaule (Roth) Cooke, Fl.  
Pres. Bombay 2: 215, 1904; Sedgwick, in RBSI. 6: 350,  
t. 11, 1913; Banerjee & Pramanik, B.BSI. 17(4):  
113, 1975.

T. amplexicaule Roth, Nov. Sp. Pl. 104, 1821; FBI. 4:  
153 (pro parte); Gam. 2: 631.

A branched, erect, annual, hispid herb. Leaves variable  
in size; ovate-oblong or lanceolate-oblong, clothed with  
stiff hairs. Flowers pale-violet or blue; cone of the anthers  
exserted. Nutlets 4, broad.

Occasionally seen on waste, fallow lands; also noted in  
Sorghum fields.

Flowers and fruits : August - April.

JVJ 344, 1261.

2. Trichodesma zeylanicum (Burm. f.) R. Br., Prodr. Fl. Nov.  
496, 1810; FBI. 4: 154; C. 2: 282; Gam. 2: 632;  
Banerjee & Pramanik, loc. cit. 120.

Borago zeylanica Burm. f. Fl. Ind. 41, t. 14, f. 2,  
1768; Linn. Mant. 202, 1771.

An erect herb, covered with coarse hairs. Leaves oblong or oblong-lanceolate, densely clothed with hairs. Flowers blue or violet.

More common than previous taxon; occasionally seen on fallow, open land along the path; also noted as a winter weed. Flowers and fruits : August - April.

JVJ 174, 406.

## 82. CONVOLVULACEAE

1. Pollen-grains spinulose :

2. Fruit a thin walled capsule; opening by valves or irregularly dehiscent ..... 5. Ipomoea

2. Fruit indehiscent, coriaceous or fleshy :

3. Fruit mealy or fleshy; corolla funnel-shaped; stigma globose ..... 1. Argyreia

3. Fruit woody; corolla salver-shaped; stigma linear-oblong ..... 9. Rivea

1. Pollen-grains not spinulose :

4. Styles 2, free :

5. Flowers white, solitary or passing into terminal clusters in upper axils..3. Cressa

5. Flowers blue, solitary or in  
few-flowered cymes ..... 4. Evolvulus
4. Style 1, entire or with 2 minute branches :
6. Stigmas elongate :
7. Prostrate or trailing herbs;  
stigmas linear ..... 2. Convolvulus
7. Twining shrub; stigmas elliptic ... 6. Jacquemontia
6. Stigmas globose :
8. Capsule operculately dehiscent;  
stems winged ..... 8. Operculina
8. Capsule opening by 4-valves;  
stems not winged ..... 7. Merremia
1. Argyreia Lour.

Argyreia nervosa (Burm. f. ) Boj. Hort. Maurit. 224, 1837;  
Sant. 171; Van Ooststr. in Fl. Males. Ser. I, 4(4):  
499, 1953.

Convolvulus nervosus Burm. f. Fl. Ind. 48, t. 20, f. 1, 1768.

Argyreia speciosa Sweet, Hort. Brit. 289, 1827; FBI. 4: 185;  
Wt. Icon. t. 851; C. 2: 324; Gam. 2: 637.

A large climber with white, hairy stem. Leaves large,  
ovate, cordate, green above, white-velvety below. Flowers

rose-purple, large; bracts large, foliar. Capsule globose, apiculate.

Planted in gardens for its decorative foliage and flowers.

Local name : Samudrashesh.

Flowers and fruits : August - December.

JVJ 1099.

## 2. Convolvulus

1. Leaves auricled or hastate at the base;

twining or trailing herbs ..... 1. C. arvensis

1. Leaves not auricled or hastate;

prostrate or sub-erect herbs :

2. Flowers 1-3- together, sessile or

sub-sessile in leaf-axils ..... 3. C. microphyllus

2. Flowers few on conspicuous peduncles..2. C. deserti

1. Convolvulus arvensis Linn., Sp. Pl. 153, 1753; FBI. 4: 219;

C. 2: 303; Gam. 2: 650; van Ooststr. loc. cit. 437;

Santapau, in JBNHS. 47: 343, 1947.

Trailing or twining herb. Flowers white or pinkish-white. Capsule globose.

Occasionally seen on moist soils near canals and irrigated fields; often mixed with grasses.

Local name : Chandivevdi.

Flowers and fruits : August - April.

JVJ 253, 1122.

2. Convolvulus deserti Hochst. ex Steud. Nom. ed. 2 (1): 408, 1841 (nom. nud.); Backer & Rendle, in FTA 4(2): 164, 1905; Bhandari, 246.

C. microphyllus Choisy, in DC. Prodr. 9: 403, 1845 (Partim).

A suffruticose herb. Stems slender, terete, sparsely hairy. Leaves linear-oblong to linear-spathulate, sub-sessile. Flowers pink or rosy-white.

Rare; noted on wet, sandy soils near Dumas.

Flowers and fruits : December - March.

JVJ 1952.

3. Convolvulus microphyllus Sieb. ex Spreng. Syst. Veg. 611, 1824; Wt. Icon. t. 1367; FBI. 4: 218; C. 2: 301; Heine, in Kew Bull. 16: 205, 1962.

C. pluricaulis Choisy, Mem. Soc. Phys. Geneve 6: 477, 1833 & in DC. Prodr. 9: 403; FBI. 4: 218; M. 239.

A prostrate or sub-erect herb. Leaves small, linear or oblong. Flowers pinkish-white. Capsule oblong-globose.

Fairly common along the border of fields, along the bank of canals and in open grassy places; also noted as a weed.

Flowers and fruits : August - April.

JVJ 279, 439, 851.

### 3. Cressa Linn.

Cressa cretica Linn. Sp. Pl. 223, 1753; FBI. 4: 225; C. 2: 296; Gam. 2: 647; M. 230.

C. indica Retz. Obs. 4: 24, 1786; Gr. 133.

A small, erect, hairy herb. Leaves ovate, acute, greyish green. Flowers white or pinkish-white. Capsule 4-seeded.

Occasionally seen on saline, sandy soils along the roadsides; also near the margins of ditches; rarely as a weed in cultivated fields.

Local name : Khari.

Flowers and fruits : September - April.

JVJ 716, 1044, 1502.

### 4. Evolvulus Linn.

Evolvulus alsinoides (L.) Linn., Sp. Pl. 392, 1762; FBI. 4: 220; C. 2: 296; Gam. 2: 648; Sant. loc. cit. 340; Sant. 168; Verdc., in Fl. Trop. E. Afri. 19, 1963; Stearn, Taxon 21: 649, 1972.

Convolvulus alsinoides Linn. Sp. Pl. 157, 1753.

A prostrate, branched herb. Leaves lanceolate-ovate, distichous, clothed with white appressed hairs. Flowers

bright blue or white. Capsule thin.

Fairly common in gregarious patches under the shade as well as on open lands, found as a weed and mixed with grasses in the cultivated fields.

Local name : Shankhavali.

Flowers and fruits : July - March.

JVJ 852, 1287.

5. Ipomoea Linn.

1. Aquatic plants ..... 1. I. aquatica

1. Terrestrial plants :

2. Flowers scarlet red :

3. Leaves entire or angular ..... 7. I. hederifolia

3. Leaves pinnately divided ..... 13. I. quamoclit

2. Flowers not scarlet red :

4. Corolla tubular or salver-shaped ;

stems muricate; flowers pale-purple,

below the fruit ..... 8. I. muricata

4. Corolla campanulate or infundibuli-

form; stems and peduncle not as above:

5. Large, straggling shrubs;

flowers pink ..... 6. I. fistulosa

## 5. Twiners, climbers, trailers or prostrate :

## 6. Prostrate, long-trailing, rooting

herbs with edible, tuberous roots ....2. I. batatas

## 6. Twiners, not rooting, roots not

tuberous :

## 7. Leaves entire :

## 8. Outer sepals sagittate or

cordate at the base .....15. I. sinensis

## 8. Outer sepals not as above :

## 9. Flowers in sessile or sub-

sessile axillary heads, pink... 5. I. eriocarpa

## 9. Flowers in pedunculate,

1-few-flowered cymes :

## 10. Corolla whitish-yellow with

purple centre; sepals acute.10. I. obscura

## 10. Corolla white or pale-purple,

without purple centre;

sepals obtuse .....14. I. sepiaria

## 7. Leaves lobed or compound :

11. Leaves bi-lobed .....11. I. pescaprae

11. Leaves more than two-lobed :

12. Leaves digitately lobed; lobes pinnately  
divided into segments .....4. I. coptica
12. Leaves digitately lobed; lobes not divided :
13. Flowers in many-flowered,  
pedunculate heads .....12. I. pes-tigridis
13. Flowers in lax, 1-3-flowered cymes :
14. Leaves 3-lobed :
15. Sepals with long ligulate  
tips ..... 9. I. nil
15. Sepals without long  
ligulate tips .....16. I. triloba
14. Leaves 5-lobed or rarely  
palmately compound ..... 3. I. cairica
1. Ipomoea aquatica Forsk., Fl. Aeg.-Arab. 44, 1775; FBI. 4:  
210; C. 2: 315; Sant. loc. cit. 349; Ooststr. loc. cit.  
473, ff. 47-48.

A trailing, aquatic herb, usually floating on the water surface or sometimes occupying the muddy banks of ponds; rooting at the nodes. Leaves elliptic, ovate-oblong, cordate-hastate. Flowers purple-pink. Capsule ovoid, glabrous.

Very common throughout the area in ponds, ditches along the roadsides, canals and puddles.

Local name : Jal-Bhaji.

Uses : Tender stems and leaves are used as vegetable and sold in market.

Flowers and fruits : August - April.

JVJ 170, 1335, 1961.

2. Ipomoea batatas (L.) Lamk., Tabl. Encycl. 1: 465, 1793;  
FBI. 4: 202; C. 2: 320; Sant. 152; M. 235.

Convolvulus batatas Linn. Sp. Pl. 154, 1753.

A spreading glabrous plant, often rooting at the nodes; tuberous roots white or red. Flowers purple.

Cultivated at Variav.

Local name : Shakkaria.

Flowers : October - January.

3. Ipomoea cairica (L.) Sweet, Hort. Brit. 287, 1827; Gam. 2: 645; Ooststr., loc. cit. 478; M. 238.

Convolvulus cairica Linn., Syst. ed. 10: 922, 1759.

Ipomoea palmata Forsk. fl. Aeg.-Arab. 43, 1775; FBI. 4: 214; C. 2: 319; Sant. 171.

A glabrous twiner. Leaves deeply palmately lobed; lobes lanceolate or elliptic. Flowers purple.

Commonly grown near human habitation and in gardens.

Flowers : All throughout the year.

JVJ 893, 1536.

4. Ipomoea coptica (L.) Roth apud Roem. et Schult. Syst. 4: 208, 1819 et in Nov. Pl. Sp. 110, 1821; Ooststr., loc. cit. 479; M. 237.

Convolvulus copticus Linn., Mant. 2, append. 559, 1771.

Ipomoea dissecta Willd., Phyto-geogr. 5, t. 2, 1794; FBI. 4: 200; C. 2: 318.

A slender, glabrous, trailing or twining annual. Leaves digitately lobed, lobes with irregular pinnatifid segments. Flowers white. Capsules glabrous with persistent calyx.

Rare; on wet sandy soils near Dumas.

Flowers and fruits : August - October.

JVJ 72.

5. Ipomoea eriocarpa R. Br. Prodr. Fl. 484, 1810; FBI. 4: 204; C. 2: 312; Ooststr., loc. cit. 462, ff. 35, 36; Verdc. in Fl. Trop. E. Afr. 91: 1963; M. 235.

A slender, twining herb. Leaves ovate-lanceolate with cordate base. Flowers pinkish. Capsule globose.

Seen on hedges along the roadside.

Flowers and fruits : October - February.

JVJ 494, 1922.

6. Ipomoea fistulosa Mart. ex Choisy, in DC. Prodr. 9: 349; 1845; van Steenis, in Fl. Males. Ser. 1, 4: 599, 1954; Sant. & Patel, Trans. Bose Resch. Inst. 21: 40, 1958.

I. carnea auct. non Jacq. 1760; C. 2: 321; Bor &  
Raizada, 6, f. 5.

A large, erect or ascending shrub with milky juice and fistular stems. Leaves large, ovate, cordate. Flowers pink or flesh-coloured. Capsule ovoid.

Grown in gardens and along roadsides as a hedge plant.  
Flowers and fruits : October - February.

JVJ 1115, 1338.

7. Ipomoea hederifolia Linn., Syst. Nat. ed. 10, 925, 1759;  
Ooststr. Nova Guinea n.s. 6: 28, 1955; Verdc. loc. cit.  
132; Sant. 169.

I. angulata Lamk., Tabl. Encycl. 1: 464, 1791; Ooststr.  
loc. cit. 481, f. 54, 1953.

I. coccinea Clarke, in FBI. 4: 199, 1883 (non Linn.).

Quamoclit coccinea Cooke, Fl. Pres. Bom. 2: 330  
(non Moench.).

A handsome, annual twiner. Stems glabrous, slightly angular. Leaves ovate-cordate, angular or obscurely to deeply 3-lobed. Flowers red with exerted, yellow stamens. Capsule globular.

Occasionally on the hedges along the roadside near Nana Varachha.

Flowers and fruits : August - January.

JVJ 891, 1537.

Plate 23B

8. Ipomoea muricata (L.) Jacq. Hort. Schoenbr. 3: 40, t. 323, 1898 (non Cav. 1799); FBI. 4: 197; Ooststr. loc. cit. 481.

Convolvulus muricatus Linn., Mant. 44, 1767.

Calonyction muricatum G. Don, Gen. Syst. 4: 264, 1837; C. 2: 322; Gam. 2: 646.

A climbing shrub with muricate stems. Leaves ovate, deeply cordate. Flowers bluish-purple to rose-purple. Capsule globose.

Rare; on roadside hedges.

Flowers and fruits : August - November.

JVJ 804, 1539.

9. Ipomoea nil (L.) Roth, Cat. Bot. 1: 36, 1797; Sant. loc. cit. 348; Ooststr. loc. cit. 465; Sant. 170.

Convolvulus nil Linn., Sp. Pl. 219, 1762.

Ipomoea hederacea Clarke, in FBI. 4: 199, 1883; C. 2: 321 (et al plur. auct. non Jacq.); Gam. 2: 644.

A large twiner with hairy stems. Leaves ovate-cordate, generally 3-lobed. Flowers blue or purple with white bands at the back. Capsule sub-globose.

Occasionally observed on the hedges, also seen creeping over the ground.

Flowers and fruits : September - December.

JVJ 379, 1075, 1316.

10. Ipomoea obscura (L.) Ker-Gawler, Bot. Reg. 3: t. 239, 1817; FBI. 4: 209; C. 2: 318; Gam. 2: 643; Ooststr. loc. cit. 471, f. 44; Verdc., loc. cit. 116.

Convolvulus obscurus Linn., Sp. Pl. (ed. 2), 220, 1762.

A slender, annual twiner. Leaves ovate-cordate. Flowers creamy-white. Capsule ellipsoid.

More or less common in all localities.

Flowers and fruits : September - December.

JVJ 234, 1336.

11. Ipomoea pes-caprae (L.) Sweet, Hort. Sub. Lond. 35, 1818; Gam. 2: 644; Sant. loc. cit. 347, (sub. sp. pes-capre); Ooststr., loc. cit. 475, ff. 49, 50; Bhandari, 258.

Convolvulus pescaprae Linn., Sp. Pl. 159, 1753.

Ipomoea biloba Forsk. Fl. Aeg.-Arab. 44, 1775; FBI. 4: 212; C. 2: 317.

A prostrate creeper or twinner. Leaves deeply 2-lobed, sub-orbicular, obovate, glabrous. Flowers rose-purple.

Occasionally cultivated in gardens for its attractive flowers and foliage, extensively planted by the Forest

department as a sand binder near the sea-shores of Hajira and Dumas.

Flowers and fruits : October - January.

JVJ 497, 854.

12. Ipomoea pes-tigridis Linn., Sp. Pl. 162, 1753; Wt. Icon. t. 836; FBI. 4: 204; C. 2: 320; Gam. 2: 644; Sant. loc. cit. 47: 348; Ooststr. loc. cit. 467, f. 40; M. 237.

A twiner . Stem clothed with long, spreading hairs. Leaves palmati-sect, 5-9-lobed. Flowers white, Capsule glabrous; seeds grey.

Occasional on the hedges of fields.

Flowers and fruits : August - December.

JVJ 169, 805, 1077.

13. Ipomoea quamoclit Linn., Sp. Pl. 159, 1753; FBI. 4: 199; Ooststr., loc. cit. 482; M. 234.

Quamoclit vulgaris Choisy, in Mem. Soc. Phys. Geneve 6: 434, 1833; C. 2: 331.

Q. pinnata (Desr.) Boj. Hort. Maurit. 224, 1837; Gam. 2: 645; Bor & Raizada, 3, f. 1.

A handsome, slender twiner. Leaves pinnatisect to form almost filiform segments. Flowers scarlet red.

Planted in gardens for its attractive foliage and flowers.

Flowers : September - March.

JVJ 371, 1090.

14. Ipomoea sepiaria Koenig ex Roxb. Hort. Beng. 14, 1814  
nom. nud. & Fl. Ind. 2: 90, 1824; FBI. 4: 209; Wt.  
 Icon. t. 838; C. 2: 315; Verdc., loc. cit. 117.

A prostrate or twining herb. Leaves ovate, cordate with broad sinus and rounded lobes. Flowers white to bluish-purple or pale-purple. Capsule ovoid..

Occasionally observed on hedges.

Flowers and fruits : August - November.

JVJ 122, 1337.

15. Ipomoea sinensis (Desr.) Choisy, in Mem. Soc. Phys. Geneve  
 6: 459, 1833; Verdc., in Kew Bull. 204, 1958; Raizada,  
 in Indian For. 92(5): 314, 1966.

Convolvulus sinensis Desr., in Lamk. Encycl. 3: 557, 1792.

Ipomoea calycina (Choisy) Clarke, in FBI. 4: 201; C. 2:  
 311 (non Messn. 1868); Gam. 2: 642.

Aniseia calycina Choisy, Convolv. Orient. in Mem. Soc.  
 Phys. Geneve 6: 482, 1834; Wt. Icon. t. 833.

A slender twiner. Leaves ovate, cordate. Flowers white; outer sepals sagittate. Capsule ovoid.

Occasional on hedges along the roadside near Althan.

Flowers and fruits : October - December.

JVJ 1497.

16. Ipomoea triloba Linn., Sp. Pl. 161, 1753; Ooststr.,  
loc. cit. 468, f. 41.

Convolvulus dentatus Blanco, Fl. Filip. ed. 1: 89, 1837,  
non Vahl 1794.

Ipomoea blancoi Choisy, in DC., Prodr. 9: 389, 1845.

A prostrate or twining, glabrous annual. Leaves broadly ovate-orbicular, more or less deeply 3-lobed. Flowers pink, 1-flowered to few-flowered, axillary cymose. Capsule sub-globose, hairy.

A rare plant; noted from the premises of Varachha water works.

Flowers and fruits : November - February.

JVJ 449, 1880.

#### 6. Jacquemontia Choisy

Jacquemontia pentantha (Jacq.) G. Don in Gen. Syst. 4: 283,  
1837; Ooststr., loc. cit. 435; M. 239.

Convolvulus pentanthus Jacq. Coll. 4: 210, 1790.

Jacquemontia caerulea Cooke, in Fl. Bom. Presi. 2: 304,  
1905 (non Choisy in Mem. Soc. Phys. Geneve 6: 476, 1833);  
FBI. 4: 220.

A twiner with slender stem. Leaves ovate-cordate, entire. Flowers blue-showy.

An ornamental plant, grown in gardens.

Local name : Nili Ghanti.

Flowers : August - April.

JVJ 1445

7. Merremia Dennst. ex Endl. (nom. cons.)

1. Leaves simple :

2. Leaves reniform ..... 2. M. gangetica

2. Leaves not reniform :

3. Flowers 1-3 on axillary peduncles;  
leaves linear-oblong to ovate with  
3-toothed apex and dilated at the  
base into toothed auricles ..... 5. M. tridentata

3. Flowers in dense axillary racemose  
cymes; leaves ovate, deeply cordate  
with rounded base ..... 3. M. hederacea

1. Leaves compound :

4. Peduncles glandular in upper parts;  
leaflets margins dentate to serrate.. 4. M. quinquefolia

4. Peduncles hairy, not glandular; leaf-  
let margins entire ..... 1. M. aegyptia

1. Merremia aegyptia (L.) Urban, Symb. Antill. 4: 505, 1910;  
Gam. 2: 652; Ooststr., loc. cit. 448; Sant. loc. cit.  
345.

Ipomoea aegyptia Linn., Sp. Pl. 162, 1753.

I. pentaphylla Jacq. Collect. 2: 297, 1788; FBI. 4: 202.

Merremia pentaphylla Hall. f. in Engler, Bot. Jahrb.  
16: 552, 1893; C. 2: 308.

A twining annual. Stems with long, spreading hairs. Leaves pentafoliolate; leaflets broadly lanceolate. Flowers white to pale-purple. Capsule papery, ovoid.

Common in hedges around Katargam.

Flowers and fruits : August - December.

JVJ 1345.

2. Merremia gangetica (L.) Cufod., Bull. Jard. Bot. Etat 31  
(Suppl.) 743, 1961; Maheshwari, in BBSI. 5(2): 133,  
1963; Raizada, in Indian For. 92(5): 317, 1966.

Convolvulus gangeticus Linn., S in Torner, Cent. II,  
Pl. 9, 1756.

Evolvulus emarginatus Burman, f., in Fl. Ind. 77, t. 30,  
f. 1, 1768.

Merremia emarginata (Burman, f.) Hallier, Bot. Jahrb. 16:  
552, 1839; C. 2: 305; Gam. 2: 652.

Ipomoea reniformis Choisy, in Mem. Soc. Phys. Geneve 6:  
446, 1833; FBI. 4: 206.

A prostrate, branched herb, often rooting at nodes. Leaves reniform with crenate margin. Flowers yellow. Capsule globose.

Fairly common on the wet banks of canals, on open wasteland and on dry beds of pond and river.

Local name : Underkani.

Flowers and fruits : August - April.

JVJ 89, 1468, 1522.

3. Merremia hederacea (Burm. f.) Hall.f. in Engler, Bot.

Jahrb. 18: 118, 1894; Merr. Enum. 3: 361; Ooststr., loc. cit. 441, f. 23 a-b; Sant. loc. cit. 344.

Evolvulus hederaceus Burm. f. Fl. Ind. 77, t. 30, f. 2, 1768.

Ipomoea chryseides Ker-Gawl., in Bot. Reg. t. 270, 1818; FBI. 4: 206; Wt. Icon. t. 157.

Merremia chryseides (Ker-Gawl.) Hall.f. in Engler, Bot.

Jahrb. 16: 552, 1893; C. 2: 307; Gam. 2: 652.

A twining herb with angular stems. Leaves ovate, broadly cordate at the base. Flowers yellow. Capsule broadly ovoid.

Fairly common on the hedges along the way to Singanpor.

Flowers and fruits : October - January.

JVJ 1510.

4. Merremia quinquefolia (L.) Hall. f. in Engler, Bot. Jahrb.

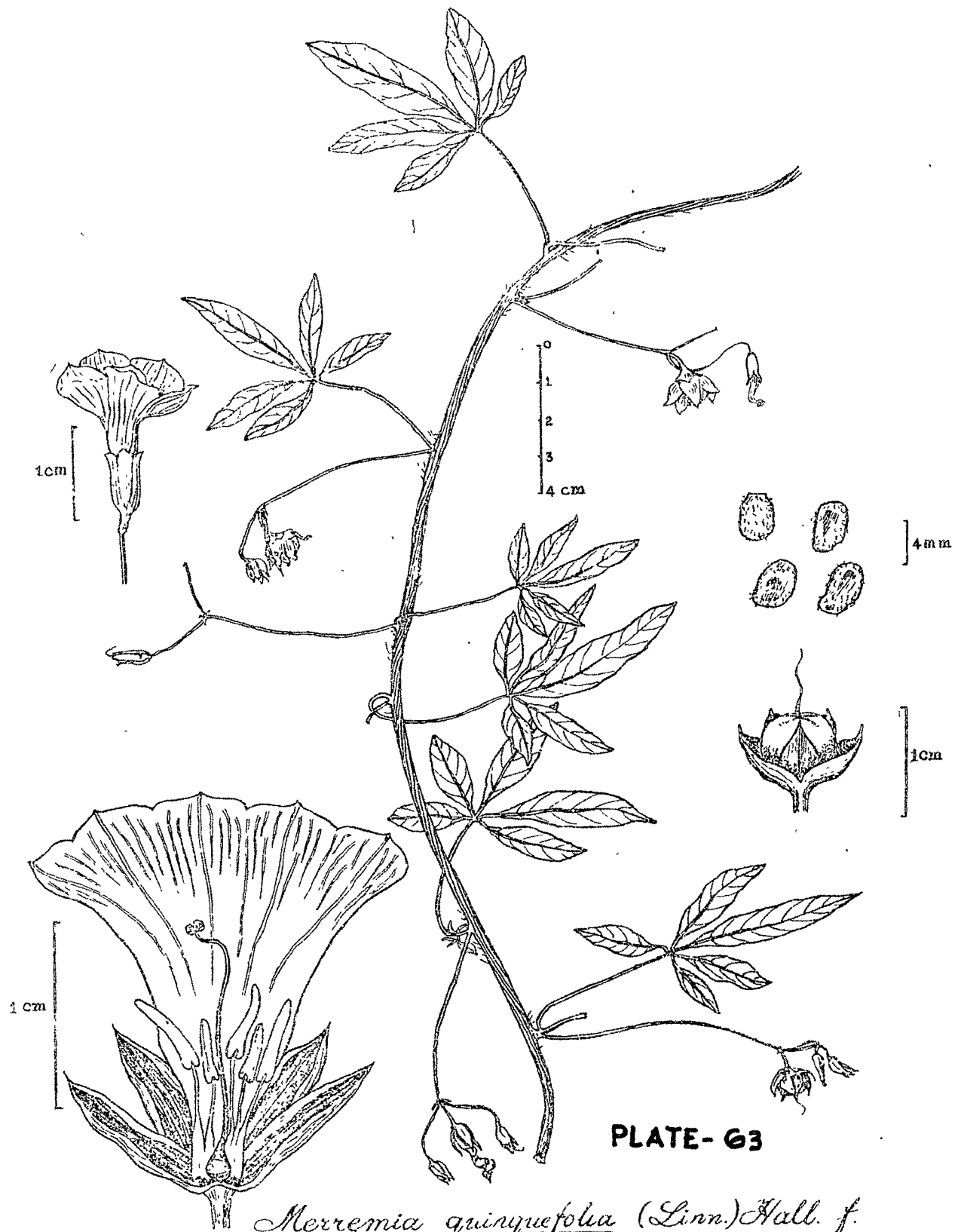


PLATE- 63

*Merremia quinquefolia* (Linn.) Hall. f.

16: 552, 1893; Ooststr. loc. cit. 446, f. 28; Sant.  
& Patel, in JBNHS. 53(2): 215, f. 2, 1955.

Ipomoea quinquefolia Linn., Sp. Pl. 162, 1753.

Convolvulus quinquefolius Linn., Syst. ed. 10, 923, 1759.

A slender, twining herb. Leaves palmately compound, leaflets 5, oblong-lanceolate, serrate. Flowers creamy-white. Capsule globose.

A rare plant, found on hedges near cotton research farm and around Dumas.

Flowers and fruits : August - January.

JVJ 803, 1811. Plate 63.

5. Merremia tridentata (L.) Hallier, Bot. Jahrb. 16: 552, 1893;

C. 2: 306; Ooststr. loc. cit. 445; Verdc., loc. cit. 51, t. 14.

Convolvulus tridentatus Linn., Sp. Pl. 157, 1753.

A small, trailing herb. Leaves linear-oblong, obtuse, truncate or emarginate at the apex and dilated at the base into toothed auricles. Flowers white or pale yellow. Capsules globose.

A rare plant, collected near hedges at Nana Varachha.

Flowers and fruits : August - October.

JVJ 889.

8. Operculina Silva Manso

Operculina turpethum (L.) Silva Manso, Enum. Subst. Bras.

16: 1836; Hall. f., in Engl. Bot. Jahrb. 18: 120,  
1894; C. 2: 309; Gam. 2: 653; Ooststr., loc. cit. 456,  
f. 32; M. 231.

Convolvulus turpethum Linn., Sp. Pl. 155, 1753.

Ipomoea turpethum R. Br. Prodr. 485, 1810; FBI. 4: 212.

A perennial twiner with twisted, angular, winged stems. Leaves ovate, cordate or truncate at base. Flowers pinkish-white. Capsule globose, enclosed in the persistent papery calyx.

Frequently seen on wet, grassy soils near Variav; on the wet bank of canals. Fairly common along the sides of railway track between Udhana and Bhestan.

Flowers and fruits; August - March.

JVJ 1232, 1340.

9. Rivea Choisy

Rivea hypocrateriformis (Desr.) Choisy, Mem. Soc. Phys. Geneve

6: 408, 1834; FBI. 4: 184; C. 2: 323; Gam. 2: 635.

Convolvulus hypocrateriformis Desr., in Lam. Encycl. 3:

561, 1792.

A stout twiner with silky, white, appressed hairs. Leaves

orbicular, cordate, with a pair of purplish glands at the base of lamina. Flowers white, scented. Fruits ovoid.

A rare plant, collected once near BRC Compound, Udhana.

Flowers and fruits : October - December.

JVJ 1449.

### 83. CUSCUTACEAE

#### Cuscuta Linn.

1. Style 1; Stigma conical .....3. C. reflexa

1. Styles 2; stigmas globose, peltate :

2. Scales 1.8 mm. long, oblong, fimbriate

only on the upper half .....1. C. chinensis  
var. chinensis

2. Scales 1.5 mm. long, spatulate,

truncate or rarely emarginate,

fimbriate from the base .....2. C. chinensis  
var. ciliaris

1. Cuscuta chinensis Lamk., Encycl. Method. 2: 229, 1786,

var. chinensis; FBI. 4: 226; Wt. Icon. t. 1373;

C. 2: 293; Gam. 2: 634; Yuncker, 209, f. 80 A-G, 1932;

Sant. & Patel, in JBNHS. 54(3): 710, f.c. 1957.

C. hyalina Wt. Icon. t. 1372, 1848.

A yellow, leafless total parasite. Flowers waxy-white,

corolla urceolate; calyx lobes overlapping, distinctly carinate, infra-staminal scales reaching upto the filaments.

Abundant on the hedges, observed as a parasite on a large number of hosts such as Medicago sativa, Lawsonia inermis, Zizyphus mauritiana.

Local name : Amarvel.                      English name : Dodder.

Flowers and fruits : August - April.

JVJ 1583, 2016.

2. Cuscuta chinensis Lamk. var. ciliaris Engelm. in Trans.

Acad. Sci. St. Louis 1: 480, 1859; Yuncker 210, 1932;

Sant. & Patel, loc. cit. 711, f. c. 4b.

This variety is quite distinct from the typical species; its flowers are slightly longer than the species; the filaments are shorter than the anthers; the infrastaminal scales are broadened upwards, truncate, rarely emarginate, styles somewhat thicker.

A wiry total parasite; noted on Triumfetta rotundifolia, Clitoria ternatea and Lawsonia inermis.

Flowers and fruits : August - April.

JVJ 892, 1806.

3. Cuscuta reflexa Roxb., Pl. Cor. 2: 3, t. 104, 1798; FBI.

4: 225; Wt. Icon. t. 1373; C. 2: 292; Gam. 2: 654;

Yuncker, 259, f. 130. A-F. 1932; Ooststr. Fl. Males

393, f. 2, 1953; Sant. & Patel, loc. cit. 712, f. A.

Flowers pale white, style 1, short, stigma short, thick and fleshy.

Occasionally seen on hedges, noted on Capparis sepiaria, Ipomoea triloba and Clerodendrum inerme.

Flowers and fruits : August - April.

JVJ 1121, 1584.

#### 84. SOLANACEAE

1. Fruits berry :

2. Stamens 5; all fertile, not didynamous :

3. Calyx greatly enlarged and enclosing the fruits :

4. Flowers solitary, shortly pedicellate ..7. Physalis

4. Flowers in clusters, almost sessile.....9. Withania

3. Calyx not enclosing the fruits :

5. Anthers connivent round the style :

6. Anthers opening by pores .....8. Solanum

6. Anthers opening longitudinally.....4. Lycopersicon

5. Anthers not connivent round the style:

7. Corolla rotate .....1. Capsicum

7. Corolla tubular .....2. Cestrum

2. Stamens 4; paired, the fifth much  
smaller or rudimentary .....6. Petunia

1. Fruits capsular :

8. Flowers white, solitary, capsule  
rounded, tubercled or spiny .....3. Datura

8. Flowers rosy, in terminal panicles,  
capsule ovoid, smooth .....5. Nicotiana

1. Capsicum Linn.

Capsicum annuum Linn., Sp. Pl. 188, 1753; C. 2: 347; M. 248.

An erect, branched undershrub. Leaves ovate-lanceolate, dark green. Flowers white, drooping, solitary or in fascicles of 2-4. Berries green, becoming red or orange, pungent.

Cultivated on a large scale. The local variety (Surti Marcha) is well known in Gujarat.

Local name : Marcha.

Uses : The green and dried pungent fruits are used as a spice.

Flowers and fruits : Almost round the year.

JVJ 781, 1520.

2. Cestrum Linn.

1. Corolla-lobes acute, erect or spreading-2. C. nocturnum

1. Corolla-lobes blunt, reflexed.....1. C. diurnum

1. Cestrum diurnum Linn., Sp. Pl. 191, 1753; Bailey, 874;

Bor & Raizada, 118, f. 75, Pl. 43.

A branched shrub. Leaves oblong or elliptic. Flowers white, sweet-scented by day; corolla lobes reflexed.

Cultivated in gardens and private premises; not so common as Cestrum nocturnum.

Local name : Divas ni Rani.

Flowers : August - January.

JVJ 598.

2. Cestrum nocturnum Linn., Sp. Pl. 191, 1753; Bailey, 874;

Bor & Raizada, 119, f. 76, Pl. 45; Sant. 176; M. 247.

A glabrous, scandent shrub. Leaves ovate-oblong, membranous. Flowers yellowish-green, sweet scented at night; corolla tube cylindrical with acute, erect or spreading lobes.

Cultivated in many public and private gardens for its fragrant flowers.

Local name : Rat Rani.

Flowers : Almost year round.

JVJ 818.

### 3. Datura Linn.

1. Plants glabrous or nearly so; corolla 5-toothed;

fruits tuberculate or armed with short spines...2. D. metel

1. Plants pubescent; corolla 10-toothed; fruits  
armed with long, weak spines .....1. D. innoxia

1. Datura innoxia Mill. Gard. Dict. (ed. 8) n. 5, 1768;  
Santapau, loc. cit. 659; Sant. 155; M. 243; Pavagadh, 161.

D. metel Sims., in Bot. Mag. t. 1440, 1812; FBI. 4: 243  
(non Linn.).

A branched undershrub. Leaves ovate, acute, oblique at  
base. Flowers white; corolla single, 10-toothed. Capsule armed  
with long weak spines.

Apparently not common like D. metel; noted on waste lands  
of P. T. Science College campus.

Local name : Dhaturu.

Flowers and fruits : October - April.

JVJ 663.

2. Datura metel Linn., Sp. Pl. 179, 1753; FBI. 4: 243; Gam. 2:  
660; Santapau, in JBNHS. 47: 657, 1948; Sant. 174;  
M. 243; Pavagadh, 161.

D. fastuosa Linn. Syst. 2: 932, 1759; FBI. 4: 242;  
Wt. Icon. t. 1396; C. 2: 343.

D. alba Nees, in TLS. 17: 73, 1834; Wt. Icon. t. 852.

D. fastuosa var. alba Clarke, in FBI. 4: 243, 1883.

An erect, branched, nearly glabrous, undershrub with dark  
purple stems. Leaves ovate, acute, oblique at the base. Flowers

dirty white. Capsule subglobose, spiny with persistent reflexed calyx.

More common than the previous species; on wet or dry wastelands.

Local name : Dhaturo.

Flowers and fruits : July - April.

JVJ 551, 663, 780, 1906.

#### 4. Lycopersicon Mill.

Lycopersicon esculentum Mill., Gard. Dict. n. 2, 1768; FBI. 4: 237; C. 2: 345; Sant. 175; M. 247; Terrell, in Taxon 26(1): 129-148, 1977.

L. lycopersicum (Linn.) Airy Shaw, Willis Dict. (ed. 7) 398, 1966; Santapau & Janardhanan, 35, 1966.

Solanum lycopersicum Linn. Sp. Pl. 185, 1753.

An erect, hairy herb. Leaves interruptedly pinnate; leaflets irregularly toothed. Flowers yellow, decurved. Berries red or yellow, pulpy.

Cultivated on a large scale for its edible fruit; occasionally seen as an escape on wet soils.

Local name : Tameta.      English name : Tomato.

Uses : Fruits are used as vegetable.

Flowers and fruits : Round the year except the dry months.

JVJ 607.

5. Nicotiana Linn.

Nicotiana tabacum Linn., Sp. Pl. 180, 1753; FBI. 4: 245;

C. 2: 346; Bailey, 875; Santapau, in JBNHS. 47: 660,  
1948; M. 242; Pavagadh, 162.

An erect, viscid annual, Leaves large, oblong or ovate-lanceolate, coarse. Flowers rosy in terminal panicles.  
Capsule ovate.

Seen in cultivation on fertile, sandy river-beds, near Variav; not seen elsewhere.

Local name : Tamaku.      English name : Tobacco.

Uses : Grown for its leaves which are used in cigars, Bidies, snuff and for chewing.

Flowers and fruits : December - April.

JVJ 462, 1235.

6. Petunia Juss.

Petunia hybrida Hort. ex Vilm. Fl. Pl. Terre. 1: 615; Bailey, Cycl. Hort. 3: 2565, tt. 2880, 2881 and Man. Cult. Pl. 879.

An erect or decumbent annual. Flowers white or in shades of pink to purple. Corolla long, funnel-shaped; capsule 2-celled.

Cultivated in gardens as a seasonal, ornamental plant for its beautiful flowers.

Local name : Priy Darshina.

Flowers and fruits : January - April.

JVJ 612, 1159.

#### 7. Physalis Linn.

1. Stems with purplish streaks; corolla with  
purple spots inside towards the base;  
anthers bluish-white .....1. P. longifolia

1. Stems without purplish streaks; corolla  
greenish yellow without purple spots inside;  
anthers yellow .....2. P. minima

1. Physalis longifolia Nutt. in Trans. Amer. Phil. Soc. 5:  
93, 1837; Dunal, in DC. Prodr. 13: 447, 1852; Sant.  
Shah et Kapadia, in JBNHS 58: 550, 1961; Nair & Nair,  
in BBSI. 6: 70, 1964; Sant. 174.

An erect herb. Stems hollow. Leaves entire, ovate-oblong.  
Flowers pale yellow.

An American weed naturalized at few places, not so  
common as P. minima.

Flowers and fruits : August - October.

JVJ 492, 816.

2. Physalis minima Linn., Sp. Pl. 183, 1753; FBI. 4: 238;  
C. 2: 340; Santapau, in JBNHS. 47: 657, 1948; Sant.  
174; M. 241; Pavagadh, 160.

Physalis pubescens Wight., Ill. t. 166 B, f. 6 (non Linn.).

An erect herb. Leaves ovate, sinuate or toothed. Flowers creamy-white. Berries enveloped in a bladdery calyx.

Occasionally along the bank of canals, near hedges, on wet soils near ditches; often mixed with grasses under the shade of tree.

Local name : Popati.

Uses : Fruits are eaten by the villagers.

Flowers and fruits : August - April.

JVJ 193, 815.

#### 8. Solanum Linn.

1. Plants armed with prickles (Solanum melongena may be armed or unarmed) :

2. Prostrate or ascending herbs with long, straight prickles .....5. S. surattense

2. Erect or trailing, subscandent undershrubs :

3. Leaves exceeding 5 cm. long .....1. S. melongena

3. Leaves not exceeding 5 cm. long .....6. S. trilobatum

1. Plants unarmed :

4. Climbing undershrubs; cultivated .....4. S. seaforthianum

4. Erect herb or undershrubs; not cultivated :

5. Anthers 1.6 to 2.4 mm. long;

style more than 2 mm. long .....2. S. nigrum

5. Anthers 1.3 to 1.4 mm. long;

style less than 2 mm. long .....3. S. roxburghii

1. Solanum melongena Linn., Sp. Pl. 186, 1753; FBI. 4: 235;

Merr. Enum. 3: 427; C. 2: 336; Santapau, loc. cit.

655; Sant. 173; M. 246.

Solanum esculentum Dunal, Hist. Solan. 208, 1813.

An erect or diffuse undershrub, prickly or not. Leaves ovate, lobed. Flowers violet-purple or blue. Berries rounded, oval or elongated light purple, violet, black, rarely white.

Cultivated in various parts of the area for the fruits. The local variety known as 'Surati Ravaiya' is famous in Gujarat.

Local name : Ringana, Ravaiya. English name : Brinjal.

Uses : The fruits are used as vegetable.

JVJ 606, 1245, 1521.

2. Solanum nigrum Linn. Sp. Pl. 186, 1753; FBI. 4: 229;

C. 2: 332; Gam. 2: 657; Santapau, loc. cit. 652;

Sant. 172; M. 245.

Solanum rubrum Mill. Gard. Dict. n. 4, 1768; Wight,

Icon. t. 344.

An erect, branched, herb. Leaves ovate, sinuate or lobed, dark green. Flowers in drooping sub-umbellate, extra-axillary

cymes. Corolla white with yellow or yellow-green central star. Berries globose, shining or dull green, becoming black at maturity. Seeds 30-40 per berry.

A common weed of cultivated and fallow fields, also seen in waste, wet, shaded places.

Local name : Nani piludi.

Flowers and fruits : Almost all the year round.

JVJ 171, 282, 773.

3. Solanum roxburghii Dunal, in DC. Prodr. 13(1): 57, 1852;  
Heiser, Jr. et al. in American Naturalist 99(909):  
472, 1965.

An unarmed, decumbent herb. Leaves deltoid-ovate, truncate at the base, distantly toothed. Flowers 3-4 in sub-umbellate racemose, corolla white with central, yellow-green star; anthers small, 1.3 to 1.4 mm. long, filament pubescent; style less than 2 mm. long, slightly exceeding the anther, pubescent  $\frac{1}{2}$  its length. Berries globose, shining, becoming red or orange on maturity; seeds 25 or less per berry.

Rare; noted once on waste lands near Rander.

Flowers and fruits : August - February.

JVJ 1907.

Solanum nigrum and S. roxburghii have been separated following the computer-based taxonomic analysis by Heiser, Jr.

et al., loc. cit... Probably the two species have so far been lumped under the name Solanum nigrum L. It is therefore, essential that all the Indian material of this complex be properly scrutinised in the light of the work of Heiser, Jr. et al...

4. Solanum seaforthianum Andr., Bot. Rep. 8: t. 504, 1808;  
Bailey, 869; Bor & Raizada, 127, 1954.

A glabrous, climber. Leaves ovate, deeply pinnatifid, lobes ovate-lanceolate. Flowers blue. Berries globose, red.

Occasionally cultivated in gardens for its attractive flowers and foliage.

English name : Potato Creeper.

Flowers and fruits : January - April.

JVJ 1705.

Plate 32A

5. Solanum surattense Burm. f. Fl. Ind. 57, 1768 (excl. Syn. Pluk. & Raj.); Sant. 173; M. 245; Pavagadh, 159.

S. xanthocarpum Schrad. & Wendl. Sert. 1: 8, t. 2, 1795;  
FBI. 4: 236; C. 2: 335; Santapau, loc. cit. 653.

A prostrate, prickly, perennial herb or undershrub. Prickles large, yellow, straight, shining. Leaves ovate, elliptic, pinnately lobed. Flowers deep purple, in extra-axillary cymes; anthers yellow. Berries globose, yellow.

Fairly common along the roadsides, on the slope of river bank, on open wasteland or in fallow fields.

Local name : Bhoy ringani.

Flowers and fruits : Throughout the year but less during monsoon.

JVJ 597, 704, 1962, 2093.

6. Solanum trilobatum Linn. Sp. Pl. 188, 1753; Wt. Icon. t. 854; Gr. 138; D. & G. 175; FBI. 4: 236; C. 2: 337; Santapau, loc. cit. 654.

A trailing or sub-scandent undershrub with many hooked prickles. Leaves small 3-5-lobed. Flowers purple, in extra-axillary racemose cymes; pedicels often prickly. Berries globose, bright red.

Rare; noted along the hedges.

Flowers and fruits : September - December.

JVJ 469, 248.

9. Withania Pauquy (nom. cons.)

Withania somnifera (Linn.) Dunal, in DC. Prodr. 13(1): 453, 1852; FBI. 4: 239; C. 2: 341; Santapau, loc. cit. 657; M. 241.

Physalis somnifera Linn. Sp. Pl. 182, 1753; Wt. Icon.t.8553.

An erect, perennial herb or undershrub. Leaves ovate, entire, oblique at base. Flowers greenish yellow in short

umbellate clusters. Berries enclosed in the inflated calyx.

Rare; few plants were reported from the wastelands of S.V.G. Polytechnic Compound, also seen near Dayalji Ashram; on the way to Katargam.

Local name : Ashwagandha.

Flowers and fruits : September - March.

JVJ 1123, 1843.

#### 85. SCROPHULARIACEAE

##### 1. Plants cultivated :

- 2. Corolla saccate; flowers variously  
coloured ..... 1. Antirrhinum
- 2. Corolla tubular, not saccate; flowers (scar)  
scarlet ..... 8. Russelia

##### 1. Plants wild :

- 3. Corolla 2-lipped, personate and tubular :
- 4. Corolla spurred ..... 4. Kickxia
- 4. Corolla not spurred :
- 5. Stamens 4; staminode 0 :
- 6. Calyx-segments winged ..... 14. Torenia
- 6. Calyx not winged :

- 7. Anther 1-celled :
  - 8. Calyx ribbed; leaves linear.....12. Striga
  - 8. Calyx not ribbed; leaves ovate,  
pinnatifid .....13. Sutera
- 7. Anthers 2-celled :
  - 9. One of the anther cells barren;  
leaves much lobed .....10. Sopubia
  - 9. Both anther cells fertile :
    - 10. Leaves heterophyllous ..... 5. Limnophila
    - 10. Leaves not as above :
      - 11. Anther-loculi separated  
due to bifurcation of the  
connective; flowers yellow..6. Lindenberqia
      - 11. Anther-loculi not separated;  
flowers other than yellow :
        - 12. Bracteoles 2;  
flowers violet .....11. Stemodia
        - 12. Bracteole 0; flowers  
other than violet ..... 7. Lindernia
- 5. Stamens 2; Staminoes 2 :
  - 13. Staminoes inserted in the corolla tube;  
capsule loculicidal, marsh plant ..... 3. Dopatrium

13. Stamnodes inserted on the corolla  
throat; capsule septicidal; plant  
not marshy .....8. Lindernia
3. Corolla not 2-lipped; rotate to subrotate :
14. Stamens 2 .....16. Veronica
14. Stamens 4 :
15. Flowers yellow; leaves alternate...15. Verbascum
15. Flowers other than yellow;  
leaves opposite :
16. Calyx with 5 unequal lobes;  
leaves fleshy, entire; flowers  
pale blue ..... 2. Bacopa
16. Calyx with 4 equal lobes; leaves  
serrate, not fleshy; flowers  
white .....9. Scoparia
1. Antirrhinum Linn.

Antirrhinum majus Linn., Sp. Pl. 617, 1753; C. 2: 382; Pennell,  
Scroph. East. Temp. N. Amer. 317, 1935; Bailey, 895.

A small herb. Leaves lanceolate or oblong-lanceolate.  
Flowers variously coloured.

Grown in gardens during winter.

English name : Snapdragon.

Flowers : January - April.

JVJ 664.

## 2. Bacopa Aub.

Bacopa monnieri (L.) Wetts. in Engl. & Prantl., Pflanzen.

4(3b): 77, 1891 ('monniera'); Pennell, Proc. Acad.

Nat. Sci. Philad. 98: 94, 1946.

Lysimachia monnieri Linn., Cent. Pl. 2: 9, 1756.

Moniera cuneifolia Michaux., Fl. Bor. Am. 2: 22, 1803

(monniera); C. 2: 356; Gam. 2: 669.

A prostrate, succulent herb. Leaves ovate-oblong.

Flowers pale-blue. Capsule globose.

Fairly common on ~~o~~ muddy soils.

Flowers and fruits : August - April.

JVJ 387, 2039.

## 3. Dopatrium Ham. ex Benth.

Dopatrium junceum (Roxb.) Ham. ex Benth., Scroph. Ind. 31,

1835; FBI. 4: 274; C. 2: 363; Santapau, in JBNHS. 49:

35, 1950; Sant. 178; Subramanyam, in Aquat. Angios.

31, 1962.

Gratiola juncea Roxb., Pl. Cor. t. 129, 1800.

An erect, fleshy herb. Radical leaves elliptic-obovate,

cauline leaves ovate-lanceolate. Flowers violet.

A rare plant of moist, muddy soils of river bed near Ved.  
Flowers and fruits : August - October.

JVJ 1271.

4. Kickxia Dumort.

Kickxia ramosissima (Wall.) Janchen in Oest. Bot. Zeitschr.

82: 152, 1933; Pennell. Scrophu. W. Hima. 69, 1943;

Sant. loc. cit. 27.

Linaria ramosissima Wall. Pl. As. Rar. 2: 43, t. 153, 1831;

FBI. 4: 251; C. 2: 353.

Elatinoides ramosissima (Wall.) Wettst. in Pfam. 4(3b):

58, 1891.

A slender, drooping, much-branched herb. Leaves variable, ovate to triangular, hastate. Flowers yellow. Capsule ovoid or sub-globose.

Occasional on the wet slopes of river Tapi near Ved and Nana Varachha.

Local name : Bhint Ghilodi.

Flowers and fruits : October - February.

JVJ 442.

5. Limnophila R. Br. (nom. cons.)

Limnophila indica (L.) Druce, Bot. Exch. Club. Soc. Brit.

Isles 3: 420, 1914. Pennell, loc. cit. 26, 1943;  
 Subramanyam, loc. cit. 30; Sant. 178; Philcox, Kew Bull.  
 24: 115, 1970.

Hottonia indica Linn., Syst. Nat. 919, 1759.

Limnophila gratioloides R. Br. Prodr. 442, 1810; FBI. 4:  
 271, C. 2: 362; Gam. 2: 668.

L. racemosa Benth. Scroph. Ind. 26, 1835; Wt. Icon. t.  
 861; FBI. 4: 271; C. 2: 362; Gam. 2: 668.

A slender, aquatic herb. Upper leaves whorled or opposite,  
 entire with serrate margins and 3-nerved; submerged leaves  
 dissected. Flowers white or pinkish-white; capsule ovoid or  
 subglobose.

Frequently seen in a small pool near Nana Varachha;  
 not common.

Flowers and fruits : August - January.

JVJ 446.

#### 6. Lindenbergia Lehm.

Lindenbergia muraria (Roxb. ex D. Don) P. Bruehl, in Journ.  
 Dept. Bot. Cal. Univ. 2 (Bot.) 27, 1920.

Stemodia muraria Roxb. ex Don, Prodr. Fl. Nep. 89, 1825.

Lindenbergia urticaefolia Lehm., in Link & Otto. Icon. Pl.  
 Rar. Hort. 95, t. 31, 1828; FBI. 4: 262; C. 2: 379;  
 Gam. 2: 665.

L. indica Sant. loc. cit. 45, 1950 & Sant. 330; M. 252.

An erect, densely glandular, hairy herb. Leaves ovate, cuneate, serrate. Flowers yellow. Capsule hairy.

Occasionally seen in the crevices of old temples; on the elevated banks of river Tapi; also in moist, shady places.

Local name : Patharchatti.

Flowers and fruits : August - March.

JVJ 172, 1096.

#### 7. Lindernia Allioni

1. Perfect stamens 4; capsule equalling or shorter than the calyx; flowers axillary, solitary ..... 2. L. crustacea

1. Perfect stamens 2; capsule longer than the calyx :

2. Leaves parallel nerved; staminodes bilobed ..... 4. L. parviflora

2. Leaves penni-nerved; staminodes entire :

3. Leaves sharply, deeply and closely serrate; flowers in lax, terminal racemes ..... 1. L. ciliata

3. Leaves shortly and distantly serrate; flowers in axillary racemes ..... 3. L. oppositifolia

1. Lindernia ciliata (Colsm.) Pennell, Brittonia 2 : 182,  
1936; Mukerjee, in JIBS. 24: 130, 1945; Sant. 180;  
Pavagadh, 166.

Gratiola ciliata Colsm. Prodr. Descr. Grat. 14, 1793.

Bonnaya brachiata Link & Otto, Ic. Pl. Ser. 2: 25, t.  
11, 1820; FBI. 4: 284; C. 2: 369.

A small, diffusely branched herb. Leaves oblong. Flowers pinkish-blue or white. Capsule narrowly oblong, longer than the calyx.

Occasionally seen on the margins of canals, near ditches and on wet soils of fields.

Flowers and fruits : August - October.

JVJ 187, 919, 1155.

2. Lindernia crustacea (L.) F. Muller, Cens. Austr. Pl. 97,  
1882; Mukerjee, loc. cit. 130; Sant. 179; M. 252.

Capraria crustacea Linn., Mant. 87, 1767.

< Vandellia crustacea Benth., Scroph. Ind. 35, 1835; Wt.  
Icon. t., 863; FBI. 4: 279; C. 2: 366; Gam. 2: 673.

A small, diffuse herb. Leaves ovate. Flowers purplish. Capsule ellipsoid-oblong, obtuse.

Common in wet places; on muddy soils of river banks.

Flowers and fruits : August - October.

JVJ 298, 1270.

Plate 64.



*Lindernia crustacea* (L.) F. Muller

3. Lindernia oppositifolia (Retz.) Mukerjee, loc. cit. 134;  
Santapau, et al. in JBNHS. 55: 481, 1958.

Gratiola oppositifolia Retz., Obs. 4: 8, 1786.

Bonnaya oppositifolia Spr. Syst. 1: 41, 1825; FBI. 4:  
286; C. 2: 370.

A small, branched, herb. Leaves linear-oblong. Flowers pinkish-violet. Capsule narrowly oblong.

Observed on wet, sandy soils of river beds and ditches.  
Flowers and fruits : September - December.

JVJ 509, 1269.

4. Lindernia parviflora (Roxb.) Haines, Bot. Bihar & Orissa  
635, 1922; Mukerjee, loc. cit. 132; Sant. 180; Fl.  
Dangs, 67; M. 253.

Gratiola parviflora Roxb., Pl. Cor. 3: 3, t. 203, 1811.

Ilysanthes parviflora (Roxb.) Benth., in DC. Prodr. 10:  
419, 1846; FBI. 4: 283; C. 2: 368; Gam. 2: 675.

A small, branched herb. Leaves ovate-lanceolate to elliptic. Flowers white. Capsule ovoid-oblong, longer than the calyx.

Frequently seen on moist, grassy soils.  
Flowers and fruits : September - December.

JVJ 1097, 1154.

9. Russelia Jacq.

Russelia equisetiformis Schlecht & Cham., in Linnaea 6: 377, 1831; Bailey, 899; Bor & Raizada, 277, Pl. 83.

R. juncea Zucc., in Flora 15(2) Beibl. 99, 1832; C. 2: 382.

An erect or drooping, much-branched undershrub. Leaves whorled; lower linear-lanceolate or ovate, upper small, reduced, scale-like. Flowers scarlet-red, showy.

Grown in the botanical garden of P. T. Science College.

English name : Coral or fountain plant.

Flowers : August - February.

JVJ 1133.

10. Scoparia Linn.

Scoparia dulcis Linn., Sp. Pl. 116, 1753; FBI. 4: 289; C. 2: 383; Gam. 2: 678; Sant. loc. cit. 47; Sant. 165.

An erect herb. Leaves usually whorled, elliptic-ovate, irregularly toothed. Flowers white. Capsule subglobose.

A rare plant, seen on wet-waste places.

Flowers and fruits : September - December.

JVJ 367.

Plate 65.

10. Sopubia Ham. ex Don

Sopubia delphinifolia (Roxb.) G. Don, Gen. Syst. 4: 560, 1837;

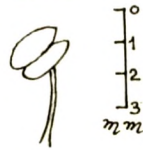
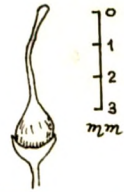
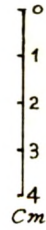
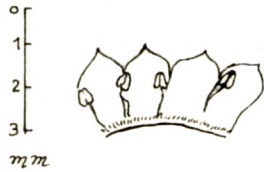
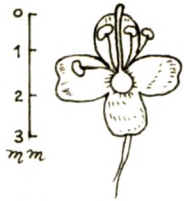


PLATE- 65

*Scoparia dulcis* Linn.

FBI. 4: 302; C. 2: 378; Gam. 2: 682; Sant. loc. cit. 45;  
Sant. 184; Pavagadh, 168.

Gerardia delphinifolia Roxb., Pl. Cor. 1: t. 90, 1795.

A much-branched, root parasite. Leaves pinnatisect, segments filiform. Flowers rose or purple. Capsule oblong-ellipsoid.

Fairly common during monsoon along with grasses in fallow lands and fields.

Flowers and fruits : August - October.

JVJ 173, 990.

#### 11. Stemodia Linn. (nom. cons.)

Stemodia viscosa Roxb., Pl. Cor. 2: 33, t. 163, 1798; Wt. Icon.

t. 1408; FBI. 4: 265; C. 2: 359; Gam, 2: 666; Sant. loc.cit. 32; Sant. 178; Pavagadh, 165.

A much-branched, viscidly hairy. Leaves obovate-lanceolate. Flowers violet-purple. Capsule ovoid-oblong.

Occasional on moist wastelands; also near drying ditches.

Flowers and fruits : October - March.

JVJ 277, 625.

#### 12. Striga Lour.

1. Calyx tube 5-ribbed .....2. S. densiflora

1. Calyx tube 15-ribbed .....1. S. angustifolia

1. Striga angustifolia (Don) Saldanha, in BBSI. 5: 70, 1963;  
Sant. 184.

Buchnera angustifolia Don, Prodr. Fl. Nep. 91, 1825.

Striga euphrasioides sensu Benth. (excl. basionym), Benth.  
in Hook. Comp. Bot. Mag. 1: 364, 1836; FBI. 4: 299;  
C. 2: 376; Gam. 2: 680; Sant., in JBNHS. 49: 44, 1950.

An erect, sparingly branched, herb. Leaves linear, scabrid.  
Flowers white. Capsule oblong-ellipsoid.

Fairly common on open grasslands during monsoon.

Flowers and fruits : August - October.

JVJ 56, 991.

2. Striga densiflora (Benth.) Benth. loc. cit. 1: 363, 1836;

FBI. 4: 299; C. 2: 375; Gam. 2: 680; Saldanha loc.cit. 69.

Buchnera densiflora Benth., Scroph. Ind. 41, 1835.

A small, erect herb. Leaves linear. Flowers white, Capsule  
oblong-obovoid.

Fairly common on open grasslands.

Flowers and fruits : August - October.

JVJ 921, 1856.

### 13. Sutera Roth

Sutera dissecta (Del.) Walp., Repert. 3: 271, 1844; Sant. 177;  
Pavagadh, 164.

Capraria dissecta Del. Fl. Egypte 95, t. 32, f. 2, 1812.

Sutera glandulosa Roth, Nov. Pl. Sp. 291, 1821; Wt.

Icon. t. 856; FBI. 4: 258; C. 2: 355; Gam. 2: 664.

A diffuse or sub-erect, glandular herb. Leaves pinnatifid, ovate, segments toothed and cut. Flowers small, white. Capsule ovoid-oblong.

A rare plant, collected from wet banks of river Tapi near Aswanikumar and Dumas.

Flowers and fruits : July - September.

JVJ 3, 712.

#### 14. Torenia Linn.

Torenia indica Saldanha (J., in BBSI. 8(2) 127, f. 1, 1966. )

T. cordifolia Roxb., Pl. Cor. 2: 32, t. 161, 1768; FBI. 4: 276; C. 2: 364; Gam. 2: 671; Sant. 179.

A small herb. Leaves ovate, sharply serrate. Flowers pale-violet; calyx broadly winged. Capsule oblong, enclosed in the persistent calyx.

A rare plant; collected once on sandy, wet soils of river beds near Ved.

Flowers and fruits : October - September.

JVJ 585.

#### 15. Verbascum Linn.

Verbascum chinense (L.) Santapau, in Fl. Pur. 90, 1958; Sant. 177; M. 249.

Scrophularia chinensis Linn., Mant. 2: 250, 1771.

Celsia coromandeliana Vahl, Symb. 3: 79, 1794; FBI. 4: 251; Wt. Icon. t. 1406; C. 2: 352; Gam. 2: 663.

C. chinensis Druce, in Rep. Bot. Soc. & Exch. Club. 1916, Suppl. 2: 612, 1917.

Verbascum coromandelianum O. Kuntze; Santapau, in JBNHS. 49: 25, 1950.

An erect herb. Leaves lyrate-pinnatifid at the base, becoming gradually sessile and pass on as bracts in the racemes. Flowers yellow. Capsule sub-globose.

A moisture-loving plant, noted in moist soils of river bank and fields.

Local name : Kalhar.

Flowers and fruits : August - April.

JVJ 17, 388.

#### 16. Veronica Linn.

Veronica anagallis-aquatica Linn., Sp. Pl. 12, 1753; FBI. 4: 293; C. 2: 373 (V. anagallis); M. 255.

An erect, succulent herb covered with numerous stalked glands. Leaves variable, oblong-lanceolate or linear-oblong, serrate. Flowers purple or whitish-purple, in slender, lax racemes. Capsule orbicular-oblong.

A rare plant, collected once from the wet-soils of lower belt of river Tapi near Nana Varachha water works.



Flowers and fruits : March - April.

JVJ 298

Plate 66.

## 86. OROBANCHACEAE

### Orobanche Linn.

Orobanche cernua Loefl. var. nepalensis DC., Prodr. 11: 33, 1847; Graham, in Fl. Trop. E. Africa (Orobanchaceae) 6; Santapau & Wagh, in BBSI. 5: 107, 1963; Pavagadh, 169.

O. nicotianae Wight, Ill. 2: 179, t. 158, 1850; FBI.4:326.

O. cernua Loefl. var. desertorum G. Beek. Biblioth. Bot. 19: 142, t. 33(1): 1890; C. 2: 397; Gam. 2: 687.

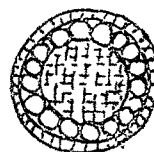
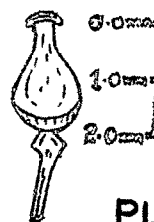
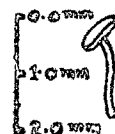
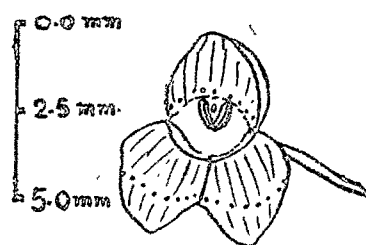
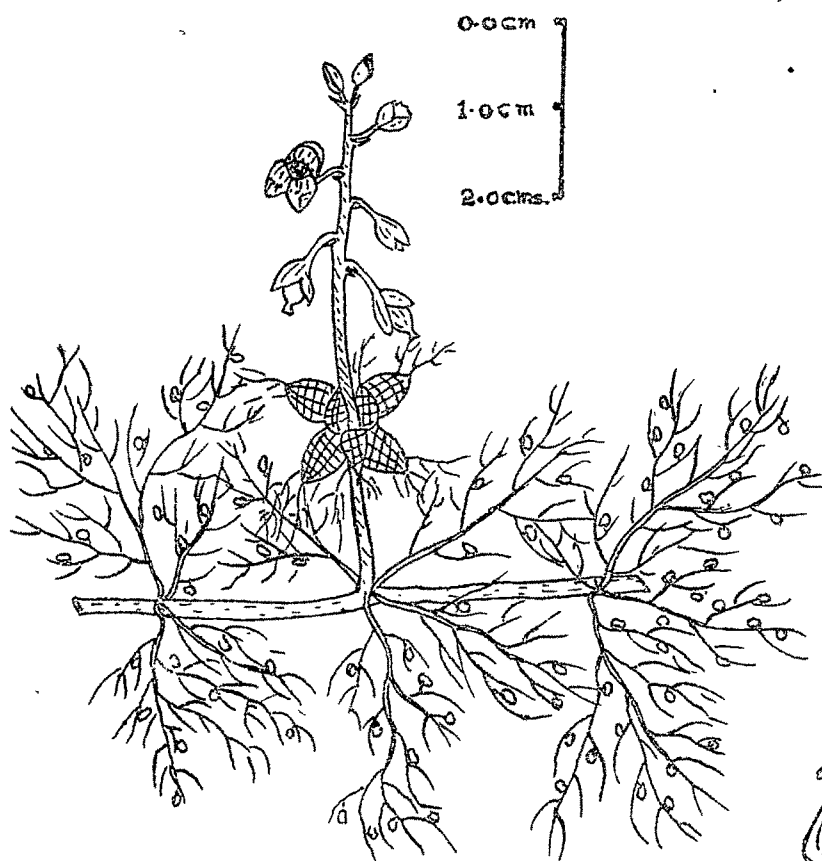
An erect, pale-white, scapigerous root parasite. Leaves scaly, ovate-lanceolate. Flowers whitish-blue in elongated spike. Bracts ovate, acuminate. Capsule ellipsoid, scarcely exceeding the calyx.

A total parasite commonly observed on the roots of Solanum melongena Linn. at Ved, Katargam and Singanpor where they are seen in irrigated fields during winter. It was also noted on roots of Nicotiana tabacum at Variav.

Local name : Vanjiyo

Flowers and fruits : December - April.

JVJ 468, 1246.



Utricularia stellaris Linn. f.

PLATE- 67

## 87. LENTIBULARIACEAE

Utricularia Linn.

Utricularia stellaris L. f. Suppl. 86, 1781; Wt. Icon. t.

1567; FBI. 4: 328; C. 2: 389; Gam. 2: 689; Subramanyam,  
Aquat. Angios. 33. f. 23, 1962; Hassan, 565.

U. inflexa Forsk. var. stellaris (L. f.) P. Taylor, Mitt.

Bot. Staat. Munch. 4: 96, 1961, & Kew Bull. 18:189, 1964.

A submerged, aquatic herb, suspended in water by a whorl of floats about the middle of peduncles. Leaves much dissected with pectinate segments; each pinnae with a small, ovoid bladder near its base. Flowers yellow, in slender, erect, few-flowered racemes. Capsule globose, circumscissile.

Rare in distribution. The insectivorous, submerged aquatic was observed in puddles and ditches along the way to Hajira.

Local name : Arkzver      English name : Bladder wort.

Flowers and fruits : December - March.

JVJ 2000.

Plate 67.

## 88. BIGNONIACEAE

1. Trees :

2. Leaves simple ..... 2. Crescentia

2. Leaves compound :

- 3. Leaves digitately 3-5-foliolate .... 7. Tabebuia
- 3. Leaves pinnately compound :
  - 4. Leaves uni-pinnate :
    - 5. Calyx spathaceous; splitting  
down on one side; flowers  
orange scarlet ..... 6. Spathodea
    - 5. Calyx not as above; flowers  
other than orange scarlet :
      - 6. Fruit indehiscent, large  
woody, gourd-like ..... 4. Kigelia
      - 6. Fruit dehiscent, capsule  
linear ..... 8. Tecoma
  - 4. Leaves 2-3 pinnate :
    - 7. Flowers white with a long  
slender corolla tube ..... 5. Millingtonia
    - 7. Flowers mauve-blue; corolla tube  
not as long as above ..... 3. Jacaranda
- 1. Climbers ..... 1. Bignonia
- 1. Bignonia Linn.

Bignonia magnifica Bull., in Gard. Chron. II 73, 1879; Bor  
& Raizada, 34, f. 27.

A climber. Leaflets 2, opposite, obovate-oblong. Flower large purplish-rosy or purplish white.

A beautiful plant grown in gardens for its attractive flowers.

Flowers : December - February.

JVJ 553.

Bignonia unguis-cati L. (locally known as vaagh nakhii) and horticultural varieties of Bignonia have been cultivated in some gardens.

## 2. Crescentia Linn.

Crescentia cujete Linn., Sp. Pl. 626, 1753; C. 2: 411;

Bailey, 904; Benthall, 348. f.

A small tree. Leaves often fascicled, broadly oblanceolate, obtuse, tapering to base. Flowers yellowish with green, red or purple veins, solitary, pendulous. Fruit a big, globose, amphisarca with a hard rind.

Planted in the compound of a private bungalow at Dumas.

English name : The Calabash tree.

Flowers and fruits : November - April.

JVJ 95.

## 3. Jacaranda Juss.

Jacaranda mimosifolia D. Don, in Bot. Reg. t. 631, 1822;

Sandwith, in Kew Bull. 456, 1953; Blatt. & Mill. Beaut.

Ind. Trees, 93, t. 18; M. 259.

J. ovalifolia R. Br. in Bot. Mag. t. 2327, 1822; Merr.

Enum. 3: 444; Benthall, 341-342, f.

A small tree. Leaves bipinnate. Flowers mauve-blue in panicles.

Few plants observed in the premises of Baroda Rayon Corporation at Udhana. It should be planted in Surat Municipal Corporation gardens as an avenue tree.

English name : Blue Jacaranda.

Flowers : March - April.

JVJ 1743.

#### 4. Kigelia DC.

Kigelia pinnata DC. Prodr. 9: 247, 1845; Benthall, 346-347, f.; Bailey, 905; M. 258.

A medium-sized to large tree. Leaves imparipinnate; leaflets obovate-oblong. Flowers chocolate-red, in lax pendulous racemes. Fruit hanging on cord-like peduncles.

Planted in few gardens at Dumas.

English name : Sausage or Cucumber tree.

Flowers and fruits : January - May.

JVJ 840.

#### 5. Millingtonia Linn. f.

Millingtonia hortensis Linn. f. Suppl. 291, 1781; FBI. 4:

377; C. 2: 409; Gam. 2: 699; Benthall, 333-334;

Blatt. & Mill. l. c. 106, t. 22; M. 259.

An erect, tall, handsome tree with corky bark. Leaves 2 to 3 pinnate, dark green; leaflets ovate or ovate-lanceolate, acuminate, serrate-crenate. Flowers white, fragrant, long, tubular, in terminal panicles.

Planted for its ornamental fragrant, flowers at many places, few plants are seen on the way to Ved.

Local name : Buchnu zad. English name : Indian Cork tree.

Flowers and fruits : October - January.

JVJ 673.

#### 6. Spathodea Beauv.

Spathodea campanulata Beauv. Fl. Owar. 1: 47, 1805; C. 2:

410; Gam. 2: 703; Bailey, 907; Benthall, 338-339, f.

A medium-sized to large tree. Leaves imparipinnate, leaflets ovate-lanceolate or elliptic with 2-3 fleshy glands at the base. Flowers orange-scarlet in racemes; calyx boat-shaped, spathaceous; corolla large, campanulate. Capsule oblong-lanceolate, pointed at both ends.

Grown in gardens for its foliage and flowers; seen planted as a roadside tree, beautiful plantation is seen in the campus of Navyug College.

English name : The fountain tree.

Flowers and fruits : January - April.

JVJ 1142, 1741.

7. Tabebuia Gomez

Tabebuia pentaphylla (L.) Hemsl., in Biol. Centr. Am. Bot.  
2: 495, 1882.

Bignonia pentaphylla Linn., Sp. Pl. 870, 1762.

A medium-sized tree, branching from near the ground. Leaves digitately compound, 3 to 5 foliolate; leaflets ovate-oblong. Flowers rosy-pink, showy, appear when the plant becomes leafless.

A handsome tree, planted in the botanical garden of P.T. Science College. It should be introduced in public gardens also.

Flowers : December - February.

JVJ 2101.

8. Tecoma Juss. emend. H.B. & K.

Tecoma stans (Linn.) H.B. & K. Nov. Gen. & Sp. 3: 144, 1818;  
Benthall, 335-336, f.; Sant. 192; Bor & Raizada, 37,  
f. 28, Pl. 9, 10; M. 258.

Bignonia stans Linn. Sp. Pl. 871, 1753.

Stenolobium stans Seem. in Journ. Bot. 1: 88, 1863;  
C. 2: 410.

A large shrub. Leaves imparipinnate; leaflets 5-11, ovate or oblong-lanceolate, acuminate, serrate. Flowers bright

yellow, in terminal panicles, showy. Capsule linear, brown; seeds thin, winged.

Cultivated in private and public gardens for its decorative leaves and beautiful flowers.

Flowers and fruits : Almost throughout the year but profusely during monsoon.

JVJ 665, 1746.

#### 89. PEDALIACEAE

1. Flowers yellow, fruit a drupe, 4-spinous...1. Pedaliu

1. Flowers white or pale-pink, fruit a capsule, spineless .....2. Sesamum

#### 1. Pedaliu Linn.

Pedaliu murex Linn., Syst. 1123, 1759; FBI. 4: 386; Wt.

Icon. t. 1615; C. 2: 412; Gam. 2: 704; M. 262.

A small, erect, succulent herb, containing mucilage. Leaves ovate-oblong, crenate, lower ones often lobed. Flowers yellowish.

A weed of coastal regions, often seen on waste, fallow, sandy soils.

Local name : Motu gokharu.

Flowers and fruits : August - November.

JVJ 77, 160, 499.

2. Sesamum Linn.

Sesamum indicum Linn., Sp. Pl. 634, 1753; FBI. 4: 387;

C. 2: 413; Gam. 2: 704; Sant. 172; M. 262; Pavagadh, 172.

S. orientale Linn., Sp. Pl. 634, 1753.

An erect, hairy herb. Leaves ovate, or lanceolate; lower leaves deeply divided. Flowers white or pale-pink, with conspicuous glands at the base. Capsule bluntly quadrangular; seeds obovoid-oblong, slightly compressed, black or white.

Occasionally cultivated for the oil-yielding seeds; also observed as an escape from cultivation often mixed with grasses and Alysicarpus sp.

Local name : Tal.                      English name : Sesamum

Uses : Oil from seeds is used for cooking.

Flowers and fruits : August - December.

JVJ 161, 965.

## 90. MARTYNIACEAE

Martynia Linn.

Martynia annua Linn., Sp. Pl. 618, 1753; Gam. 2: 705;

Santapau, Fl. Pur. 95; M. 263.

M. diandra Glox. Obs. Bot. 14, t. 1, 1785; Gr. 127;

D. & G. Suppl. 58; C. 2: 414.

A tall, sturdy undershrub covered with glandular hairs.

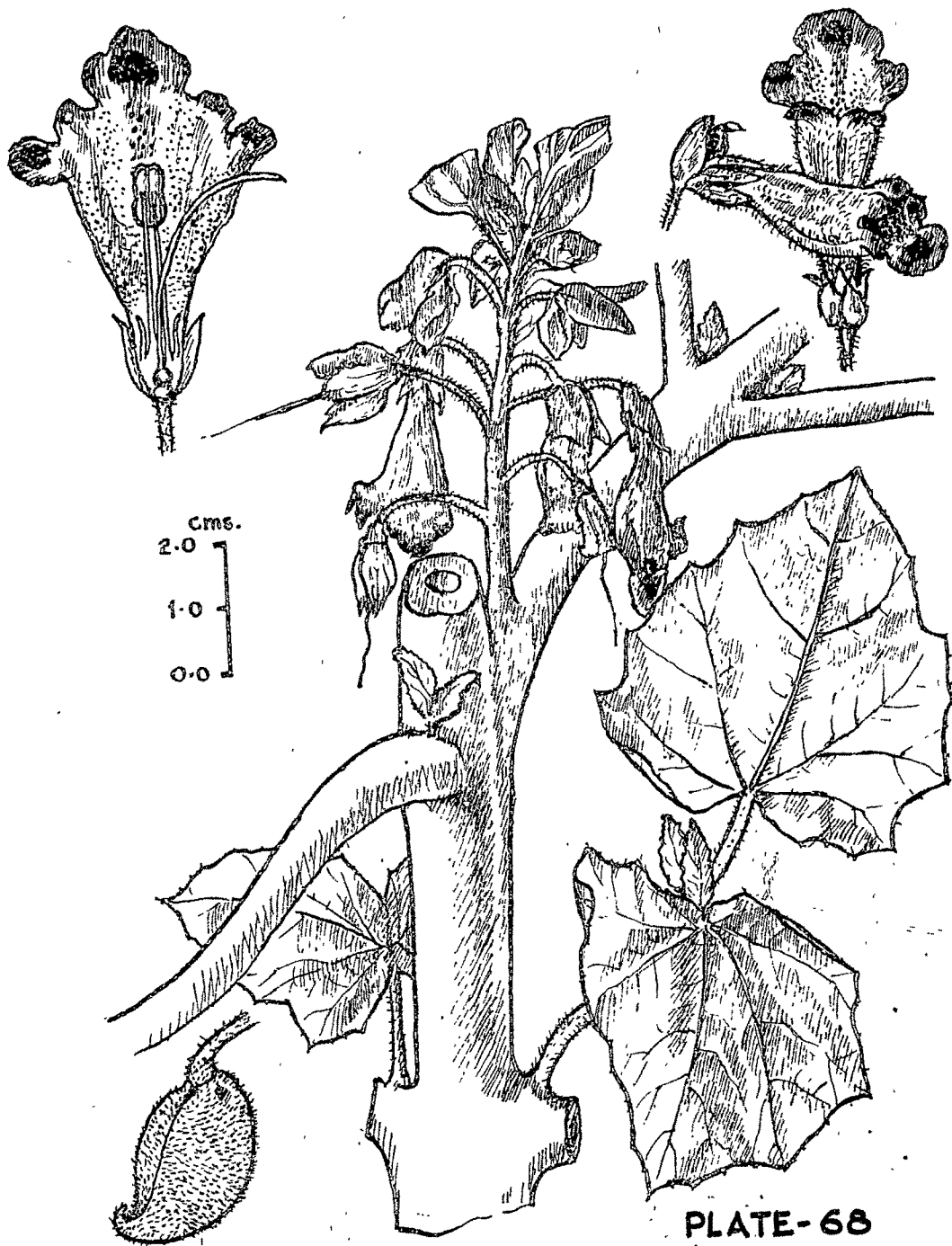


PLATE-68

Martynia annua Linn.

Leaves large, broadly ovate, cordate, sticky, covered with glutinous secretion with irregularly dentate margins. Flowers rose-coloured with purplish dots at the throat. Fruits hard, woody capsule with 2 prominent, curved hooks.

Commonly seen on rubbish heaps near habitations, or near the hedges along roadsides. A beautiful colony of these plants can be seen just opposite Athawa-gate, during monsoon.

Local name : Vichhundo.

Flowers and fruits : September - October.

JVJ 1098, 1156.

Plate 68.

#### 91. THUNBERGIACEAE

##### Thunbergia Retz. (nom.cons.)

Thunbergia grandiflora (Roxb. ex Rottl.) Roxb., Fl. Ind.

3: 34, 1832; Wt. Icon. t. 872; FBI. 4: 392; C. 2: 418;  
Gam. 2: 708; Bor & Raizada, 693, t. 8A; Sant. 194.

Flemingia grandiflora Roxb. ex Rottl., in Ges. Naturf. Fr.  
Neue Schr. 4: 202, 1803.

An extensive climber with pendant branches. Leaves large ovate, thick, uppermost often passing.

Often cultivated for its showy flowers.

Flowers : September - December.

JVJ 399.

## 92. ACANTHACEAE

1. Corolla 1-lipped, upper lip absent;  
lower lip large :
  2. Leaves pinnatifid, toothed; spinous;  
flowers more than 3 cm. in length.....1. Acanthus
  2. Leaves not as above; flowers less  
than 2 cm. in length .....5. Blepharis
1. Corolla 2-lipped or sub-equally 5-lobed :
  3. Herbs almost stemless, scapigerous;  
leaves radical .....11. Elytraria
  3. Plants with stems and leafy throughout :
    4. Calyx 4-lobed :
      5. Calyx lobes unequal; outer calyx-  
segments spiny; corolla  
yellow-orange ..... 4. Barleria
      5. Calyx lobes equal, calyx segments  
not spiny; corolla other than  
yellow :
        6. Plant unarmed; lower anther  
cells with a spur-like  
appendage ..... 16. Justicia

- 6. Plant armed; anther cells
  - without appendage ..... 14. Hygrophila
- 4. Calyx 5-lobed :
- 7. Stamens 2 :
- 8. Anther-cells placed at different
  - levels, not parallel :
- 9. Anther-cells spurred :
  - 10. Bracts with scarious margins;
    - 2 or 4 rowed; placenta
      - separating elastically ..... 19. Runqia
    - 10. Bracts in cylindric or 4-farious
      - placenta not separating
        - elastically ..... 16. Justicia
  - 9. Anther cells not spurred :
    - 11. Flowers in axillary clusters;
      - bracts flat, orbicular ..... 7. Dicliptera
    - 11. Flowers in axillary and terminal
      - spikes or trichotomous cymes or
        - panicles; bracts linear :
    - 12. Corolla shorter than bracts;
      - flowers pink; herb ..... 17. Peristrophe
    - 12. Corolla longer than bracts;
      - flowers white; shrub ..... 2. Adhatoda

## 8. Anther cells parallel :

13. Flowers subtended by cladodes ..... 6. Bremekampia

## 13. Flowers not subtended by cladodes :

14. Inflorescence a capituliform

compound spike, surrounded by

4 large, ovate bracts ..... 12. Gantelbua

## 14. Inflorescence not capituliform :

15. Flowers pinkish-white;

anthers bearded ..... 15. Indonessiella

15. Flowers bluish-green; anthers

not bearded ..... 10. Ecbolium

## 7. Stamens 4 :

16. Anther-cells mucronate or spurred

at base ..... 9. Dyschoriste

## 16. Anther-cells entire :

17. Flowers axillary solitary or 2-3

together or in lax axillary cymes :

18. Prostrate; leaves sparsely hairy;

capsule pubescent; flowers 2-3

together ..... 8. Dipteracanthus

18. Erect; leaves not hairy, capsule not

pubescent; flowers in lax, axillary cymes.. 18. Ruellia

17. Flowers axillary or terminal spiciform  
racemes or spikes :

19. Flowers spiciform racemes;

ovules 2 ..... 3. Asystasia

19. Flowers in capitate spikes;

ovules more than 2 ..... 13. Hemigraphis

1. Acanthus Linn.

Acanthus ilicifolius Linn., Sp. Pl. 639, 1753; Wt. Icon. t.  
459; FBI. 4: 481; C. 2: 427; Gam. 2: 712.

An erect, branched undershrub or shrub. Leaves elliptic-oblong with sharp spinous teeth. Flowers large, pinkish-blue. Capsule oblong.

Fairly common along the coast of river Mindhola.

Flowers and fruits : February - April.

JVJ 2067.

Plate 69.

2. Adhatoda Miller

Adhatoda zeylanica Medic., Hist. & Commentat. Acad. Elect.  
Sci. Theod. Palat. 6: 393, 1790; Hassan, 540.

Justicia adhatoda Linn., Sp. Pl. 15; 1753; Adams, Fl. Pl.  
Jamaica 690, 1972.

Adhatoda vasica Nees, in Wall., Pl. As. Rar. 3, 103, 1832;

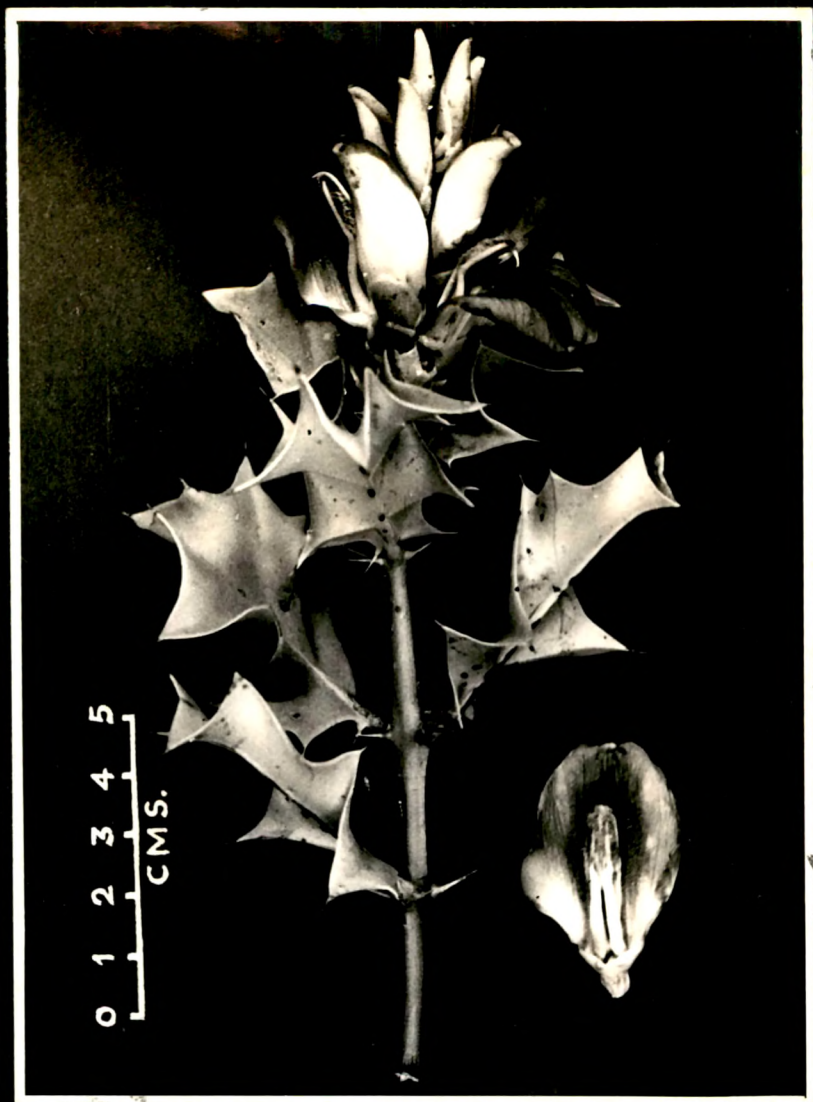


PLATE-69

FBI. 4: 540; C. 2: 492; Gam. 2: 758; Sant. Bot. Mem.  
Univ. Bomb. 2, 92, 1951; Sant. 210.

A shrub. Leaves large, lanceolate. Flowers white.  
Capsule clavate, subacute.

Fairly common throughout the area, planted in the  
gardens as a hedge plant, also seen near habitation.

Local name : Ardusi.

Flowers and fruits : October - April.

JVJ 624, 1542.

### 3. Asystasia Blume

Asystasia gangetica (L.) T. Anders., in Thw. Enum. 235, 1860;  
Gam. 2: 744; Sant. 181.

Justicia gangetica Linn., Amoen. Acad. 4: 299, 1759.

Asystasia coromandeliana Wight ex Nees, in Wall. Pl. As.  
Rar. 3: 89, 1832; Nees in DC. Prodr. 165; Wt. Icon. t.  
1506; FBI. 4: 483; C. 2: 466.

An erect annual herb. Leaves ovate, acute. Flowers  
white, in one sided racemes. Capsule hairy.

Probably cultivated but noted as an escape near  
Chaupati at Dumas.

Flowers and fruits : September - December.

JVJ 1885.

4. Barleria Linn.

Barleria prionitis Linn., Sp. Pl. 636, 1753; Wt. Icon. t. 452; FBI. 4: 482; C. 2: 457; Sant. 201; M. 274.

An erect, armed undershrub. Leaves ovate-elliptic, acicular spines in the axil. Flowers orange-yellow; calyx lobes spiny. Capsule black.

Occasionally seen as an undergrowth of hedges on the way to Althan and Ved; also grown in gardens.

Local name : Kantaro aseria.

Flowers and fruits : October - March.

JVJ 1496.

5. Blepharis Juss.

Blepharis maderaspatensis (L.) Roth, Nov. Pl. Sp. 320, 1821; Sant. Bot. Mem. Univ. Bomb. 2: 15, 1951; M. 265; Pavagadh, 174.

Acanthus maderaspatensis Linn., Sp. Pl. 639, 1753.

Blepharis boerhaviifolia Pers., Syn. Pl. 2: 1806; Wt. Icon. t. 458; FBI. 4: 478; C. 2: 424; Gam. 2: 712.

A prostrate herb with diffuse slender branches. Leaves whorled, oblong-lanceolate. Flowers blue or bluish-white. Capsule compressed, 2-seeded.

Occasionally seen along the slope of river banks and near hedges.

Flowers and fruits : October - April.

JVJ 678, 1469.

6. Bremekampia Sreemadhavan

Bremekampia neilgherryensis (Wight) Sreem., Bull. Bot. Surv.

India 6: 323, 1965; Hassan, 546.

Haplanthus neilgherryensis Wt. Icon. t. 1556, 1850; Gam. 2: 737; Sant. 178.

H. tentaculatus var. neilgherryensis Clarke, in FBI. 4:507.

H. tentaculatus Nees in DC., Prodr. 11: 513, 1847, pro parte; C. 2: 453.

A herb. Leaves ovate, acute, membranous; cladodes densely villous. Flowers pale-blue to whitish blue. Capsule oblong.

Occasionally seen as an undergrowth of hedges.

Flowers and fruits : December - April.

JVJ 1853, 1963.

7. Dicliptera Juss. (nom. cons.)

Dicliptera verticillata (Forsk.) Christens, in Dansk. Bot.

Arkiv. 4(3): 11, 1922; Sant. 207.

Dianthera verticillata Forsk. Fl. Aeg.-Arab. 9, 1775.

Dicliptera micranthes Nees, in Wall. Pl. As. Rar. 3: 112, 1832; FBI. 4: 553; C. 2: 481.

An erect, branched herb. Leaves ovate or elliptic. Flowers white in axillary clusters. Capsule ellipsoid.

Frequently seen on moist, grassy soils under the shade of a tree within the premises of Varachha Municipal water works.

Flowers and fruits : September - November.

JVJ 1114, 1505.

8. Dipteracanthus Nees emend. Bremek.

Dipteracanthus prostratus (Poir.) Nees, in Wall. Pl. As. Rar.

3: 81, 1832; Sant. Bot. Mem. Univ. Bomb. 2: 24, 1951 & in JBNHS. 51: 352, 1953; Sant. 196; M. 273.

Ruellia prostrata Poir., in Lamk. Encycl. 6: 349, 1804; FBI. 4: 411.

R. prostrata var. dejecta Clarke, in FBI. 4: 412; 1884; C. 2: 431.

A prostrate or straggling, branched herb. Leaves elliptic-obovate to oblanceolate. Flowers pale-blue to pale-violet. Capsule linear-long, pubescent.

It is seen growing under the hedges.

Flowers and fruits : October - February.

JVJ 1142, 1964.

9. Dyschoriste Nees

Dyschoriste erecta (Burman.) Kuntze, Rev. Gen. Pl. 485, 1891;

Sant. loc. cit. 2: 31.

Ruellia erecta Burman, Fl. Ind. 135, t. 41, f. 3, 1768.

Dyschoriste depressa Nees, in Wall., Pl. As. Rar. 3: 81,  
1832; C. 2: 437; Gam. 2: 718.

A prostrate to sub-erect herb. Leaves ovate-oblong or elliptic-obovate. Flowers pinkish-white to pale-blue. Capsule oblong.

A rare plant, collected once on moist soils under the shade of a tree near Ved.

Flowers and fruits : October - December.

JVJ 1313.

#### 10. Ecbolium Kurz.

Ecbolium viride (Forsk.) Alston, in Trim. Hand. Fl. Ceyl.  
6: 229, 1931; Sant. 208.

Justicia viridis Forsk. Fl. Aeg.-Arab. 5, 1775.

Ecbolium linneanum Kurz, in JASB. 2: 75, 1871.

var. latevirens.

E. linneanum var. latevirens Clarke, in FBI. 4: 545;  
C. 2: 484; Gam. 2: 752; Sant. in RBSI 16(1): 185, 1960.

An erect herb or undershrub. Leaves elliptic-lanceolate. Flowers bluish-green, showy.

Occasionally seen in cultivation in some gardens, as an ornamental.

Flowers : August - October.

JVJ 400.

11. Elytraria Michaux (nom. cons.)

Elytraria acaulis (L. f.) Lindau, in Engl. & Prantl. 1: 304, 1897; Gam. 2: 709; Sant. Bot. Mem. Univ. Bomb. 2: 11, 1951 & JBNHS. 51: 350, 1953; M. 265.

Justicia acaulis Linn. f. Suppl. 84, 1781; Roxb. Pl. Cor. 2: t. 127, 1897.

Tubiflora acaulis O. Kuntze, Rev. Pl. 500, 1891; C.2: 420.

A small, scapigerous herb. Leaves radical, obovate spathulate, crenate. Flowers white, in spike on long bracteate scapes. Capsule ovoid.

Observed on wastelands near hedges.

Flowers and fruits : February - April.

JVJ 629.

12. Gantelbua Bremek.

Gantelbua urens (Heyne ex Roth) Bremek., in Mat. Mon. Strob. 148, 1944; Sant. loc. cit. 28; Fl. Dangs, 73.

Ruellia urens Heyne ex Roth, Nov. Pl. Sp. 302, 1821.

Hemigraphis dura T. Anders, in Journ. Linn. Soc. 9: 461, 1876; FBI. 4: 422; C. 2: 433; Gam. 2: 715.

A procumbent, bristly herb. Leaves oblong-hispid with a

short petiole. Flowers light blue. Capsule linear-oblong.

Occasionally seen at the bottom of hedges, also seen along the sides of railway track and on hard exposed soils of dried ditches.

Flowers and fruits : October - March (seen in flowering upto late May or even June).

JVJ 243, 1566.

### 13. Hemigraphis Nees

Hemigraphis latebrosa (Heyne ex Roth) Nees var. heyneana

Bremek., in Mat. Strob. 139, 1944; Sant. loc. cit. 26; Sant. 196.

H. latebrosa (Heyne ex Roth) Nees, in DC. Prodr. 11: 723, 1847; Wt. Icon. t. 1504; FBI. 4: 423; C. 2: 434; Gam. 2: 715.

Ruellia latebrosa Heyne ex Roth, Nov. Pl. Sp. 307, 1821.

An erect or sub-erect hairy herb. Leaves ovate, crenate-serrate. Flowers purplish-white or blue. Capsule ellipsoid or sub-orbicular.

Occasionally seen along the elevated river banks near hedges, especially under the shade of a tree.

Flowers and fruits : August - February.

JVJ 588, 772, 1884.

14. Hygrophila R. Br.

Hygrophila auriculata (Schum.) Heine, Kew Bull. 16: 172,  
1962; Sant. 194; Raizada, in Ind. For. 92(5):312, 1966.

Barleria auriculata Schum. in Schumach. & Thonn. Beskr.  
Guin. Pl. 285, 1827.

Asteracantha longifolia (L.) Nees, in Wall. Pl. As. Rar.  
3: 40, 1832; Wt. Icon. t. 449; C. 2: 428; M. 267.

Hygrophila spinosa Anders. in Thwait. Enum. 225, 1860;  
FBI. 4: 408.

An erect, stout herb. Leaves whorled, sparsely hispid,  
lanceolate, with sharp yellow, straight spines. Flowers  
purplish-blue. Capsule linear-oblong.

A gregarious marsh-loving plant, found throught the area.  
Flowers and fruits : October - March.

JVJ 1137.

15. Indonessiella Sreemadhavan

Indonessiella echioides (L.) Sreem., in Phytologia, 16:  
466, 1968.

Justicia echioides Linn., Sp. Pl. 16, 1753; Roxb. Fl.  
Ind. 1: 118, 1832.

Andrographis echioides (L.) Nees, in Wall. Pl. As. Rar.  
3: 117, 1832; FBI. 4: 505; C. 2: 451; Gam. 2: 736;  
Sant. loc. cit. 51; M. 268.

An erect annual herb, clothed with spreading hairs. Leaves linear-oblong. Flowers whitish, dotted with rose-purple spots. Capsule elliptic-lanceolate.

Occasionally growing under the shade of hedges.

Flowers and fruits : October - January.

JVJ 587, 1466.

# 16. Justicia Linn.

1. Calyx 5-partite; undershrub .....1. J. gendarussa

1. Calyx 4-partite, erect or prostrate herbs :

2. Leaves ovate-elliptic, upto 5 cm. long;

Sepals aristate and scarious, 1)

bracteoles with bulbous-based hairs..2. J. neesii

2. Leaves ovate or oblong, upto 3 cm.

long; sepals not as above; hairs on

bracteoles jointed .....3. J. simplex

1. Justicia gendarussa Burm., Fl. Ind. 10, 1768; FBI. 4: 532;

C. 2: 492; Gam. 2: 755; M. 270.

Gendarussa vulgaris Nees, in Wall. Pl. As. Rar. 3:

104, 1832 & in DC. Prodr. 11: 410, 1847; Wt.

Icon. t. 468.

An undershrub. Leaves linear-lanceolate. Flowers purplish-white.

Grown in gardens as a boundary or a hedge plant.

Flowers : March - April.

JVJ 1140, 1688.

2. Justicia neesii Ramamoorthy (nom. nov.) in Flora of Hassan, dist. 551, 1976.

J. micrantha Wall. (List 2449, 1830, nom.) ex Clarke in FBI. 4: 536; non Pohl ex Nees 1847; C. 2: 489; Gam. 2: 756; Sant. loc. cit. 87.

Rostellularia crinita Nees, in Wall. Pl. As. Rar. 3: 101, 1832 (non Justicia crinita Thunb.); Sant. 209.

An erect herb. Leaves ovate-elliptic with transversely oriented cystoliths toward margin. Flowers pink.

Noted on wet soils, often occurs amongst grasses.

Flowers and fruits : September - December.

JVJ 476, 1138.

3. Justicia simplex D. Don, Prodr. Fl. Nep. 11: 1825; FBI. 4: 539; C. 2: 490; Gam. 2: 756; Sant. loc. cit. 89; M. 271.

An erect, slender, branched herb. Flowers pinkish; bracts hairy. Capsule oblong, hairy at the top.

Frequently seen on waste soils along with grasses.

Flowers and fruits : August - October.

JVJ 79.

17. Peristrophe Nees

Peristrophe bicalyculata (Retz.) Nees, in Wall. Fl. As. Rar.

3: 113, 1832; FBI. 4: 554; C. 2: 415; Gam. 2: 759;  
Sant. 236; M. 269.

Dianthera bicalyculata Retz., in Act. Holm. 297, t. 9, 1775.

An erect herb or undershrub; stems angled, rough. Leaves ovate, hairy. Flowers bright rosy.

Fairly common near habitation, gregarious on waste, fallow lands.

Flowers and fruits : August - March.

JVJ 168, 250.

18. Ruellia Linn. emend. Bremek.

Ruellia tuberosa Linn., Sp. Pl. 635, 1753, Bremek. in

Verh. Nederl. Akad. Wet. II 45(1): 11, 1948; Sant.  
loc. cit. 23; Nair & Nair, in BBSI. 5: 222, 1963;  
M. 272.

An erect or sub-erect herb with a number of slender elongated, tuberous roots. Leaves oblong. Flowers blue-purple or white. Capsule elongate with persistent calyx, bursting spontaneously on moistening.

Occasionally seen in well-guarded premises of P. T. Science, Medical and Engineering Colleges; also grown in gardens.

Flowers and fruits : August - March.

JVJ 967.

A white-flowered variant was noted in the compound of the P. T. Science College.

### 19. Rungia Nees

1. Bracts homomorphic, upto 6 mm. long;  
flowers 6-10 mm. long, upper lip of  
corolla emarginate ..... 2. R. repens
1. Bracts dimorphic, 3-4 mm. long; flowers  
upto 5 mm. long; upper lip of corolla  
entire ..... 1. R. pectinata
1. Rungia pectinata (L.) Nees, in DC. Prodr. 11: 469, 1847;  
Wt. Icon. t. 1547; Sant. loc. cit. 77; Sant. 232;  
M. 269.

Justicia pectinata Linn., in Torner, Cent. II Pl. 3,  
1756.

Rungia parviflora var. pectinata (L.) Clarke, in  
FBI. 4: 550; C. 2: 479.

An erect or scandent herb, variable in size and form.  
Leaves very variable, lanceolate or oblong. Flowers pale  
blue. Capsule compressed, hairy.

Occasionally seen on moist soils of river bank.

Flowers and fruits : August - January.

JVJ 888, 1066.

2. Rungia repens (L.) Nees, in Wall., Pl. As. Rar. 3: 110,  
1832; FBI. 4: 549; C. 2: 480; Sant. loc. cit. 78;  
Sant. 206; M. 270.

Justicia repens Linn., Sp. Pl. 15, 1753.

An erect or sub-erect herb. Leaves elliptic-lanceolate.  
Flowers violet, in broad spikes. Capsule ovoid-oblong.

Flowers and fruits : August - December.

JVJ 888, 1066.

### 93. VERBENACEAE

1. Inflorescence cymose panicle :

2. Corolla regular; calyx enlarged  
in fruit ..... 9. Tectona

2. Corolla 2-lipped; calyx not as above :

3. Leaves digitately compound ..... 11. Vitex

3. Leaves simple :

4. Calyx rotate ..... 4. Holmskioldia

4. Calyx campanulate :

5. Flowers yellow; stamens  
inserted ..... 3. Gmelina

5. Flowers white or reddish;  
stamens exerted ..... 1. Clerodendrum

1. Inflorescence capitate or spicate

or racemose :

6. Creeping herbs; calyx 2-4-lobed..... 7. Phyla

6. Erect plants :

7. Flowers in short capitate heads... 5. Lantana

7. Flowers in elongate lax spikes or  
racemes :

8. Calyx petaloid; flowers blue or  
pale violet .....6. Petrea

8. Calyx not petaloid :

9. Shrub; flowers pedicellate,  
in racemes .....2. Duranta

9. Herbs or undershrubs; flowers  
sessile, in spikes :

10. Leaves variously dissected  
and long-petiolate .....10. Verbena

10. Leaves elliptic, sessile... 8. Stachytarpheta

1. Clerodendrum Linn.

1. Climber; flowers crimson .....3. C. splendens

1. Erect; flowers white :

2. Calyx truncate or shortly tooth ....1. C. inerme

2. Calyx distinctly lobed or dentate...2. C. multiflorum

1. Clerodendrum inerme (L.) Gaertner, Fruct. 1: 271, 1788;

FBI. 4: 589; C. 2: 511; Gam. 2: 769; M. 283; Sant.

214; Bor & Raizada, 146, f. 92.

Volkameria inermis Linn., Sp. Pl. 889, 1753.

A scandent, straggling shrub. Leaves elliptic-obovate.  
Flowers white; filaments purple-red. Drupe 4-lobed pyrenes.

Grown in gardens as a hedge plant.

Local name : Vilayati mendi.

Flowers and fruits : July - April.

JVJ 1353.

2. Clerodendrum multiflorum (Burm. f.) O. Kuntze, Rev. Gen.

Pl. 1891; Santapau & Janardhanan, 40.

Volkameria multiflora Burm. f., Fl. Ind. 137, t. 45,  
f. 1, 1768.

Clerodendrum phlomidis Linn. f. Suppl. 292, 1781;

FBI. 4: 590; Wt. Icon. t. 1473; C. 2: 511; Gam. 2:

769; M. 283.

A large shrub or small tree with light brown bark.  
Leaves ovate or rhomboidal, coarsely crenate or serrate.  
Flowers white, scented. Drupe black.

Frequently seen growing along with hedge plants throughout the area; also planted in Gandhi Baag.

Local name : Arani.

Flowers and fruits : August - April.

JVJ 88, 208, 1965.

3. Clerodendrum splendens G. Don, in Edinb. N. Phil. Journ.

11: 349, 1824; Bailey, Stand. Cycl. Hort. 1: 800;

M. 284.

A large climbing shrub. Leaves oblong-orbicular, coriaceous, dark green above. Flowers crimson. Drupes black.

The combination of flowers and foliage is very attractive. Grown in gardens along the trellis and walls.

Flowers and fruits : December - March.

JVJ 390.

## 2. Duranta Linn.

Duranta repens Linn., Sp. Pl. 637, 1753; Bailey, 843; M. 279;

Sant. 215.

D. plumieri Jacq., Select. Am. 186, t. 176, 1763; FBI. 4:

560; C. 2: 518; Gam. 2: 774.

An evergreen bushy shrub. Leaves obovate, elliptic or oblong-lanceolate. Flowers bluish-violet. Berries small, orange.

Often planted in gardens as fence plant.

Local name : Damayanti.

Flowers and fruits : All round the year.

JVJ 1744, 2047.

Duranta repens var. alba FBI. 4: 560, is also planted in gardens for its attractive white flowers.

### 3. Gnelina Linn.

1. Flowers yellow; bracts small ..... 1. G. asiatica
1. Flowers yellow; bracts large, membranous  
with purple-veins ..... 2. G. philippensis
1. Gnelina asiatica Linn., Sp. Pl. 626, 1753; FBI. 4: 582;  
C. 2: 505; Gam. 2: 768.

A bushy shrub. Leaves ovate or elliptic, obscurely lobed.  
Flowers yellow; calyx cup-shaped.

Planted in the garden of P. T. Science College.

Flowers and fruits : August - March.

JVJ 1604.

2. Gnelina philippensis Cham. in Linnaea, 7: 109, 1832;  
M. 282.
- G. hystrix Schult. ex Kurz, in JASB. 39: 81, 1870;  
FBI. 4: 582; C. 2: 505.

A spinous shrub. Leaves elliptic. Flowers yellow in pendulous panicles.

Occasionally planted in gardens for its attractive inflorescence.

Flowers : April - October.

JVJ 1605.

#### 4. Holmskioldia Retz.

Holmskioldia sanguinea Retz., Obs. 6: 31, 1791; FBI. 4: 596;

C. 2: 518; Bailey, 842; Bor & Raizada, 142; M. 285.

A straggling, woody shrub. Leaves ovate to broadly ovate-oblong. Flowers bright red; calyx petaloid.

Grown in gardens for its showy flowers.

English name : Cup and Saucer plant.

Flowers : December - March.

JVJ 397.

#### 5. Lantana Linn.

1. Bracts lanceolate, 3-5-nerved; corolla pink, red to yellow, not white; plants with recurved prickles .....1. L. camara  
var. aculeata
1. Bracts ovate, 5-7-nerved; corolla pink, light purple or white; plants unarmed..2. L. indica

1. Lantana camara Linn. var. aculeata (L.) Moldenke, in  
Torreya 34: 9, 1934; Sant. 211; M. 277.

L. aculeata Linn., Sp. Pl. 627, 1753; Gam. 2: 761.

L. camara auct. (non Linn.); FBI. 4: 562; C. 2: 498;

A bushy, aromatic shrub, stem prickly. Leaves ovate or ovate oblong. Flowers variously coloured. Drupe shining black.

Fairly common in hedges along the roadsides, also grown in gardens.

Local name : Indradhanu.

Flowers and fruits : Almost round the year.

JVJ 552, 910, 2030.

1. Lantana indica Roxb., Fl. Ind. 3: 89, 1832; Wt. Icon. t. 1464; FBI. 4: 562; C. 2: 498; Gam. 2: 761; M. 277.

An unarmed shrub. Leaves ovate, acute, rounded cordate with appressed white pubescent beneath. Flowers scentless white or variously coloured.

Occasionally planted in the garden hedges; often runs wild.

Local name : Dhanidariya.

Flowers and fruits : Most part of the year.

JVJ 586.

6. Petrea Linn.

Petrea volubilis Linn., Sp. Pl. 626, 1753; C. 2: 518; Bor  
& Raizada, 141; M. 277.

A large woody climber. Stems ash-coloured. Leaves ovate or lanceolate, scabrous. Flowers blue or pale-violet; calyx persistent, blue; corolla caducous, violet.

Grown in gardens for its attractive flowers.

Local name : Chakardi, Nilambha.

English name : Purple Wreath.

Flowers : January - April.

JVJ 669.

7. Phyla Lour.

Phyla nodiflora (L.) Greene, in Pittonia 4: 46, 1899; Sant.  
211; M. 276.

Verbena nodiflora Linn., Sp. Pl. 20, 1753.

Lippia nodiflora A. Rich, in Michaux, Fl. Bor. Amer. 2:  
15, 1803; Wt. Icon. t. 1463; FBI. 4: 563; C. 2: 499;  
Gam. 2: 762.

A slender, diffuse, creeping herb, often rooting at the nodes. Leaves spatulate to obovate, cuneate, entire below, coarsely serrate above. Flowers pink-purple to white.

A fairly common weed of wet slopes of river banks, near ponds, puddles; also found as a weed in cultivated fields.

Flowers and fruits : July - April.

JVJ 101, 1234, 2054.

8. Stachytarpheta Vahl (nom. cons.)

Stachytarpheta urticaefolia (Salisb.) Sims., in Bot. Mag.

t. 1848, 1816; Raizada, in Ind. For. 92(5): 324, 1966.

Cymburus urticaefolius Salisb., Parad. Lond. 53, 1805-1807.

Stachytarpheta indica auct. (non Vahl, 1804); FBI. 4:564;

C. 2: 501.

An erect shrub. Leaves ovate, dentate. Flowers blue.  
Drupes oblong.

Planted in gardens.

Flowers and fruits : December - January.

JVJ 1742.

9. Tectona Linn. f. (nom. cons.)

Tectona grandis Linn. f., Suppl. 151, 1781; Roxb., Pl. Cor.

t. 6, 1795; FBI. 4: 570; C. 2: 503; Sant. 212; Fl.

Dangs, 75; M. 280.

A large, deciduous tree; ultimate branches quadrangular, channelled, stellately hairy. Leaves large, elliptic or obovate. Flowers muddy-white, in large terminal, cymose panicles. Drupes enclosed in inflated bladdery calyx.

Planted at few places.

Local name : Saag.                      English name : Teak.

Flowers and fruits : October - April.

JVJ 674.

10. Verbena Linn.

Verbena bipinnatifida Schau., in DC. Prodr. 11: 553, 1847;

Bailey, 840; M. 278.

A prostrate herb with ascending stem. Leaves segmented.  
Flowers bluish-purple.

Cultivated in the gardens.

Flowers : December - February.

JVJ 1698.

11. Vitex Linn.

Vitex negundo Linn., Sp. Pl. 638, 1753; Wt. Icon. t. 519;

FBI. 4: 583; C. 2: 508; Gam. 2: 771; Sant. 213; Fl.

Dangs, 75; M. 281; Pavagadh, 187.

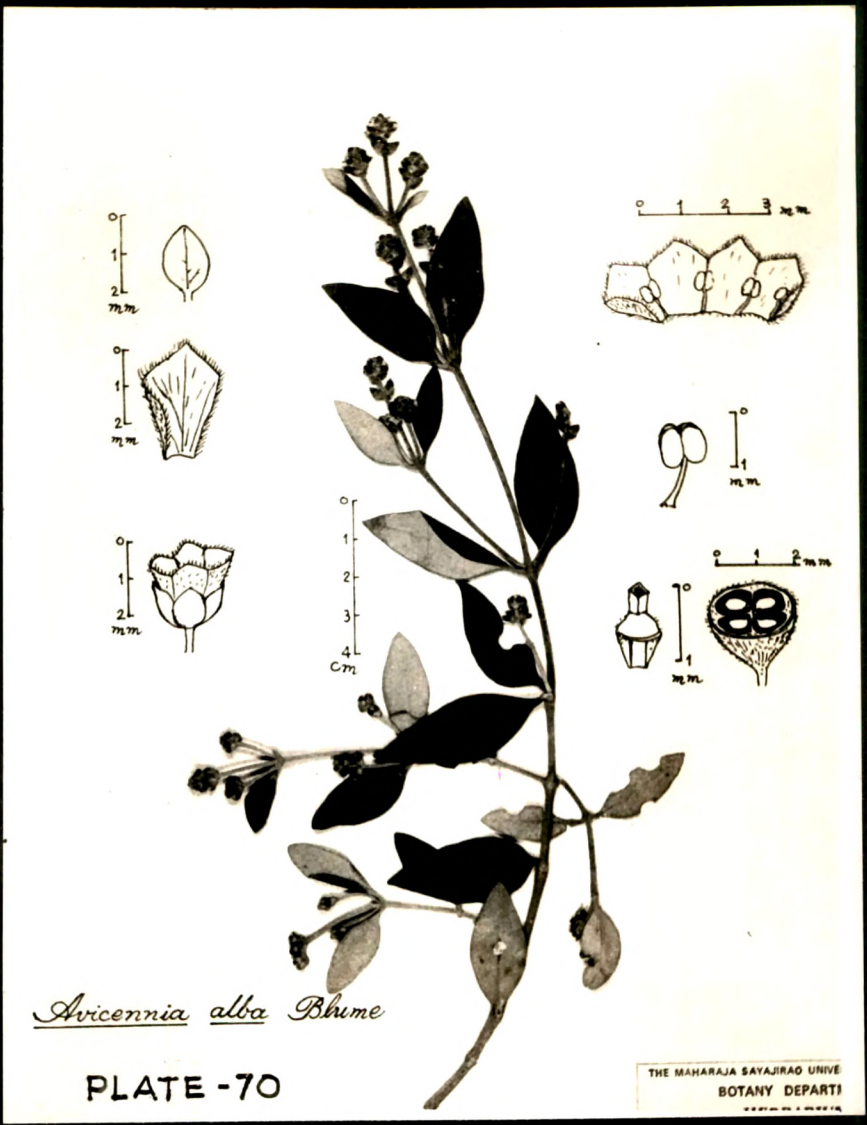
A large shrub or a small tree. Leaves 3-5-foliolate;  
leaflets lanceolate, acute white tomentose beneath. Flowers  
whitish-blue. Drupes black.

Frequently planted near habitation and gardens.

Local name : Nagud.

Flowers and Fruits : August - March.

JVJ 165, 1544.



## 94. AVICENNIACEAE

Avicennia Linn.

Avicennia alba Blume, Bijdr. 821, 1826; Wt. Icon. t. 1482;

C. 2: 517; Gam. 2: 774; Prain, 838.

A. officinalis var. alba FBI. 5: 604.

A shrub with pale branches. Leaves lanceolate, acute, glabrous above, whitish-tomentose beneath. Flowers yellowish-green. Capsule ovoid.

Abundant on saline muddy soils near Abhava.

Local name : Tavarō.

Uses : Tender branches are used as fodder.

Flowers and fruits : January - April.

JVJ 862, 2065.

Plate 70.

## 95. LAMIACEAE ( LABIATAE )

1. Corolla with 4, nearly equal lobes....6 Mentha

1. Corolla distinctly 2-lipped :

2. Stamens 2 .....9 Salvia

2. Stamens 4 :

3. Calyx 6-10-toothed .....5 Leucas

## 3. Calyx 5-lobed :

## 4. Filaments united at base into

a sheath ..... 3 Coleus

## 4. Filaments free :

5. Stamens declinate, lying upon or  
enclosed in the lower lip :

## 6. Flower-whorls axillary; calyx

subequally 5-toothed ..... 4 Hyptis

## 6. Flower-whorls in terminal spike

or raceme; calyx 2-lipped,  
upper lip large :7. Corolla-tube short; not  
exserted; stigma 2-fid :

## 8. Calyx deflexed in fruit,

upper lobe recurved, margins

decurrent on the tube ..... 7 Ocimum

## 8. Calyx sub-erect or declinate

in fruit, upper lobe not

recurved, margins not

decurrent ..... 2 Basilicum

## 7. Corolla-tube long, exserted;

stigma sub-entire, capitate.... 8 Orthosiphon5. Stamens erect, exserted ..... 1 Anisomeles

1. Anisomeles R. Br.

Anisomeles indica (L.) Kuntze, Rev. Gen. Pl. 512, 1891;

Gam. 2: 797; Mukerjee, Lab. Ind. Empire, III, 1959;

Fl. Dangs, 76; M. 289; Keng, Gard. Bull. Straits

Settlem. 24: 34, 1969.

Nepeta indica Linn., Sp. Pl. 571, 1753.

Anisomeles ovata R. Br. in Ait, f. Hort. Kew, 3: 364, 1811;

Wt. Icon. t. 865; FBI. 4: 672; C. 2: 543.

An erect herb or undershrub; branches tetragonous.  
Leaves ovate, truncate-cordate. Flowers bluish-purple or  
purple. Nutlets black, smooth.

Occasionally seen as an undergrowth of hedges; fairly  
common along the railway track, between Surat - Bhestan.

Local name : Chodharo.

Flowers and fruits : October - February.

JVJ 343, 1577.

2. Basilicum Moench.

Basilicum polystachyon (L.) Moench., Menth. Suppl. 143, 1802;

Kuntze, Rev. Gen. Pl. 2: 512, 1891 (B. polystachyum);

Bennet, in Ind. For. 95(9): 629, 1969.

Ocimum polystachyon Linn., Mant. 2: 567, 1771.

Moschosma polystachyon (L.) Benth., in Wall. As. Rar. 2:

13, 1831; FBI. 4: 612; C. 2: 527; Gam. 2: 782; Fl.

Dangs, 77; Pavagadh, 190 (M. polystachyum).

An erect, branched herb with 4-angled stem. Leaves ovate, thin, irregularly crenate-serrate. Flowers pale-pink. Nutlets brown, smooth.

Rare plant; found on wet-soils near river banks at Nana Varachha and Variav.

Flowers and fruits : October - January.

JVJ 428, 1204.

Bennet (loc. cit.) remarks, "The genus Basilicum Moench. (1802) based on Ocimum polystachyon Linn. is prior to Moschosma Reichb. (1897)". Hence, the genus Basilicum being older has priority over Moschosma. The nomenclatural change is thus justified.

### 3. Coleus Lour.

Coleus spp. Various horticultural species of the genus Coleus and several hybrid forms with variegated, coloured leaves are cultivated in gardens as ornamental, potted herbs. The leaves of Coleus amboinicus Lour. are edible.

### 4. Hyptis Jacq.

Hyptis suaveolens (L.) Poit. Ann. Mus. Natl. Hist. Nat. 7: 472, t. 29, f. 2, 1806; C. 2: 560; Gam. 2: 789; Mukerjee, loc. cit. 63; Sant. 195; Keng, Gard. Bull. Straits, Settle. 24: 96, 1969.

Ballota suaveolens Linn., Syst. (ed. 10) 1100, 1759.

An undershrub with scattered hairs. Leaves broadly ovate, sinuate and serrulate. Flowers blue-purple.

Nutlets 2.

Rare; few plants were noted along the railway track between Udhana - Bhestan.

Flowers and fruits : October - January.

JVJ 1369, 1514.

#### 5. Leucas R. Br.

1. Whorls lax; 2-4-flowered .....2 L. biflora
1. Whorls dense, many-flowered :
  2. Calyx mouth oblique :
    3. Mouth of the calyx much produced below .....5 L. urticaefolia
    3. Mouth of the calyx produced above :
      4. Calyx-mouth villous within....3 L. cephalotes
      4. Calyx-mouth not villous within..1 L. aspera
  2. Calyx mouth straight or nearly so ....4 L. longifolia
1. Leucas aspera (Willd.) Spreng., Syst. 2: 743, 1825; FBI. 4: 690; C. 2: 548; Gam. 2: 803; Mukerjee, loc. cit. 166; M. 290; Pavagadh, 191.

Phlomis aspera Willd., in Lamk. Enum. Pl. Hort. Berol.

2: 621, 1822.

A small annual herb, branching from the base. Leaves linear to elliptic, sub-entire to crenate. Flowers white. Nutlets oblong, brown.

Noted on the sandy soils near Dumas, also seen as a weed of tobacco fields.

Flowers and fruits : September - January.

JVJ 477, 1237.

2. Leucas biflora R. Br., Prodr. 504, 1810; Wt. Icon. t.

866; FBI. 4: 683; C. 2: 553; Gam. 2: 804; Mukerjee, loc. cit. 180.

A straggling or prostrate herb. Leaves ovate elliptic, crenate, serrate. Flowers white, usually 2 or 4 in the axils.

A rare plant, noted in the crevices of the river embankments near Variav and Nana Varachha.

Flowers and fruits : September - February.

JVJ 1222, 1883.

3. Leucas cephalotes (Roth) Spreng. Syst. 2: 743, 1825;

FBI. 4: 689; Gam. 2: 804; C. 2: 549; M. 289.

Phlomis cephalotes Roth, Nov. Pl. Sp. 262, 1821;

Roxb. Fl. Ind. 3: 10, 1832.

An erect, annual herb. Leaves ovate-lanceolate, crenate,

serrate. Flowers white in dense, globose terminal whorls; the uppermost leaves coming out from the whorls.

C Occasionally seen along the sandy wet soils of river bank.

Flowers and fruits : September - December.

JVJ 1116.

4. Leucas longifolia Benth., Lab. Gen. & Sp. 744, 1835;

FBI. 4: 684; C. 2: 551.

An erect herb with erect or spreading hairs. Leaves linear, entire, obtuse or sub-acute. Flowers white, in few-flowered, axillary whorls; calyx with white, erect, stiff hairs. Nutlets obovoid-oblong.

Rare; noted once on the wet soils near canal.

Flowers and fruits : September - November.

JVJ 1334.

5. Leucas urticaefolia (Vahl) R. Br. Prodr. 504, 1810; Wt.

Icon. t. 1451; FBI. 4: 680; C. 2: 547 (urticifolia);

Mukerjee, loc. cit. 166; M. 290.

An erect, herb. Leaves ovate, coarsely dentate. Flowers white, in many-flowered, dense, globose whorls. Nutlets obovoid-oblong.

Occasional on the wet soils of river banks.

Flowers and fruits : October - February.

JVJ 1285, 1905.

6. Mentha L.

Mentha spicata Linn., Sp. Pl. 576, 1753; M. 286.

M. viridis Linn., Sp. Pl. 804, 1763; FBI. 4: 647; C. 2:559.

A prostrate, aromatic, perennial herb. Stems reddish.  
Leaves ovate-lanceolate.

Cultivated throughout the area for its leaves which are  
boiled with tea for pleasant taste.

Local name : Phudino. English name : Green Mint.

Flowers and fruits : not seen.

JVJ 1116.

7. Ocimum Linn.

1. Calyx glabrous within :

2. Pedicels shorter than the calyx; lower  
calyx teeth shorter than the upper lip...3. O. gratissimum

2. Pedicels as long as or longer than the  
calyx, 2 lower calyx teeth longer than  
the upper .....4. O. sanctum

1. Calyx hairy within :

3. Fruiting calyx 6 mm. long; corolla  
10-12 mm. long .....2. O. basilicum  
var. thyrsiflora

3. Fruiting calyx 3 mm. long; corolla  
6 mm. long .....1. O. americanum

1. Ocimum americanum Linn., Sp. Pl. 833, 1753 et in Cent.

Pl. 1: 15, 1755; Sant. 192; Keng, Gard. Bull.

Straits Settlem. 24: 126, 1969.

O. canum Sims, Bot. Mag. 51: t. 2452, 1823; FBI. 4:

607; C. 2: 521; Gam. 2: 777; Mukerjee, Rec. Bot.

Surv. India 14(1): 17, 1940.

An erect, herbaceous aromatic annual. Leaves elliptic-lanceolate. Flowers white. Nutlets black.

Fairly common on wastelands along roadsides near Dumas, more or less occurs in all localities.

Local name : Ran Tulsi.

Flowers and fruits : August - March.

JVJ 76, 345.

2. Ocimum basilicum Linn. var. thrysiflora Benth. Lab. Gen.

& Sp. 5, 1833; FBI. 4: 608; C. 2: 523.

A small, branched herb with purple stem. Leaves ovate. Flowers pink or purple.

Cultivated in gardens, often seen as an escape.

Local name : Damaro, Sabjo.

Uses : Leaves are used in garlands.

Flowers and fruits : August - January.

JVJ 1370.

3. Ocimum gratissimum Linn., Sp. Pl. 1197, 1753; FBI. 4:

608; C. 2: 522; Mukerjee, loc. cit. 20; M. 287.

An erect, branched undershrub. Leaves elliptic-lanceolate. Flowers creamy white or greenish-yellow. Nutlets brown.

Rare plant; growing on wet sandy soils of river banks near Singanpor.

Local name : Avachi - bavachi.

Flowers and fruits : August - October.

JVJ 763.

4. Ocimum sanctum Linn., Mant. 1: 85, 1767; FBI. 4: 609;

C. 2: 521; Mukerjee, loc. cit. 19; Sant. 216.

An erect, much-branched herb or undershrub with purple stems. Leaves elliptic-oblong. Flowers white. Nutlets smooth, enclosed within persistent calyx.

Cultivated as a sacred plant in most Hindu houses.

Local name : Tulsi.

Flowers and fruits : All throughout the year.

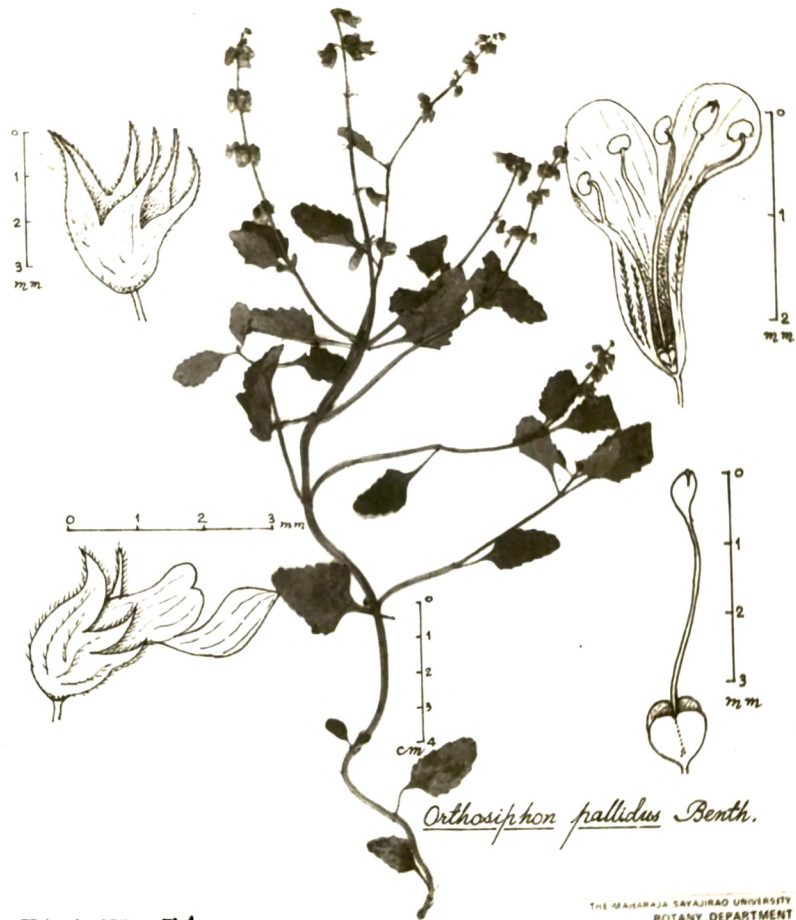
JVJ 475.

#### 8. Orthosiphon Benth.

Orthosiphon pallidus Benth., in Hook. Bot. Misc. 3: 370,

1833; FBI. 4: 613; C. 2: 523; Gam. 2: 779; Mukerjee,

loc. cit. 23.



*Orthosiphon pallidus* Benth.

A low undershrub, woody at the base. Leaves ovate, crenate-serrate, shortly cuneate, gland-dotted. Flowers white; corolla tube exerted, lower lip sub-orbicular; stigma clavate. Nutlet smooth.

Rare; noted on moist, shady situations near Udhana-Khadi.  
Flowers and fruits : October - January.

JVJ 1233, 1660.

Plate 71.

#### 9. Salvia Linn.

1. Flowers deep scarlet, cultigen .....1. S. coccinea

1. Flowers pale-pink or white;  
a wild plant .....2. S. plebeia

1. Salvia coccinea Juss. ex Murr. in Commentat. Gotting. 1:  
86, t. 1, 1779; C. 2: 558; Bailey, 858.

A slender herb. Leaves ovate or cordate, crenate.  
Flowers deep scarlet.

Planted in gardens as a seasonal ornamental, for its  
beautiful flowers.

Flowers : Post-monsoon period.

JVJ 1616.

2. Salvia plebeia R. Br. Prodr. 501, 1810; FBI. 4: 665;  
C. 2: 557; Gam. 2: 808; Sant. 219; Mukerjee, loc.cit.  
111; M. 288.

A small, erect herb. Leaves oblong-lanceolate, crenate. Flowers white or pale-pink. Nutlets ovoid.

Occasionally seen on wet, clayey soils of river banks near Ved and Variav.

Flowers and fruits : October - March.

JVJ 293, 1904, 2038.

#### 96. PHYTOLACCACEAE

##### Rivinia Linn.

Rivinia humilis Linn., Sp. Pl. 121, 1753; Bailey, 359 & Cycl. Hort. 3: 2966, f. 3412, 1958; Backer, in Fl. Males I, 4: 229, t. 1, 228, 1951.

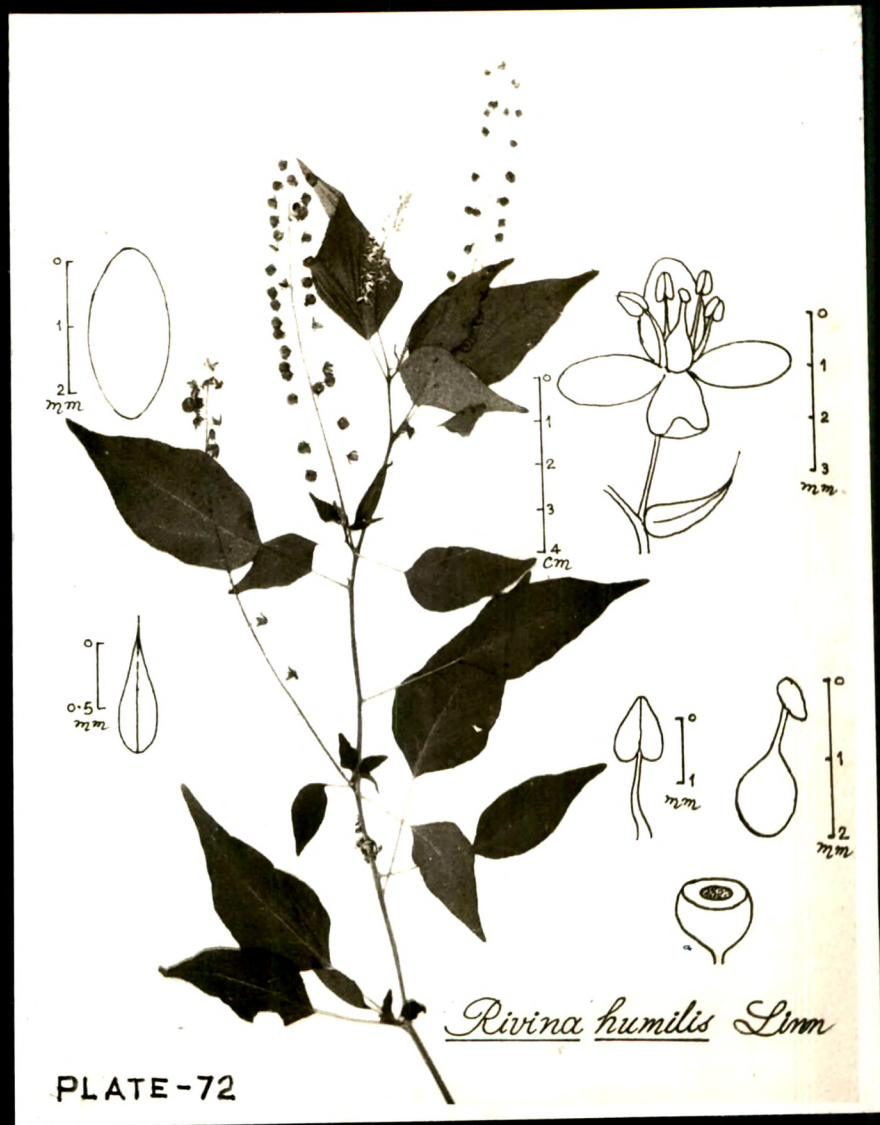
An erect, branched herb or undershrub. Leaves ovate-oblong or ovate-lanceolate, rounded or sub-cordate base, acuminate, acute, glabrous above, shortly pubescent on midrib beneath. Flowers white, in terminal and axillary racemes. Berries bright red, becoming black.

A garden weed noted near hedges in shaded localities of a garden, on the way to Anjana farm; not seen elsewhere. Local name : Safed-Dhani.

Flowers and fruits : August - April.

JVJ 2102.

Plate 72.



## 97. NYCTAGINACEAE

1. Thorny shrubs; bracts coloured .....2. Bougainvillea

1. Unarmed herbs; bracts not coloured :

2. Flowers large, showy with a calyx-  
like involucre bracts; erect herbs..3. Mirabilis

2. Flowers small, not showy, without an  
involucre, diffuse or scandent herbs.1. Boerhavia

1. Boerhavia Linn.

1. Flowers nearly sessile; leaves in  
unequal pairs ..... 2. B. diffusa

1. Flowers with long slender pedicels;  
leaves in equal pairs ..... 1. B. chinensis

1. Boerhavia chinensis (Burm. f. ) Druce, in Rep. Bot. Exch.

Cl. Brit. Isles, 1913 (3): 415, 1914; Sant. & Wagh,  
in BBSI. 6(2): 115, 1963; Raizada, in Ind. For.  
92(5): 303, 1966; Almeida, in JBNHS. 65(1):  
267-268, 1968.

Valeriana chinensis Burm. f. Fl. Ind. 15, t. 6, f. 3,  
1968.

Boerhavia repanda Willd., Sp. Pl. 1: 22, 1797; Wt.  
Icon. t. 1766; FBI. 4: 709; C. 2: 564; Gam. 2:  
814; M. 293.

A diffuse or straggling herb. Leaves deltoid-ovate, nearly equal with truncate or cordate base. Flowers pink; stamens well-exserted. Fruits faintly ribbed, club-shaped with glandular knobs. F

Frequently seen along with hedge plants, less common than Boerhavia diffusa.

Local name : Vel satodi.

Flowers and fruits : August - January.

JVJ 278, 764.

2. Boerhavia diffusa Linn., Sp. Pl. 3, 1753; C. 2: 563; Gam. 2: 814; Sant. 220; M. 194; Almeida, loc. cit. 267-268, 1968.

B. repens Linn., Sp. Pl. 3, 1753; FBI. 4: 709.

B. procumbens Roxb., Fl. Ind. 1: 146, 1820; Wt. Icon. t. 874.

A prostrate to ascending herb. Leaves unequal in pairs. Flowers small, dark pink, stamens not exerted.

Fairly common throughout the area.

Local name : Punarnava, Satodi.

Flowers and fruits : Nearly throughout the year.

JVJ 542, 703.

2. Bougainvillea Comm. ex Juss. (nom. cons.)

Bougainvillea spectabilis Willd., Sp. Pl. 2: 348, 1799;

C. 2: 567; Gam. 2: 815; Bor & Raizada, 269, Pl. 98;  
Bailey, 358 & Cycl. Hort. 533; Sant. 221; M. 292.

A large, thorny, woody, climbing shrub; branches sarmentose. Leaves ovate-orbicular. Flowers creamy white, subtended by purple coloured bracts.

A number of Bougainvillea varieties with variously coloured bracts are grown in gardens throughout the area.

Flowers : Throughout the year.

JVJ 1617.

### 3. Mirabilis Linn.

Mirabilis jalapa Linn., Sp. Pl. 177, 1753; C. 2: 567;

Gam. 2: 815; Bailey, 358; Sant. 221; M. 292.

An erect, branched herb or undershrub. Leaves ovate, truncate or cordate. Flowers red, purple, yellow or of mixed colours, showy; open late in the afternoon.

Planted in gardens as an ornamental herb.

Local name : Gulbas. English name : Four O'clock plant.

Flowers : August - February.

JVJ 1621.

## 98. AMARANTHACEAE

1. Leaves alternate :

2. Staminodes interposed with stamens or

forming a hypogynous cup .....2. Aerva

- 2. Staminodes absent :
  - 3. Ovary 2-many-ovuled; stamens united at the base .....5. Celosia
  - 3. Ovary 1-ovuled; stamens free :
    - 4. Flowers bisexual; styles 2-3 mm. long .....6. Digera
    - 4. Flowers unisexual or polygamous; style nearly absent .....4. Amaranthus
- 1. Leaves opposite or clustered :
  - 5. Anthers 1-celled :
    - 6. Flowers in terminal heads; stigma bifid .....7. Gomphrena
    - 6. Flowers in axillary heads; stigma capitate .....3. Alternanthera
  - 5. Anthers 2-celled :
    - 7. Stamens with interposed fimbriate staminodes; bracts and bracteoles hard, spinous .....1. Achyranthes
    - 7. Stamens without staminodes; bracts and bracteoles not (so):
      - 8. Flowers in spikes; stamens 2.....8. Nothosaerva
      - 8. Flowers clustered; stamens 5.....9. Pupalia

1. Achyranthes Linn.

Achyranthes aspera Linn. var. porphyristachya Hook. f. in  
 FBI. 4: 730, 1885; C. 2: 580; Sant. 224; M. 299;  
 Pavagadh, 196.

A. porphyristachya Wall. Cat. 6925, 1832.

A. aspera Cooke, 2: 580, pro parte.

An erect, branched herb. Leaves few, elliptic or ovate.  
 Flowers greenish-white, in long terminal spikes; bracts and  
 bracteoles persistent, spiny and fall off with fruit.  
 Utricle oblong.

A common weed of various habitats.

Local name : Aghedo or Anghedo.

Flowers and fruits : August - April.

JVJ 241, 590.

2. Aerva Forsk.

1. Spikes axillary and terminal :

2. Erect; densely woolly tomentose;

leaves alternate; flowers

unisexual, dioecious .....1. A. javanica  
 var. bovei

2. Climbing, pubescent; leaves

alternate and opposite; flowers

bisexual .....3. A. sanguinolenta

1. Spikes all axillary; flowers unisexual  
and bisexual ..... 2. A. lanata

1. Aerva javanica (Burm. f.) Juss. ex Schultes var. bovei  
Webb., in Hook. Niger Flora 173, 1849; Townsend  
C.C. Not. on Amara. 2, Kew Bull. 29(3):461, 1974.

A. bovei (Webb.) Edgew., in Jour. Linn. Soc. 6:  
206, 1862.

- A. pseudo-tomentosa Blatt. & Hall., in JBNHS. 26(3):  
816, 1919; Bhandari, 321.

A much-branched, densely woolly tomentose. Leaves  
alternate, linear-lanceolate. Flowers unisexual, dioecious in  
white, cylindrical spikes.

A rare plant; collected once on dry, sandy soils  
near Dumas.

Flowers and fruits : October - December.

JVJ 484.

2. Aerva lanata (L.) Juss., in Ann. Mus. Par. 2: 131, 1808;  
FBI. 4: 728; C. 2: 578; Gam. 2: 825; Sant. 223;  
M. 294.

Achyranthes lanata Linn., Sp. Pl. 204, 1753 (non  
Celosia lanata Linn. ibid. 205).

An erect herb. Stems and branches covered with soft,  
woolly hairs. Leaves elliptic, obovate or sub-orbicular.

Flowers greenish-white.

Occasionally found along roadsides, on open waste places, along river banks, in cultivated fields and crevices of old walls.

Local name : Kapuri madhuri.

Flowers and fruits : Throughout the year.

JVJ 405, 589.

3. Aerva sanguinolenta (L.) Blume, Bijdr. 547, 1825; Backer, in Fl. Males I, 4(2): 85, 1949; Sant. 223.

Achyranthes sanguinolenta Linn., Sp. Pl. (ed. 2): 294, 1762.

Aerva scandens Wall. Cat. 6911, 1829; Moq. in DC.

Prodr. 13(2): 302, 1849; FBI. 4: 727; C. 2: 492;

Gam. 2: 1178.

A climbing undershrub. Leaves elliptic-lanceolate, acute. Flowers white, bisexual, in terminal and axillary spikes.

Occasional along the slope of river banks near Aswanikumar and on wet soils near BRC - Udhana.

Flowers and fruits : September - December.

JVJ 391, 1193.

### 3. Alternanthera Forsk.

1. Stamens 3 ..... 4. A. sessilis

1. Stamens 5 :

2. Three outer tepals distinctly 3-nerved..1. A. ficoides

2. Tepals are not 3-nerved :

3. Heads prickly; tepals very dissimilar;

leaves sub-orbicular or circular ....3. A. pungens

3. Heads not prickly; tepals similar;

leaves spatulate .....2. A. paronychioides

1. Alternanthera ficoides (L.) R. Br. ex R. & S. Syst. 5:

555, 1819; Backer, in Fl. Males. I, 4(2): 93, 1949.

Gomphrena ficoidea Linn., Sp. Pl. 235, 1753.

G. polygonoides Linn., Sp. Pl. 225, 1753 ex parte.

Alternanthera polygonoides R. Br. Prodr. 416, 1810.

An erect or decumbent perennial herb. Leaves oblong, oblong-obovate, spatulate. Flowers terminal and axillary, often in dense clusters; bracts and bracteoles acuminate. Perianth more than 5 tepals; pale whitish-yellow; 3 outer ones with 3 close-set, strong upwards convergent nerves.

Occasionally seen on waste, fallow lands.

Flowers and fruits : October - February.

JVJ 1903.

2. Alternanthera paronychioides St. Hil., Voy. Bres. 2: 439,

1833; Santapau, in JBNHS. 54: 476-477, 1956; Nair & Nair, in BBSI. 5(3 & 4): 220, 1963.

A prostrate, hairy herb, often rooting at nodes. Leaves opposite, spatulate, broad at the apex and decurrent along the petiole. Flowers white in axillary clusters.

Found occasionally in the shades of hedge plants, also noted on the wet muddy soils of river banks.

Flowers and fruits : August - October.

JVJ 875, 1105.

3. Alternanthera pungens H.B. & K. Nov. Gen. & Sp. 2: 206, 1818; Melville, Kew Bull. 12: 178, 1958; Sant. 200; Raizada, in Ind. For. 92(5): 301, 1966; M. 298.

Achyranthes repens Linn., Sp. Pl. 205, 1753.

Alternanthera repens (L.) Link, Enum. Pl. Hort. Bot. Berol. 1: 154, 1821, (non Gmelin, 1791); Backer, loc. cit. 91.

A prostrate, much-branched herb, often rooting at the nodes. Leaves orbicular-sub-orbicular, with soft spiny apex. Flowers white in axillary heads with spiny perianth segments.

Noted in dense patches on open waste places, often occurring on newly placed soil heaps, also grows as a garden weed.

Flowers and fruits : October - March.

JVJ 503, 1141.

4. Alternanthera sessilis (L.) DC. Cat. Hort. Monsp. 77,  
1813; Wt. Icon. t. 727; Backer, loc. cit. 94;  
Sant. 225; M. 299; Pavagadh, 200.

Gomphrena sessilis Linn., Sp. Pl. 225, 1753.

Alternanthera triandra Lamk., Encycl. 1: 95, 1783; C. 2:  
584; Gam. 2: 825.

A prostrate to sub-erect, much-branched herb. Leaves  
linear-oblong or elliptic-lanceolate. Flowers small, white in  
axillary clusters.

Fairly common weed of moist, wet places throughout the  
area; also found in the cultivated fields and sandy river beds.

Local name: Jal Jambuo, Panini bhaji.

Flowers and fruits : August - May.

JVJ 829, 1065, 1790.

#### 4. Amaranthus Linn.

1. Sepals 5; Stamens 5 :

2. Leaf axils with spines ..... 3. A. spinosus

2. Leaf axils without spines :

3. Bracts and bracteoles shorter

than the perianth ..... 1. A. dubius

3. Bracts and bracteoles longer :

than the perianth ..... 2. A. hybridus  
ssp. cruentus  
var. paniculatus

1. Sepals 3; Stamens 3 :

4. Fruit circumscissile ..... 4. A. tricolor

4. Fruit indehiscent ..... 5. A. viridis

1. Amaranthus dubius Mart. ex Thell. Hort. Erl. 197, 1814;  
Thell. in Asch. & Gr. Syn. 5, 1: 265, 1914; Backer,  
loc. cit. 78; Naik, in Proceedings of the Ind. Acad.  
Sci. 71: 229, f. 1, 1970; Townsend, loc. cit. 471, 1974.

An erect, branched annual herb with striate stem. Leaves ovate or broadly lanceolate, acute, cuneate at base. Flowers greenish-white, in axillary clusters or in axillary and terminal, interrupted spikes or panicles. Ovary 3-lobed; styles 3. Utricle ellipsoid, when fully ripe, circumsciss in or slightly below middle. Seed brownish-black, shining.

Rare plant; collected from waste lands near river banks at Nana Varachha.

Flowers and fruits : August - October.

JVJ 873, 1100

Plate 73.

2. Amaranthus hybridus Linn. ssp. cruentus (L.) Thell. var.  
paniculatus Thell. in Aschers. & Graebn. Syn. 5(1):  
247, 1914; Backer, loc. cit. 79; Sant. 224; M. 296.  
A. cruentus Linn., Syst. Nat. ed. 1052; 1269, 1759.  
A. paniculatus Linn., Sp. Pl. (ed. 2) 1406, 1763; FBI.  
4: 718; C. 2: 573; Gam. 2: 819.

PLATE - 73



*Amaranthus dubius*, Mart. ex Thell.

A tall, handsome, much-branched herb or undershrub. Stems stout, grooved, purple-coloured. Leaves ovate or ovate-lanceolate. Spikes dense, reddish-green or yellow. Capsule ovoid.

Cultivated along with wheat; also noted as an escape.

Local name : Rajgaro.

Uses : The grains are eaten on the day of fasting.

JVJ 361.

3. Amaranthus spinosus Linn., Sp. Pl. 991, 1753; Wt. Icon. t. 513; FBI. 4: 718; C. 2: 573; Gam. 2: 819; Sant. 221; M. 296.

An erect herb, armed with spines. Leaves ovate-lanceolate. Flowers small, green.

Fairly common on the slope of river bank, along the roadsides, on waste-rubbish lands near habitation.

Local name : Kantalo Dabho.

Flowers and fruits : Almost throughout the year.

JVJ 80, 414, 711, 1802.

4. Amaranthus tricolor Linn., Sp. Pl. 989, 1753; Backer, loc. cit. 77; Sant. 222; M. 294.

A. gangeticus Linn., Syst. 1268, 1759; Wt. Icon. t. 715; FBI. 4: 719; C. 2: 574.

A. polygamous Linn., Amoen. Acad. 4: 294, 1759; C.2:575.

A tall, erect, branched, stout herb. Leaves ovate-oblong

or lanceolate. Flowers axillary clusters. Fruits circumscissile, rugose.

Observed as a weed in cultivated fields; also along roadside ditches and in waste places; also cultivated.

Local name : Chavlai, Tandaljo.

Uses : Tender branches and foliage are eaten as vegetable.

Flowers and fruits : August - April.

JVJ 49, 1893.

5. Amaranthus viridis Linn., Sp. Pl. (ed. 2) 1405, 1763;

FBI. 4: 720; C. 2: 575; Gam. 2: 820; Merrill, in  
Amer. J. Bot. 23: 611, 1936; Sant. 222.

A. gracilis Desf. Tabl. Hort. Par. 43, 1804; M. 297.

An erect, much-branched, annual herb. Leaves ovate or deltoid-ovate. Flowers pale-green. Commonly met on moist-grassy soils along the banks of water-courses; also grows in cultivated fields.

Local name : Dhimado.

Flowers and fruits : August - February.

JVJ 346, 1803.

## 5. Celosia Linn.

1. Flowers in dense, unbranched, conical

spikes; a wild plant .....1. C. argentea

1. Flowers in branched spikes, forming  
a cockscomb; a cultigen ..... 2. C. cristata

1. Celosia argentea Linn., Sp. Pl. 205, 1753; Wt. Icon. t.  
1767; FBI. 4: 714; C. 2: 570; Gam. 2: 816; Sant. 221;  
M. 295.

An erect herb. Leaves linear or ovate-lanceolate.

Flowers white or pink. Capsule ellipsoid.

Frequently seen on the slopes of river bank; also along  
the railway track and in fallow wastelands.

Local name : Lemadi.

Flowers and fruits : November - February.

JVJ 351, 444.

2. Celosia cristata Linn., Sp. Pl. 205, 1753; FBI. 4: 715;  
C. 2: 571; Gam. 2: 817; M. 295.

An erect herb. Leaves linear or ovate-lanceolate. Flowers  
red or yellow; bracts variously coloured.

Grown as an ornamental herb; often found as an escape  
near garden.

Local name : Mor Shikh. English name : Cockscomb.

Flowers : December - April.

JVJ 693.

#### 6. Digera Forsk.

Digera muricata (L.) Mart., in Beitr. Amar. 77, 2, 1825;

Backer, loc. cit. 80; Pavagadh, 198.

Achyranthes muricata Linn., Sp. Pl. (ed. 2) 295, 1762.

A. alternifolia Linn., Mant. 50, 1767.

Digera alternifolia (L.) Aschers., in Schwfth. Beitr. Fl.

Aethiopiens 180, 1867; M. 295; Raizada, in Ind. For.

92(5): 308, 1966.

D. arvensis Forsk. Aeg.-Arab. 65, 1775; FBI. 4: 717; C. 2:

572; Gam. 2: 818.

An erect, annual herb with spreading branches. Leaves ovate or elliptic-lanceolate. Flowers pink or rose. Fruits globose, muricate.

Frequently seen in crop fields, on the slope of river banks and on open wastelands.

Local name : Kanjaro.

Flowers and fruits : August - March.

JVJ 62, 419, 1854.

#### 7. Gomphrena Linn.

1. Flowers in globose heads, red, crimson

or deep purple; plants cultivated .....2. G. globosa

1. Flowers in ovoid or cylindrical spikes,

white; plants wild .....1. G. celosioides

1. Gomphrena celosioides Mart. in Nov. Act. Nat. Cur. 13:

301, 1826; Sant. 226; Raizada, in JBNHS. 48: 675, 1949;

Sandwich, in Kew Bull. 29, 1946; M. 298.

A prostrate herb with smooth silvery hairs. Leaves spatulate to oblong-elliptic. Flowers white or dirty white.

Fairly common in open, waste places, along roadsides near waste dumps; also seen in cultivated fields and other habitats throughout the area.

Flowers and fruits : Almost round the year.

JVJ 691, 1052.

2. Gomphrena globosa Linn., Sp. Pl. 224, 1753; FBI. 4: 732; C. 2: 584; Bailey, 356, f. 58B; Sant. 226; M. 297.

An erect herb. Leaves elliptic-oblong to ovate. Flowers crimson, red or deep-purple.

Cultivated in most of the gardens; often found as an escape from cultivation in waste places, near gardens.

Local name : Butan. English name : Bachelor's Button.

Flowers : October - February.

JVJ 692, 1695.

#### 8. Nothosaerva Wight

Nothosaerva brachiata (L.) Wt. Icon. t. 611, 1853; FBI. 4: 726; C. 2: 580; Gam. 2: 823; Backer, in Fl. Males I, 4(2): 86, 1949; M. 299.

Achyranthes brachiata Linn., Mant. 1: 50, 1767.

A small, glabrous, straggling herb. Leaves ovate-lanceolate, thin, membranous. Flowers greenish-white. Utricle enclosed in the perianth.

Occasionally seen along the margins of roadside ditches; also noted as a weed of the irrigated fields.

Flowers and fruits : September - February.

JVJ 592, 1877.

9. Pupalia Juss. (nom. cons.)

Pupalia lappacea (L.) Juss., in Ann. Mus. Hist. Nat. Paris,

2: 132, 1803; FBI. 4: 724; C. 2: 583; Gam. 2: 821; M. 300.

Achyranthes lappacea Linn., Sp. Pl. 204, 1753.

A straggling, woolly, undershrub with long internodes. Leaves ovate-elliptic. Flowers greenish-white, woolly; stamens pinkish.

Observed in hedges throughout the area.

Local name : Safed Jipto.

Flowers and fruits : August - March.

JVJ 197, 938.

99. CHENOPODIACEAE

1. Stems jointed, fleshy, leaves O :

2. Flowers in the scales of cone-like

spikes .....1. Arthrocnemum

2. Flowers in the cavities of

successive joints ..... 4. Salicornia

1. Stems leafy, not jointed :

3. Leaves sessile, narrowly linear, semi-

terete, very succulent, bracteoles

distinct ..... 6. Suaeda

3. Leaves distinctly petiolate; flat :

4. Flowers usually bisexual ..... 3. Chenopodium

4. Flowers unisexual; the plants

monoecious or dioecious :

5. Stigmas 2; fruit between

2 large flat bracts ..... 2. Atriplex

5. Stigmas 4-5, fruit enclosed in a

carpel-like body formed by the

bracts ..... 5. Spinacia

1. Arthrocnemum Moq.

Arthrocnemum indicum (Willd.) Moq. Chenop. Enum. 113, 1840 &

in DC. Prodr. 13, 2: 151, 1849; FBI. 5: 12; C. 2: 589;

Gam. 2: 828; Backer, in Fl. Males I, 4: 104, 1949.

Salicornia indica Willd., in Nova Aca. His. Nat. 5, 111,

t. 4, f. 2, 1799; Wt. Icon. t. 737.

A perennial, fleshy, leafless herb or undershrub. Stems

prostrate, branches numerous, ascending, jointed, very fleshy.  
Leaves O. Flowers greenish, minute, bisexual.

Fairly common on saline soils along the coast of Mindhola near Abhava and Bhimpor.

Local name : Machharni bhaji.

Uses : Tender branches are sold as a vegetable in local market.

Flowers and fruits : August - January.

JVJ 2066.

## 2. Atriplex Linn.

Atriplex hortensis Linn., Sp. Pl. 1053, 1753; FBI. 5: 6;  
C. 2: 588; Gam. 2: 827; Bailey, 354.

A stout, succulent herb; often tinged with red. Lower leaves deltoid-ovate, upper leaves ovate-lanceolate. Flowers in short paniced spikes or clusters.

Sometimes seen in cultivation.

Local name : Moti palkhani bhaji. English name : Mountain  
spinach.

Uses : Tender branches are eaten as vegetable.

Flowers and fruits : December - February.

JVJ 1793.

## 3. Chenopodium Linn.

1. Plants odourless; seeds smooth, shining .....1. C. album

1. Plants with a foetid smell; seeds

rugose, dull-black ..... 2. C. murale

1. Chenopodium album Linn., Sp. Pl. 219, 1753; FBI. 5: 3;

C. 2: 501; Gam. 2: 827; Backer, loc. cit. 102;

Sant. 226; M. 302.

An erect, green herb. Leaves variable, toothed or lobed, rhomboid or deltoid-ovate to elliptic-oblong, thick, fleshy. Flowers greenish, in compact spikes.

Frequently growing as a weed on moist soils of irrigated crop fields; often found with wheat.

Local name : Chilni bhaji.

Flowers and fruits : October - March.

JVJ 276, 1676.

2. Chenopodium murale Linn., Sp. Pl. 219, 1753; FBI. 5: 4;

C. 2: 586; Gam. 2: 827; Backer, loc. cit. 101; M. 302.

A low, foetid herb. Leaves rhomboid or ovate-deltoid. Flowers green.

Occasionally noted as a weed in cultivated fields.

Flowers and fruits : December - February.

JVJ 1792.

4. Salicornia Linn.

Salicornia brachiata Roxb., Fl. Ind. ed. Carey & Wall., 1:82,

1820; Wt. Icon. t. 738; FBI. 5: 12; C. 2: 590; Gam. 2: 828; Prain, 659.

An erect-sub-erect undershrub. Stems much-branched, branches slender, jointed, fleshy. Flowers green, perianth sepaline. Utricle membranous, ovoid.

Occasionally seen on saline coastal soils near Abhava and Bhimpor.

Local name : Machulni bhaji.

Flowers and fruits : October - March.

JVJ 843, 2070.

#### 5. Spinacia Linn.

Spinacia oleracea Linn., Sp. Pl. 1027, 1753; FBI. 5: 6; C. 2: 595; Gam. 2: 830; Bailey, 354; Backer, loc. cit. 103; M. 304.

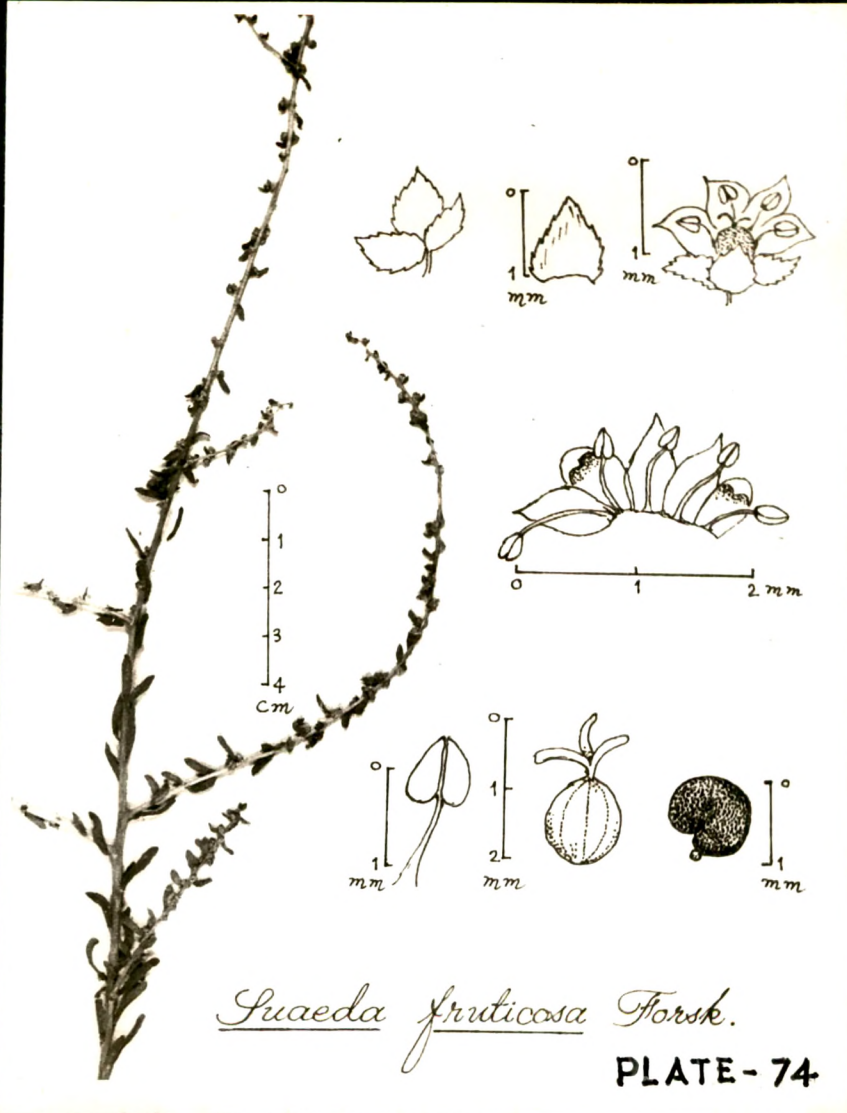
An erect, annual herb. Stems succulent reddish. Leaves variously lobed, radical leaves large, cauline leaves smaller. Flowers minute; staminate flowers in spikes, pistillate in clusters.

Occasionally cultivated.

Local name : Palakhni bhaji. English name : Garden spinach.

Flowers : June - July.

JVJ 1793.



6. Suaeda Forsk.

1. Flowers solitary or 2-3-nate; bracteoles  
with entire or slightly toothed margins ...1. S. fruticosa
1. Flowers in dense, many-flowered clusters,  
bracteoles with pectinate margins .....2. S. nudiflora

1. Suaeda fruticosa Forsk., Fl. Aegypt.-Arab. 70, 1775;  
FBI. 5: 13; C. 2: 590.

An erect, much-branched undershrub. Leaves fleshy,  
variable. Flowers green; bracteoles membranous. Utricle ovoid;  
seeds smooth, shining.

Found gregariously on saline-marshy soils of coastal  
regions around Hajira and Dumas.

Local name : Morasni bhaji.

Uses : Tender branches are sold locally as vegetable.

Flowers and fruits : August - April.

JVJ 84, 2064.

Plate 74.

2. Suaeda nudiflora Moq., in Ann. Sc. Nat. 23: 316, 1831;  
FBI. 5: 14; C. 2: 591; Gam. 2: 829.

A diffusely, branched undershrub. Leaves elliptic-oblong  
or linear-obovate. Flowers green, in dense globose, many-  
flowered clusters, forming dense spikes. Utricles ovoid.

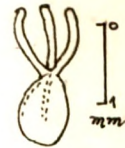


PLATE - 75

*Suaeda nudiflora* Moq.

Gregariously occur on saline-marshy soils of coastal regions.

Local name : Zinni morasni bhaji.

Uses : Tender branches are used as vegetable.

Flowers and fruits : October - April.

JVJ 476, 2063.

Plate 75.

#### 100. BASELLACEAE

##### Basella Linn.

Basella rubra Linn., Sp. Pl. 272, 1753; FBI. 5: 20; C. 2: 594; Gam. 2: 830; Bailey, 354; M. 304.

B. alba Linn., Sp. Pl. 272, 1753; van Steenis, Fl. Males. Ser. 1, 5: 300, 1958.

A succulent, glabrous, twining herb. Leaves broadly ovate, cordate, fleshy. Flowers red or pinkish-white. Utricle red, turning black.

Only known in cultivation.

Local name : Poi.

Uses : Leaves are used as a vegetable.

Flowers and fruits : August - February.

JVJ 394.

## 101. POLYGONACEAE

- 1. Habit erect or prostrate :
  - 2. Leaves with ochreate stipules :
    - 3. Woody shrub; leaves ovate-orbicular..2. Coccoloba
    - 3. Herbaceous plants; leaves not so :
      - 4. Perianth 4-5 merous;
        - stigmas capitate .....4. Polygonum
      - 4. Perianth 3-merous; stigmas
        - fimbriate .....5. Rumex
  - 2. Leaves present or 0; stipules obscure...3. Homalocladium
- 1. Habit climbing .....1. Antigonon

1. Antigonon Endl.

Antigonon leptopus Hook. & Arn. Bot. Beech. Voy. 308, t. 69,  
1841; C. 3: 10; Gam. 2: 835; Bor & Raizada, 265; Bailey,  
351; Sant. 228; M. 307.

A large climber. Leaves ovate, cordate or deltoid, veiny;  
stipules 0. Flowers pink or red-rose in long racemes with  
peduncles terminating into tendrils.

Usually grown in gardens for its flowers. Occasionally  
found on hedges along the road from Surat - Ved and Katargam.

English name : Ice-cream creeper.

Flowers and fruits : August - April.

JVJ 637.

## 2. Coccoloba Linn.

Coccoloba uvifera Linn., Syst. (ed. 10) 1007, 1759; Bailey, 351 & Cycl. Hort. 1: 807-808, f. 1009, 1958.

A large shrub or small tree. Leaves orbicular-cordate, large, midrib red at the base, petioles short with sheathing stipules. Flowers white in axillary and terminal spikes; nuts roundish.

Planted in the botanical garden of P. T. Science College.

English name : Sea-grape.

Flowers and fruits : March - May.

JVJ 2151.

## 3. Homalocladium Bailey

Homalocladium platycladum Bailey, in Man. Cult. Pl. 351, 1949.

Muehlenbeckia platyclada (Muell.) Meissn, in Bot. Zeit.

23: 313, 1865 (M. platyclados); C. 3: 11; Gam. 2: 835;

Sant. 228.

Coccoloba platyclada Muell. in Bot. Mag. t. 5282, 1863.

An erect plant. Branches (phylloclades) flattened, green, leaf-like, leathery. Leaves few or O. Flowers small, pale-white.

A handsome potted plant; often cultivated in gardens.

English name : Centipede plant.

Flowers : September - January.

JVJ 2102.

4. Polygonum Linn.

1. A prostrate herb ..... 3. P. plebeium

1. Erect herbs :

2. Stipules ciliate with long stiff

bristles ..... 1. P. barbatum  
var. gracile

2. Stipules glabrous ..... 2. P. glabrum

1. Polygonum barbatum Linn. var. gracile Steward, in Contr.  
Gray Herb. 88: 55, 1930; Sant. 227; Fl. Dangs, 80;  
M. 306.

P. serrulatum Hook. f., in FBI. 5: 38, 1886 (excl. var.  
donii); C. 3: 7 (non Lagasca nec Meissn. nec Miq.)

P. barbatum Hk. f., in FBI. 5: 37, 1886; Wt. Icon. t.  
1798; Gam. 2: 833.

An erect, glabrous herb. Leaves sub-sessile, linear-lanceolate, acute; stipules strigose, ciliate with long, stiff bristles. Flowers pink. Nutlets trigonous.

Less common than P. glabrum; seen along the lowermost belt of river Tapi in the association of P. glabrum.

Flowers and fruits : October - March.

JVJ 232, 706, 1632.

2. Polygonum glabrum Willd., Sp. Pl. 2: 447, 1799; Wt. Icon.

t. 1797; FBI. 5: 34; C. 3: 5; Gam. 2: 833; Sant. 227;  
M. 306.

An erect, stout, glabrous herb. Leaves lanceolate, acuminate; stipules ochreate, not ciliate. Flowers pink. Nutlets black, biconvex.

Abundant along banks of river, canals and water courses, throughout the area.

Flowers and fruits : July - April.

JVJ 705, 877, 2091.

3. Polygonum plebeium R. Br. Prodr. 420, 1810; FBI. 5: 27; C. 3:

4; Gam. 2: 832 (plebejum); Sant. 226; Fl. Dangs, 80;  
M. 305.

A diffusely branched, prostrate herb. Leaves small, linear, oblong; stipules short, hyaline, fimbriate. Flowers pink or red, in axillary clusters. Nutlets trigonous.

A variable plant, the forms and varieties depending on the amount of moisture and shade; frequently seen on the beds of drying puddles and ponds.

Local name : Jinko ocharad.

Flowers and fruits : September - March.

JVJ 272, 395, 417, 1966.

5. Rumex Linn.

Rumex dentatus Linn., Mant. 2: 226, 1771; FBI. 5: 59; C. 3:10;

Sant. 227; M. 307.

An erect, glabrous, annual herb. Stems ribbed, usually brownish-red. Leaves radical and cauline, radical leaves much longer than cauline, oblong, obtuse rounded. Flowers pedicillate, in distant whorls. Nut trigonous, winged.

Rare; noted on damp, wet soils of lower banks of the river near Variav.

Flowers and fruits : August - February.

JVJ 203, 1967.

Rumex vesicarius Linn. is locally known as 'Chakka ni bhaji'. The leaves are sold in local market as vegetable, but the plant never seen in cultivation or in wild state.

## 102. ARISTOLOCHACEAE

### Aristolochia Linn.

1. A herb; plant wild; flowers less than 5 cm. long ..... 1. A. bracteolata
1. A climbing shrub; cultigen; flowers large, more than 5 cm. long ..... 2. A. elegans
1. Aristolochia bracteolata Lamk., Encycl. 1: 258, 1783; Andrew, Fl. Pl. Anglo-Egypt. Sudan 1: 121, f. 17, 1950; Sant. & Wagh, BBSI. 5: 105, 1963.  
A. bracteata Retz., Obs. Bot. 5: 29, 1789; FBI. 5: 75; C. 3: 16; Gam. 2: 841; M. 308.

A small, prostrate herb. Leaves broadly ovate or reniform, obtuse, cordate at base. Flowers dark purple, tubular with trumpet-shaped mouth; capsule ribbed, oblong. Seeds deltoid.

Often found on moist sandy soils at Dumas, Hajira and on the way to Magdalla port.

Flowers and fruits : August - January.

JVJ 11, 802.

2. Aristolochia elegans Mast., in Gard. Chron. 2: 301, 1885;

C. 3: 18; Bailey, 346; Bor & Raizada, 26, f. 22; M. 308.

A glabrous climbing shrub. Leaves ovate, cordate, obtuse or rounded. Flowers blotched with dark-purple or violet-brown, white outside; perianth tube elongated, yellowish-green; limb nearly circular.

Often found as an ornamental cultigen in few private gardens.

Local name : Batak vel.

Flowers : October - November.

JVJ 1762.

### 103. PIPERACEAE

1. Anther-cells distinct; stigmas

united, not ciliate ..... 2. Piper

1. Anther-cells fused; stigma penicillate.....1. Peperomia

1. Peperomia R. & P.

Peperomia pellucida (L.) H.B.K. Nov. Gen. 1: 64, 1815; C. 3: 21; Santoy 229.

A small, succulent, branched annual herb with weak, glabrous stems. Leaves broadly ovate, acute, cordate, thinly membranous. Flowers minute, greenish, in terminal and leaf-opposed spikes.

A rare plant growing on old walls during monsoon.

Flowers and fruits : August - September.

JVJ 1128.

2. Piper Linn.

Piper longum Linn., Sp. Pl. 29, 1753; FBI. 5: 83; C. 3: 20.

A creeping plant. Leaves cordate, lower with long petioled. Flowers small, greenish-yellow, in compact spikes.

Cultivated in few gardens.

Local name : Lindi pipar. English name : Long pepper.

Uses : Dry fruits are used medicinally.

flowers and fruits : October - December.

JVJ 1440.

## 104. PROTEACEAE

Grevillea R. Br. (nom.cons.)

Grevillea robusta A. Chunn., in R. Br. Prot. Nov. 24, 1830;  
Haines, 3: 839; Bailey, 345; Sant. 233; M. 308.

A tall, robust, tree. Young branches hoary or rusty-tomentose. Leaves bi- or tri-pinnate; leaflets pinnatifid, silvery beneath. Flowers orange-yellow, showy.

Often planted in gardens and private premises.

English name : Silver Oak, Silk Oak.

Flowers : March (Flowering is a rare).

JVJ 1763.

## 105. LORANTHACEAE

Dendrophthoe Mart.

Dendrophthoe falcata (L. f.) Etting, in Denkschr. Akad.

Wissen. Math-Naturw. Cl. 32: 52, 58, t. 13, f. 14, 1872;  
Sant. 234; M. 309.

Loranthus falcatus Linn. f. Suppl. 211, 1781.

L. longiflorus Desr., in Lamk. Encycl. 3: 598, 1789; Wt.  
Icon. t. 302; FBI. 5: 214; C. 3: 42; Gam. 2: 877.

A large, branched, leafy partial parasite. Leaves thick, leathery, linear-oblong or elliptic. Flowers red below, white or yellow-green above.

Commonly met with on a variety of host plants like Mangifera indica, Cordia dichotoma, Holoptelea integrifolia, Callistemon lanceolatus, Azadirachta indica, Terminalia arjuna and Derris indica.

Local name : Vando.

Flowers and fruits : October - March.

JVJ 625, 1761.

#### 106. LAURACEAE

##### Cassytha Linn.

Cassytha filiformis Linn., Sp. Pl. 35, 1753; Wt. Icon. t.

1847; FBI. 5: 188; C. 3: 35; Gam. 2: 868; Talb. 2: 286.

A herbaceous, twining stem parasite. Stems filiform, twining to the right, green, branched. Leaves O. Flowers green-white. Drupes globose, smooth.

A rare plant; often growing on Albizia lebbeck near Dumas.

Flowers and fruits : August - October.

JVJ 821.

#### 107. SANTALACEAE

##### Santalum Linn.

Santalum album Linn., Sp. Pl. 349, 1753; FBI. 5: 531; C. 3:

49; Gam. 2: 883.

A medium-sized tree. Leaves elliptic-ovate, acute, cuneate, pale-green beneath. Flowers purple to chocolate brown, not scented, in axillary, paniculate cymes. Drupes black.

Commonly planted in gardens and private premises.

Local name : Chandan.            English name : The Sandal tree.

Flowers and fruits : September - January.

JVJ 107, 1782.

#### 108. EUPHORBIACEAE

1. Flowers in cyathia :

2. Involucre regular ..... 8. Euphorbia

2. Involucre irregular ..... 11. Pedilanthus

1. Flowers not in cyathia :

3. Cells of the ovary 1-ovuled :

4. Petals present in one or both sexes  
or if absent, calyx petaloid :

5. Climbing or twining herbs ..... 15. Trogon

5. Erect or prostrate, not climbing :

6. Flowers in spikes or racemes :

7. Seeds non-strophiolate.... 3. Chrozophora

- 7. Seeds with a white  
spongy cap .....5. Croton
- 6. Flowers in 2-3-chotomous cymes ....9. Jatropha
- 4. Petals absent in both the sexes :
  - 8. Stamens many; capsule prickly.....13. Ricinus
  - 8. Stamens few; capsule hairy ..... 1. Acalypha
- 3. Cells of the ovary 2-ovuled :
  - 9. Petals present; calyx valvate ..... 2. Bridelia
  - 9. Petals absent; calyx imbricate :
    - 10. Disk present in the female and often  
in male flowers :
      - 11. Male flowers with a large  
2-3-fid pistillode .....14. Securinega
      - 11. Male flowers without pistillode :
        - 12. Herbs; fruits dry,capsular..12. Phyllanthus
        - 12. Shrubs or trees; fruits fleshy :
          - 13. Shrubs; fruits small,  
dark purple .....10. Kirganelia
          - 13. Trees; fruits large,  
pale yellow :
            - 14. Stamens 3; filaments  
united in a column..7. Emblica

14. Stamens 4;  
 filaments free ..... 4. Cicca
10. Disk absent in both male and  
 female flowers ..... 6. Drypetes
1. Acalypha Linn.
1. Wild herbs :
2. Bracts of female flowers dentate,  
 truncate; capsule hispid ..... 3. A. indica
2. Bracts of female flowers fimbriate;  
 capsule glabrous ..... 1. A. ciliata
1. Cultivated undershrubs or shrubs :
3. Leaves mottled red and purple ..... 4. A. wilkesiana
3. Leaves not as above ..... 2. A. hispida

1. Acalypha ciliata Forsk. Fl. Aeg.-Arab. 162, 1775;

FBI. 5: 417; C. 3: 109; Gam. 2: 930; Pavagadh, 214.

An erect herb. Leaves ovate, finely serrate, acuminate, long-petioled. Flowers greenish; male flowers at the top, minute; female flowers crowded at the base and subtended by large, fimbriate bracts.

A common weed of gardens, roadsides and cultivated fields.

Flowers and fruits : July - April.

JVJ 748, 1931.

2. Acalypha hispida Burm. Fl. Ind. 303, t. 61, f. 1, 1768;  
C. 3: 110; Bailey, 621.

A garden shrub. Leaves broadly ovate-serrate, cordate.  
Female raceme like a cat's tail, scarlet.

Cultivated in the gardens as a beautiful pot-plant.

Local name : Biladini punchha. English name : Red cat tail.

Flowers : January - March.

JVJ 1606.

3. Acalypha indica Linn., Sp. Pl. 1003, 1753; Wt. Icon. t.  
877; FBI. 5: 416; C. 3: 108; Gam. 2: 930; M. 316;  
Pavagadh, 213.

An erect herb. Leaves ovate, rhomboid, acute, long-  
petioled. Flowers greenish-yellow; male flowers at the top;  
female below and subtended by foliaceous bracts.

A common weed of gardens, roadsides, cultivated lands  
and of moist shady localities, more common than previous  
taxon.

Local name : Dadaro.

Flowers and fruits : August - April.

JVJ 376, 810.

4. Acalypha wilkesiana Muell.-Arg. in DC. Prodr. 15: 817, 1866;  
C. 3: 110; Gam. 2: 931; Bailey, 622; M. 317.

A garden shrub. Leaves broadly ovate, cordate, acuminate,

crenate, variously mottled with shades of red and purple or they are perfectly red or brown. Flowers bright red, in long pendulous catkins.

Grown in gardens.

Flowers : October - February.

JVJ 1691.

## 2. Bridelia Willd.

Bridelia squamosa (Muell.-Arg.) Gehrm., in Engl. Bot. Jahrb. 41, Beibl. 95: 30, 1908; Sant. in JBNHS. 50: 305, 1951; Sant. 243; Pavagadh, 209.

B. retusa Spreng. var. squamosa Muell.-Arg., in DC. Prodr. 15(2): 493, 1866; FBI. 5: 268.

B. retusa Hook. f. in FBI. 5: 268; C. 3: 68; Gam. 2: 896 (ambo pro parte, non Spreng.)

A small-sized tree. Leaves elliptic-oblong to ovate-lanceolate, rigidly coriaceous, tomentose beneath. Flowers yellowish green, on long axillary paniced spikes. Drupe fleshy.

A rare plant - perhaps planted in the premises of BRC Udhana.

Flowers and fruits : December - March.

JVJ 544.

## 3. Chrozophora Juss. Corr. Benth & Hook f. (nom. cons.)

1. Erect; leaves glandular at base;

- hairs sessile ..... 2. C. rottleri
1. Prostrate; leaves eglandular at base;  
 hairs stipitate ..... 1. C. prostrata

1. Chrozophora prostrata Dalz., in D. & G. 223, 1861;  
 C. 3: 105; (excl. Sp. afric.); Gam. 2: 921; Sant.  
 249; M. 315.

C. plicata (forma 3) Hook. f. in FBI. 5: 410.

A prostrate, herb; stellately woolly. Leaves broadly ovate or rounded. Flowers unisexual. Capsule densely woolly.

A typical inhabitant of the dry beds of ponds, puddles and ditches, in association with Polygonum plebeium, Coldenia procumbens, Grangea maderaspatana and Heliotropium supinum; also noted as a weed in crop fields.

Local name : Betho Okhrad.

Flowers and fruits : October - May.

JVJ 407, 641, 2028.

2. Chrozophora rottleri (Geis.) Juss. ex Spreng. Syst. 3:  
 850, 1826; Gam. 2: 921; Prain, in Kew Bull. 1918;  
 Sant. 248.

Croton rottleri Geis. Croton. Monogr. 57, 1807.

Chrozophora plicata Voigt, Hort. Sub. Calc. 156, 1846;  
 C. 3: 104 (non A. Juss.).

C. plicata (forma 1) Hook.f., in FBI. 5: 409, 1887.

An erect, woody herb. Leaves ovate-orbicular or obscurely 3-lobed. Flowers yellowish. Capsule hairy when young, becoming red-purple on maturity.

Occasionally seen as a weed of cultivated and fallow fields and noted on sandy river beds.

Flowers and fruits : October - April.

JVJ 98, 1671.

#### 4. Cicca Linn.

Cicca acida (L.) Merr. Interpr. Herb. Amb. 314, 1917; Sant. 246.

Averrhoa acida Linn., Sp. Pl. 428, 1753.

Cica disticha Linn., Mant. 1: 124, 1767.

Phyllanthus distichus Muell.-Arg. in DC. Prodr. 15(2): 413, 1866; FBI. 5: 304; C. 3: 86.

A small, deciduous tree. Leaves distichous; leaflets ovate, acute, base oblique. Flowers reddish, clustered on pendulous branches of old wood. Drupes yellow, globose, somewhat lobed.

Planted in some gardens.

Local name : Zinna amla, Khatta amla.

Flowers and fruits : February - April.

JVJ 676.

#### 5. Croton Linn.

Croton bonplandianum Baill., in Adans. 4: 339, 1864; Croizat, in JBNHS. 41: 573, 1940; M. 315.

C. bonplandianus (Sphalm.) Muell.-Arg. in DC. Prodr. 15:  
671, 1866.

C. sparsiflorum (C. sparsiflorus Sphalm.) Morong. (Sphalm.  
auct. Indic. Morung) in Ann. N.Y. Acad. Sc. 7: 221, 1893;  
Raizada, in Ind. For. Rec. 1: 227, 1939.

An erect, branched herb. Leaves ovate-lanceolate, serrate  
with 2 glands at base. Flowers whitish-yellow; male flowers at  
the top; female at the base. Capsule 3-angled.

Found growing by the side of the road connecting Surat - Ved  
and Katargam; also seen on old walls near Majura gate and on  
waste localities.

Flowers and fruits : August - March.

JVJ 735, 1848.

Codiaeum variegatum Blume, Bijdr. 606, 1825; C. 3: 125; Willis, 250.

The so-called 'Crotons' are often grown in gardens and  
also used as hedges. In some varieties the leaves are curiously  
twisted.

## 6. Drypetes Vahl

Drypetes roxburghii (Wall.) Hurus, in Journ. Fas. Sci. Univ.  
Tokyo, Sect. 3, Bot. 6: 335, 1954.

Putranjiva roxburghii Wall. Tent. Fl. Nep. 61, 1826; Wt.  
Icon. t. 1876; FBI. 5: 336; C. 3: 86; Gam. 2: 917;  
Wealth of Ind. 8: 325, f. 121.

A medium-sized tree. Leaves elliptic-oblong, undulate. Flowers greenish-yellow; females 1-3 in cymes; males crowded in axillary clusters. Drupes ellipsoid-tomentose.

Frequently cultivated in gardens; planted at the entrance of M.T.B. College.

Local name : Putranjiva.

Flowers and fruits : November - April.

JVJ 675, 1600.

#### 7. Emblica Gaertn.

Emblica officinalis Gaertn. Fruct. 2: 122, 1791; Wt. Icon. t. 1896; Gam. 2: 906; Sant. 246; M. 320; Pavagadh, 211.

Phyllanthus emblica Linn., Sp. Pl. 982, 1753; FBI. 5: 289; C. 3: 81.

A small, deciduous tree. Leaves linear-oblong. Flowers yellow, in axillary fascicles below the leaves, male flowers many, on short, slender pedicels; female flowers few. Drupes globose, pale-yellow, fleshy, smooth with six faint vertical lines.

Cultivated at Dumas and in some gardens.

Local name : Mota ambla. English name : Emblic myrabolan.

Uses : Fruits are used for pickles.

Flowers and fruits : October - April.

JVJ 481.

8. Euphorbia Linn.

## 1. Plants armed with stipular spines :

2. Small, woody shrubs; flowers crimson ....5. E. milii2. Erect shrubs or trees; flowers yellowish.6. E. neriifolia

## 1. Plants unarmed :

## 3. Shrubs or small trees :

4. Stems green, cylindrical;

leaves small, deciduous .....13. E. tirucalli

4. Stems and leaves not as above;

upper leaves bright red .....11. E. pulcherrima

## 3. Annual or perennial herbs :

## 5. Involucre with a single large gland :

6. Upper leaves blotched with red and

white; cultigen ..... 3. E. heterophylla6. All leaves green; wild ..... 2. E. geniculata

## 5. Involucral glands not large :

## 7. Involucral glands horned :

8. Bracts linear-lanceolate;

involucre with 2-glands ..... 1.E. dracunculoides

8. Bracts short, sub-orbicular;

involucre with 4-glands ..... 9.E. perbracteata

## 7. Involucral glands not horned :

9. Glands of involucre with a conspicuous,

petaloid limb; capsule hairy.... 8. E. parviflora

9. Glands of involucre without a petaloid  
limb or limb not conspicuous :

10. Erect or ascending herbs; leaves  
upto 35 mm. long ..... 5. E. hirta

10. Prostrate herbs; leaves less than  
12 mm. long :

11. Stems glabrous or nearly so;  
capsule glabrous all over ..... 4. E. heyneana

11. Stems hairy :

12. Capsules pubescent all over. 12. E. thymifolia

12. Capsule pubescent only at  
the angles, glabrous  
elsewhere ..... 10. E. prostrata

1. Euphorbia dracunculoides Lamk., Encycl. Method. 2: 428,  
1788; FBI. 5: 262; C. 3: 66; Gam. 2: 894; Sant., in  
Bull. Bot. Soc. Beng. 8(1): 11, 1954; M. 312;  
Pavagadh, 207.

An erect, apparently, dichotomously branched herb. Leaves  
linear-lanceolate. Floral and vegetative leaves more or less  
similar. Cyathia on short stalk. Capsule glabrous.

A rare plant; found as a weed of irrigated wheat fields  
around Jahangirpura.

Local name : Chanchadio.

Flowers and fruits : December - March.

JVJ 2056.

2. Euphorbia geniculata Orteg. Nov. Pl. Hort. Matrit. Dec. 18, 1797; FBI. 5: 239; C. 3: 66; M. 312.

An erect herb or undershrub. Leaves elliptic, lanceolate to ovate. Flowers in cyathia. Involucres 5-lobed with one conspicuous, lateral glands. Capsule 3-celled.

Fairly common on moist soils; a weed of gardens and cultivated fields, often growing with Cotton, Sorghum and vegetable fields.

Flowers and fruits : August - April.

JVJ 690, 2090.

Plate 27 B

3. Euphorbia heterophylla Linn., Sp. Pl. 453, 1753; C. 3: 66; Bailey, 618.

A bushy, annual herb. Leaves panduriform, rarely elliptic or obovate; floral leaves with a scarlet or deep-red patche in basal half. Capsule glabrous.

Often grown in gardens as an ornamental; also seen as an escape.

Local name : Lal patti.

Flowers and fruits : Major part of the year.

JVJ 2154.

4. Euphorbia heyneana Sprengel, Syst. Veg. 3: 791, 1826; Panigrahi, Kew Bull. 29: 695, 1974.

E. orbiculata H.B. & K. Nov. Gen. et Sp. 2: 52, 1817;

Rajgopal & Panigrahi, in Taxon 17: 547, 1969.

E. bombaiensis Sant., in Bull. Bot. Soc. Beng. 8: 17, 1954;

Sant. 242; Pavagadh, 208.

E. microphylla Heyne ex Roth, Nov. Pl. Sp. 229, 1821 (non

Lamk., 1788); FBI. 5: 252; C. 3: 65; Fl. Dangs, 83.

A prostrate, much-branched, glabrous herb. Leaves elliptic-obovate or rounded. Involucres solitary or 2-3 axillary; capsule glabrous.

Occasionally found as a weed on the dried slope of river banks.

Flowers and fruits : June - October.

JVJ 413.

5. Euphorbia hirta Linn., Sp. Pl. 454, 1753; Fl. Dangs, 83;

M. 312; Pavagadh, 207; Airy Shaw, in Kew. Bull. 26(2): 264, 1972.

E. pilulifera auct. (non Linn.) FBI. 5: 250; C. 3: 64.

Chamaesyce hirta (L.) Millsp. in Publ. Field Columb. Mus.

Bot. 2: 303, 1909.

An erect, annual herb; stems covered with long, yellowish crisped hairs. Leaves oblong-lanceolate, oblique. Flowers in dense crowded globose cyme; capsule hairy.

A common weed of fallow and cultivated fields; gregarious along the river banks.

Local name : Chamar dudheli.

Flowers and fruits : Almost throughout the year.

JVJ 733, 1627.

6. Euphorbia mili Ch-des-Moulins, in Bull. Hist. Nat. Soc.

Linn. Bordeaux 1: 27-30, Pl. 1, 1826; Croizat, in Journ. Arn. Arb. 21: 506, 1940; M. 311.

E. splendens Boj. ex Hook. in Bot. Mag. t. 2902, 1829;  
C. 3: 66; Gam. 2: 894.

A small, armed shrub. Leaves fascicled, spatulate or obovate. Flowers showy, crimson in long-peduncled dichotomous cymes, each cyathium subtended by 2 hemispheric, cuspidate, bright red bracts.

Grown as ornamental garden herb.

Flowers : Throughout the year.

JVJ 635, 1689.

7. Euphorbia neriifolia Linn., Sp. Pl. 451, 1753; FBI. 5: 255;

C. 3: 59; Gam. 2: 893; Sant. 240; Fl. Dangs, 83; M. 311.

A large, succulent, armed shrub. Leaves fleshy, obovate-oblong; leafless at the time of flowering and fruiting. Cyathia yellowish-green.

Commonly grown as a hedge plant around cultivated fields.

Local name : Thor.

Flowers and fruits : December - April.

JVJ 19, 57.

8. Euphorbia parviflora Linn., Syst. (ed. 10) 2: 1049, 1759;  
Sant. 243; Santapau, loc. cit. 13; Pavagadh, 207.
- E. hypericifolia Linn., Sp. Pl. 454, 1753; FBI. 5: 249  
(pro parte); Airy Shaw, loc. cit. 265.
- E. hypericifolia L. var. parviflora (L.) Hook. f. in  
FBI. 5: 250; C. 3: 63.

An erect, sub-erect or prostrate herb, branches often purplish. Leaves elliptic-oblong to linear-oblong, often serrulate. Involucres axillary and terminal clusters with white or pink limb. Capsule hairy.

Fairly common; noted as a weed in gardens and crop fields.  
Flowers and fruits : August - March.  
JVJ 6, 1107, 1578.

9. Euphorbia perbracteata Gage, in Kew Bull. 1914; 238, 1914;  
Haines, 1: 150; Santapau, loc. cit. 23; Sant. & Shah,  
in JBNHS. 62(2): 207, 1965.

A coarse annual with pale stems, 2-3-chotomously branched above. Lower leaves narrow oblong, upper broader and rounded. Involucral glands 4, truncate, broadly oblong with a reflexed horn each side.

A rare plant; collected as a weed from cultivated fields.  
Flowers and fruits : December - April.  
JVJ 403, 1978.

10. Euphorbia prostrata Ait. Hort. Kew (ed. 1) 2: 139, 1789;  
 FBI. 5: 266; Santapau, loc. cit. 16; Airy Shahw,  
loc. cit. 266; Nair & Nair, in BBSI. 5: 220, 1964;  
 M. 313; Pavagadh, 208; Nair & Pant, BBSI. 8(1): 75-77,  
 1966.

A small, prostrate, glabrous herb. Leaves oblong or nearly  
 as broad as long. Involucres many, axillary; flowers greenish-  
 yellow. Capsule pubescent on the angles, glabrous elsewhere.

Noted from the dry soils of river beds.

Flowers and fruits : August - December.

JVJ 766, 1215.

11. Euphorbia pulcherrima Willd. ex Klotz. in Otto. Dietr. Allgem.  
 Gartenz. 2: 27, 1834; FBI. 5: 239; C. 3: 66; Gam. 2:  
 894; M. 311; Sant. 243.

Poinsettia pulcherrima R. Grah., in Edinb. N. Phil. Journ.  
 20: 412, 1836; Bor & Raizada, 171, Pl. 60, 61.

A small shrub. Leaves ovate-elliptic to lanceolate,  
 bracteal leaves bright vermillion red or crimson-scarlet.  
 Cyathia in cyme. Involucres with a large yellow gland on one side.

Planted in gardens.

Local name : Moti Lalpatti. English name : Poinsettia.

Flowers : December - April.

JVJ 687, 1690.

12. Euphorbia thymifolia Linn., Sp. Pl. 454, 1753; FBI. 5: 252; C. 3: 64; Gam. 2: 893; Fl. Dangs, 84; Sant. 241; M. 313; Pavagadh, 208.

A small prostrate annual herb. Stems and branches hispidly pubescent. Leaves obliquely oblong, rounded. Involucres axillary small. Capsule pubescent.

Occasionally noted as a garden weed and near margins of drying ditches.

Flowers and fruits : August - January.

JVJ 1049, 1670.

13. Euphorbia tirucalli Linn., Sp. Pl. 452, 1753; FBI. 5: 254; C. 3: 66; Gam. 2: 893; Bailey, 618; Fl. Dangs, 84; Pavagadh, 206.

An unarmed, shrub or small tree, branches green, succulent, smooth with white milky latex. Leaves minute, linear-spathulate; seen only in rainy season.

Cultivated as a hedge plant.

Local name : Kharsani.

Flowers and fruits : Not seen.

JVJ 757.

#### 9. Jatropha Linn.

1. A small tree ..... 1. J. curcas

1. Shrubs :

2. Stems much swollen at the base .....3. J. podagrica

2. Stems not swollen at the base .....2. J. gossypifolia

1. Jatropha curcas Linn., Sp. Pl. 1006, 1753; FBI. 5: 383;

C. 3: 95; Gam. 2: 937; Sant. 220.

A small tree. Leaves large, angled or lobed. Flowers yellowish-green.

Planted in hedges; plenty on the way to Ichhapor.

Local name : Ratanjyot.

Flowers and fruits : October - March.

JVJ 2, 1202.

2. Jatropha gossypifolia Linn., Sp. Pl. 1006, 1753; FBI. 5:

383; C. 3: 94; Gam. 2: 937; Bor & Raizada, 175, f. 108,

Pl. 64.

A much-branched, glandular shrub. Leaves 3-5-lobed, reddish brown in colour. Flowers deep-red. Capsule 3-lobed.

Fairly common on the sandy river beds near Singpor; also noted on wastelands and on open grounds; often planted near tombs.

Flowers and fruits : August - April.

JVJ 708, 1512.

3. Jatropha podagrica Hook. Bot. Mag. t. 4376; C. 3: 95; Sant.

220; Bor & Raizada, 173, f. 107.

A small shrub with the stem swollen at the base. Leaves

large, peltate, 3-5-lobed. Flowers red or scarlet. Capsule green.

Planted in the botanical garden of P. T. Science College.

Flowers and fruits : September - April.

JVJ 1775.

10. Kirganelia Juss.

Kirganelia reticulata (Poir.) Baill. Etudes. Gen. Euph. 613, 1858; Gam. 2: 905; Sant. 246; Fl. Dangs, 84; M. 320; Pavagadh, 211.

Phyllanthus reticulatus Poir, in Lamk. Encycl. 5: 298, 1804; FBI. 5: 288; C. 3: 81.

A large, glabrous, straggling shrub with drooping branches. Leaves elliptic-oblong. Flowers greenish-yellow; males in fascicles of 2-6; female solitary. Berries globose, smooth, dark purple.

Common in hedges and on the upper belt of river banks.

Local name : Kambei.

Flowers and fruits : August - April.

JVJ 571, 749.

11. Pedilanthus Neck.

Pedilanthus tithymaloides (L.) Poit. in Ann. Mus. Hist. Nat.

Paris 19: 390, t. 19, 1812; FBI. 5: 252; C. 3: 124.

Euphorbia tithymaloides Linn., Sp. Pl. 453, 1753.

A succulent shrub. Leaves fleshy. Involucres scarlet red, slipper-shaped.

Grown as a hedge plant.

Local name : Vilayati Kharsani.

Flowers and fruits : February - April.

JVJ 874, 1732.

12. Phyllanthus Linn. emend. Gaertn.

1. Capsule echinate ..... 3. P. urinaria

1. Capsule smooth :

2. Stipules peltate :

3. Leaves closely set on the branches,

oblong, rounded not cuneate at base;

stipules sagittate at base .....4. P. virgatus

3. Leaves scattered on the branches,

obovate, cuneate; stipules scarious.2. P. maderaspatensis

2. Stipules not peltate .....1. P. fraternus

1. Phyllanthus fraternus Webster, Contr. Gray. Herb. 176: 53, 1955, et in Journ. Arnold. Arb. 38: 309, 1957.

P. niruri auct. non L. : J. Hooker, Fl. Brit. India 5: 298, 1887; Wt. Icon. t. 1894; C. 3: 84; Gam. 2: 903.

A small, erect herb. Leaves oblong-elliptic, rounded or

sub-cordate; stipules lanceolate, basally attached. Flowers yellowish-white; males 1-3 together; female solitary. Capsule globose, smooth.

Sparsely distributed near the water margin of canals, on wet grassy soils and weed of crop fields.

Local name : Bhonya Amli.

Flowers and fruits : August - April.

JVJ 807, 992.

2. Phyllanthus maderaspatensis Linn., Sp. Pl. 982, 1753; Wt.

Icon. t. 1895, f. 3; FBI. 5: 292; C. 3: 82; Gam. 2:

902; Sant. 246; M. 319; Pavagadh, 210.

An erect, glabrous herb. Leaves obovate-cuneate, mucronate. Flowers fascicled; males in clusters, small; females axillary solitary, large. Capsule smooth, 3-lobed.

Fairly common in the fallow and cultivated fields; along the margin of canals on wet soils.

Flowers and fruits : August - April.

JVJ 42, 404, 2088.

3. Phyllanthus urinaria Linn., Sp. Pl. 982, 1753; FBI. 5: 293;

C. 3: 83; Gam. 2: 902.

P. leprocarpus Wt. Icon. t. 1895, f. 4, 1852.

A small herb. Leaves oblong-elliptic, mucronate, rounded,

margin often purple. Flowers yellowish-green; male flowers fascicles, female flowers solitary.

A rare plant; noted along the banks of canals.

Flowers and fruits : October - March.

JVJ 1131, 2087.

4. Phyllanthus virgatus Forst. f., Fl. Ins. Austr. Prodr. 65, 1786; Backer & Bakh, f. Fl. Java 1: 469, 1963.

P. simplex Retz., Obs. Bot. 5: 29, 1788; FBI. 5: 295; C. 3: 83; Gam. 2: 902; M. 319; Pavagadh, 210.

A prostrate or ascending herb. Leaves linear-oblong, distichous, closely set, often overlapping. Flowers solitary; female larger than male. Capsule globose.

A weed of crop fields and also seen on moist soils.

Flowers and fruits : August - December.

JVJ 808.

### 13. Ricinus Linn.

Ricinus communis Linn., Sp. Pl. 1007, 1753; FBI. 5: 457; C. 3: 125; Gam. 2: 933; Sant. 252; M. 316; Pavagadh, 214.

A large shrub. Leaves large, palmately lobed, peltate, long petioled. Flowers in racemes; males at the upper end; female below. Capsule 3-lobed, echinate; seeds mottled.

Cultivated in fields; often planted in gardens and near habitation.

Local name : Dívelo, Erando. English name : Castor plant.

Flowers and fruits : October - March.

JVJ 769.

14. Securinega Comm. ex Juss. (nom. cons.)

Securinega virosa (Willd.) Baillon, Adansonia 6: 334, 1865-66;

Pax & Hoffm., in Engl. & Prantl. Pflanzenfam. (ed. 2)

19C: 60, 1931; Sant. 244; M. 318; Airy Shaw, loc. cit. 340.

Phyllanthus virosus Roxb. ex Willd. Sp. Pl. 4: 578, 1805.

Flueggea microcarpa Bl. Bijdr. 580, 1826; FBI. 5: 328;

C. 3: 77.

An erect, unarmed shrub. Leaves obovate or rounded. Flowers white. Berry fleshy, becoming white with age.

Occasionally seen along hedge plants.

Flowers and fruits : September - February.

JVJ 110, 916.

15. Tragia Linn.

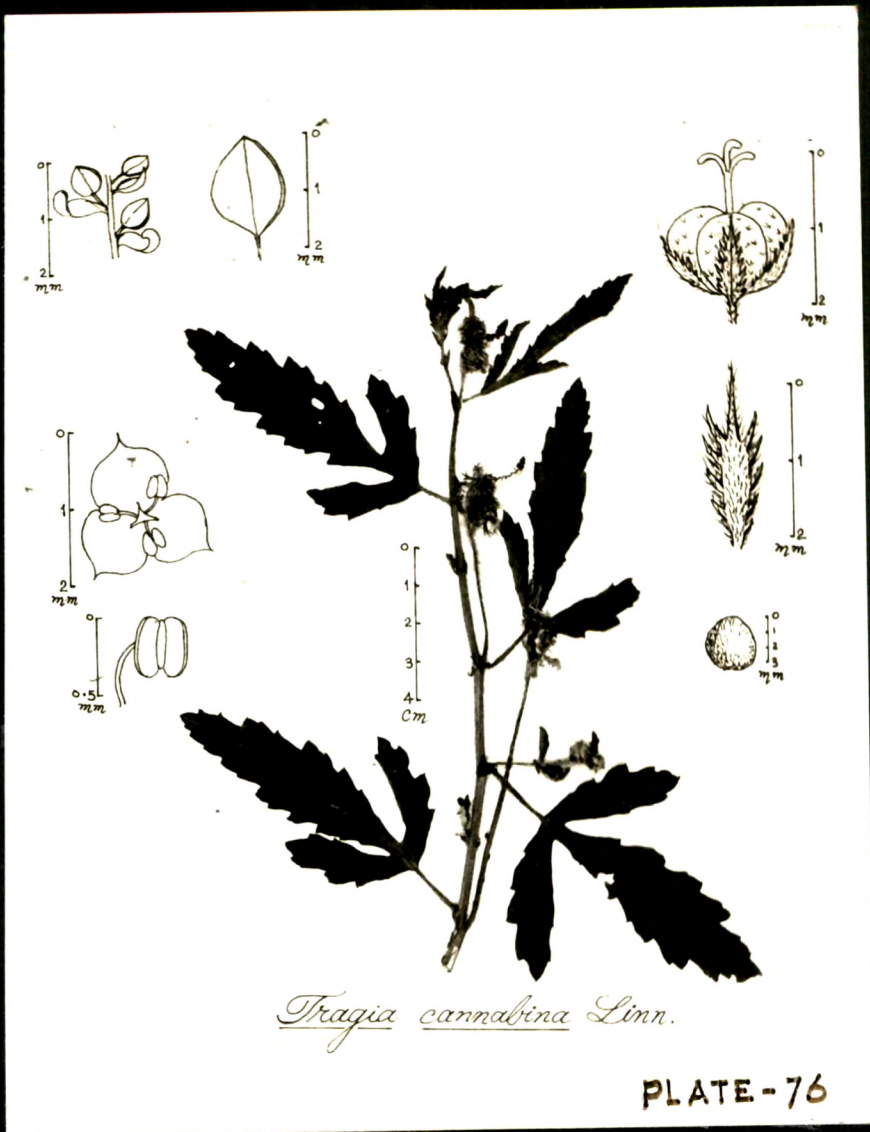
Tragia cannabina Linn. f. Suppl. 415, 1781; C. 3: 120;

Gam. 2: 932.

T. involucrata var. cannabina Muell.-Arg. in DC. Prodr.

15: 944; FBI. 5: 465.

A hispid climber or twiner with stinging hairs. Leaves palmately 3-partite; lobes toothed or pinnatifid. Flowers in



racemes; males in the upper part, yellowish; female in the lower part. Capsule 3-lobed, hirsute.

Rare; growing near hedges and on waste, fallow land around Rander; often noted near railway line at Udhana.

Flowers and fruits : July - December.

JVJ 10, 709, 1124.

Plate 76.

Manihot esculenta Crantz, is recently introduced and planted as an garden ornamental. The starchy roots, commercially known as Tapioca, are edible.

JVJ 2155.

#### 109. ULMACEAE

1. Fruit samara; leaves dark green on  
both sides; not scabrous ..... 1. Holoptelea
1. Fruit a drupe; leaves silky-tomentose  
below, scabrous ..... 2. Trema

#### 1. Holoptelea Planch.

Holoptelea integrifolia (Roxb.) Planch., in Ann. Sc. Nat.

(Ser. 3) 10: 259, 1848; Wt. Icon. t. 1968; FBI. 5: 481;

C. 3: 127; Gam. 3: 943; M. 321; Sant. 252.

Ulmus integrifolia Roxb., Pl. Cor. 1: 56, t. 78, 1795.

A medium-sized, deciduous tree; bark smooth, grey. Leaves

ovate-elliptic to broadly-ovoid, sub-coriaceous. Flowers greenish; in numerous fascicles on the leafless branches. Samara with orbicular and reticulately veined wings.

Occasional; planted in gardens and along roadsides; tree becoming leafless when fruiting.

Local name : Kanajo.

Flowers and fruits : February - April.

JVJ 1740.

## 2. Trema Lour.

Trema orientalis (L.) Blume, Mus. Bot. Lugd-Bat 2: 62, 1856;

FBI. 5: 484; C. 3: 129; Gam. 3: 945; Sant. 253;

Pavagadh, 215.

Celtis orientalis Linn., Sp. Pl. 1044, 1753.

A medium-sized tree. Leaves obliquely-ovate, acuminate, crenate-serrulate, usually with 3-nerved from the base. Flowers greenish, minute, axillary. Drupes globose, green, becoming black when mature.

Rare throughout the area. Few plants (w) are seen in hedges along roadsides on the way to Hari Nursery and Ved.

Flowers and fruits : October - February.

JVJ 1343, 1436.

## 110. URTICACEAE

1. Plants with stinging hairs; leaves

alternate; wild plant .....1. Laportea

1. Plants glabrous; leaves opposite;

cultivated plant ..... 2. Pilea

1. Laportea Gaud. (nom. cons.)

Laportea interrupta (L.) Chew. in Gard. Bull. Singapore 19:

200, 1965; Raizada, in Ind. For. 94(6): 445, 1968.

Urtica interrupta Linn., Sp. Pl. 985, 1753.

Fleurya interrupta (L.) Gaud. in Bot. Freye. Voy. 497, 1826;

Wt. Icon. t. 1975; FBI. 5: 548; C. 3: 131; Sant. 253; Fl.

Dangs, 86; Pavagadh, 216.

An annual herb with stinging hairs. Leaves broadly-ovate, acuminate, coarsely crenate, serrate. Flowers greenish, in solitary, axillary spikes or racemes.

Occasional in moist, shady places.

Flowers and fruits : August - November.

JVJ 890.

Pilea Lindl. (nom. cons.)

Pilea microphylla (L.) Leibm., in Vidensk. Selsk. Shr. (5)2:

296, 1851; FBI. 5: 551; C. 3: 160; Gam. 3: 965; Sant. 255.

Parietaria microphylla Linn., Syst. (ed. 10), 1308, 1759.

A small, prostrate or sub-erect, succulent herb with numerous, patent branches. Leaves very small, unequal, elliptic-oblong or obovate, entire, distichous. Flowers minute, in axillary cymes.

Cultivated in gardens as a potted plant for its graceful foliage.

Flowers and fruits : October - December.

JVJ 696, 1694.

### 111. MORACEAE

1. Inflorescence in a hollow, receptacle;  
flowers hidden .....2. Ficus
1. Inflorescence not in a hollow receptacle;  
flowers patent :
  2. Flowers crowded on the outside of  
oblong or irregularly globose, large  
receptacles .....1. Artocarpus
  2. Flowers in dense spikes or heads :
    3. Perianth fleshy in fruit .....3. Morus
    3. Perianth not fleshy in fruit .....4. Streblus
1. Artocarpus J. R. & G. Forst. (nom. cons.)
  1. Fruit very large, cylindric-oblong, more  
than 25 cm. long, hanging from the trunk..1.A. heterophyllus
  1. Fruit sub-globose, less than 10 cm. in  
diameter, not hanging from the trunk.....2.A. lakoocha
1. Artocarpus heterophyllus Lamk., Encycl. 3: 210, 1789;  
M. 322; Sant. 260.

A. integrifolia auct. non L. f., FBI. 5: 541; C. 3: 158;  
Gam. 3: 957.

A large, evergreen tree. Leaves elliptic, obovate or oblong, scabrous. Flowers in heads, crowded on the outside of large receptacle; male heads cylindric, females cylindric, tubercled and very large at maturity.

Cultivated at few places including Gandhibaaag.

Local name : Phanas.      English name : Jack-fruit.

Flowers and fruits : January - May.

JVJ 1749.

2. Artocarpus lakoocha Roxb., Fl. Ind. 3: 524, 1832; FBI. 5: 543; C. 3: 158; Duthie, 2: 234; M. 322.

A large, deciduous tree. Leaves elliptic, obovate or oblong. Flowers yellowish-white, in axillary, short-stalked heads. Fruit smooth, lobulate, yellow when ripe.

A rare plant; planted in one private orchard near Sultanabad - Dumas.

Local name : Lakuch.

Flowers and fruits : February - April.

JVJ 1850.

## 2. Ficus Linn.

1. Receptacles sessile :

2. Leaves glabrous :

- 3. Leaves broadly ovate, cordate,  
acuminate, aerial roots absent....6. F. religiosa
- 3. Leaves elliptic or narrowly oblong-  
ovate, acute, aerial roots often  
present .....1. F. amplissima
- 2. Leaves tomentose beneath .....2. F. benghalensis
- 1. Receptacles stalked :
  - 4. Receptacles in clusters :
    - 5. Leaves alternate .....5. F. racemosa
    - 5. Leaves opposite .....4. F. hispida
  - 4. Receptacles solitary or in pairs :
    - 6. Leaves lobed; receptacle solitary..3. F. carica
    - 6. Leaves entire; receptacle paired...7. F. virens
- 1. Ficus amplissima Sm., in Rees, Cyclop. 14: 1, 1809; Sant. &  
Janardhanan, 46.
- F. tsiela Roxb., Fl. Ind. 3: 549, 1832; FBI. 5: 515;  
C. 3: 150; Talb. 2: 518.

A glabrous tree with or without aerial roots. Leaves elliptic or narrowly oblong-ovate, subcoriaceous. Receptacles crowded at the ends of branches.

Occasionally seen as a strangler on Borassus flabellifer, on the way to Mora and Hajira; also grown as a roadside tree.

Flowers and fruits : October - March.

JVJ 1074.

Plate 11B

2. Ficus benghalensis Linn., Sp. Pl. 1059, 1753; FBI. 5: 499;  
C. 3: 145; Gam. 3: 952; M. 324; Sant. 256; Pavagadh, 219.

A large evergreen tree with numerous aerial roots. Leaves ovate-obtuse. Receptacles globose, red when ripe.

Fairly common throughout the area.

Local name : Vad.      English name : Banyan.

Flowers and fruits : October - April.

JVJ 107.

3. Ficus carica Linn., Sp. Pl. 1059, 1753; C. 3: 155; Duthie  
2: 250; Bailey, 339; M. 327.

A small-sized tree, branching from the base. Leaves scabrid, base cordate. Receptacles green becoming yellowish-purple, when mature.

A rare plant; recently introduced in cultivation at few places.

Local name : Anjir.      English name : Fig.

Uses : Fruits are edible.

Flowers and fruits : March - October.

JVJ 2152.

4. Ficus hispida Linn. f., Suppl. 442, 1781; FBI. 5: 522; C. 3:

154; Gam. 3: 956; Sant. 258; Pavagadh, 218.

A shrub or small tree; hispidly pubescent in all parts. Leaves ovate-oblong. Receptacles in cluster or short tubercled branches.

Found on waste places, on the upper belt of river banks; occasionally in the crevices of old walls.

Local name : Jangli umardo.

Flowers and fruits : November - April.

JVJ 545, 1073.

5. Ficus racemosa Linn., Sp. Pl. 1060, 1753; Corner, in Dansk. Bot. Arkiv. 23: 28, 1963; Sant. 259.

F. glomerata Roxb., Pl. Cor. 2: 13, t. 123, 1798; FBI. 5: 535; C. 3: 154; Gam. 3: 954; M. 326.

An evergreen tree. Leaves ovate-oblong or elliptic-lanceolate. Receptacles on short leafless branches, sub-globose.

More or less planted near habitation.

Local name : Umardo.

Flowers and fruits : October - April.

JVJ 880, 1074.

6. Ficus religiosa Linn., Sp. Pl. 1059, 1753; FBI. 5: 513; C. 3: 149; Gam. 3: 953; M. 325; Sant. 257; Pavagadh, 219.

A large tree. Leaves ovate, cordate, acuminate, shining. Receptacles spherical, depressed.

A sacred tree for Hindus; planted near temples and human habitation.

Local name : Pimplo.

Flowers and fruits : October - April.

JVJ 108.

7. Ficus virens Ait. Hort. Kew 3: 451, 1789; Corner, in Gard.

Bull. Singapore 17: 376, 1960; M. 327; Sant. 258;

Santapau & Janardhanan, 46.

F. infectoria Roxb., Fl. Ind. 3: 551, 1832; FBI. 5: 515;

C. 3: 151.

F. lacor auct. non Buch.-Ham.

A medium-sized tree. Leaves elliptic to ovate-lanceolate, coriaceous. Receptacles axillary, sessile on old wood or on ultimate branches.

Occasionally found along roads and near habitation.

Local name : Pipli or Pipal.

Receptacles : September - April.

JVJ 9.

Ficus elastica Roxb. has been cultivated in the garden of P. T. Science College.

### 3. Morus Linn.

Morus alba Linn., Sp. Pl. 986, 1753; FBI. 5: 492; C. 3: 159;

Gam. 3: 958; Bailey, 337; M. 328; Sant. 255.

A small, deciduous tree. Leaves ovate to lanceolate, base cordate. Flowers monoecious; male elongated catkins; female short, ovoid. Fruits dark purple to red when ripe.

Grown in gardens and private premises.

Local name : Shetur.      English name : Mulberry.

Uses : Fruits are edible.

Flowers and fruits : February - April.

JVJ 1072, 1767.

#### 4. Streblus Lour.

Streblus asper Lour. Fl. Cochinch. 2: 615; 1790; FBI. 5: 489;  
C. 3: 141; Talb. 2: 502, t. 516; M. 329; Pavagadh, 217.

Epicarpurus orientalis Blume, Bijdr., 488, 1825; Wt.

Icon. t. 1961.

A large shrub or a small tree. Leaves obovate, acute or acuminate, rough like a sandpaper. Flowers unisexual; males in shortly pedunculate globose heads; female solitary. Fruits yellow, enclosed in the enlarged perianth.

Occasionally seen along hedges; not common.

Local name : Kharoti.      English name : Sandpaper-tree.

Flowers and fruits : October - April.

JVJ 646, 1430.

## 112. CASUARINACEAE

Casuarina Linn.

Casuarina equisetifolia Linn., Amoen. Acad. 4: 143, 1759; FBI.

5: 598; C. 3: 161; Sant. 260; M. 330; Pavagadh, 220.

A tall, evergreen tree; stems jointed, cylindrical, ribbed. Leaves reduced to scales, in whorls. Male spikes cylindric; female flowers in globose or ovoid heads.

Extensively planted along the sea-coasts at Dumas, Bhimpor and Hajira; also grown in gardens and at front of buildings.

Local name : Sharu.

Flowers and fruits : August - February.

JVJ 868.

## 113. CERATOPHYLLACEAE

Ceratophyllum Linn.

Ceratophyllum demersum Linn., Sp. Pl. 992, 1753; FBI. 5: 539;

C. 3: 165; Gam. 3: 937; Sant. 232; Subramanyam, in Aquat.

Angios. 52; van Steenis, Fl. Males I. 4: 41-42, f.1, 1951.

C. verticillatum Roxb., Fl. Ind. 3: 624, 1832.

A slender, submerged, free floating, rootless, much-branched, aquatic herb. Leaves whorled, divided into filiform segments. Male and female flowers solitary.

Common in the stagnant and shallow waters of ponds and

ditches.

Flowers and fruits : October - March.

JVJ 2153.

#### 114. HYDROCHARITACEAE

1. Leaves cauline :

2. Leaves mostly whorled; stamens 3.....1. Hydrilla

2. Leaves mostly alternate; stamens 2.....2. Nechamandra

1. Leaves radical :

3. Leaves broad, petiolate; flowers

bisexual .....3. Ottelia

3. Leaves linear, ribbon-like, more or less

sessile; flowers unisexual .....4. Vallisneria

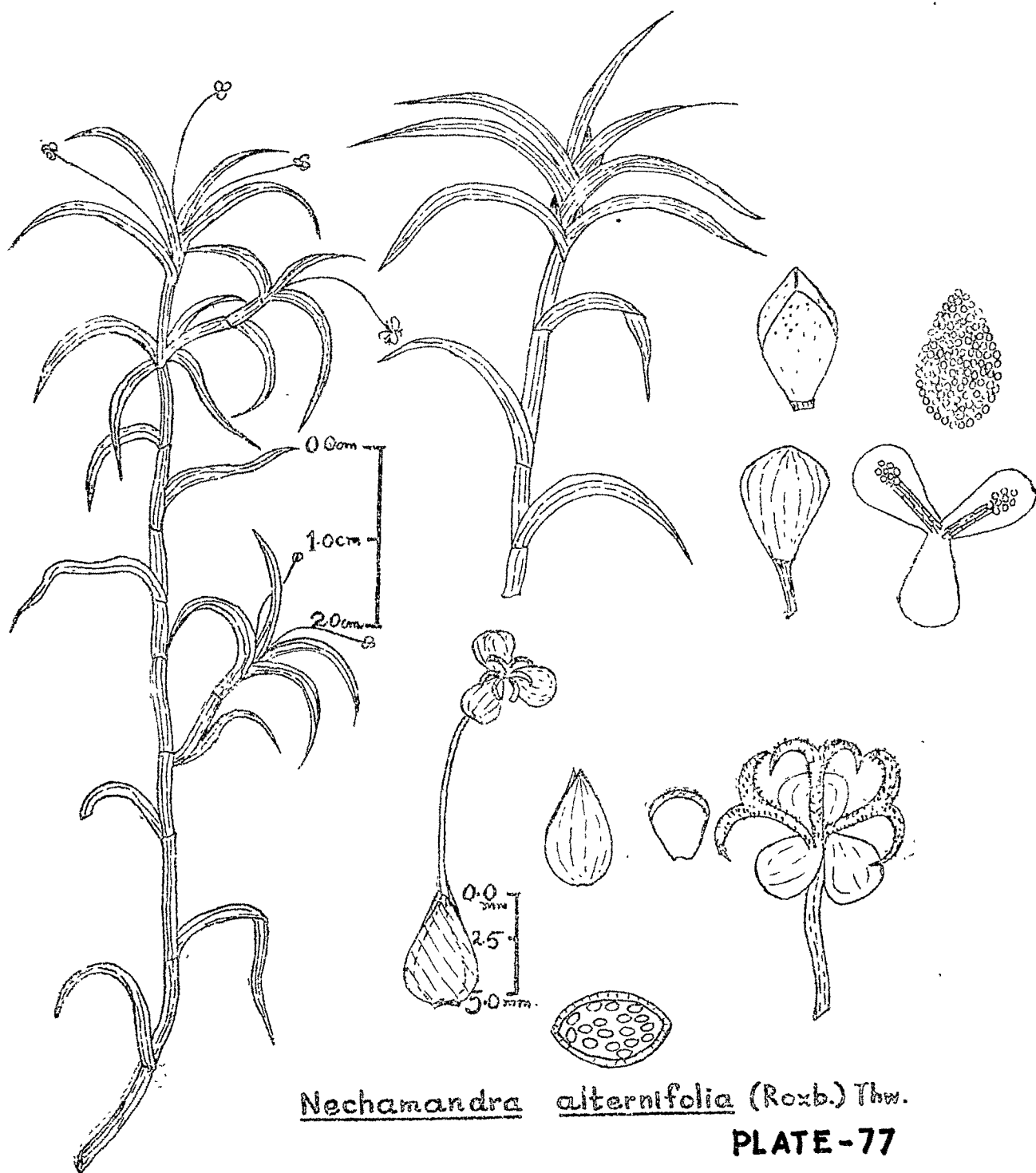
1. Hydrilla Rich.

Hydrilla verticillata (Linn. f.) Royle, Ill. Bot. Himal. t.

356, 1839; FBI. 5: 659; C. 3: 170; Gam. 3: 977; Hartog,  
in Fl. Males. I, 5: 385, f. 1, 1957; Subramanyam, in  
Aquat. Angios. 55, f. 37, 1962; M. 331; Sant. 262.

Serpicula verticillata Linn. f. Suppl. 416, 1781.

A submerged, much-branched, slender herb. Leaves sessile, oblong-linear, entire, in whorls. Flowers small; male flowers solitary, pedicellate, female sessile.



Abundant in still waters of ponds, ditches; also grown in aquaria.

Local name : Baam.

Flowers and fruits : August - March.

JVJ 167, 2062.

## 2. Nechamandra Planch.

Nechamandra alternifolia (Roxb.) Thw. Enum. Pl. Zeyl. 332, 1864; Subramanyam, loc. cit. 56, f. 38.

Vallisneria alternifolia Roxb., Pl. Cor. 2: t. 165, 1802 & Fl. Ind. 3: 750, 1832; Wt. Icon. t. 11.

Lagarosiphon roxburghii (Planch.) Benth., in B. & H.f. Gen. Pl. 3: 451, 1883; FBI. 5: 659; C. 3: 170; Gam. 3: 977 (L. alternifolia Druce).

A slender, submerged herb. Leaves long, linear, serrulate or entire. Male flowers numerous in an axillary spathes; female flowers solitary, axillary, long; stigma 6-lobed.

A rare plant; collected once from the shallow waters of pond on the way to Katargam.

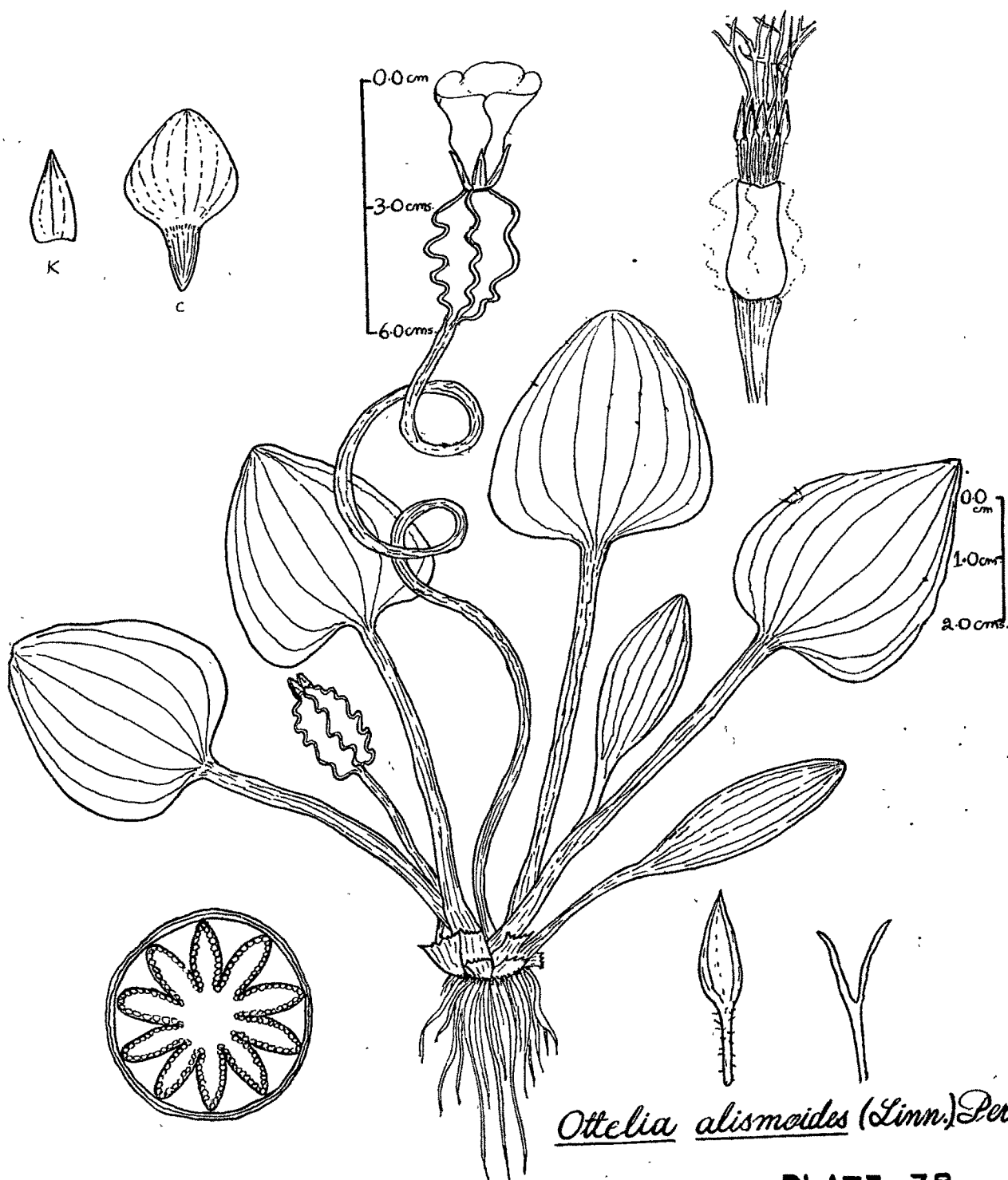
Flowers and fruits : October - November.

JVJ 1331.

Plate 77.

## 3. Ottelia Pers.

Ottelia alismoides (L.) Pers. Syn. Pl. 1: 400, 1805; FBI. 5:662;



*Ottelia alismoides* (Linn.) Pers.

C. 3: 175; Gam. 3: 978; Hartog, loc. cit. 398;

Subramanyam, loc. cit. 61, f. 43.

Stratiotes alismoides Linn., Sp. Pl. 1: 535, 1753.

A submerged or partly floating, rooted herb. Leaves of 2 types; submerged narrow or oblong, shortly petioled and tapering to the base; floating leaves orbicular, cordate or rounded at the base and narrowed into the angled petiole, margins undulate. Flowers white with a yellow tinges. Fruit winged; wings undulating, enclosed in the spathe.

Occasionally in shallow waters of ditches along roadsides on the way to Hajira and Dumas.

Flowers and fruits : October - March.

JVJ 831, 2001.

Plate 78.

#### 4. Vallisneria Linn.

Vallisneria spiralis Linn., Sp. Pl. 1015, 1753; FBI. 5: 660;

C. 3: 171; Gam. 3: 978; Sant. 233; Subramanyam, loc. cit. 57, f. 39; M. 331.

A submerged, stoloniferous, dioecious herb. Leaves linear-narrow, ribbon like. Flowers small; male flowers on short peduncles; female ones on long spirally coiled peduncles.

Locally abundant in ditches, ponds and in shallow waters of river; also grown in aquaria.

Local name : Jalsarpolia.

Flowers and fruits : December - March.

JVJ 166.

# 115. ORCHIDACEAE

1. Epiphytes ..... 2. Vanda

1. Terrestrials :

2. Erect; wild :

3. Lip spurred; flowers yellow ..... 1. Habenaria

3. Lip not spurred; flowers white ..... 4. Zeuxine

2. Climbing; cultigen ..... 3. Vanilla

1. Habenaria Willd.

Habenaria marginata Colebr. in Hook. Exot. Fl. t. 136, 1825;

FBI. 6: 150; C. 3: 226; Sant. & Kapadia, in JBNHS. 56: 199,  
1959 & Orch. Bom. 33, Pl. 5, f. 17, 1966.

A tiny herb. Leaves few, sub-radical, sessile, oblong-lanceolate, obtuse with white margins. Flowers yellow, in cylindric spikes.

A rare plant.

Flowers and fruits : September - October.

JVJ 1940.

2. Vanda R. Br.

Vanda tessellata Hook., FBI. 6: 52, 1892; Haines, 3: 1233;

Gam. 3: 1010; Sant. & Kapadia, 220, f. 51, 1966.

V. roxburghii R. Br., in Bot. Reg. 6: t. 506, 1920; Wt.  
Icon. t. 916; FBI. 6: 52; C. 3: 208.

A stout, epiphytic herb. Leaves thickly, coriaceous,  
recurved. Flowers yellow with brown lines and white margins, in  
dense <sup>9</sup>lax racemes. Capsule clavate, oblong with acute ribs.

Cultivated in the botanical garden of P. T. Science College.

Flowers : July - September.

JVJ 2158.

### 3. Vanilla

Vanilla planifolia Andr., Bailey, 301 and Cycl. Hort. 3433-3434,  
f. 3905.

A tall, climbing herb with stout stems. Leaves thick,  
oblong-lanceolate, acuminate. Flowers pale-yellow, large, in  
axillary racemes. Capsule 3-angled, elongated.

Recently introduced in cultivation as an ornamental at  
few gardens. The vanilla oil is used for flavouring, which is  
produced from the seeds.

Flowers and fruits : March - May.

JVJ 2159.

Plate 79.

### 4. Zeuxine Lindl. (nom. cons.)

Zeuxine strateumatica (L.) Schltr., Orch., Deutsch. N. Guin. 77,



1911; M. 332; Shah, in Ind. For. 89(4): 290, 1963.

Orchis strateumatica Linn., Sp. Pl. 943, 1753.

Zeuxine sulcata Lindl. Gen. & Sp; Orch. 485, 1840; FBI. 6: 106; C. 3: 213.

A delicate herb. Leaves small, linear, acuminate, sessile, passing into linear bracts. Flowers pale-white, in dense terminal racemes. Capsule ellipsoid.

Rare; observed on damp soils near Jahangirpura and along the margins of canals near Dumas.

Flowers and fruits : January - March.

JVJ 1869, 1940.

#### Cypripedium Linn.

Cypripedium sps. A horticultural variety of the ground orchid, popularly known as 'Lady-Slipper' orchid. Recently it has been introduced as an ornamental at few private gardens for its attractive flowers.

Flowers and fruits : February - April.

JVJ 2160.

Plate 33A

#### 116. ZINGIBERACEAE

1. Leaves sheathing at the base ..... 3. Zingiber

1. Leaves not sheathing :

2. Stemless herb ..... 2. Curcuma

2. Herb with leafy stems ..... 1. Alpinia

1. Alpinia Roxb. (nom. cons.)

Alpinia speciosa (Wendl.) K. Schum. Fl. Kaiser-Wilhelmsl. 29,  
1887 & in Bot. Jahrb. 15: 418, 1893; Bailey, 289; M. 333.

Zerumbet speciosum Wendl. Sert. Hanov. 4: 3, t. 19.

Alpinia nutans Roscoe, in Sm. Exot. Bot. 2: 93, t. 106, 1805  
& in TLS. 8: 346, 1807; FBI. 6: 256; C. 3: 245.

An erect, herbaceous plant. Leaves oblong-lanceolate or  
elliptic-lanceolate. Flowers waxy, white with yellow-purple  
tinge in the throat.

Often planted in cool, shaded places in gardens.

Flowers : March - April.

JVJ 2161.

2. Curcuma Linn.

1. Root stock pale yellow inside, aromatic ....1. C. ameda

1. Root stock orange-yellow inside .....2. C. longa

1. Curcuma ameda Roxb., in Asiat. Res. V. 11, P. 341, 1810;  
C. 3: 237; Gam. 3: 1036.

A leafy tufted plant. Leaves long-petiolate, oblong-  
elliptic or oblong-oblongeolate.

Cultivated during winter around Ved and Katargam. The fresh root stock possesses the smell of green mango and it is used as a condiment.

Local name : Aamba halдар. English name : Mango ginger.

Not seen in flowering.

JVJ 2162.

2. Curcuma longa Linn., Sp. Pl. 2: 1753; FBI. 6: 214; C. 3: 238; Gam. 3: 1036.

A tall herb. Leaves oblong-lanceolate, with long petioles, glabrous.

Often cultivated at few places for its fresh rhizome which are eaten as pickle and the powder prepared from the dried rhizome is used as spice.

Local name : Halдар. English name : Turmeric.

Not seen in flowering.

JVJ 2163.

### 3. Zingiber Boehm. (nom. cons.)

Zingiber officinale Roscoe, in TLS. 8: 358, 1807; FBI. 6: 246; C. 3: 242; Gam. 3: 1040; M. 333.

A herb with tuberous, aromatic rhizome. Leaves linear-lanceolate, sheathing at the base.

Cultivated in a few locality. The fresh and dried rhizomes are used as condiment.

Local name : Aadu.

English name : Ginger.

Not seen in flowering.

JVJ 2164.

# 117. CANNACEAE

## Canna Linn.

1. Canna flaccida Salisb. Icon. Stirp. Rar. t. 2, 1791; Kranzlin, in Pfreich 56: 49, f. 9; Bailey, 291 & Cycl. Hort. 656; Sant. 277.

An ornamental herb. Flowers yellow, bright red; often variegated.

Commonly grown in the garden beds.

Local name : Bajjarbattu.

Flowers : More or less throughout the year.

JVJ 2180.

2. Canna indica Linn., Sp. Pl. 1: 1753; FBI. 6: 260; C. 3: 251; Gam. 3: 1045; Sant. 277.

This plant is similar to former taxon but it can be distinguished by the smaller, narrower flowers. It is occasionally cultivated in gardens; not so popular as C. flaccida.

Flowers : Throughout the year.

JVJ 2166.

## 118. MUSACEAE

Musa Linn.

Musa paradisiaca Linn., Sp. Pl. 1043, 1753; Moore, in Bailey  
5: 185, 1957; M. 332.

M. paradisiaca Linn. subsp. sapientum (L.) K. Schum. in Pfreich.  
4(45): 20, 1900; C. 3: 249.

M. paradisiaca Linn. var. sapientum Kuntze, Rev. Gen. 2: 692,  
1891; Bailey, 286.

M. sapientum Linn., Syst. 1303, 1759; FBI. 6: 262.

A large, tree-like, stoloniferous herb. Stem composed of convolute leaf sheaths. Leaves large, oblong. Flowers monoecious, on stout, elongate, bracteate drooping spikes; bracts spirally arranged, large, ovate or orbicular, scarlet. Fruits oblong, pulp sweet, edible.

Planted on a large scale.

Local name : Kela.

English name : Banana.

Uses : Fruits are edible.

Flowers and fruits : Throughout the year.

JVJ 2167.

## 119. STRELITZIACEAE

Ravenala

Ravenala madagascariensis Sonnerat Voy. 3: 244, 1782; FBI. 6:

198; C. 3: 250; Gam. 3: 1046; Bailey, 286 & Cycl. Hort.  
2914, f. 3358.

An elegant tree which bears large fan-shaped, terminal  
crown of lanceolate-oblong distichous leaves with long petioles.

It is planted at Nehru garden. The English name 'Traveler's  
tree' comes from the fact that it stores a palatable, watery  
fluid at the base of the leaves which can be used in lieu of  
water by the weary traveller. Native of Madagascar.

Flowers : November - January.

JVJ 2165.

## 120. AMARYLLIDACEAE

1. Filaments united by petaloid

scales or teeth .....2. Pancratiun

1. Filaments free; scales or teeth absent :

2. Flowers in umbels .....1. Crinum

2. Flowers solitary .....3. Zephyranthus

1. Crinum Linn.

Crinum asiaticum Linn., Sp. Pl. 292, 1753; FBI. 6: 280; C. 3:  
256; Gam. 3: 1051; Bailey, 253; Sant. 279.

A stout herb with a large bulb. Leaves linear-lanceolate.  
Flowers white, fragrant, on a long scape, subtended by bracts.

Often planted in gardens in lawns or near hedges.

Local name : Naagdāṁni.

Flowers : Most of the year.

JVJ 1435.

## 2. Pancratium Linn.

Pancratium tortuosum Herb. in Ann. Nat. His. Ser. I, 4: 28, 1840; Bailey, Cycl. Hort. 2448.

A bulbous herb. Leaves flat, linear-lanceolate. Flowers white on long scapes in umbels, bracts spathaceous; filament bases united into a conspicuous corona.

Grown in gardens as an ornamental.

Flowers : August - September.

JVJ 1464.

## 3. Zephyranthes Herb.

Zephyranthes rosea Lindl. in Bot. Reg. t. 821; Bailey, 254 & Cycl. Hort. 3543.

A small, bulbous herb with basal linear leaves. Flowers yellow, pink or rose-red, one to each scape. Capsule globose.

Cultivated in pots; often wild on lawns during monsoon.

Flowers and fruits : July - October.

JVJ 1190.

## 121. AGAVACEAE

## 1. Ovary inferior :

2. Flowers in paniculate, on stout scape;

arborescent plant .....1. Agave2. Flowers in racemose; herbaceous plant ....3. Polianthes

## 1. Ovary superior :

3. Foliage erect; plants stemless .....4. Sansevieria

3. Foliage divergent to spreading;

plants with stems :

4. Leaves stiff, ending in a sharp point,

clustered in rosettes .....5. Yucca4. Leaves not as above .....2. Dracaena1. Agave Linn.

Agave americana Linn., Sp. Pl. 323, 1753; FBI. 6: 277; Gam. 3: 1052; Bailey, 239.

A. americana L. var. variegata Hook., in Bot. Mag. t. 3654, 1839; C. 3: 261.

An arborescent plant with ascending trunk. Leaves stout, margins prickled; arranged in basal rosettes. Flowers borne on stout scapes.

Grown as ornamental in gardens; often planted as a border

or sand binder plant by the Forest Department along the coastal regions near Mora, Hajira and Bhagava.

JVJ 971.

## 2. Dracaena Linn.

Different horticultural forms of Dracaena or may be even Cordyline are met within local gardens. They are impossible of a closer scrutiny because of paucity of flowering material. Although, Dracaena concinna Kunth, D. elliptica Thunb. and Cordyline terminalis Kunth var. ferrea Baker have been observed in many private and public gardens.

## 3. Polianthes Linn.

Polianthes tuberosa Linn., Sp. Pl. 316, 1753; C. 3: 260; Bailey, 239 & Cycl. Hort. 2731, f. 3093.

A tuber-bearing herb. Leaves basal and cauline; narrowly linear. Flowers white, fragrant, in an open spike.

Frequently planted in gardens.

Local name : Gulchhadi.

Flowers : July - December.

JVJ 1112.

## 4. Sansevieria Thunb. (nom. cons.)

Sansevieria zeylanica Willd., Sp. Pl. 2: 159, 1799; C. 3: 252; Bailey, 240.

A tufted perennial herb. Leaves linear-lanceolate, thick, coriaceous, light-green, variegated with dark-green transverse bands, margins yellow. Flowers greenish-white.

Planted in pots and beds for ornamentation.

Flowers : December - February.

JVJ 1111.

#### 5. Yucca Linn.

Yucca gloriosa Linn., Sp. Pl. 319, 1753; C. 3: 283; Gam. 3: 1067; Bailey, 241; M. 334.

A shortly trunked shrub. Leaves lanceolate, flat with sharp pointed apices. Flowers whitish-green, bell-shaped, drooping, on the branches of a terminal paniculate inflorescence.

A rare plant; planted in gardens. It flowers at intervals of several years.

English name : Adam's needle.

Flowers : August - October.

JVJ 1712.

### 122. DIOSCOREACEAE

#### Dioscorea Linn.

1. Leaves simple :

2. Stem winged; cultivated ..... 1. D. alata

2. Stem not winged; wild ..... 2. D. bulbifera

1. Leaves compound ..... 3. D. pentaphylla

1. Dioscorea alata Linn. Sp. Pl. 1033, 1753; FBI. 6: 296;

Wealth of India 3: 69, f. 34-36.

D. alata L. var. globosa Prain, Bengal Pl. 1065, 1903;

C. 3: 267.

An extensive twiner, glabrous; stems winged. Leaves broadly ovate, sub-hastately or deeply cordate, glabrous.

Extensively cultivated at Ved, Katargam and around Surat city.

Local name : Ratalu.

Uses : The roundish and oblong tubers are sold during winter and are used as vegetable.

JVJ 915.

2. Dioscorea bulbifera Linn., Sp. Pl. 1033, 1753; Wt. Icon. t.

878; C. 3: 265; Gam. 3: 1055; M. 335; Sant. 281;

Pavagadh, 223.

D. sativa Thunb. Fl. Jap. 151, 1784; FBI. 6: 295 (non Linn.).

An extensive climber. Stems with small axillary bulbils. Leaves ovate, cordate, acuminate. Flowers creamy-white. Capsules oblong, hanging in a bunch on long peduncles.

Fairly common on hedges throughout the area.

Local name : Dukkan Kand.

Flowers and fruits : August - February.

JVJ 348, 914.

3. Dioscorea pentaphylla Linn., Sp. Pl. 1032, 1753; Wt. Icon.  
t. 814; FBI. 6: 289; C. 3: 264; Gam. 3: 1056; Sant. 280.  
D. triphylla Linn., Sp. Pl. 1032, 1753.

A slender twiner; prickly near the base. Leaves 3-5-foliolate; leaflets elliptic-lanceolate, acuminate, lateral ones oblique. Flowers greenish white. Capsule oblong.

A rare plant; noted once on hedges near Sidh-Kutir at Nana Varachha.

Flowers and fruits : August - October.

JVJ 447.

## 123. LILIACEAE

1. Habit climbing :

2. Leaf apex tendrilar ..... 5. Gloriosa

2. Leaves reduced to scales; stems modified  
into green needle-shaped cladodes ..... 3. Asparagus

1. Habit erect :

3. Flowers in umbels ..... 1. Allium

3. Flowers in racemes :

4. Leaves very thick with mucilage ..... 2. Aloe

4. Leaves thin without mucilage ..... 4. Asphodelus

1. Allium Linn.

1. Leaves cylindric, usually hollow .....1. A. cepa

1. Leaves flat, not hollow .....2. A. sativum

1. Allium cepa Linn., Sp. Pl. 300, 1753; FBI. 6: 337; C. 3: 384; Bailey, 246; M. 336.

A scapigerous herb; bulb large and rounded. Flowers numerous, white in dense umbels.

Cultivated as a winter crop.

Local name : Kanda or Dungari. English name : Onion.

Uses : Tender plants and bulbs are used as vegetable.

Flowers : September - April.

JVJ 1189.

2. Allium sativum Linn., Sp. Pl. 296, 1753; FBI. 6: 337; C. 3: 284; Bailey, 247; M. 337.

Bulbs small, consisting of bulblets enclosed in a white or pale pinkish envelope. Flowers white, in lax umbels.

Widely cultivated during cold season.

Local name : Lasan. English name : Garlic.

Uses : Bulbs are used as condiment; tender leaves are used for chattani.

Flowers : November - March.

JVJ 1333.

2. Aloe Linn.

Aloe barbadensis Mill., Gard. Dict. no. 2, 1768; Bailey, 209; M. 335.

A. perfoliata Linn. var. vera Linn., Sp. Pl. 320, 1753.

A. vera (L.) Webb. & Berth. (non Mill.) FBI. 6: 264; C. 3: 283; Gam. 3: 1062.

An acaulescent plant. Leaves erect, lanceolate, succulent, spiny-edged. Flowers yellowish-green in racemes.

Grown in gardens as a pot-plant, cultivated in plenty at Swami Atmanand Saraswati Pharmacy garden.

Local name : Kumarpathu.

Flowers : March - April.

JVJ 1110.

3. Asparagus Linn.

1. Cladodes triquetrous .....1. A. racemosus  
var. javanicus

1. Cladodes flat, linear .....2. A. sprengeri

1. Asparagus racemosus Willd. var. javanicus (Kunth) Baker, in Journ. Linn. Soc. 14: 624, 1875; FBI. 6: 316; C. 3: 270; Sant. 282.

A. javanicus Kunth., Enum. 5: 100, 1850.

An extensively scandent, much-branched, spinous, straggling

or climbing undershrub. Flowers white. Berries globose.

Cultivated and wild. Frequently seen in hedges around Dumas and Magdalla.

Local name : Satavari.

Flowers and fruits : September - November.

JVJ 1752.

2. Asparagus sprengeri Regel., in Act. Hort. Petrop. 11: 302, 1890; Bailey, 216.

A climbing undershrub with long cladodes and white flowers in short racemes.

Occasionally seen in garden.

Flowers and fruits : November - March.

JVJ 2169.

#### 4. Asphodelus Linn.

Asphodelus tenuifolius Cav. in An. Cienc. Nat. 3: 46, t. 27, f. 2: 1801; FBI. 6: 332; C. 3: 279; Gam. 3: 1064; M. 337.

An annual, erect, glabrous herb. Leaves radical, fistulous. Flowers whitish with purple streaks. Capsule globose.

Rare; noted as a winter weed from crop fields.

Flowers and fruits : August - March.

JVJ 970, 1867.

5. Gloriosa Linn.

Gloriosa superba Linn., Sp. Pl. 305, 1753; Wt. Icon. t. 2047;

FBI. 6: 358; C. 3: 274; Gam. 3: 1061; Sant. 282.

A herbaceous climber. Leaves sessile, ovate-lanceolate, apices tendrilar. Flowers large, yellow-orange, solitary; perianth lobes crisped. Capsule oblong.

Seen in hedges, more or less in all localities; should be introduced in gardens.

Local name : Vachhanag.

Flowers and fruits : August - November.

JVJ 204, 491.

Ruscus aculeatus Linn.

A small garden herb with green leafy phylloclades in the axils of scale-leaves. Grown in the botanical garden of P. T. Science College; flowers are not seen.

JVJ 2170.

## 124. SMILACACEAE

Smilax Linn.

Smilax zeylanica Linn., Sp. Pl. 1029, 1753; FBI. 6: 309.

S. macrophylla Roxb., Fl. Ind. 3: 793, 1832; FBI. 6: 310;

C. 3: 271.

S. ovalifolia Roxb., Fl. Ind. 3: 794, 1832.

A large climber. Stems armed with a few small prickles. Leaves large, broadly ovate or sub-orbicular, glabrous, rounded at base; petiole usually with very long, slender tendrils. Flowers dioecious, greenish-white.

Grown in the botanical garden of P. T. Science College.

Local name : Sarsaparila.

Flowers and fruits : October - January.

JVJ 2161.

#### 125. PONTEDERIACEAE

Eichhornia Kunth ( nom. cons )

Eichhornia crassipes (Mart.) Solms., in DC. Mon. Phan. 4: 527, 1882; Backer, in Fl. Males. I, 4: 259, ff. 2-3, 1951; Subramanyam, in Aquat. Angios. 70, t. 48, 160, 1962; M. 338.

Pontederia crassipes Mart. Nov. Gen. Sp. 9, t. 4, 1823.

A floating herb; profusely rooting at the nodes. Leaves broadly ovate to elliptic spathulate, with swollen petioles. Flowers violet blue, in many-flowered spikes.

Abundant throughout the area.

Local name : Neela runa. English name : Water hyacinth.

Flowers : October - March.

JVJ 1421.

## 126. COMMELINACEAE

- 1. Fertile stamens 3, staminodes present :
  - 2. Cymes enveloped in spathaceous bracts..... 1. Commelina
  - 2. Cymes in panicles, not enveloped in  
 spathaceous bracts ..... 3. Murdannia
- 1. Fertile stamens 6; staminodes absent :
  - 3. Cultigens :
    - 4. Flowers white; ovary 3-celled;  
 cells 1-seeded ..... 4. Rhoeo
    - 4. Flowers red-purple; ovary cells  
 2-seeded ..... 5. Zebrina
  - 3. Wild ..... 2. Cyanotis

1. Commelina Linn.

- 1. Spathes funnel-shaped or with margins  
 connate nearly to the top :
  - 2. Capsule 3-seeded, seeds smooth; leaves  
 with wavy margins ..... 3. C. forskalaei
  - 2. Capsule 5-seeded, seeds rugose;  
 closely pitted ..... 1. C. benghalensis
- 1. Spathes complicate with dorsal margins,  
 free to the base ..... 2. C. diffusa

1. Commelina benghalensis Linn., Sp. Pl. 41, 1753; Wt. Icon. t. 2065; FBI. 6: 370; C. 3: 291; Gam. 3: 1075; Sant. 284; M. 340.

A procumbent herb. Leaves ovate-oblong, leaf-sheath with ciliate margin. Flowers blue, enclosed in ovate-lanceolate spathes.

Found throughout the area in shady moist places; often at the bottom of hedges.

Local name : Motushishmuliu.

Flowers and fruits : August - March.

JVJ 212, 380, 768.

2. Commelina diffusa Burm. f., Fl. Ind. 18, t. 7, f. 2, 1768; Sant. & Janardhanan, 49; Sant. 284.

C. nudiflora auct. plur. non Linn., FBI. 6: 369; C. 3: 290.

A diffuse glabrous herb branching from the base and rooting at distant nodes. Leaves linear-lanceolate, acute. Flowers blue, bracts boat-shaped. Capsule broadly oblong.

Fairly common during the monsoon throughout the area; a weed of cultivated crops.

Local name : Nanu shishmuliu.

Flowers and fruits : August - March.

JVJ 2171.

3. Commelina forskalaei Vahl, Enum. 2: 172, 1806; FBI. 6: 371; C. 3: 292; Gam. 3: 1075; M. 340.

A diffuse, branched herb, rooting at the lower nodes. Leaves linear or narrowly oblong, often with undulate or wavy margins. Flowers light blue; spathe broadly ovate, hairy.

Occasional in moist shady places.

Flowers and fruits : August - December.

JVJ 87, 834.

2. Cyanotis D. Don (nom. cons.)

Cyanotis cristata (L.) Schult. f. Syst. 7: 1150, 1830; Wt.

Icon. t. 2082; FBI. 6: 385; C. 3: 304; Sant. 288.

Commelina cristata Linn., Sp. Pl. 42, 1753.

A creeping herb. Leaves ovate-oblong with villously ciliate margins. Flowers blue in recurved, scarpoid cymes; filaments bearded. Capsule trigonous.

Occasional in shaded moist places; also noted as a weed in rice fields.

Flowers and fruits : August - October.

JVJ 1196.

3. Murdannia Royle (nom. cons.)

Murdannia nudiflora (L.) Brenan, in Kew Bull. 189, 1952; Rolla

Rao, in BBSI. 3(3 & 4): 393, 1961; Raizada, in Ind. For. 94(6): 447, 1968.

Commelina nudiflora Linn., Mant. 177, 1967 (non Linn. 1753); pro parte.

Murdannia malabarica (L.) Bruckn. in Pfam. (ed. 2) 159: 178,  
1930; Sant. 286; Raizada, in Ind. For. 92(5): 317, 1966.

Tradescantia malabarica Linn., Sp. Pl. 412, 1762.

Aneilema nudiflorum R. Br. Prodr. 271, 1810; FBI. 6: 378;  
C. 3: 298; Gam. 3: 1078.

A slender, procumbent annual, often rooting at nodes.  
Leaves linear-oblong or lanceolate. Flowers blue-purple, in  
terminal panicle. Capsule trigonous.

Occasional on wet soils; often seen along with grasses.  
Flowers and fruits : August - November.

JVJ 7.

#### 4. Rhoeo Hance.

Rhoeo discolor Hance, in Walp. Ann. 3: 659, 1853; C. 3: 306.

Tradescantia discolor L'Herit. Sert. Angl. p. 8, t. 12, 1788.

A herb. Leaves narrowly-lanceolate, large, much imbricated,  
base sheathed, green above and purple beneath. Flowers white,  
included within the bracts.

Commonly grown in gardens as a beautiful pot plant.  
Staminal hairs show the circulation movement of protoplasm,  
flower buds are used for cytological study.

Flowers : All the year round.

JVJ 1194.

5. Zebrina Schnizl.

Zebrina pendula Schnizl., in Bot. Zeit. 7: 870, 1849; C. 3: 306; Sant. 288.

A decumbent creeping herb. Leaves glistening, ovate, green, white-stripped above, purple beneath. Flowers red-purple, enclosed in a spathe.

Usually grown in garden.

Flowers : Throughout the year.

JVJ 1195.

## 127. ARECACEAE ( PALMAE )

1. Plants with fan-shaped i.e. flabelliiform leaves :

2. Petiole armed with fine teeth, saw-teeth  
or prickles (along the 2 edges or, at  
least toward base or whole length of petiole) :

3. Teeth small, fine, not prickly  
or spinose ..... 9. Trachycarpus

3. Teeth prong or saw-tooth kind :

4. Flowers bisexual ..... 5. Livistona

4. Flowers unisexual ..... 2. Borassus

2. Petiole smooth ..... 8. Thrinax

1. Plants with feathered leaves i.e. pinnate :

5. Leaves bipinnate ..... 3. Caryota
5. Leaves simply pinnate :
6. Lower leaflets spinescent ..... 6. Phoenix
6. Lower leaflets not spinescent :
7. Trunk thickened at the middle,  
whitish ..... 7. Roystonea
7. Trunk uniform throughout the length :
8. Trunk annulate, fruits ovoid-oblong,  
less than 2 cm. in diameter ..... 1. Areca
8. Trunk not annulate, fruits very big,  
more than 10 cm. in diameter..... 4. Cocos

1. Areca Linn.

Areca catechu Linn., Sp. Pl. 1189, 1753; FBI. 6: 405; C. 3: 319; Gam. 3: 1085; Blatter, E. Palm. of Bri. Ind. & Ceyl. 471, 1926; Bailey, 173; Benthall, 457.

A tall, slender-stemmed palm, annulate with raised rings. Leaves long; leaflets numerous, glabrous, upper leaflets confluent. Spadix much branched. Fruits orange or scarlet. Seeds truncate at the base.

Planted at Gandhi Baag and in the garden of P. T. Science College; also at Dumas.

Local name : Sopari.

English name : Betel-nut palm.

Uses : Seeds are used as masticatory.

Flowers and fruits : December - March.

JVJ 1618.

## 2. Borassus Linn.

Borassus flabellifer Linn., Sp. Pl. 1187, 1753; FBI. 6: 482;

C. 3: 321; Gam. 3: 1090; Blatter, loc. cit. 174;

Benthall, 442; Sant. 252.

A tall palm, with a thick dark-coloured trunk. Leaves flabelliform, segments linear-lanceolate, shining. Flowers dioecious; spadix simply branched. Male small, mixed with scaly bracteoles; female flowers large, scattered singly on a sparingly branched spadix. Fruit a drupe.

Spontaneously seen throughout the area.

Local name : Tad.      English name : Palmyra-palm.

Uses : The fruits are edible. The kernels sold as 'Galeli' are edible. The tender shoots of the young seedlings - locally called as Dantara - are sold in market and are edible.

Flowers and fruits : January - April.

JVJ 383, 866.

3. Caryota Linn.

Caryota urens Linn., Sp. Pl. 1189, 1753; FBI. 6: 422; C. 3: 315; Gam. 3: 1089; Blatt. loc. cit. 339, t. 57, f. 48; Benthall, 453; Bailey, 172; Sant. 256; M. 342.

A tall palm, trunk annulate. Leaves bipinnate; leaflets triangular or cuneiform, obliquely truncate, irregularly serrate-toothed; the upper margin produced beyond the leaflets into a tail; spadix very large, branches long and pendulous. Fruits dark purple.

Planted in the garden of P. T. Science College for the sheer beauty of the foliage and horse-tail like inflorescence.

local name : Shivajata.

English name : Fish tail palm.

Flowers and fruits : Almost year round.

JVJ 1756.

4. Cocos Linn.

Cocos nucifera Linn., Sp. Pl. 1188, 1753; FBI. 6: 482; C. 3: 322; Gam. 3: 1086; Blatt. loc. cit. 499, t. 97; Benthall, 448; Bailey, 175.

A tall, straight palm with a dark, slender, irregularly curved stem. Leaves large, pinnate; pinnae numerous, linear-lanceolate. Spadix stout, androgynous, divided into numerous drooping spikes, the upper portion densely covered with male flowers; the female near the base. Fruits green or yellowish.

It is planted in gardens, near habitations and orchards at Dumas, Bhimpor and Hajira.

Local name : Nariyel.      English name : Coconut palm.

Uses : The endospermic watery fluid is used for drinking purpose, white endosperm is edible.

Flowers and fruits : July - March.

JVJ 973.

##### 5. Livistona R. Br.

Livistona chinensis R. Br. Prodr. 268, 1810; FBI. 6: 434;  
C. 3: 320; Blatt. loc. cit. 104, t. 26; Bailey, 168;  
Benthall, 439; M. 341.

A palm of moderate height. Leaves fan-shaped, deeply divided into linear-lanceolate, acuminate, segments. Flowers bisexual, greenish. Drupe ovoid or ellipsoid.

A handsome palm, planted in the garden of P.T. Science College.

English name : China Palm.

Flowers and fruits : April - July.

JVJ 1608.

6. Phoenix

Phoenix sylvestris (L.) Roxb., Fl. Ind. 3: 787, 1832; FBI. 6: 425; C. 3: 311; Gam. 3: 1088; Blatt. loc. cit. 3, tt. 2, 3; Benthall, 431; Sant. 257.

Elate sylvestris Linn., Sp. Pl. 1189, 1753, (pro parte).

A medium-sized tree. Leaves pinnate, pinnae usually more than 2-ranked; spinous at tip. Male flowers in a compact spadix on a short, flattened peduncle; female flowers in large fascicles of spikes. Drupe oblong-ellipsoid, orange-yellow.

More or less throughout the area.

Local name : Khajur. English name : Wild date-palm.

Uses : The leaves are used for making mats, baskets, brooms and fans. The fruit is eaten by the poor people.

The plants are tapped for 'Toddy' and 'Nira'.

Flowers and fruits : March - June.

JVJ 382.

7. Roystonea O. F. Cook.

Roystonea regia (H.B. & K.) O.F. Cook. in Bull. Torrey Bot. Cl. 531, 1901; Bailey, 173; Benthall, 463; M. 343.

Oreodoxa regia H.B. & K. Nov. Gen. & Sp. 1: 305, 1815; Blatt. loc. cit. 396, t. 73.

A lofty palm with stout column-like trunk. Stem more or less thickened in the middle. Leaves pinnatisect. Flowers

borne in branching spadices; male flowers larger than the female.

Planted in gardens along the roads where it forms a beautiful avenue; also seen on the front of Sir K.P. College of Commerce and Government buildings.

English name : Bottle or Royal palm.

Flowers and fruits : June - August.

JVJ 1755.

#### 8. Thrinax Linn. f.

Thrinax parviflora Sw., Prodr. 57, 1788; Bailey, 170.

A stunted or medium-sized palm. Leaves large, flabelliform, palmatifid, glabrous, segments numerous, lanceolate, acuminate; leaf-base covered with a fibrous network. Spadix large; flowers bisexual. Fruits globular.

Planted in the campus of P. T. Science College.

English name : Silk-Top palm.

Flowers and fruits :

JVJ 1721.

#### 9. Trachycarpus H. Wendl.

Trachycarpus martiana H. Wendl., in Bull. Soc. Bot. Fran. 8: 429, 1861; FBI. 6: 436; Blatt. loc. cit. 49, t. 11 A.

A tall, slender palm. Leaves sub-orbicular, plicately

multifid, consisting of 30-40 linear segments which connate to one-half their length, shortly bifid at the top. Spadix large, drooping. Flowers polygamous. Drupes globose or oblong.

A rare palm; seen in the campus of P. T. Science College.

English name : Martius palm.

Flowers and fruits : March - May.

JVJ 1612.

The following species are also seen in plantation at different places and are much used for decoration.

Calamus sp.

A climbing palm, planted in the botanical garden of P. T. Science College.

Hyphaene indica Becc.

This palm is locally known as Ravan Tad. It was planted at many places in Surat as could be inferred from a place-name Ravan Tad falia; now has completely disappeared from the landscape of Surat except few saplings grown in Gandhi Baag.

Licuala paludosa Griff.

Planted at Gandhi Baag.

Pritchardia filifera Linden.

Planted in the campus of P. T. Science College.

Washingtonia filifera (Linden.) Wendland.

A tall, handsome palm is seen at the entrance gate of Gandhi Baag.

## 128. PANDANACEAE

Pandanus Linn. f. (nom. cons.)

Pandanus odoratissimus Linn. f., Suppl. 424, 1781; St. John, in Taxon 12(5): 201-204, 1963; Stone, Gard. Bull. Straits Settlem. 22: 236, 1967.

P. tectorius Soland. ex Balf. f. in Journ. Linn. Soc. 17: 63, 56, 1876; C. 3: 324.

P. fascicularis Lamk., Encycl. 1: 372, 1785; FBI. 6: 485; Gam. 3: 1095; M. 344.

A much-branched, bushy shrub or small tree. Leaves erect, acuminate, dentate, spirally arranged at the end of branches. Flowers dioecious; spadix with sub-sessile cylindric spikes.

Grown in gardens; also found in hedges.

Local name : Kevado.

English name : Screw Pine.

Flowers : March - May.

JVJ 2173.

## 129. TYPHACEAE

Typha Linn.

Typha angustata Bory & Chaub., Exp. Sc. Mor. 3(2): 33, 1832; FBI. 6: 489; C. 3: 326; Gam. 3: 1096; M. 344; Sant. 289.

T. angustifolia auct. non Linn.

An erect, stout, marshy shrub. Leaves semi-cylindric,

linear, long. Flowers small, brown in very dense, superposed cylindric spikes; the males and females separated by a considerable interval.

Abundant and gregarious in the marshes and swamps - throughout the area.

Local name : Gha bajariu.

Flowers : October - April.

JVJ 93, 2060.

### 130. ARACEAE

1. Plants free-floating, aquatic ..... 4. Pistia

1. Plants terrestrial :

2. Root climbers :

3. Leaves pinnately cut or perforated .... 3. Monstera

3. Leaves entire, ovate, more or less

cordate at the base ..... 5. Scindapsus

2. Erect, rhizomatous herbs :

4. Leaves divided ..... 1. Amorphophallus

4. Leaves undivided, peltate ..... 2. Colocasia

1. Amorphophallus Blume ex Decne. (nom. cons.)

Amorphophallus campanulatus (Roxb.) Blume ex Decne, Nouv. Ann.

Mus. Paris 3: 366, 1834; FBI. 6: 513; C. 3: 366; Gam. 3: 1107.

Arum campanulatum Roxb., Pl. Cor. t. 272, 1820; Wt. Icon.  
t. 782, 785, 1844.

A stemless herb with globose, depressed, dark-brown corm.  
Leaves large, radical, twice bifid.

Cultivated at Ved, Dubhalav and Katargam.

Local name : Suran.

Uses : The corms are edible.

Flowers and fruits : Not seen.

JVJ 2174.

## 2. Colocasia Clusis ex Fab. (nom. cons.)

Colocasia esculenta (L.) Schott. in Schott. & Endl. Melet. Bot.  
18, 1832; Sant. Fl. Khandala ed. 3: 293, 1967.

Arum esculentum Linn., Sp. Pl. 965, 1753.

A rhizomatous herb. Leaves large, peltate.

Cultivated at many places.

Local name : Alvi.                      English name : Arum.

Uses : Underground stems and leaves are used as vegetable.

## 3. Monstera Adans.

Monstera deliciosa Liebm. in Kjoeb. Vidensk. Meddel. 19, 1849;  
Bailey, 183.

An extensive root climber. Leaves dark green, pinnately

cut or perforated.

Grown in the botanical garden of P. T. Science College.

JVJ 2175.

#### 4. Pistia Linn.

Pistia stratiotes Linn., Sp. Pl. 963, 1753; FBI. 6: 497; C. 3: 328; Gam. 3: 1097.

A free-floating, aquatic, stoloniferous herb with long hanging roots. Leaves obovate, cuneate, arranged in rosette-like tufts. Flowers small, unisexual in a small spathe.

Occasionally in ponds or tanks; also grown in gardens.

Local name : Jal shrunkhala.

Flowers : September - December.

JVJ 1332, 2059.

#### 5. Scindapsus Schott.

Scindapsus aureus Engler, in Pfreich. (Arac.-Monster.) 80, 1908; Bailey, 183.

Pothos aureus Bailey, Cycl. Hort. 2776, f. 3159.

A root climber with cordate variegated lanceolate leaves; venation palmate. Flowers not seen.

Cultivated in gardens and indoors for its attractive leaves.

English name : Money plant.

JVJ 2176.

## 131. LEMNACEAE

1. Fronds with several roots .....2. Spirodela

1. Fronds with one root .....1. Lemna

1. Lemna Linn.

Lemna gibba Linn., Sp. Pl. 970, 1753; FBI. 6: 556; C. 3: 343.

A small, floating aquatic herb. Fronds sub-orbicular or obovate, entire, thin, each with a single root. Flowers not observed.

Common throughout tanks, ponds, ditches.

Flowers : Not observed.

JVJ 2171.

2. Spirodela Schleid.

Spirodela polyrhiza (L.) Schleid., in Linnaea 13: 392, tt. 5 & 6, 1839; McCann, in JBNHS. 43: 156, 1942; Subramanyam, in Aquat. Angios. 77; M. 346.

Lemna polyrhiza Linn., Sp. Pl. 970, 1753; FBI. 6: 557; C. 3: 343; Gam. 3: 1111; Biswas & Colder (2 ed.) 101.

A small, free-floating, aquatic herb. Fronds ovate-orbicular, opaque, dark green above and purplish beneath. Each frond giving rise to tuft of roots.

Fairly common in ponds, puddles and ditches, often completely covering the water surface.

Flowers : Not seen.

JVJ 2010.

## 132. ALISMATACEAE

1. Carpels crowded on a minute receptacle;  
achenes swollen; stamens 6 ..... 1. Limnophyton
1. Carpels inserted on a large, globular or  
oblong receptacle; achenes more or less  
compressed; stamens many ..... 2. Sagittaria

### 1. Limnophyton Miq.

Limnophyton obtusifolium (L.) Miq. Fl. Ind. B. t. 3: 242, 1855;  
FBI. 6: 560; C. 3: 345; Gam. 3: 1113; Subramanyam, Aquat.  
Angios. 86, Pl. 3, f. 52; Hartog, in Fl. Males. 1, 5: 324,  
1957.

Sagittaria obtusifolia Linn., Sp. Pl. 993, 1753.

A robust, amphibious herb with radical, sagittate leaves.  
Flowers white, polygamous, arranged in whorls in a racemose  
manner on an angular, stout scape.

Frequently seen in ponds and roadside ditches.

Flowers and fruits : November - February.

JVJ 2011, 2061.

### 2. Sagittaria Linn.

Sagittaria sagittifolia Linn., Sp. Pl. 993, 1753; C. 3: 345;

Gam. 3: 1113; Subramanyam, loc. cit. 87, 1962.

A floating herb. Leaves with long petiole, sagittate, acute, smooth. Flowers white, in 3-5 whorls along the scapes, usually 3-5 flowers in each whorl in paniculate, cuspidate whorls.

Rare; found in shallow waters of pond.

Flowers and fruits :

JVJ 486, 2033.

### 133. APONOGETONACEAE

Aponogeton Linn. f.

Aponogeton natans (L.) Engl. & Krause, in Engl.-Pfreich. 24: 11, 1906; Subramanyam, Aquat. Angios. 92, Pl. 5, f. 1, 54; M. 348.

Saururus natans Linn., Mant. 2: 227, 1767.

Aponogeton monostachyon Linn. f. Suppl. 214, 1781; FBI. 6: 564; C. 3: 348.

A stoloniferous aquatic herb; generally submerged with tuberous, rootstock. Leaves floating, oblong-lanceolate. Flowers white, in dense spikes.

Noted in ponds and tanks throughout the area.

Flowers and fruits : August - January.

JVJ 881.

### 134. POTAMOGETONACEAE

Potamogeton Linn.

1. All leaves submerged :

2. Leaves filiform .....2. P. pectinatus

2. Leaves not filiform but ovate-lanceolate,  
membranous, perfoliate .....3. P. perfoliatus

1. Upper or all leaves floating .....1. P. nodosus

1. Potamogeton nodosus Poir., in Encycl. Meth. Bot. Suppl. 4:  
535; 1816; Dandy, in Journ. Linn. Soc. 50: 531, 1937;  
Subramanyam, loc. cit. 95, Pl. 5, f. 54; M. 348.

P. indicus Roxb., Fl. Ind. 1: 452, 1832; FBI. 6: 565;  
C. 3: 349.

A submerged herb. Submerged leaves thin, long, lanceolate,  
base acute; floating leaves, rather thick and short, oblong,  
elliptic or elliptic-lanceolate. Flowers in dense spikes. Fruits  
shortly beaked.

Flowers and fruits : August - January.

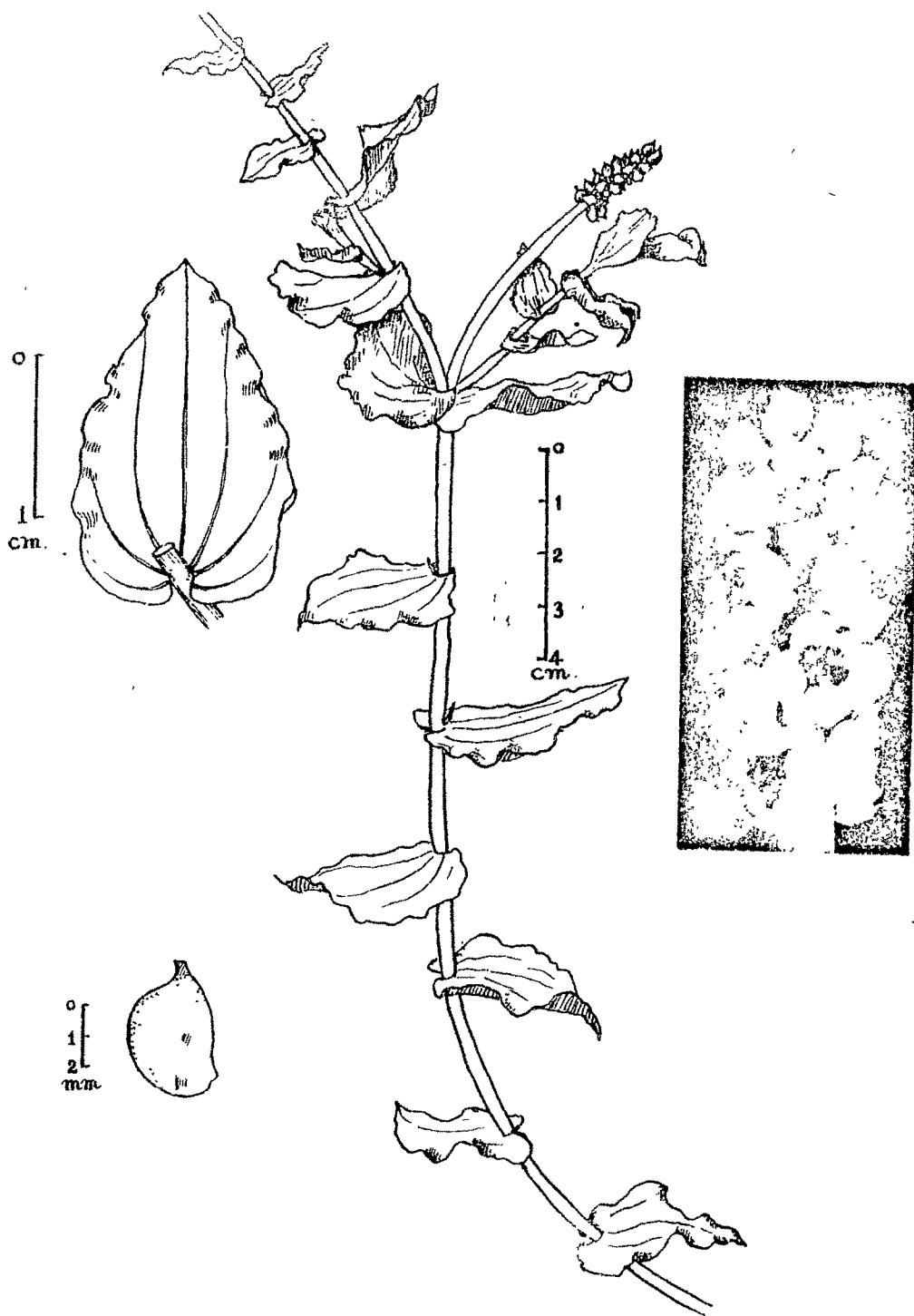
JVJ 91.

2. Potamogeton pectinatus Linn., Sp. Pl. 127, 1753; FBI. 6: 567;  
C. 3: 350; Gam. 3: 1116; Subramanyam, Aquat. Angios. 95,  
f. 55, 1-3; M. 349.

A much-branched, submerged herb with slender, filiform stems.  
Leaves narrowly linear or filiform. Flowers white, minute,  
in spikes.

Flowers and fruits : October - January.

JVJ 92.



*Potamogeton perfoliatus* Linn.

3. Potamogeton perfoliatus Linn., Sp. Pl. 126, 1753; FBI. 6: 566; C. 3: 349; Subramanyam, loc. cit. 95, f. 55, 4-5.

A submerged, aquatic herb. Leaves ovate-lanceolate, membranous, perfoliate. Flowers white, in short, condensed spikes. Drupelets obliquely ovoid.

Flowers and fruits : November - March.

JVJ 2032.

Plate 80.

#### 135. NAJADACEAE

##### Najas Linn.

Najas minor All. Fl. Pedem. 2: 221, 1785; FBI. 6: 569; C. 3: 352; Sant. & Janar. 50, Subramanyam, loc. cit. 101.

A small, delicate, submerged, aquatic herb with dichotomously branching stem. Leaves narrow and remotely toothed, not fleshy.

Fairly common in ponds, river and ditches along roadside.

Flowers and fruits : Throughout the year.

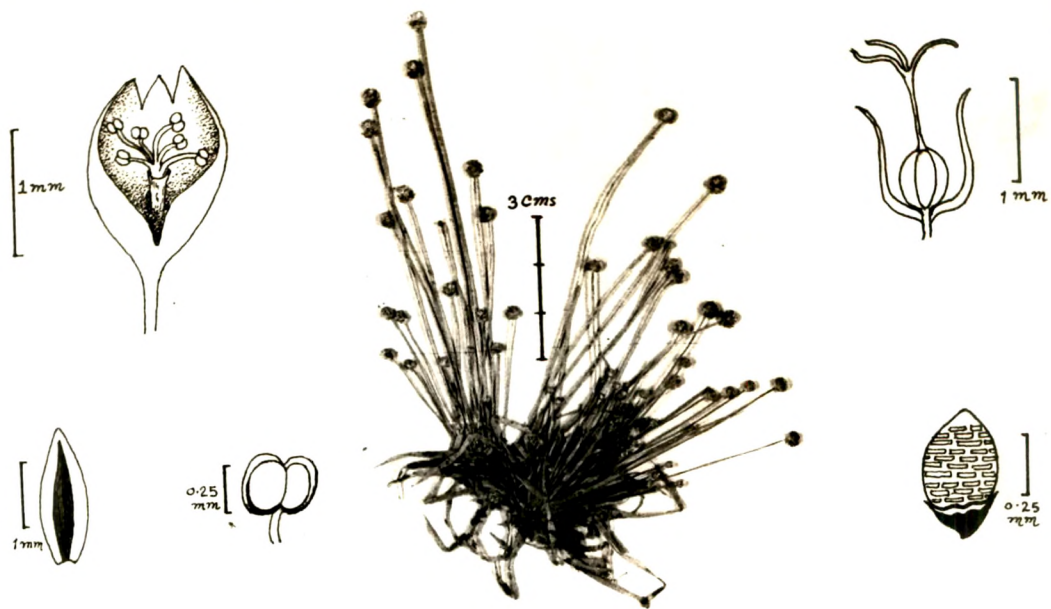
JVJ 1203, 2002.

#### 136. ERIOCAULACEAE

##### Eriocaulon Linn.

Eriocaulon cinereum R. Br. Prodr. 254, 1810; Sant. 294.

E. sieboldianum Sieb. & Zucc. ex Steud. Syn. Pl. Cyp. 2: 272,



*Eriocaulon cinereum* R.Br.

PLATE-81

1855; FBI. 6: 577; C. 3: 357; Gam. 3: 1127.

A small, stemless, tufted plant. Leaves narrowly linear, subulate, translucent. Flower peduncles numerous, with small, white globose heads; involucral bracts scarious. Male flowers stipitate; sepals 3, petals sub-equal, stamens 6. Female flowers stipitate; sepals 2, petals 0; ovary 3-lobed; styles 3, filiform.

Observed on marshy ground during monsoon.

Flowers and fruits : September - November.

JVJ 1058,

Plate 81.

### 137. CYPERACEAE

Plate No. 82 illustrates the more important morphological terms used in the key and description of the Cyperaceae members.

1. Spikelets unisexual ..... 9. Scleria

1. Spikelets bisexual :

2. Flowering glumes all distichous ..... 2. Cyperus

2. Flowering glumes all spirally imbricate : (Pimbr.)

3. Spikelets many-flowered :

4. Hypogynous bristles or scales present :

5. Nut with hypogynous bristles :

6. Style-base swollen ..... 3. Eleocharis

PLATE 82. ILLUSTRATIONS OF MORPHOLOGICAL TERMS OF THE CYPERACEAE.

1. Distichous flowering glumes.
2. Spiral flowering glumes.
3. Nut with hypogynous bristles & persistent swollen style base.
4. Nut without hypogynous bristle.
5. Stigmas 3.
6. Stigmas 2 and Trabeculate & ribbed nut.
7. Retrorsely barbellate bristles.
8. Antrorsely barbellate bristles.
9. Hypogynous scales.
10. Plumose bristles.
11. Winged rachilla.
12. Trigynous nut.
13. Plano-convex nut.
14. Triquetrous nut.
15. Biconvex nut.
16. Capitate head of Lipocarpus chinensis.
17. Terminal clusters spikelets.
18. Sub-terminal lateral heads spikelets.
19. Spikelets of Scirpus articulatus.
20. Inflorescences of Scleria.
21. Creeping rhizome - clothed with scales.

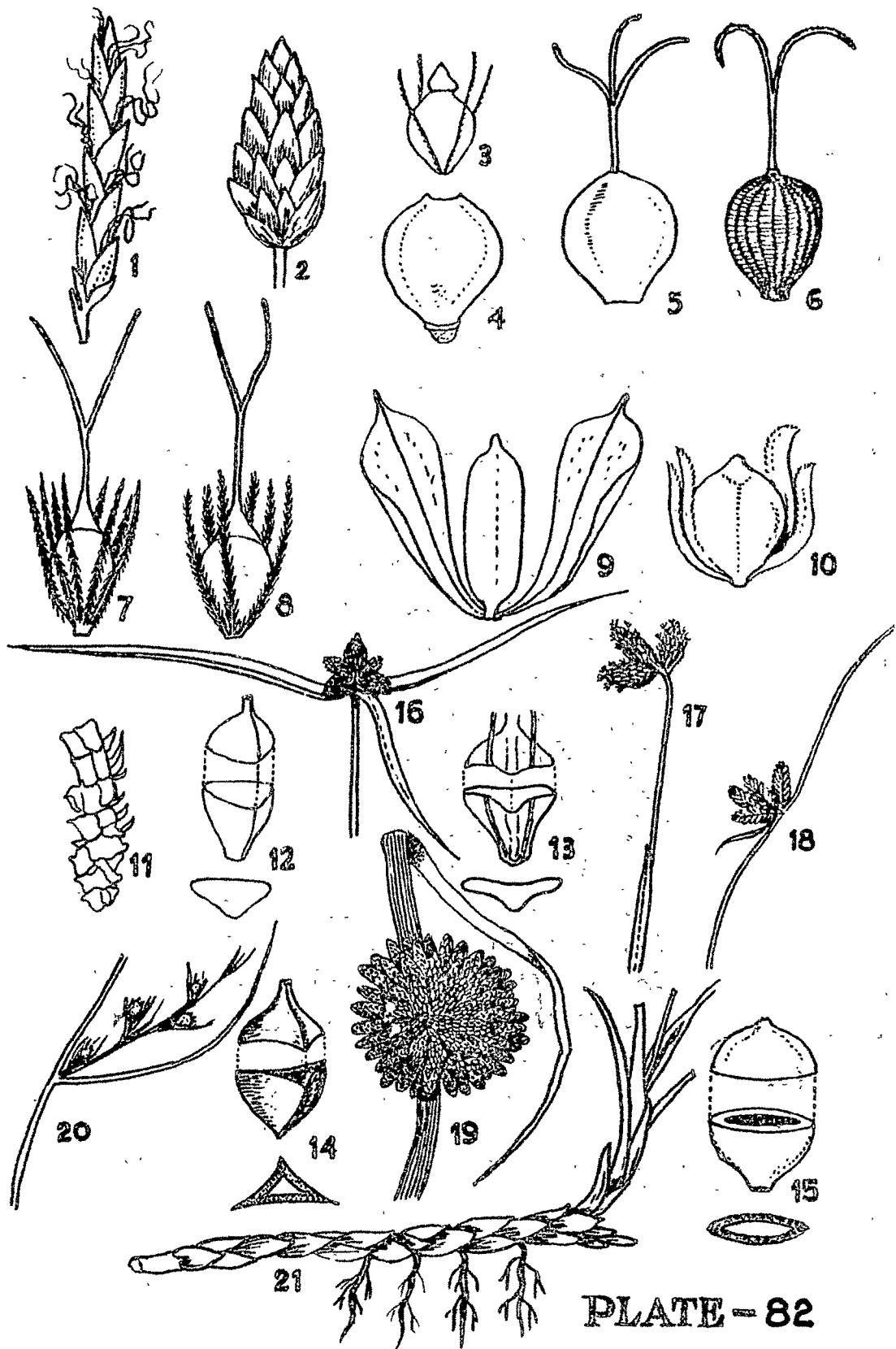


PLATE - 82

- 6. Style-base not swollen ..... 8. Scirpus
- 5. Nut with hypogynous scales :
  - 7. Scales 3, petal-like ..... 5. Fuirena
  - 7. Scales 2, not petal-like ..... 6. Lipocarpa
- 4. Hypogynous bristles or scales absent :
  - 8. Style-base dilated and constricted or articulated above the achene :
    - 9. Style-base articulated with ovary, caducous ..... 4. Fimbristylis
    - 9. Style-base not articulated, persistent on nut ..... 1. Bulbostylis
  - 8. Style-base not dilated, continuous with achene ..... 8. Scirpus
- 3. Spikelets few-flowered ..... 7. Rhynchospora
- 1. Bulbostylis Kunth (nom. cons.)

Bulbostylis barbata (Rottb.) C.B. Clarke, in FBI. 6: 651; Kern, in Reinwardtia 6: 51, 1961; Sabnis, in BBSI. 4(1-4): 200, 1962; M. 361.

Scirpus barbatus Rottb. Descr. et Icon. 52, t. 17, f. 4, 1753.

Stenophyllus barbatus (Rottb.) Cooke, in Fl. of Bom. Pres. 3: 401, 1958.

A small, tufted annual with filiform stems and wiry leaves.  
Spikelets small, brown; crowded in terminal clusters or heads.  
Achenes trigonous, dull white, style leaving a tumour on the achene.

Occasional on wet soils.

Flowers and fruits : August - February.

JVJ 192, 838.

## 2. Cyperus Linn.

1. Spikelets in sessile heads or clusters :

2. Heads or clusters terminal :

3. Heads usually greenish .....11. C. michelianus  
ssp. pygmaeus

3. Heads white or straw-coloured :

4. Spikelets in globose heads :

5. Glumes multi-nerved ..... 1. C. arenarius

5. Glumes uni-nerved .....10. C. leucocephalus

4. Spikelets in angular or lobed

heads .....20. C. triceps

2. Heads or clusters lateral ..... 9. C. laevigatus

1. Spikelets in umbels :

6. Umbels usually simple :

7. Styles bifid .....15. C. pumilus

## 7. Styles trifid :

8. Spikelets in globose heads on the rays  
of an umbel :

9. Nut nearly as long as glume, obovate-

oblong; stamen 1 .....3. C. *difformis*

9. Nut shorter than the glume, glumes with

crisped incurved tips; stamens 2 .....14. C. *pulcherrimus*

8. Spikelets spicate on the umbel rays :

## 10. Annuals :

11. Spikelets golden yellow; glumes with

squarrosely recurved arista .....18. C. *squarrosus*

11. Spikelets green, compressed with a

median ridge on each side ..... 2. C. *compressus*

## 10. Perennials :

12. Rhizome creeping, clothed with

scales ..... 7. C. *haspan*

12. Rhizome not as above :

13. Nuts rounded .....19. C. *tenuispica*

13. Nuts angular :

14. Glumes closely imbricate....17. C. *rotundus*

14. Glumes plicate-striate; spikelets  
shorter and broader than those of  
above ..... 4. C. esculentus
6. Umbels usually compound or decompound :
15. Umbels usually compound :
16. Plants robust; more than 50 cm. high :
17. Secondary rays of the umbels  
terminated by spikes or corymbs  
of less than 10 spikelets.....13. C. pangorei
17. Secondary rays of the umbels  
terminated by spikes of more  
than 30 spikelets :
18. Spikelets 8-20-flowered..... 5. C. exaltatus
18. Spikelets many-flowered.....12. C. nutans
16. Plants not robust, less than  
25 cm. high ..... 6. C. globosus
15. Umbels usually decompound :
19. Rachis flexuous, hispid on angles;  
glumes dorsally 7-nerved; achenes  
1.5 mm. long .....16. C. rectangularis
19. Rachis glabrous; glumes dorsally 3-5-  
nerved; achenes 1-1.25 mm. long ..... 8. C. iria

1. Cyperus arenarius Retz., Obs. Fasc. 4: 9, 1786; FBI. 6: 602;  
C. 3: 378; Gam. 3: 1140; Blatt. & Hallb. 26(4): 974, 1920;  
Sabnis, in BBSI. 4, 195, 1962; Sant. & Janar. 51; Vartak,  
337, f. 28, 1966.

An erect, rigid herb, rhizome stout, terete. Leaves longer or shorter than culms, linear. Spikelets straw-coloured in heads. Achenes obovoid, trigonous, smooth, black.

Occasionally seen on sand dunes along the sea-shore at Dumas and Hajira.

Flowers and fruits : August - October.

JVJ 227, 871.

2. Cyperus compressus Linn., Sp. Pl. 46, 1753; FBI. 6: 605; C. 3: 379; Gam. 3: 1140; Kükenth, loc. cit. 101: 156; M. 356; Sant. 297; Sabnis, loc. cit. 200.

A small, glabrous, tufted annual. Leaves as long as culms, flat. Spikelets sub-compressed, linear-oblong, green, becoming pale straw-coloured. Achenes broadly obovoid, triquetrous.

A fairly common weed, found on waste, moist places, often mixed with grasses.

Flowers and fruits : August - March.

JVJ 177, 318.

3. Cyperus difformis Linn., Cent. Pl. 2: 6, 1756; FBI. 6: 599;  
C. 3: 376; Gam. 3: 1139; Kükenth, in Engl. Pflanzenr. 101: 77, 1935; Sabnis, loc. cit. 200; Sant. 298; Sant. & Janar.

51; Vartak, 341, f. 2 (on p. 338).

A tufted herb. Leaves linear, smooth, shorter than the stem. Spikelets linear-lanceolate, slightly compressed. Achenes elliptical to obovoid.

Occasional on wet, damp soils near canals at Dumas and along the water current of river Tapi near Fulpada.

Flowers and fruits : September - January.

JVJ 224, 288.

4. Cyperus esculentus Linn., Sp. Pl. 1: 45, 1753 & 2: 67, 1762;  
FBI. 6: 616; C. 3: 390; Gam. 3: 1141; Chavan & Sabnis, in  
JMSU. 7(2): 61, 1958 & 8(2): 16, 1959.

A tall, erect herb. Leaves as long as stems or nearly so. Spikelets are shorter and broader than those of C. rotundus; glumes plicate, ovate-obtuse, plicate-striate.

Frequently seen on wet soils.

Flowers and fruits : August - January.

JVJ 870.

5. Cyperus exaltatus Retz., Obs. 5: 11, 1789; FBI. 6: 617; C. 3: 386; Gam. 3: 1141; Kuekenth, loc. cit. 64, 17, f. 9A-F; Sant. 298; Sabnis, loc. cit. 195; Vartak, 340, ff.45-46.

A large, stout, perennial herb. Leaves few, more than 50 cm. long, linear, acuminate, glabrous, serrulate on margins. Spikelets in compound umbels, each 8-20-flowered, straw-coloured, ovate-lanceolate. Achenes ellipsoid, tapering to both ends, trigonous.

Common on wet places; in and around ponds near the water current of river Tapi.

Flowers and fruits : August - April.

JVJ 219.

6. C. globosus All. Auct. Fl. Pedem. 49, 1789; C. 3: 370;

Kuekenth, loc. cit. 101: 353; Sant. & Janar. 51; Sant. 299.

Pycneus globosus Reich., Fl. Germ. 740, 1830.

P. capillaris Nees, in Linnaea 7: 13, 1834; FBI. 6: 591.

A tufted, glabrous herb. Leaves linear, flat. Spikelets in simple umbels, each spikelet linear-oblong, compressed. Nut dark-brown, laterally compressed.

Frequently noted on the wet soils of river bed.

Flowers and fruits : August - March.

JVJ 729, 1192.

7. Cyperus haspan Linn., Sp. Pl. 45, 1753; FBI. 6: 600; C. 3:

376; Gam. 3: 1139; Kuekenth, 247; Vartak, 341.

A tufted herb with creeping rhizome. Leaves shorter than the stem, linear. Spikelets arranged in simple or compound umbels, each spikelet linear-lanceolate. Nut minutely warty.

Not common; seen on sandy-wate soils.

Flowers and fruits : August - October.

JVJ 329, 758.

8. Cyperus iria Linn., Sp. Pl. 45, 1753; FBI. 6: 606; C. 3: 380;  
Gam. 3: 1140; M. 357; Sant. 299; Sabnis, loc. cit. 201.

An erect, tufted herb, stems longitudinally striated. Leaves near the base of the stem, long, linear. Spikelets in decompound umbels, each spikelet linear, oblong. Achenes obovoid.

Fairly common in moist grounds, near ditches; along the bank of canals and in rice fields.

Flowers and fruits : August - December.

JVJ 178.

9. Cyperus laevigatus Linn., Mant. 179, 1771; C. 3: 374; Kuekenth, loc. cit. 321; Sabnis, loc. cit. 201; Vartak, 339, f. 12.

Juncellus laevigatus C. B. Clarke, in FBI. 6: 596, 1893.

An erect, glabrous herb with creeping rhizome. Aerial stems arising in clusters, green or straw-coloured, polished. Spikelets in lateral heads, pale, straw-coloured. Achenes smooth.

Observed in wet places.

Flowers and fruits : August - December.

JVJ 180.

10. Cyperus leucocephalus Retz. Obs. 5: 11, 1789; FBI. 6: 602;  
C. 3: 377; Gam. 3: 1140; Kuekenth, loc. cit. 228, f. 31;  
Sant. 299; Sabnis, loc. cit. 195.

A perennial, rhizomatous, slender, glabrous herb. Leaves narrowly linear, filiform, glabrous. Spikelets in capitate head.

Achenes apiculate, trigonous.

Occasional, along the wet-margins of canals and river.

Flowers and fruits : August - December.

JVJ 323.

11. Cyperus michelianus (L.) Link. ssp. pygmaeus (Rottb.) Asch. & Graebner, Synops. 2: 273, 1903; Kuekenth, loc. cit. 312, f. 35; Sabnis, loc. cit. 195; Sant. 300.

C. pygmaeus Rottb. Descr. et Icon. 20, 1773; C. 3: 372; Gam. 3: 1132; M. 352.

Juncellus pygmaeus C.B.Clarke in FBI. 6: 596, 1893.

A small, prostrate or sub-erect head. Leaves narrowly linear. Spikelets in compact, terminal heads. Achenes ellipsoid, style-base persisting.

Noted on sandy wet soils of river bed.

Flowers and fruits : August - March.

JVJ 4, 221.

12. Cyperus nutans Vahl, Enum. Pl. 2: 363, 1805; Gam. 3: 1140; Kern, loc. cit. 2: 111; M. 357.

C. eleusinoides Kunth. Enum. 2: 39, 1837; FBI. 6: 608; C. 3: 382; Gam. 3: 1140; Kuekenth, loc. cit. 144; Sabnis, loc. cit. 195; Sant. 298; Vartak, 339, f. 35.

An erect, tall, perennial, glabrous herb. Leaves linear, margins scabrid. Spikelets in compound umbels; each spikelet

linear, pale brown. Nuts ellipsoid, trigonous, punctate.

Frequently seen in wet places.

Flowers and fruits : August - January.

JVJ 181, 1174.

13. Cyperus pangorei Rottb. Descr. et Icon. 31, 1773; Gam. 3: 1140; Sant. 300; Sant. & Janar. 51; Mirashi & Donde, in Bull. Bot. Soc. Nag. 3(2): 49, 1962.

C. tegetum Roxb., Fl. Ind. 1: 208, 1832; FBI. 6: 613; C. 3: 384; Sant. 300; Sabnis, loc. cit. 195.

C. corymbosus Rottb. var. pangorei (Rottb.) Kuekenth, in Engler, Pfreich. 101: 80, 1936.

A perennial, stoloniferous herb. Stems more or less septate or articulate when dry. Spikelets reddish, in compound umbels. Achenes trigonous, obovoid.

Occasionally growing in the marshes and by the side of ditches.

Flowers and fruits : August - March.

JVJ 220, 357, 432.

14. Cyperus pulcherrimus Willd., in Kunth, Enum. 2: 35, 1835; FBI. 6: 600; C. 3: 376.

A tall, tufted annual. Leaves narrowly-linear. Spikelets on the rays of umbels, crowded in sub-globose heads; each spikelet oblong-lanceolate, 12-30-flowered; rachilla not winged; glumes ovate-oblong, obtuse with crisped incurved tips; stamens 2. Nuts



*Cyperus pulcherrimus* Willd.  
PLATE-83

stipitate, globosely trigonous, acute at both ends, granulate, style nearly as long as the nut.

A rare plant; found near the water current of river Tapi at Fulpada.

Flowers and fruits : August - December.

JVJ 1635. Plate 83.

15. Cyperus pumilus Linn., Cent. Pl. 2: 6, 1756 & Sp. Pl. (ed. 2) 69, 1762; C. 3: 370; Kuekenth, loc. cit. 375, f. 44; Sabnis, loc. cit. 195; M. 352; Sant. 300; Vartak, 340, f. 6.

Pycneus nitens Nees, in Nov. Acta Nat. Cur. 19 (suppl. 1): 53, 1843; FBI. 6: 591.

A dwarf, tufted annual. Leaves narrowly linear. Spikelets, 2-7-rayed in terminal umbels. Achenes biconvex, laterally compressed.

Occasional on sandy-wet soils.

Flowers and fruits : August - December.

JVJ 324.

16. Cyperus rectangularis (Kuekenthal) Bennet, in Ind. For. 95, 692, 1969.

C. iria var. rectangularis Kuekenth. loc. cit. 101: 152.

C. alulatus Kern, in Reinwardtia 1(4): 463-466, t. 1, 1952; Sant. & Janard. 51.

A small, tufted, annual. Leaves few, scabrid toward apex. Spikelets compressed, golden-yellow or yellowish-brown. Achenes obovate, triquetrous, punctate.

Frequently seen on moist grassy soils.

Flowers and fruits : August - November.

JVJ 322.

17. Cyperus rotundus Linn., Sp. Pl. 1: 45, 1753; FBI. 6: 614;  
C. 3: 385; Gam. 3: 1140; Kuekenth. loc. cit. 101;  
Sabnis, loc. cit. 201; M. 356; Vartak, 340, f. 43;  
Sant. 300.

An erect, perennial herb. Stolons long, slender, tubers hard, fragrant. Leaves narrow, linear, flat. Spikelets in simple umbels, reddish-brown. Achenes a obovoid, trigonous.

A rare plant, found on sandy soils in the vicinity of water.

Local name : Moth.

Flowers and fruits : August - December.

JVJ 15, 222.

18. Cyperus squarrosus Linn., Cent. Pl. 2: 6, 1756 & Amoen. Acad.  
4: 303, 1760; (non C.B. Clarke); Mirashi & Donde, loc. cit.  
48; Sabnis, in Ind. For. 93(3): 191, 1967; Sant. 300;  
Vartak, 339, f. 30.

C. aristatus Rottb. Descr. et Icon. 23, t. 6, f. 1, 1773;  
FBI. 6: 606; C. 3: 380; Gam. 3: 1140; Sabnis, loc. cit. 200.

A small, glabrous, tufted herb. Stems stout or slender.

Leaves narrowly linear, glabrous. Spikelets in a simple umbel, golden-yellow. Achenes apiculate, trigonous.

Frequently found along with grasses on wet soils.

Flowers and fruits : August - December.

JVJ 319, 872.

19. Cyperus tenuispica Steud. Synop. Cyper. 2: 11, 1855; Gam. 3: 1139; Kuekenth. 245; Vartak, 341, f. 23.

C. flavidus C.B.Clarke, in FBI. 6: 600; C. 3: 375; Sabnis, loc. cit. 195.

A slender, tufted herb. Leaves linear. Spikelets in terminal compound umbels, each spikelet linear-lanceolate, compressed. Achenes obovoid, trigonous.

A rare plant; found occupying the dried exposed soils of ditches.

Flowers and fruits : August - January.

JVJ 228.

20. Cyperus triceps (Rottb.) Endl. Cat. Hort. Vindob. 1: 94, 1842; Kuekenth. loc. cit. 578; Sabnis, loc. cit. 195; M. 353; Sant. 301; Vartak, 340, f. 13.

Kyllinga triceps Rottb. Descr. et Icon. 14, t. 4, f. 6, 1733; FBI. 6: 587; C. 3: 391.

A small, slender, tufted plant. Leaves linear, as long as or longer than the stem. Spikelets, in white, sessile angular heads in groups of 3, spikelet 1-flowered. Nuts oblong,

laterally compressed.

Occasional on wet, open lands; often seen with grasses.

Flowers and fruits : August - December.

JVJ 230.

Cyperus alternifolius Linn. subsp. flabelliformis (Rottb.)

Kuekenth, Pflanzenr, 101: 193, 1956.

This species popularly known as the "Umbrella plant", is grown in the botanical garden of P. T. Science College and some private gardens for ornamental purposes.

### 3. Eleocharis R. Br.

Eleocharis atropurpurea (Retz.) Kunth, Enum. 2: 151, 1837;

FBI. 6: 627; C. 3: 403; Gam. 3: 1145; Sabnis, loc. cit.

195; M. 358; Sant. 302; Vartak, 344, f. 6.

Scirpus atropurpureus Retz. Obs. 5: 14, 1789.

A small, slender, tufted annual. Leaves absent. Spikelets ovoid, obtuse or sub-acute, dark, brown, solitary and terminal; glumes broadly ovate-oblong; bristles white. Achenes minute.

Occasional on damp soils.

Flowers and fruits : August - October.

JVJ 191.

### 4. Fimbristylis Vahl (nom. cons.)

1. Spikelets 1-2 :

- 2. Lower glumes distichous ..... 6. F. ovata
- 2. Lower glumes spiral ..... 7. F. polytrichoides
- 1. Spikelets many :
  - 3. Spikelets in simple umbel :
    - 4. Style bifid :
      - 5. Glumes mucronulate, glabrous, nut  
pale, trabeculate and ribbed :
        - 6. Spikelets 1-1.5 mm. wide;  
glumes 1-nerved ..... 1. F. bisumbellata
        - 6. Spikelets 2-4 mm. wide;  
glumes 3-nerved ..... 2. F. dichotoma
      - 5. Glumes pubescent in the upper half;  
nut not as above :
        - 7. Nut stipitate; stem leafy ... 8. F. sieberiana
        - 7. Nut not stipitate; leaves very  
short or absent ..... 3. F. ferruginea
    - 4. Style trifid ..... 9. F. tenera
  - 3. Spikelets in compound or decompound umbels :
    - 8. Umbels usually compound; stigmas 3..10. F. woodrowii
    - 8. Umbels decompound :
      - 9. Spikelets obtuse; glumes not  
mucronate; rachilla not winged...4. F. littoralis
      - 9. Spikelets acute; glumes mucronate;  
rachilla winged .....5. F. miliacea

1. Fimbristylis bisumbellata (Forsk.) Bub., Dodec. 30, 1850;

Gam. 3: 1151; Kern, in Reinwardtia, 6(2): 47, 1961;

Sant. 301; Sant. & Janar. 51; Vartak, 341, f. 1.

Scirpus bisumbellatus Forsk. Fl. Aeg.-Arab. 15, 1775.

Fimbristylis dichotoma (non Vahl) sensu Clarke, in FBI.

6: 635; C. 3: 394.

A densely, tufted annual with striate, smooth stems. Spikelets yellowish-brown, in compound umbels. Achenes ribbed and trabeculate.

Occasional on muddy banks of canals.

Flowers and fruits : August - December.

JVJ 354.

2. Fimbristylis dichotoma (L.) Vahl, Enum. 2: 287, 1806; FBI.

6: 635; Gam. 3: 1151; Kern, loc. cit. 6(1): 46 &

6(2): 147.

Scirpus dichotomus Linn., Sp. Pl. 50, 1753.

Fimbristylis diphylla sensu Clarke, in FBI. 6: 636;

C. 3: 396.

A tufted, perennial herb. Stems slender, angled, striate, smooth. Leaves with scaberulous margins. Spikelets in simple umbels; glumes mucronate, smooth. Achenes trabeculate and ribbed.

Fairly common along the margins of canals and ditches.

Flowers and fruits : July - January.

JVJ 41, 330.

3. Fimbristylis ferruginea (L.) Vahl, Enum. 2: 291, 1805; FBI.

6: 638; C. 3: 396; Gam. 3: 1151; Sabnis, loc. cit.

200; M. 359; Vartak, 341, f. 17; Sant. 301.

Scirpus ferrugineus Linn., Sp. Pl. 50, 1753.

A rhizomatous, tufted perennial. Leaves filiform, short. Spikelets pale-brown in simple umbels; glumes broadly ovate, hoary, pubescent in the upper half. Achenes smooth.

Occasional on muddy soils near ditches.

Flowers and fruits : August - October.

JVJ 185, 1250.

4. Fimbristylis littoralis Gaudich, in Freyc. Voy. Bot. 413, 1826.

F. miliacea sensu Clarke, in FBI. 6: 644 (non Scirpus miliaceus L.) 1893; C. 3: 397; S. 302.

A tufted annual. Leaves linear, scabrid on margins. Spikes globose or sub-cylindric, in terminal, compound umbels. Achenes broadly obovoid, creamy-white, acutely trigonous, tubercled and transversely ribbed.

Occasional, along the brims of temporary water collections during monsoon.

Flowers and fruits : August - November.

JVJ 2177.

5. Fimbristylis miliacea (L.) Vahl, Enum. 2: 287; 1805; Gam. 3:

1152; Kern, in Backer & Bakh. f., Fl. Java 3: 463, 1968;

Vartak, 341, f. 8; Sant. 302.

Scirpus miliaceus Linn., Syst. Veg. ed. 10, 868, 1759.

Fimbristylis quinquangularis Kunth, Enum. 2: 229, 1837;  
FBI. 6: 644; C. 3: 397; Sabnis, loc. cit. 201; M. 360;  
Sant. 302; Sant. & Janar. 52.

An erect, glabrous herb. Umbels decompound; spikelets not globose but acute; glumes mucronate. Achene tuberculate, white or pale yellow.

Occasionally observed in marshy places.

Flowers and fruits : September - March.

JVJ 358, 1175, 1993.

6. Fimbristylis ovata (Burm. f.) Kern, in Blumea 15:126, 1967.

Carex ovata Burm. f., Fl. Ind. 194, 1768.

Fimbristylis monostachyos (L.) Hassk. Pl. Jav. Rar. 61,  
1848; FBI. 6: 649; C. 3: 399; Gam. 3: 1152; Sabnis,  
loc. cit. 196; M. 359; Vartak, 341, f. 21.

A slender, densely tufted herb. Leaves crowded on the swollen base of the stem. Spikelets narrowly ovate, compressed, straw-coloured. Achenes trigonous, stipitate.

Occasionally seen in moist shady places.

Flowers and fruits : August - November.

JVJ 1055.

7. Fimbristylis polytrichoides R. Br. Prodr. 226, 1810; FBI.

6: 623; C. 3: 393; Gam. 3: 1150; Sedgwick, in JBNHS.  
26: 193; Sabnis, loc. cit. 196; Vartak, 342, f. 15.

A small, slender annual. Spikelet solitary, terminal, oblong-ellipsoid, rachilla stout. Achene minutely tuberculate, obovate.

Frequently observed on wet soils near ditches.

Flowers and fruits : August - January.

JVJ 183, 1182.

8. Fimbristylis sieberiana Kunth, Enum. 2: 237, 1837; Kern, in Blumea 8(1): 131, 1955; Shah & Surya., in JBNHS. 66: 412-414, 1969.

F. ferruginea (L.) Vahl, var. siberiana (Kunth) Boeck., Linnaea 37: 17, 1817.

A rhizomatous perennial herb. Leaves linear, glaucous, sparsely pubescent. Spikelets in simple umbel; each spikelet ovate; glumes broadly ovate, obtuse, apiculate. Achene broadly obovate to orbicular.

Frequently seen on damp soils near ditches.

Flowers and fruits : August - February.

JVJ 385, 1915.

9. Fimbristylis tenera Roem. & Schult. Syst. Mant. 2: 57, 1824; FBI. 6: 642; Gam. 3: 1152; Sabnis, loc. cit. 196; Sant. 302; Sant. & Janar. 52.

F. monticola Hochst. ex Steud. Sy. Pl. Cyp. 111, 1855; C. 3: 399.

F. tenera Roem. & Schult. var. oxylepis (Steud.) C.B.  
Clarke, in FBI. 6: 642; M. 360.

A slender, annual. Stems filiform, obtusely trigonous.  
Spikelets in simple or compound umbels; each spikelet lanceolate,  
terete, acute; glumes ovate, apiculate, loosely imbricate.  
Achenes globose.

Occasional on damp places.

Flowers and fruits : August - October.

JVJ 184, 837, 957.

10. Fimbristylis woodrowii C.B. Clarke, in Bull. Misc. Inf. 227,  
1898 (Woodrowi); C. 3: 398; Sant. 302; Vartak, 341, f. 2.

A slender, filiform, annual. Spikelets in terminal simple  
or compound umbels; each spikelet linear to ovate-lanceolate,  
reddish-brown. Achenes obovate-oblong, trigonous.

A rare plant; collected once from wet soils near ditches  
around Dumas.

Flowers and fruits : August - October.

JVJ 226.

##### 5. Fuirena Rottb.

Fuirena ciliaris (L.) Roxb., Fl. Ind. 1: 184, 1820; Blatt. &  
McC., in JBNHS. 37: 772, 1934; Sabnis, in BBSI. 4: 196,  
1962 et JBNHS. 68(3): 857-858, 1972; Vartak, 345, f. 4 et  
J. Univ. Poona Sci. & Tech. 40: 198, 1971.



*Frireana ciliaris* (L.) Roxb.

PLATE-84

Scirpus ciliaris Linn., Mant. 2: 182, 1771.

Fuirena glomerata Lam. Tab. Encycl. 1: 150, 1791; FBl. 6: 666; C. 3: 412.

A slender annual. Stems leafy throughout. Leaves linear-lanceolate, ligulate at the mouth of the sheath; sheaths closed, striate hairy. Spikelets ovoid, green or brown, in axillary and terminal clusters. Scales petaloid, quadrate with a conspicuous mucro. Nut broadly, obovoid to elliptic, trigonous.

A rare plant; collected once along margins of ditches near railway track between Udhana and Bhestan.

Flowers and fruits : October - November.

JVJ 1364.

Plate 84.

#### 6. Lipocarpa R. Br. (nom. cons.)

Lipocarpa chinensis (Osborne) Kern, in Blumea Suppl. 4:167, 1958.

Scirpus chinensis Osb. It. 220.

Lipocarpa argentea R. Br., in Tuckey Congo. Narr. Exp.

459, 1818; FBl. 6: 667; Gam. 3: 1158; Vartak, 345, f. 15.

A glabrous, erect herb. Stems tufted, obtusely triangular, smooth. Spikelets in a terminal capitate head, white; glumes hyaline, dotted and streaked with red-brown tinge. Nut small, oblong or ovoid, minutely punctate.

A rare plant; collected once from the alluvial sandy soils of river bed near Variav. It is a new record for Gujarat and



erstwhile Bombay State.

Flowers and fruits : August - October.

JVJ 211.

Plate 85.

7. Rhynchospora Vahl (nom. cons.)

Rhynchospora glauca Vahl, Enum. 2: 233, 1806; FBI. 6: 671;

Gam. 3: 1160; Parabia, in Cont. Cyp. Guj. 1, 294-295,  
t. 50, 1974 (unpublished).

R. chinensis Boeck., in Linnaea 37: 586, 1873.

R. glauca Vahl var. chinensis C. B. Clarke, in FBI. 6: 672,  
1893.

An annual, glabrous herb; stem erect, trigonous. Leaves narrow-linear. Spikelets in terminal or corymbose panicles, each with one-flowered, ellipsoid, chocolate-brown colour; hypogynous bristles 6, ascendingly hispidulous. Nut ovoid, oblong, biconvex, beaked by the persistent style-base.

A rare plant; collected once from the alluvial sandy soils of a small island in the river bed of Tapi near Variav. It is also a new record of erstwhile Bombay State.

Flowers and fruits : August - October.

JVJ 210.

8. Scirpus Linn.

1. Inflorescence umbellate :

2. Inflorescence terminal; bristles

retroscissely scabrid ..... 6. S. tuberosus

2. Inflorescence lateral;

bristles plumose ..... 4. S. littoralis  
var. subulatus

1. Inflorescence a head :

3. Hypogynous bristles present ..... 1. S. affinis

3. Hypogynous bristles absent :

4. Heads above the middle of the stem :

5. Glumes multistriate; stem

septate when dry ..... 5. S. roylei

5. Glumes not striate; stem not

septate when dry ..... 3. S. lateriflorus4. Heads near the base of the stem..... 2. S. articulatus

1. Scirpus affinis Roth, in Roem. & Schult. Syst. 2: 140,  
1817 & Nov. Pl. Sp. 30, 1821; Kern, Reinwardtia 6(1):  
33, 1961; M. 362.

S. maritimus var. affinis (Roth) C.B. Clarke, in FBI. 6:  
659; C. 3: 408; Gam. 3: 1156; Sabnis, loc. cit. 196;  
Vartak, 342, f. 3.

An erect, tufted perennial herb; rhizome smooth, horizontal.

Stems sharply trigonous, leafy. Leaves narrowly linear. Spikelets in terminal head, light brown; hypogynous bristles 4. Achenes lenticular, dark brown, ovate, apiculate.

Occasionally seen on muddy soils of ditches and ponds.

Flowers and fruits : September - January.

JVJ 190.

2. Scirpus articulatus Linn., Sp. Pl. 47, 1753; FBI. 6: 656; C. 3: 406; Gam. 3: 1156; Kern, loc. cit. 6(1): 34; Sabnis, loc. cit. 196; M. 361; Sant. 302; Vartak, 343, f. 5.

An amphibious marshy herb with erect, hollow, cylindrical culms and fibrous roots. Spikelets brown, in lateral heads, often near the base, hypogynous bristles nil. Achenes b obovoid, triquetrous black, apiculate.

Common on sticky, muddy soils of ditches and ponds.

Flowers and fruits : September - March.

JVJ 12, 331, 496.

3. Scirpus lateriflorus Gmel. Syst. Veg. 1: 127, 1791; Kern, loc. cit. 6(1): 34.

S. supinus Roxb. (auct. non Linn.) Fl. Ind. 1: 219, 1820; FBI. 6: 655; C. 3: 406; Sabnis, loc. cit. 196.

S. supinus L. var. uninodis C.B. Clarke, in FBI. 6: 656, 1893; C. 3: 406.

S. supinus L. var. lateriflorus (Gmel.) Koyama, in Journ.

Fac. Sci. Univ. Tokyo 7: 302, 1958; Sant. 302; Sant. & Janar. 52.

A densely tufted, annual. Spikelets ovate-oblong or ellipsoid, pale brown or straw-coloured, arranged in lateral head. Achenes obovoid or orbicular, trigonous, black.

Frequently seen on wet muddy soils of river beds, also along the margins of ditches.

Flowers and fruits : August - December.

JVJ 213, 1176.

4. Scirpus littoralis Schrad. var. subulatus (Vahl) Chiov. Pl.

Nov. etc. ex Aethiopia 16, 1928; Koyama, in Canad. Journ. Bot. 41(7): 1126, 1963; Sant. & Janar. 52.

S. subulatus Vahl, Enum. 2: 268, 1806.

S. littoralis sensu Clarke, C.B., in FBI. 6: 659 (non Schrad.); C. 3: 408; Gam. 3: 1156; Sabnis, loc. cit. 196; M. 362; Vartak, 343, f. 4.

A sturdy, amphibious plant with creeping rhizome. Stems terete below, slightly trigonous above. Leaves absent. Spikelets in lax drooping, sub-corymbose or paniculate umbels, borne laterally near the apex; hypogynous bristles. Plumose with moniliform hairs. Achenes smooth, apiculate.

Common throughout the area, along the banks of river, ponds and ditches.

Flowers and fruits : August - March.

JVJ 34, 1991.

5. Scirpus roylei (Nees) Parker, in Duthie, Fl. Upper Gang. Pl.

3: 361, 1921; Sant. & Janar. 52; M. 362; Vartak, 343, f.10.

Isolepis roylei Nees, in Wt. Contrib. 107, 1834.

Scirpus quinquefarius Buch.-Ham., in Wall. Cat. 3465, 1828

(nomen.) ex Boeck. in Linnaea 36: 701, 1870; FBI. 6:

657; C. 3: 407; Sabnis, loc. cit. 196.

An erect, tufted annual. Leaves O. Spikelets in a solitary, yellowish-brown, lateral head, each spikelet ovate-oblong. Achenes obovoid, triquetrous, black.

Occasional in exposed mud of the ditches.

Flowers and fruits : August - October.

JVJ 136.

6. Scirpus tuberosus Desf. Fl. Atlant. 1: 50, 1798; Beetle, in

Amer. Journ. Bot. 29: 84, 1942; M. 363; Rau, in BBSI.

10 (suppl. 2): 87, 1967.

S. maritimus Linn., Sp. Pl. 51, 1753; FBI. 6: 658; C. 3:

407; Gam. 3: 1156; Sabnis, loc. cit. 196; Sant. &

Janar. 52; Vartak, 342, f. 1.

An erect, perennial, amphibious plant with creeping rhizome. Leaves grass-like, keeled, as long as the stem. Spikelets pale brown or reddish brown, in umbellate inflorescence; glumes strongly keeled; hypogynous bristles 3-6, retrorsely scabrid. Achenes pale-yellow, trigonous, smooth.

Fairly common along the lower belt of river Tapi near Ashwanikumar, Jahangirpura and Rander.



*Scleria tessellata* Willd.

Flowers and fruits : July - March.

JVJ 189, 984.

9. Scleria Berg.

Scleria parvula Steudel., Synop. Pl. Glumac. 2: 174, 1855;

Nelmes, in Kew Bull. 105, 1956; Koyama loc. cit. 136.

S. tessellata auct. non Willd. 1805; FBI. 6: 686; C. 3: 418;

Gam. 3: 1163; Sabnis, loc. cit. 196; Sant. 303.

A perennial tufted, grass-like herb; rhizome small, stem triquetrous. Leaves linear, sub-acute. Inflorescence terminal and sub-terminal, branched, leafy panicle. Nut sessile, oblong-ellipsoid, white, tessellately cancellate in vertical lines, top rounded, not beaked.

Occasionally seen on wet soils near canals along with grasses.

Flowers and fruits : August - October.

JVJ 188, 325.

Plate 86.

POACEAE ( GRAMINEAE )

(Keys to the groups, genera and species have been adopted and prepared following Bor - The Grasses of Burma, Ceylon, India and Pakistan, 1960).

Key to the groups

1. Spikelets 2-flowered, falling entire at maturity, usually with the upper floret bisexual 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

Group 1 ..... Panicoideae

1. Spikelets 1-many-flowered, breaking up at maturity above the more or less persistent glumes, or if falling entire, then not 2-flowered with the lower florets male or barren and the upper hermaphrodite; usually more or less laterally compressed or terete or if 2-flowered and falling entire, the glumes and lemmas all membranous and with a globose wrinkled seed which splits the palea when mature

Group 2 ..... Pooideae

Group 1 : Panicoideae

Key to the tribes of Panicoideae

1. 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 .....2. Maydeae
1. Spikelets all hermaphrodite or with male or barren and hermaphrodite spikelets 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 :

2. Spikelets often paired, with one sessile and  
the other pedicelled, similar or dissimilar  
rarely solitary and all alike; glumes as long  
as spikelet and enclosing the florets, more  
or less rigid and firmer than the lemmas which  
are both hyaline or membranous, upper lemma  
usually awned .....1. Andropogoneae

2. Spikelets solitary or paired, more or less  
similar; glumes usually membranous, the lower  
usually smaller or sometimes suppressed; lower  
lemma mostly resembling the upper glume in  
texture; upper lemma papery to very tough and  
rigid, usually awnless .....3. Paniceae

1. Tribe : Andropogoneae

Key to the genera of Andropogoneae

1. Spikelets of each pair similar; the sessile  
and pedicelled hermaphrodite :

2. Spikelets arranged in more or less ample  
panicles or compound racemes arranged  
along a central axis; upper lemma awnless...38. Saccharum

2. Spikelets arranged in a single or in several  
racemes, upper lemma awned.....23. Eulalia

1. Spikelets in each pair dissimilar, the sessile hermaphrodite, the pedicelled male or sterile, or completely absent :
3. Joints of the rachis and pedicels of the pedicelled spikelet swollen, 3-angled, rounded or flattened :
4. Sessile spikelet with a male and a hermaphrodite floret; upper lemma awned :
5. Racemes many-noded :
  6. Pedicelled spikelets developed; lower glume usually coriaceous below, often transversely wrinkled .....27. Ischaemum
  6. Pedicelled spikelets reduced to a linear, curved pedicel; lower glume coriaceous, covered all over with transverse ridges which are broken up into warts or teeth, not keeled .....43. Thelepogon
5. Racemes 1-noded ..... 3. Apluda
4. Sessile spikelet with a hermaphrodite floret only or occasionally with a male floret below; upper lemma unawned :
7. Sessile spikelet spherical; lower glume pitted all over; pedicelled spikelet reduced .....24. Hackelochloa

7. Sessile spikelet not spherical in shape :
8. Spikelets similar; rachis very tough;  
joints and pedicel fused .....25. Hemarthria
8. Spikelets dissimilar; rachis usually  
breaking up; joints and pedicel  
not fused ..... 30. Ophiuros ✓
3. Joints of the rachis and the pedicel narrow,  
seldom thickened upwards; sessile spikelet  
usually awned :
9. Spikelets in racemes which not interrupted  
by spathes or solitary at the ends of the  
branches, the racemes collected into whorled  
panicles; joints and pedicels not furrowed..40. Sorghum
9. Panicles of racemes interrupted by spathes  
or the espatheate racemes digitate or in  
pairs or solitary and terminal; joints and  
pedicels with a translucent furrow :
10. Margins of the lower glume of the  
sessile spikelet sharply unfolded;  
2-keeled; awn glabrous :
11. Upper lemma of the sessile  
spikelet not cleft, often  
stipitate and passing into  
the awn ..... 15. Dichanthium

- 11. Upper lemma of the sessile spikelet  
2-lobed or 2-cleft, awned in the sinus :
  - 12. Aromatic grasses, racemes in pairs  
supported by spathes ..... 10. Cymbopogon
  - 12. Grasses not aromatic, racemes not  
supported by spathes ..... 2. Andropogon
- 10. Margins of the lower glumes intumed rounded  
at the sides, at the most keeled upwards;  
awns usually hairy :
  - 13. Involucral spikelets pedicellate .....28. Iseilema
  - 13. Involucral spikelets sessile .....44. Themeda

2. Tribe : Maydeae

Key to the genera of Maydeae

- 1. Female spikelets completely enclosed in a  
metamorphosed leaf-sheath which forms a  
spherical or cylindrical bead-like false  
involucre ..... 9. Coix
- 1. Female spikelet not enclosed in a false  
involucre :
  - 2. Female spikelets in crowded longitudinal  
rows on a very thick axis; male spikelets  
terminal panicles ..... 48. Zea
  - 2. Female inflorescence not as above ..... 7. Chionachne

3. Tribe : PaniceaeKey to the genera of Paniceae

1. Spikelets unisexual ..... 41. Spinifex

1. Spikelets all similar in shape and sex :

2. Spikelets falling singly, not subtended  
by bristles, or if so, then bristles  
persisting after the spikelets have fallen :

3. Spikelets arranged in more or less open  
panicles, or with the panicles  
contracted and spike-like :

4. Spikelets subtended by bristle-like  
branches ..... 39. Setaria

4. Spikelets not subtended by  
bristle-like branches ..... 33. Panicum

3. Spikelets arranged in one-sided spikes  
or spike-like racemes, which are digitate  
or scattered, rarely solitary :

5. Lemma of the upper floret more or  
less crustaceous or coriaceous with  
narrow inrolled margins :

6. Spikelets abaxial :

7. Lower glume developed,  
although sometimes small :

8. Glumes acuminate or awned, rarely only  
acute; upper lemma not mucronate :

9. Leaf-blades linear, racemes dense;  
culms erect or sub-erect .....18. Echinochloa

9. Leaf-blades lanceolate to ovate,  
racemes loose to moderately dense;  
culms creeping and ascending.....31. Oplismenus

8. Glumes awnless, if acuminate then with  
the upper lemma mucronate :

10. Upper lemma acute, not mucronate..34. Paspalidium

10. Upper lemma obtuse or short awned.46. Urochloa

7. Lower glume usually absent, spikelets

plano-convex .....35. Paspalum

6. Spikelets adaxial ..... 5. Brachiaria

5. Lemma of the upper floret thinly cartilaginous,  
usually with flat, hyaline margins .....16. Digitaria

2. Spikelets with an involucre of bristles or  
subtended by a solitary bristle and falling with  
or without the bristles at maturity :

10. Upper lemma smooth; bristles caducous :

11. Involucre of free, naked or

plumose bristles .....36. Pennisetum

11. Involucre of spines of rigid bristles  
united at the base often into a  
hard cup .....6. Cenchrus
10. Upper lemma transversely rugose,  
bristles persistent .....39. Setaria

Group 2 : Pooideae

Key to the tribes of Pooideae

1. Lamina transversely veined and articulate  
on the sheath; shrubs ..... 3. Bambuseae  
(13. Dendrocalamus)
1. Lamina not as above; herbs :
  2. Spikelets borne in open or contracted or  
spike-like panicles, less often in  
racemes or spikes :
    3. Spikelets usually with 2 or more fertile  
florets or if with one fertile floret,  
then with <sup>one</sup> sterile reduced floret above it :
      4. Lemmas usually 7-9-nerved; inflorescence  
a simple spike or globular head of  
spikelets ..... 1. Aeluropodeae  
( 1. Aeluropus )
      4. Lemmas 1-3-nerved; inflorescence of  
panicles or racemes :

- 5. Inflorescence panicles, if racemes  
or spikes, spikelets not secund .....5. Eragrosteae
- 5. Inflorescence racemes or panicles of  
racemes; spikelets secund .....4. Chlorideae
- 3. Spikelets with one fertile floret (male or  
female in unisexual 1-flowered spikelets)  
with or without one or two male or barren  
florets below it, the latter often much reduced :
- 6. Glumes minute or suppressed; fertile  
lemma and palea very similar in shape  
and texture ..... 7. Oryzeae
- 6. Glumes well-developed; fertile lemma and  
palea not similar :
- 7. Spikelets with 2 florets; the lower  
male or barren, the upper  
hermaphrodite ..... 6. Isachneae
- 7. Spikelets with 1 fertile florets :
- 8. Spikelets very rarely falling entire  
and then with firmly membranous or  
coriaceous awned or 5-nerved lemma :
- 9. Lemmas hyaline or membranous at  
maturity; glumes and lemmas very  
similar in texture ..... 9. Sporoboleae

9. Lemmas indurated or rigid at maturity, terete or dorsally compressed; glumes and lemmas not similar ..... 2. Aristideae
8. Spikelets falling entire at maturity, either singly or in clusters from the axis of slender spike-like panicles or racemes; lemma delicate, 1-3-nerved..8. Perotideae
2. Spikelets borne in spikes; spikelets sessile or shortly pedicelled, along one side of the rachis of solitary, digitate or scattered spikes, spike-like racemes or on opposite sides of rachis of solitary spike or raceme :
10. Spikelets on opposite sides of the rachis of solitary spikes or spike-like racemes..10. Triticeae
10. Spikelets secund on a tough rachis; inflorescence of digitate or solitary spikes or panicle of spikes .....4. Chlorideae
1. Tribe : Aeluropodeae
1. Aeluropus
2. Tribe : Aristideae
4. Aristida
3. Tribe : Bambuseae
- Dendrocalamus

4. Tribe : ChlorideaeKey to the genera of Chlorideae

1. Inflorescence terminal, spicate, not of digitate  
or racemose spikes, lemmas not obovate .....29. Melanocenchris
1. Inflorescence of spikes, digitate or racemose;  
lemmas obovate :
  2. Spikelets with one or more fertile florets  
and one or more imperfect florets  
above them ..... 8. Chloris
  2. Spikelets with one fertile floret and no  
imperfect florets .....11. Cynodon

5. Tribe : EragrosteaeKey to the genera of Eragrosteae

1. Glumes aristate or aristate-acuminate;  
inflorescence a narrow panicle; spikes  
deflexed on flattened rachis .....17. Dinebra
1. Glumes obtuse, acute or acuminate but never  
aristate; inflorescence spikes or short racemose  
spikes; spikes erect :
  2. Spikelets in open, contracted or spike-like  
panicles, rarely solitary :
    3. Spikelets awnless :

4. Inflorescence a panicle, often effuse  
or sometimes contracted into spike-  
like and cylindric .....22. Eragrostis
4. Inflorescence a secund spike .....21. Eragrostiella
3. Spikelets awned, in dense, globose  
clusters .....20. Elytrophorus
2. Spikelets sessile or very short pedicelled,  
loosely to densely imbricate, in digitate or  
racemosely arranged spikes or spike-like  
racemes :
5. Axis and branches of the inflorescence  
ending in a spikelet :
6. Spikelets falling entire at maturity  
from the axis of straight spikes, the  
latter numerous and crowded into a  
long narrow, dense panicle; glumes  
1-nerved .....14. Desmostachya
6. Spikelets breaking up at maturity,  
spikelets 3-6-flowered; glumes  
1-5-nerved .....19. Eleusine
5. Axis of spikes terminating in a  
sharp point .....12. Dactyloctenium
6. Tribe : Isachneae  
26. Isachne

7. Tribe : Oryzeae

32. Oryza

8. Tribe : Perotideae

37. Perotis

9. Tribe : Sporoboleae

Key to the genera of Sporoboleae

1. Inflorescence elongate, spike-like; fruit  
with a conspicuous beak .....47. Urochondra

1. Inflorescence a panicle; fruit  
without a beak .....42. Sporobolus

10. Tribe : Triticeae

15. Triticum

1. Aeluropus Trin.

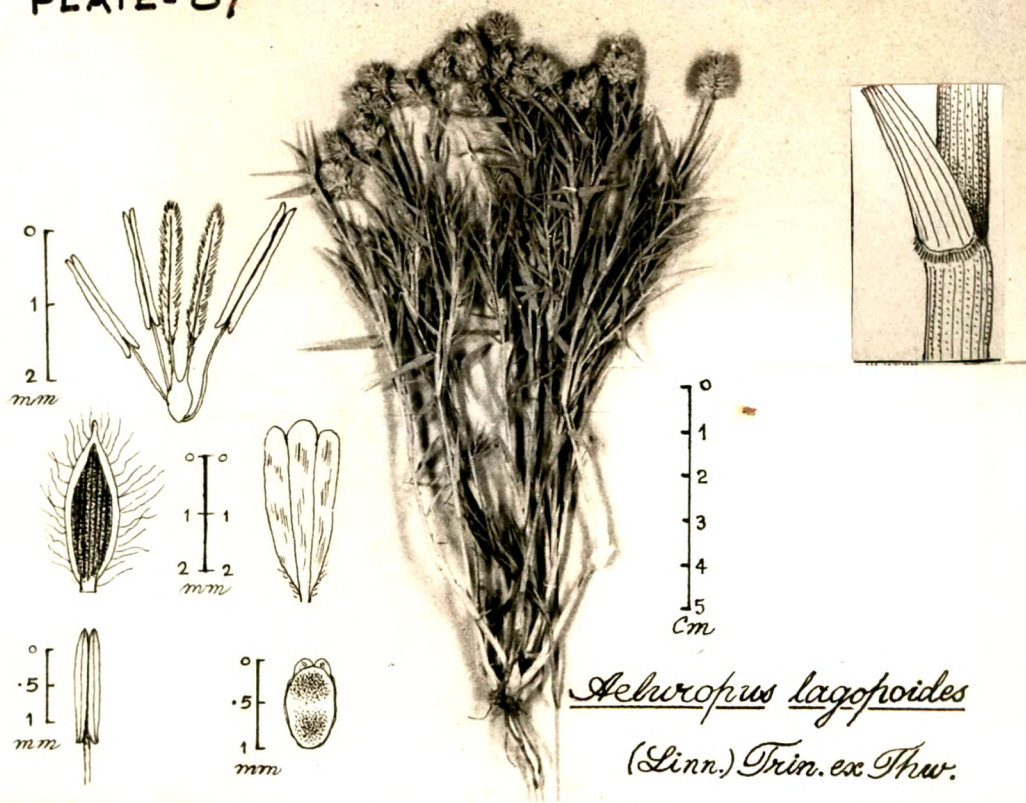
Aeluropus lagopoides (L.) Trin. ex Thw. Enum. Pl. Zeyl. 374,  
1864 (per errorem lagopodioides); Bor, 380; Sant. &  
Janar. 52.

Dactylis lagopoides Linn., Mant. 33, 1767.

Aeluropus villosus Trin. ex C.A. Mey., Verz. Pfl. Cauc. 18,  
1831; FBI. 7: 334; C. 3: 567.

A. repens (Desf.) Parl. Fl. Ital. 1: 462, 1848; Blatt. &  
McC. 277, t. 33.

PLATE-87



*Helwopus lagopoides*  
(Linn.) Trin. ex Thw.

A prostrate or sub-erect herb. Leaves narrowly linear, flat. Inflorescence of globose, elliptic or oblong heads of closely crowded spikes; spikelets hermaphrodite; glumes membranous, lemmas longer than the glumes, hyaline; lodicules 2; stamens 3; styles 2; ovary glabrous.

Fairly common along the coastal regions of Dumas, Abhavan, Bhimpor and Hajira.

Flowers and fruits : September - April.

JVJ 290, 841.

Plate 87.

## 2. Andropogon Linn.

Andropogon pumilus Roxb., Fl. Ind. 1: 277, 1820; FBI. 7: 170; C. 3: 495; Blatt. & McC. 99, t. 65; Bor, 93; Patel, in Ind. For. 91: 3111.

A small, slender, annual herb. Leaves linear, finely acuminate, glabrous, sheaths compressed, ligule short. Racemes in nearly equal pairs on a very slender peduncle. Spikelets glabrous, spathe narrow, flattened glabrous.

A rare grass; noted near the hedges.

Flowers and fruits : October - December.

JVJ 1444.

## 3. Apluda Linn.

Apluda mutica Linn., Sp. Pl. 82, 1753; Bor, 93; Patel, loc.cit.

91: 311; Pavagadh, 242; Sant. 303.

A. aristata Linn., Amoen. Acad. 4: 303, 1756; Sant. 303;  
M. 369.

A. varia Hack., in DC. Monogr. Phan. 6: 196, 1889; FBI. 7:  
150; C. 3: 474; Blatt. & McC. 29, t. 20.

An erect, slender, annual herb. Leaves linear-lanceolate,  
flat. Inflorescence a panicle, each one enclosed in a spathe.  
Spikelets greenish-white, sessile and pedicellate.

Found in hedges, under the shade of trees; often  
gregarious in open waste places.

Flowers and fruits : September - December.

JVJ 522.

#### 4. Aristida Linn.

1. Glumes long-awned ..... 2. A. setacea

1. Glumes not awned ..... 1. A. adscensionis

1. Aristida adscensionis Linn., Sp. Pl. 82, 1753; FBI. 7:  
224; C. 3: 529; Blatt. & McC. 209, t. 138; Bor, 407;  
M. 398; Patel, loc. cit. 91: 328.

A slender, erect or ascending herb. Leaves narrowly  
linear, flat, scabrous. Panicles with filiform hair-like  
branches, involucre glumes not awned but upper emarginate  
with a very short mucro between the lobes.

Frequently seen growing on elevated banks of river Tapi;

often mixed with hedges.

Flowers and fruits : September - February.

JVJ 263, 1253.

2. Aristida setacea Retz. Obs. 4: 22, 1786; FBI. 7: 225; C. 3: 529; Blatt. & McC. 211, t. 139; Bor, 412; Patel, loc. cit. 91: 329; Pavagadh, 264; Sant. 303.

An erect, tufted, slender herb. Leaves narrowly linear. Panicles contracted; glumes long-awned, sheaths coriaceous-crustaceous, shiny, polished; spikelets narrowly linear.

Rare; seen on the margins of fields.

Flowers and fruits : October - December.

JVJ 527.

#### 5. Brachiaria Griseb.

Brachiaria ramosa (L.) Stapf in Prain, Fl. Trop. Afr. 9: 542, 1919; Blatt. & McC. 134, t. 86; Bor, 284; M. 397; Patel, loc. cit. 91: 312; Sant. 306.

Panicum ramosum Linn., Mant. Pl. 29, 1767; FBI. 7: 36 (pro parte); C. 3: 449.

A slender, tufted, annual herb. Leaves linear-lanceolate, flat, glabrous or slightly hairy, scaberulous, acuminate. Spikelets alternate, in pairs, ovoid, loosely arranged in spikes.

Occasional on the drying slopes of river banks; also noted as a weed.

Flowers and fruits : September - February.

JVJ 304, 420, 1682.

6. Cenchrus Linn.

1. Bristles or spines of the involucre  
antrorsely scabrid :
2. Bristles connate at the base only .....1. C. ciliaris
2. Bristles connate into a cup :
3. Inner bristles very slender, widened  
into a cup at the base, tapering to a  
setiform tip; the outer bristles,  
slender, numerous .....3. C. pennisetiformis
3. Inner bristles rigid, flattened and  
subulate, acute the tip, the outer few  
or absent .....4. C. setigerus
1. Bristles or spines of the involucre  
retrorsely scabrid .....2. C. biflorus
1. Cenchrus biflorus Roxb. Fl. Ind. 1: 238, 1820; FBI. 7: 89; ?  
C. 3: 433; Blatt. & McC. 185, t. 118; Bor, 287;  
M. 377; Patel, loc. cit. 322.

C. catharticus Delile, Cat. Hort. Monsp. 1838, 4, 1839.

An erect, small, tufted annual; stems geniculate,  
branching from the base. Spike cylindric, solitary; bristles

retroscarsely scabrid or spiny.

Occasionally seen on fallow lands.

Flowers and fruits : September - April.

JVJ 1822.

2. Cenchrus ciliaris Linn., Mant. Alt. 302, 1771; Bor, 287, f. 33; Pavagadh, 255; Patel, loc. cit. 91: 322.

Pennisetum cenchroides Rich., in Pers. Syn. 1: 72, 1805; FBI. 7: 88; C. 3: 432.

An erect or decumbent, tufted, perennial herb. Leaves linear-lanceolate, glabrous. Spikes terminal, solitary; spikelets oblong-lanceolate.

Fairly common on the dry soils of elevated river banks.

Flowers and fruits : August - March.

JVJ 264.

3. Cenchrus pennisetiformis Hochst. & Steud. ex Steud. Syn. Pl. Glum. 1: 109, 1854; Bor, 289.

Pennisetum cenchroides Rich. var. echinoides Hook. f., in FBI. 7: 88, 1896.

A tufted, erect, slender, herb. Leaves linear-lanceolate, finely acuminate. Spike solitary, terminal cylindric; rachis scaberulous. Bristles connate at the base into a cup, tapering to a setiform tip.

Common in fallow fields and open waste places; on sandy

river beds; also noted as a garden weed.

Flowers and fruits : October - February.

JVJ 1431, 1878.

4. Cenchrus setigerus Vahl, Enum. Pl. 2: 395, 1806; Bor, 290;  
Patel, loc. cit. 91: 322; Pavagadh, 255.

C. biflorus auct. non Roxb. 1820; FBI. 7: 89; C. 3: 433;  
Blatt. & McC. 185, t. 118.

An erect or spreading, tufted, glabrous herb. Leaves  
linear-lanceolate, scabrid-hairy. Spikelets in terminal raceme.

Occasional on wastelands and along the banks of canal.

Flowers and fruits : August - January.

JVJ 28, 1060.

#### 7. Chionachne R. Br.

Chionachne koenigii (Spr.) Thw. Enum. Pl. Zeyl. 357, 1864;

Bor, 262; Patel, loc. cit. 320; Pavagadh, 239; Sant. 306.

Coix koenigii Spreng., Syst. 1: 239, 1825.

Chionachne barbata (Roxb.) R. Br. in Benn. Pl. Jav. Rar.

18, 1838.

Polytoca barbata (Roxb.) Stapf, in FBI. 7: 102, 1896; C. 3:

519; Blatt. & McC. 6, t. 3.

An erect, monoecious herb. Leaves linear, flat, hairy.  
Racemes on slender peduncles; male spikelets above, female

spikelet solitary below.

Frequently seen on wetlands.

Flowers and fruits : August - January.

JVJ 1681.

### 8. Chloris Sw.

1. Empty lemmas above the fertile floret,  
solitary, well-developed .....3. C. virgata
1. Empty lemmas above the lowest two to four ;
2. Culms glabrous below the inflorescence...1. C. barbata
2. Culms puberulous below the inflorescence.2. C. quinquesetica
1. Chloris barbata (L.) Sw. Fl. Ind. Occ. 1: 200, 1797; FBI. 7:  
292; C. 3: 557; Gam. 3: 1272; Blatt. & McC. 256; Bor,  
465; Patel, loc. cit. 330.

Andropogon barbatus Linn., Mant. Pl. Alt. 302, 1771.

A perennial grass. Leaves narrowly linear, flat, finely acuminate. Spikes 5-20, digitately arranged in terminal fascicles; spikelets green or purple; involucre glumes hyaline, lanceolate.

Fairly common on the middle belt of river banks; also observed in shaded localities and cultivated fields.

Flowers and fruits : August - April.

JVJ 268, 1059.

2. Chloris quinquesetica Bhide, in Journ. Proc. As. Soc. Beng.  
n.s. 8: 311, 1912; Blatt. & McC. 257; Bor, 466; Patel,  
loc. cit. 331.

An erect, perennial herb, often creeping and rooting at lower nodes. Leaves narrowly, linear-lanceolate, hairy on margins. Spikes terminal, crowded into sub-racemose fascicles. Spikelets with five awns.

A rare plant; noted as a garden weed.

Flowers and fruits : September - January.

JVJ 1784.

3. Chloris virgata Sw., Fl. Ind. Occ. 1: 203, 1797; FBI. 7:  
791; Blatt. & McC. 225, t. 170; Bor, 468; M. 388;  
Patel, loc. cit. 331; Pavagadh, 261.

A tufted, erect, annual grass; branches creeping and rooting at the nodes. Spikes 6-15, erect, digitate; spikelets 2-rowed, ovate-lanceolate.

Often seen along the railway track, in open waste places; on old walls.

Flowers and fruits : July - April.

JVJ 25.

#### 9. Coix Linn.

- Coix lacryma-jobi Linn., Sp. Pl. 972, 1753; FBI. 7: 100; C. 3:  
517; Blatt. & McC. 3, t. 1; Bor, 264; Patel, loc. cit. 321;

Sant. & Janar. 54; Sant. 307.

A tall, stout, erect herb. Leaves linear-lanceolate. Inflorescence a drooping raceme with unisexual florets; male florets terminal, drooping and each subtended by a bract; female florets at the base, enveloped by hard, polished bluish-grey bracts.

Fairly common and often found in association with Typha angustata, along the margins of ditches, banks of ponds and puddles.

Flowers and fruits : September - January.

JVJ 1680.

#### 10. Cymbopogon Spr.

1. Sessile spikelets without on awn or the awn reduced to a bristle not visible outside the spikelets .....1. C. citratus

1. Sessile spikelets awned .....2. C. martinii

1. <sup>✓</sup>Cymbopogon citratus (DC.) Stapf, in Kew Bull. 357, 1906; Blatt. & McC. 103; Bor, 126; Patel, loc. cit. 313; Sant. 307.

Andropogon citratus DC. Cat. Hort. Monsp. 78, 1813.

A. schoenanthus auct. non L. 1753; FBI. 7: 204; C.3: 511.

A tall, perennial, aromatic herb. Leaves linear-lanceolate,

glaucous-green, rough along margins. Racemes in pairs, supported by spathes, often collected into huge panicles; sessile spikelets without an awn; lower glume usually shallowly concave in the lower half.

Noted in cultivation at Katargam, Ved and in few gardens.

Local name : Lili cha.

Uses: Leaves are used to flavour tea.

Flowers : September - January.

JVJ 591.

2. Cymbopogon martinii (Roxb.) Wats. in Atkins. Gaz. N.W. Prov.

Ind. 392, 1882; Blatt. & McC. 104; Bor, 129; Pavagadh, 248; Sant. 307.

Andropogon martinii Roxb., Fl. Ind. 1: 280, 1820.

A. schoenanthus var. martinii Hook. f., in FBI. 7: 204, 1896.

A tall, erect, perennial herb. Leaves linear-lanceolate, aromatic. Spikelets first greenish, becoming reddish-brown, arranged in terminal spike.

Occasional, along the margins of canals and along railway line.

Flowers and fruits : October - January.

JVJ 501, 1183.

11. Cynodon A. Rich. (nom. cons.)

Cynodon dactylon (L.) Pers. Syn. 1: 85, 1805; FBI. 7: 288;

C. 3: 554; Blatt. & McC. 250, t. 166; Bor, 469, f. 52;  
Patel, loc. cit. 331; Sant. 307.

Panicum dactylon Linn., Sp. Pl. 58, 1753.

A perennial creeping herb with slender, erect culms. Leaves narrowly linear or lanceolate, flat. Spikes digitately spreading; spikelets sessile, imbricating greenish.

Common throughout the area.

Local name : Daro.

Flowers and fruits : Throughout the year.

JVJ 44.

## 12. Dactyloctenium Willd.

Dactyloctenium aegyptium (L.) Beauv. Agrost. Expl. Pl. 72, 1812;

Blatt. & McC. 262, t. 176; Bor, 489, t. 54; Sant. 308;

Patel, loc. cit. 332.

Cynosurus aegyptius Linn., Sp. Pl. 72, 1753.

Eleusine aegyptiaca (L.) Desf. Fl. Allant. 1: 85, 1798; FBI.

7: 295; C. 3: 560.

An erect, sub-erect herb with stoloniferous branches. Leaves narrowly linear. Spikes 2-6, digitately radiating; spikelets 3-5-flowered; laterally compressed.

A common weed; found in all localities.

JVJ 27, 456.

13. Dendrocalamus Nees (nom. cons.)

Dendrocalamus strictus Nees, in *Linnaea* 9: 476, 1834; FBI. 7: 404; C. 3: 572; Blatt. & McC. 285; Patel, loc. cit. 330.

A tall, deciduous, densely tufted bamboo with strong, erect stem. Inflorescence, a large branching panicle of dense globular heads.

Planted at many places.

Local name : Vans.

Uses : Used in construction of huts.

Flowers and fruits : January - April.

JVJ 32.

14. Desmostachya Stapf

Desmostachya bipinnata (L.) Stapf, in Dyer. Fl. Cap. 7: 632, 1900; Blatt. & McC. 244, t. 162; Bor, 491; Patel, loc.cit. 332; Pavagadh, 258.

Briza bipinnata Linn., Syst. 875, 1759.

Eragrostis cynosuroides (Retz.) Beauv. Ess. Agrost. 162, 1812; FBI. 7: 324; C. 3: 550.

A tall, tufted, rigid, perennial herb. Leaves linear, flat. Panicles erect, narrowly pyramidal or cylindrical, purplish to brownish at maturity; spikelets sessile, biseriate.

Occasionally seen on drier parts; on open lawns, along river banks and railway track.

Local name : Dabhado ghas.

Flowers and fruits : February - August.

JVJ 2178.

15. Dichanthium Willemet

<sup>Sp</sup>  
Dichanthium caricosum (L.) A. Camus, in Bull. Mus. Hist. Nat.  
 Paris 27: 549, 1921; Blatt. & McC. 92; Bor, 134; Patel,  
loc. cit. 314.

Andropogon caricosus Linn., Sp. Pl. (ed. 2) 1480, 1763;  
 FBI. 7: 196; C. 3: 507.

A small, tufted, delicate grass. Leaves narrowly linear,  
 hairy. Raceme solitary, 2-nate or sub-digitately paniculate.

Occasional in wet places near canals.

Flowers and fruits : August - November.

JVJ 32.

16. Digitaria Heist. ex Fabr.

Digitaria adscendens (H.B.K.) Henrard, in Blumea 1: 92, 1934;  
 Bor, 298; Patel, loc. cit. 323; Pavagadh, 254; Sant. 308.

Panicum adscendens H.B. & K. Nov. Gen. & Sp. Pl. 1: 97, 1816.

A tall, erect, annual herb. Leaves linear, flat. Racemes  
 sub-digitate, erect or spreading. Spikelets lanceolate,  
 appressed to the rachis.

Common along the vertical slope of river banks and along the margins of fields.

Flowers and fruits : August - December.

JVJ 261, 526.

17. Dinebra Jacq.

Dinebra retroflexa (Vahl) Panz. in Denkschr. Acad. Wiss. Munch.

270, t. 12, 1814; Blatt. & McC. 264; Bor, 491; Patel, loc. cit. 332; Pavagadh, 255.

Cynosurus retroflexus Vahl, Symb. Bot. 2: 20, 1791.

Dinebra arabica Jacq. Fragm. 77, t. 121, f. 1, 1807; FBI. 7: 297; C. 3: 562.

An erect, tufted, slender, annual herb. Leaves linear, flat, acuminate. Panicles terminal, spikes racemosely arranged on the axis; spikelets alternately arranged on flattened branches.

Common along the border of fields and banks of canal.

Flowers and fruits : October - December.

JVJ 280, 519.

18. Echinochloa P. Beauv.

1. Spikelets awned :

2. Lower lemma cuspidate or

shortly awned .....2. E. crusgalli var. brevisetæ

2. Lower lemma long to

moderately long-awned .....3. E. crusgalli var. crusgalli

1. Spikelets not awned .....1. E. colonum

1. Echinochloa colonum (L.) Link., Hort. Berol. 2: 209, 1833;

Blatt. & McC. 148, t. 94; Bor, 308, t. 34; Patel,

loc. cit. 323; Pavagadh, 252; Sant. & Janard. 55;

Sant. 309.

Panicum colonum Linn., Syst. (ed. 10) 870, 1759; FBI. 7:

32; C. 3: 447.

An erect to ascending, slender annual. Spikes 8-15, sessile, simple, appressed to the axis; rachis stout, angular spikelets globosely ovoid.

Occasionally seen in the cultivated fields; in all moist places, along the roadside ditches.

Local name : Samo.

Flowers and fruits : September - March.

JVJ 36, 258.

2. Echinochloa crusgalli (L.) P. Beauv., Ess. Agrost. 53: 161,

1812, var. breviseta (Doell) Neill., Fl. Nied. Ost.

31, 1859; Bor, 310.

Panicum crusgalli var. brevisetum Doell, Fl. Bad. 1: 232,

1857.

An erect, tufted annual herb. Panicle long, slender, more or less flexuous; spikelets crowded, lower lemma cuspidate or

shortly awned.

Occasional along the borders of fields.

Flowers and fruits : August - December.

JVJ 309.

3. Echinochloa crusgalli (L.) P. Beauv. var. crusgalli Bor, 310.

E. crusgalli (L.) P. Beauv. Ess. Agrost. 53 & 161, t. 11, f. 2, 1812; Blatt. & McC. 150, t. 95; Patel, loc. cit. 91: 323; Sant. & Janar. 55; Sant. 310.

Panicum crusgalli Linn., Sp. Pl. 50, 1753; FBI. 7: 30.

A tall, erect or sub-erect, tufted annual. Leaves linear, flat. Panicles terminal; spikelets ovoid, greenish or tinged purple.

Occasional in most places.

Flowers and fruits : October - December.

JVJ 257, 294.

19. Eleusine Gaertn.

1. Spikes slender, narrow, nearly glabrous at base..2. E. indica

1. Spikes stout, broad, hairy at base .....1. E. coracana

1. Eleusine coracana (L.) Gaertn. Fruct. 1: 8, t. 1, f. 11,

1789; FBI. 7: 294; C. 3: 561; Blatt. & McC. 260, t. 173;

Bor, 492; Patel, loc. cit. 333; Sant. 310.

Cynosurus coracanus Linn., Syst. Nat. (ed. 10) 2:875, 1759.

An erect, stout herb. Leaves linear-lanceolate. Spikes digitately umbellate. Spikelets glabrous, ovoid, apiculate.

Noted as an escape.

Local name : Nagli or Ragi.

Flowers and fruits : August - January.

JVJ 759, 1678.

2. Eleusine indica (L.) Gaertn. Fruct. 1: 8, 1789; Blatt. & McC. 259; FBI. 7: 293; C. 3: 560; Bor, 493; Patel, loc. cit. 333; Pavagadh, 259; Sant. 310.

Cynosurus indicus Linn., Sp. Pl. 72, 1753.

An erect, tufted annual. Leaves linear, flat, glabrous or sparsely hairy. Spikes digitately or sub-digitately umbellate, with 1 or 2 below umbel. Spikelets ovate or oblong, biseriate.

Occasional on fallow lands, on open lawns.

Flowers and fruits : August - April.

JVJ 1685.

## 20. Elytrophorus Beauv.

Elytrophorus spicatus (Willd.) A. Camus, in Lecomte, Fl. Gen. de l' Indo-China. 7: 547, 1923; Bor, 493; Patel, loc. cit. 333; Sant. 310.

Dactylis spicata Willd. in Ges. Naturl. Freund. Berl. Neue

Schrift. 3: 416, 1801.

Elytrophorus articulatus Beauv. Agrost. 67, t. 14, f. 2,  
1812; FBI. 7: 306; C. 3: 567.

An erect, tufted, slender herb with densely fibrous roots. Inflorescence paniculate, often longer than the rest of the plant. Spikes globose or oblong.

Occasional, on fallow, wasteland; often seen near ditches. Flowers and fruits : August - November.  
JVJ 738, 940.

#### 21. Eragrostiella Bor

Eragrostiella bifaria (Vahl) Bor, in Ind. For. 66: 270, 1940;  
Bor, 494; Patel, loc. cit. 333; Sant. 310.

Poa bifaria Vahl, Symb. Bot. 2: 19, 1791.

Eragrostis bifaria Wt. ex Steud. Nom. Bot. (ed. 2) 1: 562,  
1840 (nomen) et Syn. Pl. Glum. 1: 264, 1854; FBI. 7: 325;  
C. 3: 350; Blatt. & McC. 241.

An erect, tufted, herb. Leaves narrowly linear; from the basal sheaths, very much shorter, never reaching the base of the inflorescence. Spikes terminal; spikelets ovoid-lanceolate, laterally compressed.

Frequent, on wet soils.

Flowers and fruits : August - September.

JVJ 2179.

22. Eragrostis P. Beauv.

1. Spikelets breaking up from above  
downwards; rachilla fragile :
  2. Keels of the palea more or less ciliate :
    3. Panicles spiciform or compact and dense :
      4. Panicle spiciform, more or less lobed  
or interrupted ..... 3. E. ciliaris  
var. ciliaris
      4. Panicle short, thick, compact..... 2. E. ciliaris  
var. brachystachya
    3. Panicle effuse :
      5. Culms and leaves more or  
less viscous ..... 10. E. viscosa
      5. Culms and leaves not viscous ..... 8. E. tenella
  2. Keels of the palea scabrid or smooth  
but never ciliate ..... 4. E. japonica
1. Spikelets breaking up from below upwards;  
rachilla tough :
  6. Lemma upto 0.15 cm. long :
    7. Lowest branches of the panicle  
fascicled or sub-whorled ..... 6. E. pilosa
    7. Lowest branches not whorled ..... 7. E. poaeoides

6. Lemmas over 0.15 cm. long :

8. Leaves with raised glands; glands on the keel of the lemma or on the margins of the leaves or sheaths, pitted glands irregularly distributed .....1. E. cilianensis

8. Plants without glands :

9. Annual; lemmas 2 mm. long; spikelets green to reddish-purple .....9. E. unioloides

9. Perennial; lemmas less than 2 mm. long; spikelets slaty-grey to black .....5. E. nigra

1. Eragrostis cilianensis (All.) Vignolo-Lutaki in Malpighia 18: 386, 1904; Blatt. & McC. 237, t. 157; Bor, 503; Patel, loc. cit. 334; Sant, 311.

Briza eragrostis Linn., Sp. Pl. 70, 1753.

Poa cilianensis All., Fl. Pedem. 2, 246, t. 91, f. 2, 1785.

Eragrostis major Host., Gram. Austr. 4: 14, t. 24, 1809; FBI. 7: 320; C. 3: 548.

An erect, tufted, annual. Leaves ovate-lanceolate. Panicle lax or contracted, terminal. Spikelets straw-coloured, many-flowered.

Occasional on elevated banks of river.

Flowers and fruits : August - December.

JVJ 266, 762.

2. Eragrostis ciliaris (L.) R. Br. var. brachystachya Boiss.  
Fl. Orient. 5: 582, 1884; C. 3: 545; Bor, 506; Sant.  
& Janar. 55.

A small, erect, tufted annual. Leaves narrowly linear.  
Panicles spiciform, dense and compact, short and thick.

Rare; on fallow waste lands.

Flowers and fruits : September - January.

JVJ 1684.

3. Eragrostis ciliaris (L.) R. Br. var. ciliaris; Bor, 506.

E. ciliaris (L.) R. Br., in Tuckey, Narr. Exp. Congo, App.  
478, 1818; FBI. 7: 314; Blatt. & McC. 231, t. 154;  
Patel, loc. cit. 334.

Poa ciliaris Linn., Syst. Nat. (ed. 10) 2: 875, 1759.

E. ciliaris var. ciliaris (L.) Stapf, in FBI. 7:314, 1896.

A slender, annual herb. Leaves narrowly linear, glabrous.  
Panicles cylindric, spiciform, more or less interrupted;  
spikelets crowded, compressed.

Occasional on drying soils.

Flowers and fruits : August - December.

JVJ 531.

4. Eragrostis japonica (Thunb.) Trin. in Mem. Acad. Sc. Petersb.

(ser. 6) 1: 405, 1831; Bor, 509; Patel, loc. cit. 324;  
Sant. 311.

Poa japonica Thunb. Fl. Jap. 51, 1784.

Eragrostis interrupta var. tenuissima Stapf, in FBI. 7:  
316, 1896; C. 3: 546; Blatt. & McC. 233.

An erect, tufted, annual, variable in size. Panicles long, linear, branches usually whorled; spikelets small.

Fairly common in cultivated fields, near ditches and along the river banks.

Flowers and fruits : August - February.

JVJ 265.

5. Eragrostis nigra Nees ex Steud., Syn. Pl. Glum. 1: 267,  
1854; Bor, 511.

E. paniculata Thw. Enum. Pl. Zeyl. 373, 1864 (non Steud.).

An erect, tall, tufted, perennial grass. Leaves narrowly linear, filiform with curved tips. Panicles effuse; glumes not very unequal, lemmas straight on the back, nerves of lemma without tiny glandular pits. Spikelets slaty-grey to black, 2 mm. wide.

A rare plant; collected once from the coastal region.

Flowers and fruits : October - January.

JVJ 2180.

6. Eragrostis pilosa (L.) P. Beauv. Ess. Agros. 71, 1812;  
FBI. 7: 323; C. 3: 550; Blatt. & McC. 244, t. 160;  
Bor, 512; Sant. 311.

Poa pilosa Linn., Sp. Pl. 68, 1753.

An erect, tufted, annual herb. Leaves narrowly linear, flat. Panicles broadly elliptic; spikelets pedicellate, ovate or narrowly elliptic.

Occasional, on wet lands.

Flowers and fruits : October - December.

JVJ 310.

7. Eragrostis poaeoides P. Beauv. Ess. Agrost. 162, 1812;

Bor, 512; Patel, loc. cit. 335.

Poa eragrostis Linn., Sp. Pl. 68, 1753.

Eragrostis minor Host. Gram. Austr. 4: 15, 1809 & Fl.

Aust. 135, 1827; FBI. 7: 321; C. 3: 548; Blatt. & McC.  
238, t. 158.

An erect, tufted herb. Leaves linear, flat. Panicles obovate or oblong; spikelets narrowly oblong, compressed.

Occasional, on wet soils near rice fields.

Flowers and fruits : August - December.

JVJ 68, 1179.

8. Eragrostis tenella (L.) P. Beauv. ex Roem. & Schult. Syst.

Veg. 2: 576, 1817; Raizada, 485; Bor, 513; M. 386;

Sant. 311; Patel, loc. cit. 335; Pavagadh, 257.

Poa tenella Linn., Sp. Pl. 69, 1753.

Eragrostis tenella var. plumosa (Retz.) Stapf, in FBI. 7:

315, 1896; C. 3: 545.

An erect or sub-erect, tall, tufted herb. Panicles loose or dense, contracted; spikelets oblong, pale-green.

Occasional, on wet soils; also noted as a garden weed.

Flowers and fruits : October - January.

JVJ 313, 1783.

9. Eragrostis unioloides (Retz.) Nees ex Steud. Syn. Pl. Glum.

1: 264, 1854; Blatt. & McC. 235, t. 156; Bor, 515;

Patel, loc. cit. 335; Sant. 312.

Poa unioloides Retz. Obs. Bot. 5: 19, 1789.

Eragrostis amabilis auct. non Poa amabilis Linn., 1753;

FBI. 7: 317; C. 3: 547.

A small, glabrous annual. Leaves linear-lanceolate.

Panicles ovate-oblong; spikelets ovate-lanceolate; faintly purplish.

Occasional on wet soils near ditches; also on fallow lands.

Flowers and fruits : October - January.

JVJ 307, 1178.

10. Eragrostis viscosa (Retz.) Trin. in Mem. Acad. Sc. Pétersb.

(ser. 6) 1: 397, 1831; Blatt. & McC. 233; Bor, 515;

Patel, loc. cit. 335; Pavagadh, 256; Sant. 312.

Poa viscosa Retz. Obs. 4: 20, 1786.

Eragrostis tenella var. viscosa (Retz.) Stapf, in FBI. 7:

315; C. 3: 546.

A tufted, erect, viscid annual. Stems and rachis more or less viscid. Inflorescence a compound panicle with slender, filiform, spreading branches; spikelets 7-10-flowered.

Commonly observed along roadsides, on fallow wet lands; often noted as a weed in cultivated fields.

Flowers and fruits : October - April.

JVJ 259, 1177.

### 23. Eulalia Kunth

Eulalia trispicata (Schult.) Henr., in Blumea 3: 453, 1940;

Bor, 157; Patel, loc. cit. 91: 315; Sant. 312.

Andropogon tristachyus Roxb., Fl. Ind. 1: 261, 1820;

(non H.B.K. 1816).

Pollinia argentea Trin. in Bull. Acad. Sci. Petersb. 1:

71, 1836; FBI. 7: 111; C. 3: 467.

An erect, tufted, perennial herb. Leaves linear, flat, glabrous or slightly hairy. Inflorescence, spike-like racemes 6-12 digitately arranged spikes; spikelets brown, flattened; rachis and pedicels covered with whitish hairs.

Occasional, along the wet banks of canals.

Flowers and fruits : August - January.

JVJ 1251.

24. Hackelochloa O. Kuntze

Hackelochloa granularis (L.) O. Kuntze, Rev. Gen. Pl. 776,  
1891; Bor, 159; Patel, loc. cit. 315; Pavagadh, 243;  
Santn. 313.

Cenchrus granularis Linn., Mant. 2: 575, 1771.

Manisuris granularis Linn. f. Nov. Gram. Gen. 40, 1779;  
FBI. 7: 159; C. 3: 473; Blatt. & McC. 32, t. 22.

An erect, slender, tufted annual. Leaves narrow, linear-lanceolate, hairy. Inflorescence, solitary, axillary, racemes, resembling a string of minute beads; spikelets sessile and pedicellate, globose, pale brown.

Rare; on the drier soils of the slope of river bank.

Flowers and fruits : October - December.

JVJ 523, 1257.

25. Hemarthria R. Br.

Hemarthria compressa (L. f.) R. Br. Prodr. 207, 1810; Blatt.  
& McC. 31, t. 21; Bor, 161; Patel, loc. cit. 315.

Rottboellia compressa Linn. f., Suppl. 114, 1781; FBI. 7:  
153; C. 3: 470.

An erect, tufted, annual herb. Leaves narrowly-linear. Racemes few to many, fascicled, axillary and terminal; spikelets sessile.

Occasional, along roadsides.

Flowers and fruits : August - December.

JVJ 1180.

26. Isachne R. Br.

Isachne elegans Dalzell ex Hook. f., Fl. Brit. Ind. 7: 23,  
1896; C.439; Bor, 580; Sant. 314.

A small, tufted grass. Leaves linear-lanceolate, acute, straight with minutely serrulate margins. Spikelets small or minute, loosely panicle, sub-globose or obovoid, 1-2-flowered; glumes 4.

A rare plant; collected once from the wet banks of canal along Udhana - Magdalla road.

Flowers and fruits : October - December.

JVJ 1184.

27. Ischaemum Linn.

1. Pedicel of the pedicelled spikelet more than one-third the length of the sessile spikelet :
2. Lower glume of the sessile spikelet oblong-obtuse, perfectly smooth and glabrous....1. I. Commutatum
2. Lower glume of the sessile spikelet lanceolate or elliptic-lanceolate, dorsal surface pilose, flat or depressed.....2. I. pilosum

1. Pedicel of the pedicelled spikelet less than one-third of the length of the sessile spikelet .....3. I. rugosum

1. Ischaemum commutatum Hack., in DC. Monogr. Phan. 6, 209, 1889; Bor, 178.

A small, tufted, leafy grass. Leaves narrowly linear, flat. Inflorescence, digitate, fascicled or corymbose, spiciform, racemes, spikelets 2, sessile, smooth. Grain oblong-lanceolate, dorsally compressed.

Occasional, along the vertical slope of river banks.

Flowers and fruits : August - December.

JVJ 1260.

2. Ischaemum pilosum (Klein ex Willd.) Wight, in Madras Lit. Sci. Journ. 138, 1835; FBI. 7: 130; C. 3: 479; Blatt. & McC. 14, f. 9; Bor, 183; Patel, loc. cit. 316.

Andropogon pilosus Klein ex Willd. Sp. Pl. 4: 920, 1806.

A tall, tufted, erect or geniculate herb. Leaves linear, flat. Inflorescence digitate, spiciform, racemes; rachis compressed; spikelets with short awn.

Occasional on dry sandy soils of river beds.

Flowers and fruits : August - December.

JVJ 1252.

3. Ischaemum rugosum Salisb., Icon. Stirp. Rar. 1, t. 1, 1791;

FBI. 7: 127; C. 3: 477; Blatt. & McC. 12, t. 7; Bor, 184; Patel, loc. cit. 317; Sant. 315.

A small, tufted, annual herb. Leaves narrowly-linear, flat. Racemes terminal, solitary or paired, erect, pale-yellow, rachis trigonous; spikelets closely pressed together.

Occasional, on wet soils near canals.

Flowers and fruits : August - December.

JVJ 521.

28. Iseilema Anderss.

Iseilema laxum Hack. in DC. Mon. Phan. 6: 682, 1889; FBI. 7: 218; C. 3: 517; Blatt. & McC. 173; Bor, 188; M. 369; Patel, loc. cit. 317.

An erect or sub-erect, annual. Leaves narrowly linear, flat. Inflorescence racemiform panicle, of distant, axillary, pedunculate, fascicles; spikelets sessile and pedicellate; male spikelets whorled; oblong-lanceolate; bisexual narrowly lanceolate.

Occasional on wet fallow lands.

Flowers and fruits : August - October.

JVJ 2156.

29. Melanocenchris Nees

Melanocenchris jacquemontii Jaub. & Spach. Ill. Pl. Or. 4:

36, 1851; Bor, 473; Patel, loc. cit. 331; Sant. 316.

Gracilea royleana Hk. f. FBI. 7: 284; C. 3: 553;

Blatt. & McC. 248.

A small, slender, tufted annual herb. Leaves narrow, linear-lanceolate. Spikelets, greenish-white, arranged racemosely on a flexuous, zigzag rachis.

A rare plant.

Flowers and fruits : August - December.

JVJ 528, 1254.

30. Ophiuros Gaertn. f.

Ophiuros exaltatus (L.) O. Kuntze, Rev. Gen. Pl. 2: 780, 1891;

Bor, 199; Patel, loc. cit. 318.

Aegilops exaltatus<sup>exaltatus</sup> Linn., Mant. 2: 575, 1771.

Rottboellia corymbosa Linn. f., Suppl. 114, 1781.

Ophiuros corymbosus Hook. f. FBI. 7: 160 (pro parte);

C. 3: 468; Gam. 3: ~~1218~~; Blatt. & McC. 40, t. 28.

A slender, rhizomatous, perennial herb. Leaves linear-lanceolate, hairy above, glabrous beneath. Spikes slender, long, often in dense, corymbose fascicles.

Occasional, on wet soils.

Flowers and fruits : August - March.

JVJ 985, 2068.

31. Oplismenus P. Beauv.

Oplismenus burmanii (Retz.) Beauv. Agrost. 54, 1812; FBI. 7: 68; C. 3: 443; Gam. 3: 1232; Blatt. & McC. 154; Bor, 317; Patel, loc. cit. 324; Sant. 316.

Panicum burmannii Retz., Obs. Bot. 3: 10, 1783.

A procumbent, slender annual. Leaves ovate-lanceolate. Spikelets oblong-lanceolate, close in short panicles; involucre and lower floral glumes awned.

Occasionally seen in shaded places along roadsides.

Flowers and fruits : October - December.

JVJ 517.

32. Oryza Linn.

1. Spikelets persistent ..... 2. O. sativa

1. Spikelets caducous ..... 1. O. nivara

1. Oryza nivara Sharma & Shastri, in Ind. Journ. Genet. & Pl. Breed. 25(2): 161, 1965; Sant. & Janard. 56.

O. sativa L. var. fatua Prain, 1184, 1903.

O. rufipogon Griff. Notul. 3: 5, 1851; Bor, 605.

An annual herb. Leaves linear, flat, scabridly hairy. Spikelets arranged in panicles.

The plant is closely resembled the cultivated rice.

Occasionally found on damp soils around ditches along with other aquatics; also noted as a weed in rice fields.

Flowers and fruits :

49

JVJ 433, 2035.

2. Oryza sativa Linn., Sp. Pl. 333, 1753; FBI. 7: 92; C. 3: 565; Gam. 3:1276 ; Blatt. & McC. 274, t. 187; Bor, 605; Patel, loc. cit. 336; Sant. 317.

A small, annual herb. Leaves linear, flat, scabrid on margins and on veins beneath. Spikelets ovoid-oblong, arranged in drooping lax panicles, persistent.

Extensively cultivated throughout the area.

Local name : Dangar, Chokha. English name : Rice.

Flowers and fruits : September - December.

JVJ 1299.

### 33. Panicum Linn.

Panicum sumatrense Roth ex Roem. et Schult. Syst. Veg. 2: 434, 1817; Bor, 701; Sant. 317.

P. miliare Lamk. Tab. Encycl. Meth. Bot. 1: 173, 1791; FBI. 7: 46; C. 3: 456; Bor, 329; Patel, loc. cit. 325.

An annual, tufted grass. Leaves linear-flat, flaccid. Panicles very compound, contracted, erect or nodding. Spikelets solitary or in pairs, ellipsoid or ovate, acute, lower glume orbicular, apiculate.

Cultivated at few places.

Flowers and fruits : February - March.

JVJ 2157.

#### 34. Paspalidium Stapf

Paspalidium geminatum (Forsk.) Stapf, in Fl. Trop. Afr. 9:

583, 1920; Blatt. & McC. 142; Bor, 333; Patel, loc. cit.  
91: 325.

Panicum geminatum Forsk., Fl. Aeg.-Arab. 18, 1775.

P. fluitans Retz., Obs. Bot. 3: 8, 1783; C. 3: 446.

A tall, tufted, perennial grass. Leaves linear, flat, glabrous. Spikelets ovoid, arranged in spikes which are longer than the internodes.

Frequently seen in shaded places.

Flowers and fruits : August - December.

JVJ 1301.

#### 35. Paspalum Linn.

Paspalum scrobiculatum Linn., Mant. Pl. 1: 29, 1767; FBI. 7:

10; C. 3: 460; Gam. 3: 227; Blatt. & McC. 136; Bor, 340; Patel, loc. cit. 326; Sant. 318.

An erect, tufted, glabrous herb. Leaves lanceolate, glabrous or softly hairy. Spikelets in spikes, sessile, broadly elliptic.

Found as an escape; not cultivated.

Local name : Kodari.

Flowers and fruits : September - February.

JVJ 1300.

36. Pennisetum Rich.

Pennisetum typhoides (Burm.)f Stapf & Hubbard, in Kew Bull.

271, 1933; Bor, 350; Patel, loc. cit. 327; Sant. 318.

Alopecurus typhoides Burm. Fl. Ind. 27, 1768.

Pennisetum typhoideum Rich., in Pers. Syn. 1: 72, 1805;

FBI. 7: 82; C. 3: 432.

A tall, erect, stout, annual. Leaves broad, linear-lanceolate. Spikelets, in dense, cylindric, terminal panicle.

Occasionally cultivated as a summer crop in few fields; often noted as an escape.

Local name : Bajari. /

JVJ 1302.

37. Perotis Ait.

Perotis indica (L.) Kuntze, Rev. Gen. 2: 787, 1891; Blatt. &

McC. 220, t. 147; Bor, 611; M. 373; Patel, loc. cit. 337.

Anthoxanthum indicum Linn., Sp. Pl. 28, 1753.

Perotis latifolia Ait. Hor. Kew. 1: 85; FBI. 7: 98; C.3:538.

A slender, tufted annual. Leaves linear-lanceolate.

Spikelets narrowly linear, scabrous, in dense-spike, purplish-violet.

Frequently found in open waste places around Dumas.

Flowers and fruits : August - October.

JVJ 2181.

### 38. Saccharum Linn.

Peduncle hairy below the panicle ..... 3. S. spontaneum

Peduncle glabrous below the panicle :

Lower glume of sessile spikelet glabrous..2. S. officinarum

Lower glume of sessile spikelet hairy ....1. S. bengalense

1. Saccharum bengalense Retz., Obs. Bot. 5: 16, 1789; Bor, 211; Patel, loc. cit. 318.

S. arundinaceum Hk. f. in FBI. 7: 119 (non Retz.); C.3:465.

S. munja Roxb., Fl. Ind. 1: 250, 1832; Blatt. & McC. 48, t. 32.

A tall, sturdy, perennial grass. Leaves linear-lanceolate, flat, very long. Spikelets lanceolate, awnless, pale-cream-coloured, arranged in panicles.

Few plants are cultivated in Gandhi Baag.

Local name : Munj-ghaas.

Flowers and fruits : October - January.

JVJ 1823.

2. Saccharum officinarum Linn., Sp. Pl. 54, 1753; FBI. 7: 118;  
C. 3: 566; Gam. 3:1185; Bor, 212; M. 371; Patel, loc.  
cit. 318.

An erect, tall grass. Stem thick, many-noded. Leaves linear-lanceolate, sharply serrate on margins. Spikelets lanceolate, surrounded with densely silky-white hairs; arranged in dense, silvery, pyramidal panicles.

Extensively cultivated throughout the area, except coastal villages.

Local name : Sherdi.

English name : Sugarcane.

Uses : The juicy culms contain sugarcane juice, which apart from yielding sugar, is also very popular drink during summer.

Flowers : September - December.

JVJ 989, 1185.

3. Saccharum spontaneum Linn., Mant. Ait. 183, 1771; FBI. 7:  
118; C. 3: 465; Blatt. & McC. 45; Bor, 214; M. 371;  
Patel, loc. cit. 318.

An erect, perennial grass. Leaves linear, acuminate, stiff. Spikelets lanceolate, awnless; rachis silvery-silky; arranged in panicle giving elegant appearance to the plant.

Fairly common near ditches, along canals and other wet places; often noted as a weed in banana fields.

Flowers and fruits : August - February.

JVJ 267.

Plate 88.

PLATE 88. SACCHARUM SPONTANEUM L. - A WEED IN BANANA FIELD



39. Setaria P. Beauv. (nom. cons.)

1. Bristles retrorsely barbed ..... 4. S. verticillata

1. Bristles antrorsely barbed :

2. Inflorescences cylindric false spikes :

3. Spikelets 3 mm. long; upper lemma  
coarsely rugose, boat-shaped and  
slightly keeled upwards ..... 1. S. glauca

3. Spikelets less than 3 mm. long; upper  
lemma usually finely rugose, not  
keeled at all ..... 2. S. pallide-fusca

2. Inflorescences a narrow panicle, loosely  
lobed, tapering upwards ..... 3. S. tomentosa

1. Setaria glauca (L.) Beauv. Agrost. 51, 1812; FBI. 7: 78;  
C. 3: 435; Blatt. & McC. 172; Bor, 360; Patel, loc. cit.  
327; Sant. 319.

Panicum glaucum Linn., Sp. Pl. 56, 1753.

A tall, tufted grass with ascending, erect, glabrous culms.  
Leaves linear-lanceolate, scabrid. Spikelets closely set on  
rachis which are arranged in cylindric panicles.

More or less common throughout the area.

Flowers and fruits : August - December.

JVJ 314.

2. Setaria pallide-fusca (Schum.) Stapf, & Hubb. in Kew Bull.  
259, 1930; Bor, 363; Patel, loc. cit. 327.

Panicum pallide-fusum Schumach. Beskr. Guin. Pl. 58, 1827.

A tall, tufted, slender herb. Leaves linear, flat; spikes perfect, in dense erect spike; branches reduced to involucre bristles.

Frequently seen around wet places.

Flowers and fruits : August - December.

JVJ 305.

3. Setaria tomentosa (Roxb.) Kunth, Rev. Gram. 1: 47, 1829;  
Bor, 365; Patel, loc. cit. 327.

Panicum tomentosum Roxb., Fl. Ind. 1: 303, 1820.

P. intermedium Roth, Nov. Pl. Sp. 47, 1821 (non Vahl).

Setaria intermedia (Roth) R. & S. Syst. Veg. 2: 489, 1817;  
FBI. 7: 79; C. 3: 436; Blatt. & McC. 174.

An erect or ascending, slender herb. Leaves linear-lanceolate. Spikelets ovoid, in dense-flowered, pyramidal panicles.

Occasional, on wet soils near ditches and canals.

Flowers and fruits : August - December.

JVJ 306, 529.

4. Setaria verticillata (L.) Beauv., Agrost. 51, 1812; FBI. 7:  
80; C. 3: 436; Blatt. & McC. 174; Bor, 365; Patel,  
loc. cit. 327.

Panicum verticillatum Linn., Sp. Pl. (ed. 2) 82, 1762.

A much-tufted annual herb with erect, ascending branching from the base. Leaves linear-lanceolate. Spikelets ellipsoid, arranged in cylindric or oblong spike-like panicle.

Frequently seen on moist-soils of river banks.

Flowers and fruits : July - October.

JVJ 52, 760.

40. Sorghum Moench. (nom. cons.)

1. Wild ..... 2. S. halepense

1. Cultivated ..... 1. S. bicolor

1. Sorghum bicolor (L.) Moench. Menth. Pl. Hort. Bot. Merburg.  
207, 1794; Bor, ~~207~~.

Holcus sorghum Linn., Sp. Pl. 1047, 1753.

H. bicolor Linn., Mant. Alt. 301, 1771.

Andropogon sorghum (L.) Brot. Fl. Lusit. 1: 88, 1804;  
FBI. 7: 183; C. 3: 511.

Sorghum vulgare Pers. Syn. Pl. 1: 107, 1805; Blatt. & McC.  
58; Patel, loc. cit. 319.

A stout annual herb. Leaves broadly lanceolate, flat. Spikelets broadly ovate-lanceolate, arranged in decompound verticillate branches which form panicles.

Extensively cultivated in all localities. A variety of

Sorghum locally known as 'vani' is cultivated on a large scale during winter months. The unripe grains are eaten as 'Poak', which is famous in Gujarat.

Local name : Juwar.

Uses : The grains are made in to flour which is used for bread.

Flowers and fruits :

JVJ 988.

2. Sorghum halepense (L.) Pers. Syn. Pl. 1, 101, 1805; Blatt. & McC. 55, t. 37; Bor, 222; Patel, loc. cit. 319; Sant. 320.

Holcus halepensis Linn., Sp. Pl. 1047, 1753.

Andropogon halepensis Brot. Fl. Lus. 1: 89, 1804; FBI. 7: 182; C. 3: 502.

A tall, perennial herb. Leaves linear-lanceolate, margins scabridly serrulate. Spikelets ovoid-lanceolate, dorsally compressed, arranged in a decompound panicle which is brown-purplish in colour.

Occasional, grows along hedge plants.

Local name : Baru ghaas.

Flowers and fruits : September - February.

JVJ 262, 457.

41. Spinifex Linn.

Spinifex littoreus (Burm. f.) Merr. in Philip. Journ. Sci. Bot.

7: 229, 1912; Bor, 366; Patel, loc. cit. 328; Sant. & Janar. 57.

Stipa littorea Burm. f. Fl. Ind. 29, 1768.

S. spinifex Linn., Mant. 1: 34, 1767.

Spinifex squarrosus Linn., Mant. 2: 300, 1771; FBI. 7: 63; C. 3: 428; Blatt. & McC. 122, t. 76A.

A perennial, creeping grass. Leaves linear-lanceolate, rigid, thickly coriaceous, spinous-tipped. Spikelets dioecious, male in rigid, radiating spatheate racemes; female solitary, arranged in compact, spatheate umbels.

Fairly common on salty-saline soils, along the coastal regions of Abhava, Bhimpur and Hajira.

Flowers and fruits : October - February.

JVJ 2182.

#### 42. Sporobolus R. Br.

1. Lower glume much shorter than the lemma ;  
rarely two thirds as long ;
2. Upper glume distinctly shorter than the  
lemma; lowest branches not truly whorled..1. S. diander
2. Upper glume as long, nearly as long or  
longer than the lemma; lowest branches  
whorled or not .....2. S. marginatus
1. Lower glume as long as the spikelet or at

least three quarters its length .....3. S. virginicus

1. Sporobolus diander (Retz.) Beauv. Agrost. 26, 1812; FBI. 7: 247; C. 3: 539; Blatt. & McC. 221; Bor. 629; Patel, loc. cit. 337; M. 403; Sant. 320.

Agrostis diandra Retz. Obs. Bot. 5, 19, 1789.

An erect, slender, annual. Leaves linear, glabrous. Spikelets small, densely crowded into pyramidal panicles.

In shaded places near hedges along roadsides.

Flowers and fruits : August - October.

JVJ 51.

2. Sporobolus marginatus Hochst. ex A. Rich. Tent. Fl. Abyss. 2: 397, 1851; Bor. 632; Patel, loc. cit. 338; M. 404.

S. arabicus Boiss. Diagn. (ser. 1) 13: 47, 1853; FBI. 7: 252; C. 3: 541.

S. pallidus Boiss. Fl. Orient. 5: 512, 1854; Blatt. & McC. 227, t. 152.

An erect, perennial grass with stoloniferous base. Leaves linear, narrow, flat, minutely ciliate-serrulate. Spikelets minute, spindle-shaped, arranged in pyramidal panicle.

Occasionally found on saline soils of coastal localities like Abhava and Hajira.

Flowers and fruits : March - May.

JVJ 1679.

3. Sporobolus virginicus (L.) Kunth, Rev. Gram. 1: 67, 1829;  
 FBI. 7: 249; Blatt. & McC. 225, t. 149; Bor. 634; Patel,  
loc. cit. 91: 338; Sant. & Janard. 58.

Agrostis virginica Linn., Sp. Pl. 63, 1753.

An erect or sub-erect, perennial herb. Leaves narrow, needle-shaped or convolute due to involute margins. Spikelets small, minute; arranged in spiciform, pyramidal panicles.

More or less on salty-sandy soils of sea-shore near Hajira and Dumas.

Flowers and fruits : August - October.

JVJ 312, 731.

43. Thelepogon Roth ex R. & S.

Thelepogon elegans Roth ex R. & S. Syst. Veg. 2: 788, 1817;

FBI. 7: 148; C. 3: 490; Blatt. & McC. 27, t. 18; Bor. 247;  
 Patel, loc. cit. 329; Pavagadh, 242.

A robust, annual herb. Stems erect, branching from the base. Leaves linear, thin, flat, cordate, hispid with bulbous hairs. Spikelets minute, arranged in corymbose racemes; rachis fragile.

On wet soils along the bank of canals.

Flowers and fruits : October - December.

JVJ 520.

44. Themeda Forsk.

Themeda quadrivalvis (L.) O. Kuntze, Rev. Gen. Pl. 2: 794, 1891;  
Blatt. & McC. 118; Bor. 252; Patel, loc. cit. 320; Pavagadh,  
249; Sant. 320.

Andropogon quadrivalvis Linn., in Murr. Syst. Veg. ed. 13,  
758, 1774.

Anthistiria cillata Linn. f. Suppl. 113, 1781; FBI. 7: 213.

Themeda ciliata (L. f.) Hack. in DC. Monogr. Phan. 6: 664,  
1889; C. 3: 514.

A stout, annual. Stems erect, simple or branched, terete,  
glabrous. Leaves linear, flat. Spikelets brownish-red, in sub-  
erect panicles, bearing at equal distances, shortly pedunculate  
clusters of racemes.

Fairly common throughout the area.

Flowers and fruits : September - January.

JVJ 296, 524.

45. Triticum Linn.

Triticum aestivum Linn., Sp. Pl. 85, 1753; Blatt. & McC. 279;  
Bor. 679; Patel, loc. cit. 338; M. 376; Sant. 321.

T. sativum Lamk., Fl. Franc. 3: 625, 1778; C. 3: 574.

T. vulgare Villars, Hist. Pl. Dauph. 2: 153, 1787; FBI. 7:367.

An annual, tufted grass. Leaves linear-lanceolate. Spikelets  
distichous; laterally compressed, arranged in compact spikes,

which are awned or awnless.

Cultivated as a rabi crop in the irrigated fields.

Local name : Gahun. English name : Wheat.

Uses : Grains are used as food.

Flowers and fruits : December - March.

JVJ 525, 1677.

46. Urochloa P. Beauv.

1. Spikelets glabrous ..... 1. U. panicoides var. panicoides

1. Spikelets pubescent ..... 2. U. panicoides var. pubescens

1. Urochloa panicoides P. Beauv. var. panicoides; Bor, 372.

U. panicoides P. Beauv., Agros. Ess. 53, t. 11, f. 1, 1812;  
M. 396; Pavagadh, 253.

A tall, erect, annual herb. Leaves ovate-lanceolate, cordate, sparsely hairy. spikelets straw-coloured, lanceolate; arranged in panicles, rachis compressed, glabrous.

Occasionally on moist-shady localities.

Flowers and fruits : August - December.

JVJ 1258.

2. Urochloa panicoides P. Beauv. var. pubescens (Kunth) Bor,  
Grass. of Bur. Cey. Ind. & Pak. 372, 1960; Patel, loc.  
cit. 328.

U. pubescens Kunth, Rev. Gen. Gram. 1: 31, 1829.

Panicum javanicum Poir. Encycl. Suppl. 4: 274, 1816;

FBI. 7: 35; C. 3: 450.

An erect, slender branched annual herb. Leaves linear-lanceolate. Spikelets often in pairs, pubescent; arranged in panicles.

Occasionally on moist soils along the roadsides.

Flowers and fruits : August - December.

JVJ 987, 1061.

47. Urochondra C. E. Hubb.

Urochondra setulosa (Trin.) Hubb., in Hook. Ic. Pl. Sub. tab.

3457, 1947; Bor. 634; Patel, loc. cit. 338; Sant. & Janar. 58.

Vilfa setulosa Trin., in Mem. Acad. Sci. Petersb. ser. 6, 6:

55, 1840.

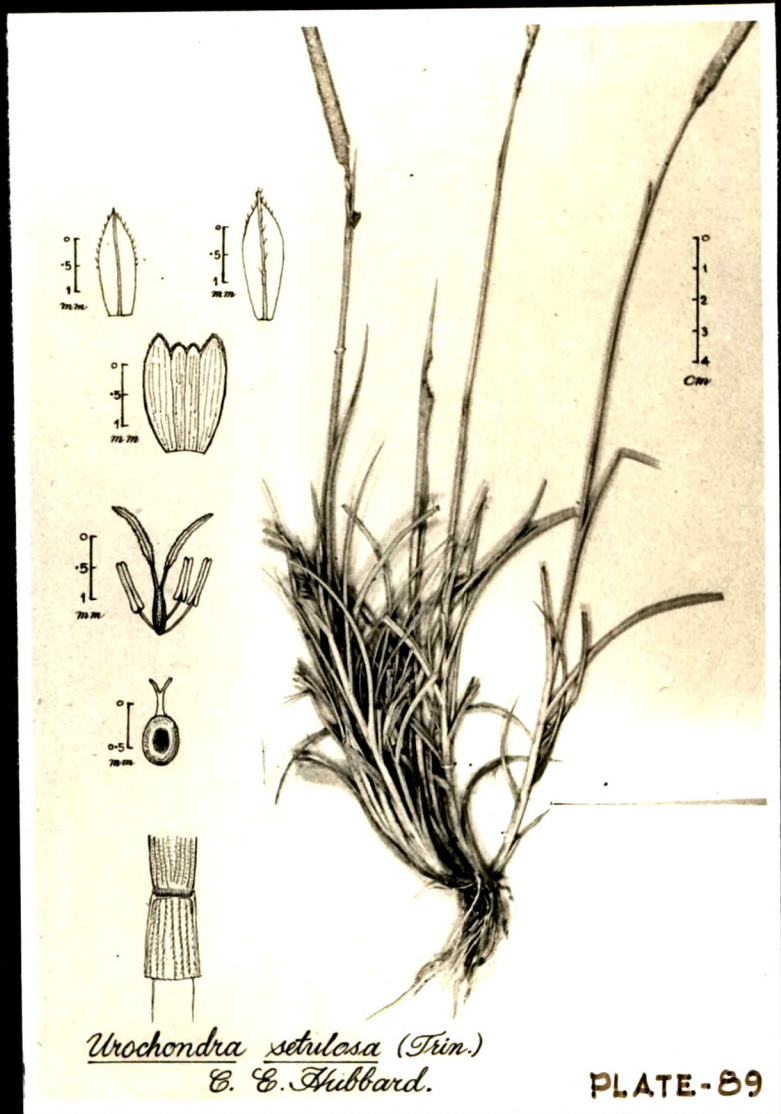
Heleochoa dura Boiss. Or. 5: 447, 1834; FBI. 7: 236; C. 3: 532.

A tall, sturdy, perennial grass. Leaves narrowly-linear, involute, terete, rigid, coriaceous. Inflorescence spike-like, solitary, terminal; spikelets densely imbricate, glumes 3, linear-ob lanceolate.

Rare; along the coastal region of Abhava.

Flowers and fruits : October - February.

JVJ 2183. Plate 89.



48. Zea Linn.

Zea mays Linn., Sp. Pl. 971, 1753; FBI. 7: 102; C. 3: 574;  
Blatt. & McC. 2; Bor. 270; Patel, loc. cit. 321; M. 369.

A tall, stout annual. Stems glabrous. Leaves broad, linear. Female spikes crowded, in longitudinal rows on a thick axis; male in terminal panicles.

Cultivated throughout the area.

Local name : Makai.      English name : Maize.

Uses : Grains are used as a food.

Flowers and fruits : July - March.

JVJ 234.

\*\*\*\*\*