

## ANNONACEAE

Key to the Genera of the ANNONACEAE

Inner petals spreading like the outer or none: fruit  
 one-seeded ..... Polvalthia.  
 Outer petals thick; inner petals small or 0: fruit  
 many-seeded ..... Annona.

Polvalthia Blume.

Polvalthia longifolia (Lam.) Hook. f. et Thoms. FBI. 1:62, 1872;

C. 1:12; King in ARBGC. 4(1):72; Chavan and Oza in

J. M. S. Univ. Baroda. 9(2): 75-76, t. 2.

Uvaria longifolia Lam. Encycl. 597, 1785.

Gutteria longifolia Wall. Cat. 6442, nom. nudem.

A tall evergreen tree. Leaves lanceolate, 15-20 cms. long with undulate margins. Flowers greenish-yellow, in fascicles or umbels. Fruit - ripe carpels one-seeded berries.

Cultivated as a road side tree; not noted in wild state.

Plate No. - 3.

Local name: Asopalav.

Flowers. - February to April. Fruits. - April to May.

Local uses: The leaves of this anonad are used for decoration in religious ceremonies.

Surrounding plains of the hill, by the sides of the road; not seen on the hill.

OZA 612, 613.

Cultivated throughout the hotter parts of India; native of Ceylon.

Any critical notes on the identity or on nomenclature:

(i) This comes under Article 32, paragraph no. 2 of the Int. Code of Bot. Nomenclature (1956). We do not yet know for certain who first made the combination P. longifolia. On the subject, see Santapau (1953) in the Indian Forester 79:611-13.

(ii) Ordinarily, the leaves of this plant species are entire and simple. But we have come across a fasciated leaf. For the details, see Chavan and Oza loc.cit.

Annona Linn.

Annona squamosa Linn. Sp. Pl. 537, 1753; FBI. 1:78; C. 1:14;

Gr. 3; D. & G. Suppl. 2; Prantl. in Pfam. 3(2):37,  
f. 31, B, C; Talb. 1:26, t. 17; N. 9; G. 20; Blatter in  
JBNHS. 34:292.

A small tree about 240 cms. high. Leaves obtuse, 5-10 cms. long. Flowers green, solitary. Fruit ovoid or globose with distinct areoles; seeds many.

Local name: Sitaphal.

Flowers. - June to July. Fruits. - September to February.

Local uses: This is the Custard Apple of India. Cultivated for its sweet fruits.

Fairly common along the path on the slopes of the forest and at Machi.

OZA 228.

Naturalized throughout India especially in the Western Peninsula. Tropical America.

## MENISPERMACEAE

Key to the Genera of the MENISPERMACEAE adapted from GambleKey to Male specimens

- Stamens connate, anthers in a ring, calyx of 4 spreading  
 sepals ..... Cissampelos.
- Stamens free:
- Leaves deeply cordate ..... Tinospora.
- Leaves acute, obtuse, or sub-cordate at base:
- Panicles upto 30 cms. long, drooping ..... Diploclisia.
- Flowers in small fascicles or cymes ..... Cocculus.

Key to Female specimens

- Style - scar terminal ..... Tinospora.
- Style - scar based:
- Flowers in a raceme of small cymes subtended by  
 foliaceous cordate bracts; drupes hirsute ..... Cissampelos.
- Flowers in compound umbels or panicles:
- Drupes elongate, 2.5 cms. long, panicles  
 long, drooping ..... Diploclisia.
- Drupes pisiform, not long as above ..... Cocculus.

Cissampelos Linn.

Cissampelos pareira Linn. Sp. Pl. 1031, 1753; FBI. 1:103; C. 1:22;  
 N. 11; Diels in Pfreich. 46:286, f. 91 A-K; Blatter in  
 JBNHS. 31:555; Sant. 5.

This is a tomentose climber. Leaves round, peltate, cordate.  
 Flowers green. Male flowers in cymes 2.5 - 5 cms. long. Female

flowers long pendulous bracteate racemes. Fruit is an ovoid drupe, red.

Observed on hedges.

Flowers and Fruits. - June to September.

At the foot of the hill, and the surrounding plains.

OZA 1500.

Tropical and subtropical India, from Sindh and the Punjab to Ceylon and Singapore. Cosmopolitan in warm regions.

Tinospora Miers.

Tinospora cordifolia (Willd.) Miers. in Ann. Hist. Nat. (Ser. 3)

7:38, 1851; Hook. f. & Thoms. Fl. Ind. 184, 1855; FBI.

1:97; C. 1:18; D. & G. 5; N. 10; Diels in Pfreich.

46:139; Blatter in JBNHS. 31:549; Sant. 3.

Menispermum cordifolium Willd. Sp. Pl. 4:826, 1806.

Cocculus cordifolius DC. Syst. 1:518, 1818 & Prodr.

1:97; Gr. 4; Wight, Icon. tt. 485, 486.

Climbing shrubs; bark of the stems corky. Leaves glabrous, membranous, 5-8 cms. long. Flowers yellowish: males fascicled, females solitary. Fruit is a red drupe.

Noted on hedges and over trees in the forest.

Local name: Galo.

Flowers. - February to March. Fruits. - April to May.

Leaves. - November to December.

At the foot and in the Deciduous forest of the hill.

OZA 1501.

Throughout tropical India, from Kumaon to Assam and Birma,



and from Behar and Konkan to Ceylon and Carnatic.

Diploclisia Miers.

Diploclisia glaucescens (Blume) Diels. in Engl. Pfreich. 1. c.

225, t. 77, 1910; G. 28; Blatter in JBNHS. 31:551; Sant. 4.

Cocculus glaucescens Blume, Bijdr. 25, 1825.

C. macrocarus Wight & Arn. Prodr. 13, 1834; FBI. 1:101;

C. 1:20; Gr. 5; N. 11; Wight, Ill. 1:22, t. 7.

Large climbing shrubs with typical round leaves, 5-nerved, margins undulate. Flowers yellow, in large drooping panicles. Fruit is an oblong red drupe.

Flowers. - February to March. Leaves. - December to January.

Rare in the forest; by the side of paths about half way up the hill.

OZA 343.

From the Konkan southwards, and in Ceylon. China.

Cocculus DC. (nom. cons.)

Cocculus hirsutus (Linn.) Diels in Pfreich. 46:236, 1910; Sant. 5;

Blatter in JBNHS. 31:552.

C. villosus DC. Syst. 1:525, 1818; FBI. 1:101; C. 1:21; N. 11.

Menispermum hirsutum Linn. Sp. Pl. 341, 1753.

A herbaceous climber; villous. Leaves yellowish-green, pubescent, ovate, minutely cordate at the base. Flowers yellow-green; males in axillary panicles, females 1-3, in axillary clusters. Fruit is a small drupe.

Observed on hedges and in the cultivated fields.

Local name: Vevadi.

Flowers. - September to January. Fruits. - December.

Fairly common on the lower parts of the hill; rare on the higher parts; a few in the plains.

OZA 118, 273, 762.

Throughout tropical and subtropical India, from the base of the Himalaya to Malabar and Pegu. Trop. Africa.

#### NYMPHAEACEAE

##### Nymphaea Linn. (nom. cons.)

Nymphaea pubescens Willd. Sp. Pl. 2:1154, 1799; G. 34; Blatter in JBNHS. 34:294, pro parte; Sant. 6; Conard, Mon. Gen.

Nymphaea 198-99, t. 17.

N. rubra Roxb. ex Salisb. Parad. Lond. 1, sub t. 14, 1805;

Gr. 5.

N. Lotus Hk. f. and Thoms. FBI. 1:114, 1872; C. 1:25; N. 12 (non Linn.).

N. Lotus var. pubescens Hk. f. and Thoms. loc. cit.; C. loc. cit.

Aquatic herbs. Leaves peltate, sharply sinuate-toothed, pubescent beneath, floating on the surface of the water. Flowers white: presence of long peduncles. Fruit a many-seeded berry, fleshy, greenish.

Local name: Kamal.

Flowers. - Throughout the year.

Fairly abundant in talaos along the surrounding plains of the hill; not seen on the hill itself.

OZA January 1958, 1959!

Common throughout the warmer parts of India. Africa, Hungary, Java, Philippines.

Any critical notes on the identity or on nomenclature:

We have followed Gamble in the identification of Nymphaeas of Pavagadh. There is ample justification in considering the leaf margins and the structure of anthers, and pubescence or glabrousness, etc. However, Conard and Blatter consider the separation of the species on the basis of the flower colour. Santapau, loc. cit. has dealt with the subject in detail.

#### PAPAVERACEAE

##### Argemone Linn.

Argemone mexicana Linn. Sp. Pl. 508, 1753; FBI. 1:117; C. 1:27; Gr. 6; Fedde in Pfreich. 40:273, t. 36 B; N. 13; WI. 116; Wight, Ill. t. 11; Sant. 8; Phatak and Oza in JBNHS. 55:532.

A prickly herb 30-60 cms. high. Leaves sessile, semi-amplexicaul, sinuate-pinnatifid. Flowers yellow; but Cooke, loc. cit. mentions white or yellow flowers for the genus. Fruit a many-seeded oblong capsule.

An introduced weed; gregarious. Found commonly on roadsides and cultivated fields.

Local name: Darudi.

Flowers and Fruits. - Most of the year.

Local uses: The oil from the seeds is used in skin diseases and ulcers. The roots are purgative.

The plant has reached near the top of the hill by the sides of upper talao; rare at Machi; abundant in the plains along the main road in waste places.

OZA 806; also January 1958 and March to May 1958!

Throughout India.

#### VIOLACEAE

Hybanthus Jacq. (nom. cons.)

Hybanthus enneaspermus (Linn.) Mueller. Fragm. 10, 81, 1876.

Viola enneasperma Linn. Sp. Pl. 937, 1753.

Ionidium suffruticosum Ging. in DC. Prodr. 1:311, 1824; FBI.

1:185; Gr. 11.

I. heterophyllum Vent. Jard. Malm. 27, 1803; C. 1:52.

An erect herb about 10-20 cms. high; stems sometimes prostrate. Leaves linear, alternate. Flowers red, solitary, axillary. Fruit a subglobose capsule; seeds striate.

Noted among the grasses and wet patches.

Plate No. - 4.

Flowers. - November to March. Fruits. - December to March.

Abundant near lower talao; in cultivated fields.

OZA 614; Joshi 76.

Gujarat, Bundelkhand and Agra, to Bengal and Ceylon; Konkan, S. M. country. Trop. Asia, Africa and Australia.

## CAPPARIDACEAE

Key to the Genera of the CAPPARIDACEAE

## Herbs:

Stamens sessile on the disk ..... Cleome.

Stamens inserted on the gynophore ..... Gynandropsis.

## Shrubs or trees:

Calyx tubular below ..... Maerua.

Calyx divided to the base into 4 sepals:

Stamens inserted half way up the gynophore ..... Cadaba.

Stamens inserted on the base of the gynophore:..

Leaves simple ..... Capparis.

Leaves 3 - foliolate ..... Crataeva.

Cleome Linn.

Cleome viscosa Linn. Sp. Pl. 672, 1753; FBI. 1:170; C. 1:39;

Pax & Hoffm. in Pfam. (2) 17B! 213; Wight, Icon. t. 2;

N. 16; Sant. 9; Phatak & Oza in JBNHS. 55:533.

Cleome icosandra Linn. Sp. Pl. 672, 1753.

Polanisia viscosa DC. Prodr. 1:22, 1824.

P. icosandra Wight & Arn. Prodr. 22, 1834; Gr. 8.

An erect, glandular herb, 45 - 60 cms. high. Leaves 3 - 5 - foliolate. Flowers yellow, axillary. Fruit a capsule, long, hairy, about 10 cms. long. Seeds many, black coloured.

Common in open waste lands and ditches.

Local name: Kanfuti; Talavani.

Flowers. - July to September. Fruits. - August to September.

Local uses: The juice of the leaves is used for headache and poured into ears for ear-ache. The seeds are carminative and are used to kill intestinal worms.

Fairly common and abundant in open lands at the base of the hill; and on forest slopes.

OZA 53, 53a, 192, 864, 947; Joshi 35.

Konkan; Deccan; Tropical and warm India, and the rest of the world.

Gynandropsis DC. (nom. cons.)

Gynandropsis gynandra (Linn.) Briq. in Ann. Cons. Jard. Bot.

Geneve 17:382, 1914; Pax & Hoffm. in Pfam. (2) 17B !

218; Sant. 10; Phatak & Oza in JBNHS. 55:533.

Cleome gynandra Linn. Sp. Pl. 671, 1753.

C. pentaphylla Linn. Sp. Pl. (ed. 2) 938, 1762.

Gynandropsis pentaphylla DC. Prodr. 1:238, 1824; FBI. 1:171;

C. 1:40; Gr. 7; N. 16.

An erect herb 60 - 100 cms. high, pubescent. Leaves with long petioles. Flowers white, in bracteate racemes. Fruit a capsule 5 - 7 cms. long, striate, tapering at both the ends.

Found as a weed in waste places.

Local name: Tanmani; Adhiyakaran; Aadiyakarson.

Flowers and Fruits. - July to November.

Local uses: A decoction of the root is given in fever. The juice of the plant is useful for scorpion-sting and fever. It stops pains of the body and ear trouble. The oil is used for skin diseases.

Fairly abundant in open lands near the foot of the hill.

OZA 25; Joshi 88.

Deccan; Gujarat; S. M. Country; warm parts of India and all tropical countries.

Maerua Forsk.

Maerua arenaria (DC.) Hook. f. et Thoms. in FBI. 1:171, 1872; G. 42.

Niebuhrria arenaria DC. Prodr. 1:244, 1823.

Maerua ovalifolia Cambess. in Jacquemont. Voy. Bot. 22, t. 24, 1844; C. 1:41.

A large climber. Leaves acute, elliptic - oblong, mucronate; simple. Flowers in terminal corymbs, greenish - white. Fruit a fleshy, elongate, moniliform, 1 - or more - seeded berry.

On hedges.

Flowers and Fruits. - January to February.

At the base of the hill.

OZA 514; Santapau 19891, 19892, 19893.

Gujarat, Konkan, Deccan, S. M. Country, Western Himalaya, and Central India.

Cadaba Forsk.

Cadaba fruticosa (Linn.) Druce. in Rep. Bot. Exch. Cl. Brit. Isles, 1913, 3:415, 1914.

Cleome fruticosa Linn. Sp. Pl. 671, 1753.

Cadaba farinosa Forsk. Fl. Aeg. - Arab, 68, 1775; FBI. 1:173; C. 1:43; Blatter in JBNHS. 31:901.

C. indica Lamk. Encycl. 1:554, 1783; FBI. 1:172; C. 1:43; Gr. 8; D. & G. 9.

Stroemeria tetandra et farinosa Vahl, Symb. Bot. 1:20, 1790.

A straggling shrub with simple leaves. Flowers whitish, stamens 4. Fruit 2.5 - 4 cms. long.

We have noticed Dendrophthoe falcata on this plant: it is for the first time that the genus Cadaba acts as a host for this parasite.

Flowers. - January to February. Fruits. - January to March.

At the base of the hill, rare.

OZA 513; also January 1958, 1959 ! Santapau 19852.

Konkan; Deccan; Gujarat; S. M. Country; Punjab; Sind.

Arabia, Trop. Africa.

Capparis Linn.

Key to the species of Capparis

Flowers in corymbs ..... decidua.

Flowers in umbels ..... sepiaria.

Flowers in supra - axillary rows ..... zeylanica.

Capparis decidua (Forsk.) Pax. in Engl. & Prantl. Pfam.

3(2):230, 231, t. 139 (not of Edgew), 1891.

Sodada decidua Forsk. Fl. Aegypt. - Arab. 81, 1775.

Capparis aphylla Roth, Nov. Pl. Sp. 238, 1821; FBI. 1:174;

C. 1:46; Gr. 9; D. & G. 9.

A shrub with thorns, 1.5 - 2 m. high; usually leafless, but young branches with simple leaves. Flowers reddish, in corymbs. Fruit globose, fleshy.

Noted in bare grounds and waste lands, in isolated clumps.

Local name: Kaida.

Flowers. - December to August. Fruits. - March to May.



Fairly common and abundant in the plains; common at the foot of the hill; did not notice it on the hill.

OZA 623, 624, 625.

Throughout the driest parts: Sind; Deccan; Karnatak; Gujarat; Punjab; Rajputana. Arabia, Egypt, N. trop. Africa.

Capparis sepiaria Linn. Syst. (ed. 10) 1071, 1759; FBI. 1:177;

C. 1:48; Gr. 9; N. 18; Sant. 11.

Capparis incanescens DC. Prodr. 1:247, 1824.

A large climbing shrub, woody and thorny; branches pubescent, wiry. Leaves ovate, lanceolate. Flowers white, in umbels.

Local name: Kanthar.

Flowers. - March to May. Fruits. - May.

On the slopes of the hill.

OZA 620, 747; Joshi 17.

Dry places throughout India: Deccan; Kanara; Punjab; Sind; Birma; Pegu; Ceylon. Philippines.

Capparis zeylanica Linn. Sp. Pl. (ed. 2) 720, 1762; Blatter in

JBNHS. 31:903 (sub C. brevispina) & 906 (non C. zeylanica

Hk. f. & Thoms. in FBI. 1:174); Sant. 11.

Capparis horrida Linn. f. Suppl. 264, 1781; Wight, Icon. t.

173; FBI. 1:178; C. 1:48; N. 18.

A large, climbing, thorny shrub, tomentose. Leaves acute, obtuse. Flowers white, in supra - axillary rows. Fruit reddish, 2.5 - 4 cms. in diameter.

On hedges.

Flowers and Fruits. - October to March.

On the slopes of the forest, a few plants noted.

OZA 1502.

Konkan; Deccan; S. M. Country; Sind. Ceylon.

Any critical notes on the identity or on nomenclature: This is the real Linnaean plant. On the subject, see Blatter, loc. cit.

Crataeva Linn.

Crataeva nurvala Buch. - Ham. in Trans. Linn. Soc. 15:121, 1827.

C. religiosa Hook. f. et Thoms. (non. Forst. f. Prodr. 35, 1786) in FBI. 1:172, 1897; C. 1:42.

A small tree about 4 m. high. Leaves 3 - foliolate. Flowers in terminal corymbs, white. Fruit a fleshy, globose or ovoid berry.

Local name: Vayvarno.

Flowers. - June.

Rare in the forest along the path; one tree spotted at half way up the hill.

OZA 11.

Konkan; Malabar and Kanara; cultivated elsewhere in India.  
Trop. Africa.

FLACOURTIACEAE

Flacourtia Commers.

Key to the species of Flacourtia

Fruits black, of the size of a pea ..... latifolia.

Fruits red, of the size of a cherry ..... montana.

Flacourtia latifolia (Hook. f. & Thoms.) Cooke in Fl. Pres.

Bomb. 1:56, 1901; Blatter in JBNHS. 31:913; Sant. 13.

F. Ramontchi L' Her. var. latifolia Hk. f. et Thoms. FBI. 1:193, 1872.

F. inermis (?) Graham 10, 1839 (non Roxb.).

A small tree. Stems spiny; plenty of soft, reddish spines on the branches. Leaves large, acute, glabrous. Flowers in racemes, whitish; stigmas 3 - 4. Fruit about 9 mm. in diam., black.

Flowers. - February to March. Fruits. - March.

Fairly common in the lower half of the hill, on the sides of the paths.

OZA Dec. 1957 and Feb. 1958.

Deccan; S. M. Country.

Any critical notes on the identity or on nomenclature:

(i) Cooke is justified in making a distinct species of the variety of F. Ramontchi: we are inclined to follow Cooke, since our findings show only 3 - 4 stigmas.

(ii) In passing it may be remarked that there is a lot of confusion over the Flacourtias; the synonymy is very extensive if not complicated. Hermann Sleumer of Netherlands, the specialist on the subject, in his letter of January 2nd, 1956, to Rev. Fr. H. Santapau, Bombay, writes with regard to the present species, which I quote here from RBSI. 16(1) - (2nd Edition) 289 :

" Flacourtia latifolia Cooke is a local form, belonging to the F. indica - complex; I cannot separate it as a species...I see only 3 good species of Flacourtia in India, Fl. indica s. lat., F. montana and F. jangomas. All 'species' as occidentalis; sepiaria, ramontchi, latifolia, sapida, etc., etc. are uniform in their characters of the style and stigmas... "

Flacourtia montana Graham, Cat. Bomb. Fl. 10, 1839; C. 1:55;  
 Pilger in Pfam. (ed. 2) 21:440; Talb. 1:76, t. 48; N. 19;  
 Blatter, loc. cit. 912; Sant. 12.

Large trees 300 - 450 cms. high. Branches thorny. Leaves somewhat pubescent, ovate, acute. Flowers in racemes. Fruits red, of the size of a cherry.

Flowers. - December, Fruits. - December to January.

Lower half of the hill, on the sides of the paths.

OZA 402.

Konkan; Kanara.

Any critical notes on the identity or on nomenclature:

The Herbarium specimen OZA 402 from Pavagadh does show the thorns on the branches.

#### POLYGALACEAE

#### Polygala Linn.

Polygala erioptera DC. Prodr. 1:326, 1824; FBI. 1:203; C. 1:60;  
 N. 21; Chodat in Pfam. 3(4):336; Blatter in JBNHS.  
 34:302; Sant. 14; Phatak & Oza in JBNHS. 55:593.

For a full description of the plant and field-notes please see Phatak & Oza, loc. cit.

Those of our popular floras that mention the colour of the flowers of this plant state that it is yellow; on numerous occasions we have noted it to be so; but lately we have found plants with red or rosy pink flowers.

Flowers. - August to November. Fruits. - September to November.

Fairly common and abundant in open lands at the base of the hill and in association with grasses near Dharmasala; a few noted on the forest slopes; abundant near the stream at the foot of the hill.

OZA 62, 62a, 62b, 184, 205, 206, 964, 965, 966, 967, 1173; Joshi 30.

Gujarat; Sind; Konkan; Deccan; Punjab; Behar; W. Peninsula; Birma. Arabia, tropical Asia and Africa.

Any critical notes on the identity or on nomenclature: At first the plant bears a strong resemblance to some species of Crotalaria, from which, however, the structure of the sepals and of the fruits distinguish it clearly. My specimens have been confirmed in Blatter Herbarium as being P. erioptera DC.

#### CARYOPHYLLACEAE

##### Key to the Genera of the CARYOPHYLLACEAE

Erect herbs ..... Polycarpaea.  
Prostrate herbs ..... Polycarpon.

##### Polycarpaea Lam. (nom. cons.)

Polycarpaea corymbosa Lamk. Tabl. Encycl. 2:129, 1800; FBI.

1:245; C. 1:66; D. & G. 16; N. 22; Wight, Icon. t. 712;

Phatak & Oza in JBNHS. 55:533.

Erect herbs 15 - 45 cms. high; tomentose. Leaves subulate, linear, with fimbriate stipules. Flowers minute, in terminal cymes: here the sepals are coloured; pinkish - white or silvery - white. Fruit is a small capsule.

Gregarious. Noted in the cultivated fields.

Flower and Fruits. - September to October.

Local uses: The application of the vegetative parts cures poisonous bites.

Common at the foot of the hill; scarce in the cultivated fields surrounding the hill.

OZA 1503; also September 1957, 1958.

Konkan; Deccan; S. M. Country; Sind; Western Peninsula; Central and N. W. India; Western Himalaya. Ceylon, Birma, Tropical Asia, Africa, Australia and America.

Polycarpon Linn.

Polycarpon prostratum (Forsk.) Aschers. & Schweinf. in Oesterr.

Bot. Zeitschr. 39:128, 1889 in observ.; Sant. 12 (ed. 2).

Alsine prostrata Forsk. Fl. Aegypt. - Arab. 207, 1775.

Polycarpon indicum Merrill in Phil. Journ. Sci. Bot. 10:30,

1905; Blatter in JBNHS. 34:304; Sant. 15.

Loeflingia indica Retz. Obs. 4:38, 1785.

Polycarpon depressum Rohrb. in Mart. Fl. Bras. 14(2):257,

1872 (non Nutt. 1833).

Pharnaceum depressum Linn. Mant. 2:562, 1771.

Hapalosia loeflingiae Wall. ex Wt. & Arn. Prodr. 358, 1834.

Polycarpon loeflingiae Benth. & Hook. Gen. Pl. 1:153, 1862;

C. 1:65.

Prostrate herbs. Leaves opposite, acute to obtuse. Flowers in dichotomous cymes, greenish yellow. Fruit is a capsule with many seeds.

In waste and moist places.

Flowers and Fruits. - January to April.

Common on the banks of the upper talao.

OZA 515.

Deccan; S. M. Country; Kanara; throughout the hotter parts of India. Tropical Asia and Africa.

Any critical notes on the identity or on nomenclature: Cooke, loc. cit. mentions that the plant is rare; our findings are that the plant is fairly common in Pavagadh and all over the district. Also we find from our field experience that this is often confused with Polygonum plebeium R. Br. since it is very similar in general appearance and habit. But the distinguishing characters for Polygonum plebeium R. Br. are leaves alternate and flowers red or pink.

#### PORTULACACEAE

#### Portulaca Linn.

#### Key to the species of Portulaca

Nodes without hairs; leaves large ..... oleracea.

Nodes with hairs; leaves small ..... quadrifida.

Portulaca oleracea Linn. Sp. Pl. 445, 1753; FBI. 1:246;

C. 1:68; N. 23; Pax & Hoffm. in Pfam. (ed. 2) 16 C: 247,

f. 108 B; Sant. 16; Phatak & Oza in JBNHS. 55:533.

A succulent prostrate herb. Leaves fleshy, linear, rounded. Flowers yellow, terminal, surrounded by a whorl of leaves. Fruit is an ovoid capsule.

On moist banks.

Local name: Moti Luni.

Flowers and Fruits. - March to December (almost throughout the year).

Local uses: As a pot herb it cures the diseases of the blood and stops urinary troubles.

Fairly common near the higher talao; rare at the top of the hill.

OZA Preserved material in the museum ! I have tried for the preparation of herbarium specimens of Portulacas in vain; the material becomes poor for study.

Throughout India. All warm climates.

Portulaca quadrifida Linn. Mant. 1:73, 1767; FBI. 1:247; C. 1:68;

N. 23; Pax & Hoffm. loc. cit. 247; Blatter in JBNHS. 34:305; Sant. 16.

Prostrate herbs; succulent, rooting at the nodes. Nodes hairy. Leaves fleshy, lanceolate to ovate. Flowers yellow, solitary, surrounded by 4 involucreal leaves. Fruit a conical capsule.

Local name: Luni.

Flowers and Fruits. - Almost throughout the year.

Local uses: As a vegetable.

Cultivated in the village Pavagadh.

OZA Preserved material in the museum !

Konkan; Deccan; S. M. Country; Sind. Tropical Asia and Africa.



ELATINACEAEBergia Linn.Key to the species of Bergia

- Flowers whitish, stamens 10 ..... odorata.  
 Flowers red, stamens 3 - 5 ..... ammannioides.

Bergia Linn.

Bergia odorata Edgew. in Journ. As. Soc. Beng. 7:765, 1838; FBI.

1:251; C. 1:73; Blatter in JBNHS. 34:623; Phatak & Oza in  
 JBNHS. 55:533.

A decumbent herb. Leaves elliptic, obtuse, serrate,  
 opposite. Flowers axillary, whitish; stamens 10. Fruit is a capsule  
 with numerous seeds.

Gregarious.

Local name: Lavariyu; Runvad.

Flowers and Fruits. - March to November.

Local uses: A paste prepared from the plant is used on  
 scorpion - sting.

Area near the foot of the hill; a few plants noted at the  
 top of the hill. Rev. Fr. Santapau in his visit to this hill in the  
 year 1955 writes, "Common and abundant in grass fields in the  
 University grounds and elsewhere; not seen on Pavagadh". After this,  
 Mr. Joshi, another explorer noted this plant from Pavagadh. My  
 entries in the field-diaries for 17-5-57 and 15-7-58 are ....  
 "Gregarious, and ... A few dried plants noted", respectively.

OZA 4, 903; Joshi 266.

Gujarat; Sind; Trop. Africa, Persia, Egypt.

Bergia ammannioides Heyne ex Roth, Nov. Pl. Sp. 219, 1821; FBI.

1:251; C. 1:73; Blatter in JBNHS. 34:623; Niedenzu in Pfam. (ed. 2) 21:274, t. 119 K - R; Wight, Ill. 1 : t. 25; Sant. 13 (ed. 2); N. 24.

Elatine ammannioides Wight & Arn. Prodr. 41, 1834; Gr. 12.

Herbs about 15 - 30 cms. high, glandular. Leaves serrate, elliptic, acute. Flowers very small, in dense clusters; stamens 3 - 5; red. Fruit a capsule.

Noted in cultivated fields; and in moist situations.

Plate No. - 5.

Flowers and Fruits. - November to March.

Not common. In the plains surrounding the hill; at the foot of the hill near the stream.

OZA 1504.

Konkan; Deccan; throughout India. Ceylon, Affghanistan, Persia, Tropical Asia, Africa, Australia.

Any critical notes on the identity or on nomenclature:

The plant may be mistaken for Ammannia baccifera Linn., from which, however, the shape of the leaves and of the capsules distinguish it clearly. The leaves in case of B. ammannioides are distinctly serrate.

Santapau, loc. cit. 16(ed. 1), attributed this plant to Roxburgh.

## MALVACEAE

Key to the Genera of the MALVACEAE

Carpels separating from the axis at maturity:

Styles as many as the carpels; staminal-tube  
antheriferous at or to the top:

Bracteoles 3: leaves lanceolate ..... Malvastrum.

Bracteoles 0:

Flowers small; carpels bursting  
irregularly, points not spreading ..... Sida.

Flowers large; carpels dehiscing by a  
regular central line, forming a  
flat - topped fruit with radiating  
points ..... Abutilon.

Style - branches twice as many as the carpels;  
staminal - tube antheriferous on the outside  
not at the top:

Ripe carpels glochidiate ..... Urena.

Ripe carpels not glochidiate, but

1 - 3 - aristate or naked ..... Pavonia.

Carpels not separating:

Bracteoles not spreading nor fimbriate:

Calyx persistent in the ripe fruit ..... Hibiscus.

Calyx deciduous in the ripe fruit ..... Abelmoschus.

Bracteoles large, foliaceous, fimbriate ..... Gossypium.

Malvastrum A. Gray. (nom. cons.)

Malvastrum coromandelianum (Linn.) Garcke in Bonplandia 5:297,  
1857; Blatter in JBNHS. 34:627.

Malva coromandelianum Linn. Sp. Pl. 687, 1753.

Malvastrum tricuspdatum A. Gray. Pl. Wright. 16, 1852;  
FBI. 1:321.

An undershrub about a meter high. Flowers reddish.

Plate No. - 6.

Flowers and Fruits. - 19 - 20 February 1958.

Rare; undergrowth of the forest.

OZA 550.

Bengal; Madras; Punjab. Tropics of both hemispheres and  
Australia. A native of America.

Any critical notes on the identity or on nomenclature:  
The specimen has been confirmed in the Blatter Herbarium. This  
plant is not listed in Cooke's Flora of the Presidency of Bombay.

Sida Linn.Key to the species of Sida adapted from Cooke

Prostrate spreading herbs ..... veronicaefolia.

Erect or suberect herbs or undershrubs:

Viscous hairy; leaves glutinous ..... glutinosa.

Stellately hairy:

Petioles spiny at the base ..... spinosa.

Petioles not spiny at the base:

Awns hardly 1/3 the length of the carpels:

Flowers white; leaves downy on both sides ..... grewioides.

Flowers yellow:

Leaves glabrous on the upper side, obovate-

cuneate..... rhombifolia

var. retusa.

Leaves glabrous on both sides, lanceolate,

awns long ..... acuta.

Leaves hairy, awns short or 0 ..... rhombifolia

var. rhomboidea.

Awns nearly as long as the carpels; carpels 10 ..... cordifolia.

Sida veronicaefolia Lamk. Encycl. 1:5, 1785; C. 1:92; Blatter in

JBNHS. 34:627; Phatak & Oza in JBNHS. 55:533.

S. humilis Cav. : FBI. 1:322; D. & G. 17.

A prostrate spreading herb. Leaves hispid, acute, ovate, cordate. Flowers yellow. Carpels 5. Seeds ash coloured.

Local name: Bhonyabala.

Flowers and Fruits. - September to January.

Local uses: The leaves are applied on cuts and bruises.

Common on the sides of the path in the lower half of the hill; half way up the hill; top of the hill.

OZA 141, 170, 303, 304, 1181.

Konkan; S. M. Country; Gujarat; Sind. In tropical and subtropical regions of the globe.

Sida glutinosa Cav. Diss. 1:16, t. 3, f. 8, 1785; C. 1:92; G. 89;

Blatter loc. cit. 628.

S. mysorensis Wt. & Arn. Prodr. 1:59, 1834; FBI. 1:322.

S. urticaefolia Wt. & Arn. Prodr. 1:59, 1834.

Plants with erect stems. Leaves glutinous. Flowers pale yellow.

Flowers. - August.

Common everywhere on the hill.

OZA 79.

Konkan; Deccan; Kanara; S. M. Country. Widely spread throughout the tropics of both hemispheres.

Sida spinosa Linn. Sp. Pl. 683, 1753; DC. Prodr. 1:460; FBI. 1:323;

C. 1:92; K. Schum. in Pfam. 3(6) 42, f. 18, J. K.; G. 89;

Blatter loc. cit. 628; Phatak & Oza loc. cit. 534.

S. alba Linn. Sp. Pl. (ed. 2) 960, 1762; D. & G. 17.

S. alnifolia Linn. Sp. Pl. 684, 1753.

An erect herb or an undershrub about 60 cms. high. Leaves obtuse, elliptic, with distinct petioles at the bases of which are the 'spines'. Flowers yellow.

Local name: Kantalobal; Gangeti.

Flowers. - October to April.

Local uses: The plant cures wounds, ulcers, and disorders of the bile. The root is a tonic, good for heart disease and asthma.

Fairly common in the edges of the forest in the lower half, abundant higher up.

OZA 1508; also 20th October 1957; Santapau 19882.

Konkan; Deccan; Gujarat; Sind; hotter parts of India, from N - W provinces to Ceylon. Tropical and subtropical regions of both hemispheres. Native of Tropical America.

Any critical notes on the identity or on nomenclature:

The typical 'spine-like' processes near the petioles of the leaves

give the species its name. The characteristic columnar group of stamens at the centre of the flower is worth noting.

Sida grewoides Guill. Perr. et A. Rich. Fl. Senegamb. 1:71, 1830; FBI. 1:323; C. 1:93; Blatter loc. cit. 628.

An undershrub. Leaves elliptic - oblong, obtuse, crenate. Flowers white. Carpels 7. Seeds brown, hairy at the hilum.

Flowers and Fruits. - 19 - 20 February 1958.

Rare; Lower Talao on the hill.

OZA 557.

N - W Provinces and Sind. Arabia, Tropical Africa.

Sida rhombifolia Linn. var. retusa Masters in FBI. 1:324, 1874; C. 1:93; Sant. 20.

S. retusa Linn. Sp. Pl. (ed. 2) 961, 1762; Gr. 16; D. & G. 17.

S. rhombifolia Linn. forma retusa Blatter in JBNHS. 34:629, 1930.

Small shrubs. Leaves obovate, retuse. Flowers yellow.

Flowers. - 1 - 9 - 1957.

Half way up the hill.

OZA September 1957.

Konkan; Deccan; Gujarat; S. N. Country; throughout India.

Tropics of both hemispheres.

Any critical notes on the identity or on nomenclature:

Blatter, loc. cit. considers all the varieties of S. rhombifolia to forms.

Sida acuta Burm. Fl. Ind. 147, 1768; C. 1:93; Blatter loc. cit.

628; Sant. 19; Phatak & Oza in JBNHS. 55:534.

S. carpinifolia Linn. f. Suppl. 307, 1781; FBI. 1:323.

Althaea coromandeliana angus-tis, praelongis foliis, semine bicornio Plukenet in Herb. vol. 1, fol. 53 (in Brit. Mus. Nat. Hist.).

An undershrub 30 - 45 cms. high. Leaves glabrous, lanceolate, petioles hairy. Flowers yellow.

In hedges.

Local name: Bala.

Flowers. - September to February. Fruits. - October to February.

Local uses: The root is utilised in nervous and urinary diseases.

At the foot of the hill, sides of the path up the hill; fairly common near the bus station at the foot and half way up the hill.

OZA 207, 248A, 274, 527, 1316, 1317; Joshi 32, 294.

Konkan; Deccan; S. M. Country. Ceylon, Malaya, the Philippine Islands, Timor and other Pacific Islands, Formosa and China.

Any critical notes on the identity or on nomenclature: The plant may be mistaken for Sida rhombifolia Linn. var. rhomboidea Masters. which is not mentioned in Cooke's Flora of the Presidency of Bombay. In Blatter Herbarium, I have seen number of specimens originally identified as S. acuta Burm. being reconsidered as S. rhombifolia Linn. var. rhomboidea Masters.

For the identification of this plant and its separation from S. rhombifolia var. rhomboidea the following characters may



be of help:

Leaves glabrous, awns long ..... S. acuta.

Leaves hairy, awns short or 0 ..... S. rhombifolia

var. rhomboidea.

Sida rhombifolia Linn. var. rhomboidea Masters in FBI. 1:324,  
1874; Sant. 19.

S. rhombifolia forma rhomboidea Blatter in JBNHS. 34:629, 1930.

Undershrubs. Leaves hairy. Flowers yellow. Awns short or 0.

Flowers. - September to October. Fruits. - October.

Half way up the hill and at about 250 m., by the side of  
the paths.

OZA 248.

Bombay. Throughout the tropics of both hemispheres.

Any critical notes on the identity or on nomenclature:

Please see Blatter, loc. cit. on the subject of variants.

Sida cordifolia Linn. Sp. Pl. 684, 1753; FBI. 1:324; C. 1:94;

Gr. 16; D. & G. 17; Blatter loc. cit. 629; Phatak & Oza  
loc. cit. 534.

A velvety herb or a shrub about 60 cms. high. Leaves  
2.5 - 5 cms. long, cordate, ovate - oblong. Flowers yellow to  
yellowish orange, remaining open till afternoon. Carpels 10.

Local name: Mahabala; Khapat.

Flowers. - August to December.

Local uses: The juice of the roots, leaves and bark heals  
ulcers and wounds. Plant is used for urinary diseases, disorders  
of blood, and scurvy. The roots are applied on scorpion - sting.

Said to yield the best fibre among the "Sida" spec.

Noted to be common everywhere on the hill, in rains. Rare at the foot of the hill near the bus station.

OZA 79, 156.

Konkan; S. M. Country; Gujarat; throughout tropical and subtropical India. Tropical and subtropical regions of both hemispheres.

Abutilon Linn.

Key to the species of Abutilon

Seeds glabrous, brown-black; carpels mucronate ..... indicum.

Seeds hairy, black; carpels not mucronate ..... glaucum.

Abutilon indicum Sweet, Hort. Brit. 1:54, 1827; FBI. 1:326;

C. 1:96; Gr. 15; D. & G. 18; Blatter in JBNHS. 34:629.

Phatak & Oza in JBNHS. 55:534.

Plants subshrubby, up to 150 cms. high. Stems tomentose. Leaves ovate, acute, cordate. Flowers yellow. Cooke, loc. cit. mentions, 'Corolla ... opening in the evening'. We have observed open flowers from dawn to dusk. Carpels hairy. Seeds glabrous, brown-black.

In hedges by the sides of palms, the plants are about 240 cms. tall.

Local name: Kansaki.

Flowers and Fruits. - May to November (almost throughout the year).

Local uses: The roots are used for fevers, cough and leprosy. The roots and leaves are taken internally for snake bite and urinary troubles.

Common at the foot of the hill.

OZA 605, 1505; Santapau 19853; Joshi 84.

Konkan; Deccan; S. M. Country; Sind. Trop. India. Ceylon.

Tropics.

Abutilon glaucum (Cav.) Sweet in Br. (ed. 1) 54, 1827; Santapau in Pl. of Saur. 6; Blatter loc. cit. 630.

Sida glauca Cav. Ic. 1:8, t. 11, 1791; FBI. 1:327.

Abutilon muticum Sweet, Hort. Brit. (ed. 2) 65, 1830; C. 1:97.

An undershrub about 100 - 130 cms. high. Leaves somewhat round, ovate, cordate, acute, very hairy, smooth. Flowers yellow; staminal tube pubescent. Fruits silky, awned: carpels about 20 - 25. Seeds black, hairy, 3 in each carpel.

The plant has a clear localisation; noted on open ground exposed to Sun; not found on other parts of the hill.

Flowers and Fruits. - December to February.

A few plants noted only near the bus station at the foot of the hill.

OZA 543, 544, 545, 1276, 1277.

Konkan; Deccan; Gujarat; Sind. N. W. provinces, and W. Peninsula. Ceylon. Afghanistan, Trop. Africa, Egypt.

#### Urena Linn.

Urena lobata Linn. Sp. Pl. 692, 1753; FBI. 1:329 (excl. U. palmata); C. 1:100; N. 29; Sant. 21.

U. sinuata Linn. Sp. Pl. 692, 1753; FBI. 1:329; C. 1:100; Gr. 13; Blatter in JBNHS. 34:631.

A shrub about 1 m. tall. Stems erect, unbranched. Leaves toothed, cordate, lobes obtuse. Flowers rosy in colour.

Local name: Vagdan Bhindi.

Flowers and Fruits. - September.

Rare. Near the Forest Nursery and forest area by the side of the road leading to Shivrajpur; on the hill proper in the forest by the sides of path.

OZA 314.

Konkan; Deccan; S. M. Country; hotter parts of India.

Tropics of both hemispheres.

Any critical notes on the identity or on nomenclature:

This has reference to Article 57 - ("Choice of Names when Taxa of the same rank are united") of the International Code of Botanical Nomenclature (1956).

Moreover, Santapau, loc. cit. has shown that Linne's two species cannot be distinguished from each other. He has united these species under U. lobata.

Pavonia Cav. (nom. cons.)

Pavonia zeylanica Cav. Diss. 3:134, t. 48, f. 2, 1787; FBI. 1:331;

C. 1:102; D. & G. 21; Elatter in JBNHS. 34:631.

A hairy undershrub 60 - 100 cms. high. Leaves 3 - lobed, - pinnatifid. Flowers pinkish. Carpels glabrous, 3 - angled, keeled at the edges. Seeds brown in colour.

Noted in grasses.

Flowers and Fruits. - November.

Common in the forest.

OZA 301, 302.

Deccan; Gujarat; Sind; N. W. provinces, W. Peninsula.

Ceylon, Tropical Africa, Mauritius.

Hibiscus Linn.

Key to the species of Hibiscus

Involucral bracts absent ..... solandra.

Involucral bracts present:

Undershrubs; flowers rosy, leaves 3 - lobed ..... punctatus.

Herbs; flowers deep yellow with its centre

purple coloured, leaves 3 - 7 - lobed ..... vitifolius.

Hibiscus solandra L'Herit. Strip. 1:103, t. 49, 1784; FBI.

1:336; C. 1:107.

An erect herb, 15 - 25 cms. high; at times 60 cms. tall.

Leaves hairy, entire in the upper parts of the plant, palmately lobed below. Flowers yellowish - white. Absence of involucral bracts.

Flowers. - September to February. Fruits. - September.

A few plants noted at the foot of the hill; rare near the stream; undergrowth of the forest.

OZA 142, 180, 289, 551.

Konkan; S. M. Country; Gujarat; hotter parts of India.

Birma, Ceylon, Asia, East tropical Africa.

Hibiscus punctatus Dalz. in Dalz. & Gibs. Bomb. Fl. 20, 1861;

FBI. 1:340; C. 1:110; Blatter in JBNHS. 34:633.

Undershrubs about a meter in height. Leaves punctate, ovate, obtuse, 3 - lobed - the middle one long. Flowers rosy.

Flowers. - September.

A few plants noted on the slopes of the forest.

OZA 152; also September 1958.

Gujarat; Sind; Multan.

Hibiscus vitifolius Linn. Sp. Pl. 696, 1753; FBI. 1:338; C. 1:109;

Gr. 13; D. & G. 20; G. 98; N. 31; Blatter loc. cit. 633.

A herb about 1 - 2 m. high, slightly hairy. Leaves 3 - 7 - lobed. Flowers deep yellow with its centre purple coloured.

Capsules winged.

Flowers and Fruits. - September to February.

Fairly common but not abundant: on the lower parts of the hill along the sides of paths.

OZA 159.

Konkan; Deccan; S. M. Country; hotter parts of India, from N - W Provinces to Ceylon. Tropical Africa, Australia.

Any critical notes on the identity or on nomenclature: Santapau (1955) in his paper on 'Excursion of the Indian Botanical Society to Pavagadh Hill near Baroda' remarks: "A very typical plant; the structure of the calyx in fruit is unique in the genus for Bombay plants. ----- up to 8 ft. (240 cms.) Tall."

Abelmoschus Medik.

Abelmoschus manihot (Linn.) Medik. Malv. Fam. 46, 1787; Sant. 22.

Hibiscus manihot Linn. Sp. Pl. 696, 1753; Blatter in JBNHS.

34:633.

H. tetraphyllus Roxb. Hort. Beng. 52, 1814, & Fl. Ind. 3:211,

1832; FBI. 1:341; C. 1:111; Talb. 1:123, t. 74; N. 31.

Abelmoschus tetraphyllus Graham, Cat. 14, 1839; D. & G. 19.

An erect herb 60 - 100 cms. high; at times it is also observed as a shrubby plant. Height varying. Leaves with rough hairs, cordate, acute. Flowers yellow, inner throat purple. Fruit a capsule.

Growth luxuriant.

Local name: Ran Bhindo.

Flowers. - September to December. Fruits. - December.

Fairly common in the undergrowth of the forest; and on the lower half of the hill in the forest by the sides of the paths.

OZA 155, 183.

Konkan; Kanara; Gujarat; Bengal.

Any critical notes on the identity or on nomenclature:

Roxburgh's name indicates that the plant has 4 epicalyx bracts. Usually the Bombay plant has 5 epicalyx bracts; the flowers with 4 bracts of the epicalyx being found rarely.

Gossypium Linn.

Gossypium herbaceum Linn. Sp. Pl. 693, 1753, partim; DC. Prodr.

1:456; FBI. 1:346; C. 1:116, partim; D. & G. Suppl. 8;

Blatter in JBNHS. 34:635.

Plants up to about 1 m. tall. Cultivated. Bore flowers and fruits during the first year ! Colour of flowers: yellow with purplish tinge. Produces white cotton.

Local name: Kapas.

Flowers and Fruits. - February to March.

Cultivated in the district.

OZA 1506, 1507.

According to Agostino Todaro, G. herbaceum, sensu stricto, does not occur in India. And Blatter, loc. cit. writes, "this species does not seem to occur in the Bombay Presidency".

Any critical notes on the identity or on nomenclature: In view of the recent article by Dr. Y. I. Prokhanov, U. S. S. R., in Taxon 8:41 - 46, 1959, our plants are under critical study. For the time being, we leave it as it is.

#### BOMBACACEAE

Salmaal Schott. & Endl.

Salmaal malabarica (DC.) Schott. & Endl. Melet. 35, 1832;

Sant. 24.

Bombax malabaricum DC. Prodr. 1:479, 1824; FBI. 1:349;

C. 1:120; Gr. 16; Talb. 1:130, tt. 79 - 80; Blatter & Millard, Beaut. Ind. Tr. 9; N. 33.

Popularly known as the "Silk Cotton Tree". A large tree with prickly trunk. Bark grey. Leaves large: leaflets lanceolate. Flowers large, in clusters near the ends of the branches; red in colour; stamens about 60 - 75. Fruit a capsule about 12 - 15 cms. long, green, turning brown after drying. Seeds whitish - yellow covered with silky cotton hairs.

Leafless when flowering. The parasite Dendronthoe falcata (Linn. f.) Etting. is observed on this tree.

Local name: Shimlo.



Buds. - January to February. Flowers. - February to March.  
Fruits. - March to May.

Local uses: Locally the fruits are collected for the cotton which is used for stuffing pillows.

Fairly common in the deciduous forest and in the lower parts of the hill; at the foot of the hill.

OZA 714; 464, 583, 676 (all preserved in the museum !)

Konkan; Deccan; S. M. Country; Tr. E. Himalaya, and throughout the hotter forest regions of India. Birma, Ceylon, Java, Sumatra, Malaya.

Any critical notes on the identity or on nomenclature:  
Recent monographers on the subject are of the opinion that the hitherto known genus Bombax is an American one with no representatives in Asia. Santapau (1951) has treated this matter in the Journal of Scientific and Industrial Research Vol. 10 B : 49 - 50.

#### STERCULIACEAE

##### Key to the Genera of the STERCULIACEAE

Herbs or undershrubs:

Flowers yellow ..... Waltheria.

Flowers pinkish - purplish ..... Melochia.

Shrubs ..... Helicteres.

Trees:

Flowers yellow, follicles covered with

stinging hairs ..... Sterculia.

Flowers orange red, follicles not

covered with stinging hairs ..... Firmiana.

Waltheria Linn.

Waltheria indica Linn. Sp. Pl. 673, 1753; FBI. 1:374; C. 1:135;

Gr. 246; G. 111; N. 36; Sant. 28.

W. americana Linn. Sp. Pl. 673, 1753.

Erect herbs 60 - 100 cms. high, pubescent. Leaves ovate, serrate. Flowers in dense axillary or terminal clusters, yellow. Fruit a 2 - valved, 1 - seeded capsule. Seeds black.

Flowers and Fruits. - July to September.

Rare in open lands near the foot of the hill.

OZA 1509; also 2 July 1957.

Konkan; Deccan; S. M. Country; hotter parts of India.

Kumaon to Malaca. Ceylon. Throughout the warmer regions of the world.

Any critical notes on the identity or on nomenclature:

The plant does need reference to Article 57 of the latest edition of the International Code of Botanical Nomenclature (1956) that reads as follows: "When two or more taxa of the same rank are united, the oldest legitimate name of (for taxa below the rank of genus) the oldest legitimate epithet is retained, unless a later name or epithet must be accepted under the provisions of Art. 58. The author who first unites taxa bearing names or epithets of the same date has the right to choose one of them, and his choice must be followed." For explanation, the examples are given in the Code, from which the one given below refers to our plant. "Robert Brown (in Tuckey, Narr. Exp. Congo App. 5:484. 1818) appears to have been the first to unite Waltheria americana L. (Sp. Pl. 673. 1753) and

W. indica L. (Sp. Pl. 673. 1753). He adopted the name Waltheria indica for the combined species, and this name must accordingly be retained."

By the way, Blatter in his revision of the Flora of the Presidency of Bombay has transferred Waltheria to the family Bombacaceae (JBNHS. 34:637). He has not given any reason for this change. Even the recent works put Waltheria under Sterculiaceae.

Melochia Linn.

Melochia corchorifolia Linn. Sp. Pl. 675, 1753; FBI. 1:374; C. 1:134; G. 110; N. 36; Blatter in JBNHS. 34:883.

Redleia corchorifolia DC. Prodr. 1:491, 1824; Gr. 19; D. & G. 24.

An erect herb or an undershrub 45 - 60 cms. high. Leaves ovate - oblong, serrate. Flowers minute, pinkish - purplish, in densely crowded terminal clusters. Fruit a capsule.

Flowers. - September to November. Fruits. - November to February.

In the plains and banks of the lower talao. Rare.

OZA 120; Joshi 89.

Kanara; Gujarat; hotter parts of India from Kumaon to Sikkim, Malacca. Ceylon. Tropics.

Helicteres Linn.

Helicteres isora Linn. Sp. Pl. 963, 1753; FBI. 1:365; C. 1:128; Gr. 16; D. & G. 22; Talb. 1:146, t. 89; G. 197; N. 35;

Wight, Icon. t. 180; Blatter in JBNHS. 34:879; Sant. 27.

These are shrubs. Leaves serrate, obovate, cordate, lower sides slightly hairy. Flowers reddish, in axillary clusters. Fruit follicles; spirally twisted.

Local name: Marada Shing.

Flowers and Fruits. - January to February.

Local uses: In Ayurvedic medicine the fruits are of high repute.

Fairly common on the forest slopes and in the undergrowth of the forest in the lower parts of the hill.

OZA 552.

Konkan; Deccan; Kanara; Gujarat; S. M. Country; C. and W. India; from Behar - Jamu; W. Peninsula. Ceylon, Java, North Australia, West Indies.

Sterculia Linn.

Sterculia urens Roxb. Pl. Cor. 1:25, t. 24, 1795; FBI. 1:355;

C. 1:123; Talb. 1:137, t. 83; Blatter in JBNHS. 34:878;

N. 34; Sant. 25.

Large trees with whitish bark. Leaves palmately lobed, glabrous above and velvety beneath, base cordate. Flowers yellow. Fruits - follicles, presence of stinging hairs brownish in colour.

Local name: Kadai.

Flowers. - January. Fruits. - January to March.

Local uses: Gum as an article of food in local preparations.

Several trees below Machi by the sides of path; a few noted in the lower parts of the hill in the forest. Not abundant.

OZA 1510; also January, March 1958 and January 1959.

Kokan; Deccan; Kanara; S. M. Country; Gujarat; N. W. India; Assam; Behar; E. and W. Peninsulas. Ceylon.

Firmiana Marsigli.

Firmiana colorata R. Br. in Bennett, Pl. Jav. Rar. 235, 1844; G. 107; Blatter in JBNHS. 34:879; Sant. 21 (ed. 2).

Sterculia colorata Roxb. Pl. Cor. 1:26, t. 25, 1795; FBI. 1:359; C. 1:125; Gr. 17; Talb. 1:140, tt. 85 - 86; Blatt. & Millard, Beaut. Ind. Tr. 102; N. 35.

Erythropsis colorata Burkill in Gardn. Bull. Straits Settl. 5:231, 1931; Sant. 26.

A tree more than 5 m. high. Ends of branches crowned with large palmately lobed leaves. Flowers orange red coloured. Follicles papery.

Branching begins at about 2 m.; branches brittle. Bark somewhat whitish with brown spots. Flowering and leafing not at the same time. Host for Bendrophthoe falcata (Linn. f.) Etting. : the parasite has attacked on a new species in the genus Sterculia.

Local name: Kodaro.

Flowers. - February to May. Fruits. - April to May.

Noted several trees on various parts of the hill, particularly the higher parts of the hill near the Makai Kothar; a few more on the way to Bhadrakali Mata.

OZA 549, 725, 799, 853.

Konkan; Deccan; S. M. Country; E. Bengal. Pegu, Ceylon, Indo - China, Siam.

## TILIACEAE

Key to the Genera of the TILIACEAE

Herbs or undershrubs:

Capsules spinous ..... Triumfetta

Capsules not spinous ..... Corchorus

Trees ..... Grewia

Triumfetta Linn.Key to the species of Triumfetta

Fruits with spines over 12 mm. diam. .... annua

Fruits with spines not over 12 mm. diam.:

Bristles of fruit glabrous; stamens 8-15 .. bartramia

Bristles of fruit slightly hairy;

stamens 15-25 ..... rotundifolia

Triumfetta annua Linn. Mant. 1:73, 1767; FBI. 1:396; G. 120;

Blatter in JBNHS. 34:890; Sant. 31.

This herb is not given in Cooke's Flora. Leaves glabrous, serrate, ovate. Flowers yellow. Fruits with spines are over 12 mm. diam.

Flowers. - September to October. Fruits. - September to March.

A few plants at the edges of the undergrowth in the lower half, not common; and at Machi. Rare.

OZA 102.

Tr. Himalaya, from Simla to Sikkim; the Khasia Mts.; Assam; Konkan; Ava and Andaman Islands. Malay Archipelago, Tr. Africa.

Triumfetta bartramia Linn. Syst. (ed. 10) 1044, 1759; Roxb. Fl.

Ind. 2:463; Blatter loc. cit. 890; Sant. 30; Phatak & Oza  
in JBNHS. 55:534.

Bartramia indica Linn. Sp. Pl. 389, 1753.

Triumfetta rhomboidea Jacq. Enum. Pl. Carib. 22, 1760;

FBI. 1:395; C. 1:147; G. 120; N. 38. (Non T. indica  
Lamk. 1791).

A shrub or an undershrub 60 - 100 cms. high. Leaves lower  
3 - 5 lobed, upper simple, hairy, cordate. Flowers yellow, stamens  
8 - 15. Fruits spiny - bristles glabrous, 5 - 6 mm. in diam.

Noted in hedges. Gregarious. In association with *Sidas*.

A very interesting incidence in support of our statement  
(Phatak & Oza, loc. cit.) and the 'Milk Increasing Qualities of  
T. bartramia', a member of the Lidenblooms, which took place on  
the Pavagadh hill is noted here from my field-diary under No. 884  
of 15-7-58. "The author saw a large group of monkeys including  
mother monkeys with their babies hanging from their chests, eating  
spec. of this plant near Machi - a small plateau surrounded by Dense  
Forest. In fact, there were other plants in the same locality but  
the monkeys and especially the females searched for the above spec.  
They ate young leaves. It seems they are fond of it or have they  
any taste for it?"

Local name: Jipati.

Flowers. - July to October. Fruits. - September to February.

Local uses: The plant increases the secretion of milk in females. It reduces swellings. The seeds are given in cases of dog-bite. The leaves are used in dysentery.

Machi; abundant on the higher parts and at the base of the hill.

OZA 101, 243, 244.

Konkan; Deccan; Kanara; S. M. Country; Tr. and Subtropical India, ascending to Himalaya. Ceylon. Malay Islands, China, Tr. Africa, America.

Any critical notes on the identity or on nomenclature: Blatter, loc. cit. writes: In the above synonymy the earliest trivial name is 'indica' but, as Craib points out, it 'cannot be used owing to the incompletely known T. indica Lam.'

Triumfetta rotundifolia Lamk. Encycl. 3:421, 1789; FBI. 1:395;

C. 1:148; D. & G. 25; Phatak & Oza in JBNHS. 55:534.

A herb or an undershrub. Leaves orbicular, toothed, stellately hairy above, lower surface tomentose and greyish coloured. Flowers yellow, stamens 15 - 25. Bristles of fruit slightly hairy.

Local name: Jipato.

Flower and Fruits. - August to October.

Local uses: Used as a demulcent.

Machi and above.

OZA 1511.

Konkan; Deccan; Gujarat; W. Peninsula and C. India, from Bandelkhand; to Maisor, Pegu.



Corchorus Linn.Key to the species of Corchorus

Beak of the capsules trifid:

Capsule 6 - angled, 3 - winged ..... aestuans

Capsule not angled (but cylindric, 2 cms.

long) nor winged ..... tridens

Beak of the capsules entire; capsule 2.5 - 5 cms. long .. olitorius

Beak of the capsules 0; capsule globose ..... capsularis

Corchorus aestuans Linn. Syst. (ed. 10) 1079, 1759 (non Forsk.);

Blatter in JBNHS. 34:892; Sant. 31; Phatak & Oza in

JBNHS. 55:534.

C. acutangulus Lamk. Encycl. 2:104, 1786; FBI. 1:398; C. 1:150;

Gr. 20; D. & G. 25.

Erect or prostrate herbs. Leaves serrate, ovate, acute.

Flowers yellow. Fruit is a capsule, 6 - angled, 3 - winged. Seeds brown.

Local name: Jiteli.

Flowers. - August to October. Fruits. - September to January.

Local uses: The seeds are used in pneumonia and the roots for cough.

On the hill, rare.

OZA 1512.

Konkan; Gujarat; Sind; hotter parts of India. Ceylon, Australia, Tr. Africa, West Indies.

Corchorus tridens Linn. Mantiss. App. 566, 1771; FBI. 1:398;

C. 1:150; Blatter, loc. cit. 892.

A herb 60 - 100 cms. high. Leaves ovate, crenate - serrate, lanceolate. Flowers minute, sessile, yellow. Fruit is a slender capsule about 2 cms. long, cylindric, not winged.

Noted in rains.

Flowers and Fruits. - August.

Near the Atak Darvajo - 1st gate, in the forest. Rare.

OZA 72, 73.

Deccan; Sind. Australia and Africa. Afghanistan.

Corchorus olitorius Linn. Sp. Pl. 529, 1753; FBI. 1:397; C. 1:149;

Gr. 20; D. & G. 25; Blatter loc. cit. 891; Sant. 32.

A herb up to 100 cms. high. Leaves ovate, lanceolate, serrate. Flowers yellow. Fruit is a glabrous capsule, 2.5 - 5 cms. long, 10 - ribbed, 5 - valved.

In waste lands. Growth luxuriant.

Local name: Chhunch.

Flowers. - September. Fruits. - September to February.

Local uses: Jute fibre is obtained from this plant.

Undergrowth of the forest; near the lower talao.

OZA 119.

Konkan; Deccan; S. M. Country; Gujarat; Sind. All tropical countries.

Corchorus capsularis Linn. Sp. Pl. 529, 1753; FBI. 1:397; C. 1:148;

Gr. 24; D. & G. 25; Blatter loc. cit. 891; Sant. 31.

Plants erect, up to 1 - 2 m. high. Leaves serrate, lanceolate, acute. Flowers yellow. Fruit a capsule globose, 5 - valved, ridged and muriculate.

Gregarious.

Flowers and Fruits. - September to November.

Local uses: Jute fibre is obtained from this plant.

OZA, In the plains surrounding the hill; foot of Pavagadh !

Konkan; Gujarat. Blatter, loc. cit. mentions: "May have been introduced from China or Cochin - China".

Grewia Linn.

Grewia tiliæefolia Vahl, Symb. Bot. 1:35, 1790; FBI. 1:386

pro parte; C. 1:141; Gr. 21; Talb. 1:160, t. 98; N. 37;

Blatter in JBNHS. 34:887; Sant. 28.

Microcos lateriflora Linn. Sp. Pl. 514, 1753 (non Grewia

lateriflora G. Don, 1831).

Grewia arborea Roxb. ex Rottl. in Neue Schr. Ges. Nat. Freund.

4:205, 1803.

A tree about 10 m. high. Leaves ovate, acuminate, crenate, cordate, hairy. Flowers yellow. Fruit is a drupe.

Host for Dendronthoe falcata (Linn. f.) Etting.

Local name: Dhaman.

Flowers. - May to June. Fruits. - June to middle of January.

In the forest; slopes of forest; higher parts of the hill; common.

OZA 775, 776.

Throughout Western India; Himalaya; W. Peninsula. Birma, Ceylon, East tropical Africa.

#### LINACEAE

##### Linum Linn.

Linum mysorens Heyne in Wall. Cat. 1507, 1829; FBI. 1:411;

C. 1:155; Gr. 33; D. & G. 16; Blatter in JBNHS. 34:892; Sant. 33.

An erect slender herb 15 - 30 cms. high. Leaves sessile, linear, mucronate. Flowers form a corymb; small, yellow.

Growth luxuriant. In pure stands; noted among grasses.

Flowers and Fruits. - September to February.

Higher parts of the hill, on earth banks; Machi, Top of the hill; fairly common and abundant.

OZA 115, 116, 518, 1174; Joshi 75, 265.

W. Peninsula, from the Konkan and Deccan to the Nilghiris. W. Himalaya. Ceylon.

Any critical notes on the identity or on nomenclature: Santapau, loc. cit. mentions three types of plants observed in Khandala. I have observed the first two types in Pavagadh: plants being erect with unbranched stem and others branching just near the root system.

#### ZYGOPHYLLACEAE

##### Key to the Genera of the ZYGOPHYLLACEAE

Spreading herbs; leaves abruptly pinnate; flowers yellow ... Tribulus  
Shrubs; leaves 2 - foliolate; flowers green ..... Balanites

Tribulus Linn.

Tribulus terrestris Linn. Sp. Pl. 387, 1753; FBI. 1:423; C. 1:160;  
D. & G. 45; Phatak & Oza in JBNHS. 55:534; Blatter in  
JBNHS. 34:894.

T. lanuginosus Linn. Sp. Pl. 387, 1753; Gr. 35; Wight,  
Icon. t. 98.

A spreading herb. Leaves with silky hairs, abruptly  
pinnate. Flowers yellow. Fruit of 5 woody cocci each with sharp  
spines.

Plate No. - 7.

Local name: Gokharu.

Flowers and Fruits. - August to October.

Local uses: The entire plant with its fruits is useful in  
kidney diseases and for ulcers.

On the plains at the foot of the hill.

OZA 1513.

Deccan; S. M. Country; Gujarat; Sind; throughout India.  
Ceylon. Warm regions of the globe.

Any critical notes on the identity or on nomenclature:  
This comes under Article 57 of the Int. Code of Bot. Nomenclature  
(1956).

Balanites Delile (nom. cons.)

Balanites aegyptiaca (Linn.) Del. Ill. Fl. d'Eg. 263, t. 28,  
f. 1, 1813; Engler & Prantl. in Pfam. 3(4):355, f. 189;  
Blatter in JBNHS. 34:895.

Balanites Roxburghii Planch. in Ann. Sc. Nat. ser. 4(2):258,  
1854; FBI. 1:522; C. 2:195.

Ximenia aegyptiaca Linn. Sp. Pl. 1194, 1753.

X. aegyptiaca Juss. Gen. 260, 1789; Roxb. Fl. Ind. 2:253, 1832.

B. aegyptica Wall. Cat. no. 6855, nom. nudem.

These are shrubs, tomentose; presence of spines. Leaves  
2 - foliolate. Flowers green; small, in axillary cymes. Fruit a  
drupe.

Flowers. - 26 March 1958.

A few plants noted at the base of the hill.

OZA 635.

Konkan; Deccan; S. M. Country; Gujarat; drier parts of India  
from Kanpur to Sikkim; Behar. Birma. Arabia, Egypt, Tr. Africa.

Any critical notes on the identity or on nomenclature:  
Cooke & Gamble have put this plant under Simarubaceae. Blatter,  
loc. cit. puts it under Zygophyllaceae: and remarks, "I unite this  
(B. Roxburghii Planch.) with B. aegyptiaca Delile, as the differences  
between the 2 species are too insignificant for a specific separation".

#### OXALIDACEAE

##### Key to the Genera of the OXALIDACEAE

Herbs creeping ..... Oxalis  
Herbs erect ..... Bionhytum

##### Oxalis Linn.

Oxalis corniculata Linn. Sp. Pl. 435, 1753; FBI. 1:436; C. 1:167;

Wight, Icon. t. 18; Sant. 35; Phatak & Oza in JBNHS. 55:535.

O. monadelpha Roxb. ex Wight & Arn. Prodr. 142, 1834.

A tiny creeping herb. Leaves 3 - foliolate, petioles long; leaflets obcordate. Flowers yellow, axillary, umbellate, on slender peduncles. Fruit a capsule, linear - oblong. Seeds numerous, brown.

Observed in moist situations. In my Field Diary for 26 March 1958 I find the following remark: "On a slightest touch to the plant, the fruits burst and spread out the seeds."

Local name: Aamalati; Khati Luni.

Flowers and Fruits. - July to October, occasionally till March.

Local uses: The plant is a remedy for scurvy and is given to relieve the effects of opium. Good for head-ache.

Near the banks of the Lower talao and in the garden at Machi; fairly abundant.

OZA 628, 629.

Warmer parts of India; Himalaya. Ceylon. Cosmopolitan.

#### Biophytum DC.

Biophytum sensitivum (Linn.) DC. Prodr. 1:690, 1824; FBI. 1:436;

C. 1:167; D. & G. 42; Reithe in Pfam. 3(4):16, f. 14 G.

Oxalis sensitiva Linn. Sp. Pl. 434, 1753.

An erect herb 15 - 20 cms. high, resembling a "Tiny Palm", with a rosette of leaves. Flowers yellow, peduncles long.

In moist spots. Gregarious.

Flowers. - September to October. Fruits. - September to February.

Undergrowth of the forest; on the forest slopes; fairly common.

OZA 114, 519; Joshi 81.

Konkan; Deccan; Kanara; Gujarat; hotter parts of India, Himalaya. Ceylon, Tropical Asia, Africa and America.

#### BALSAMINACEAE

##### Impatiens Linn.

Impatiens balsamina Linn. Sp. Pl. 938, 1753, var. rosea Hook. f.

in FBI. 1:554, 1874; Blatter in JBNHS. 36:314; Sant. 36.

I. rosea Lindl. in Bot. Reg. t. 27, 1841.

I. balsamina var. brevicalcarata Cooke, Fl. Pres. Bomb. 1:174, 1901.

Herbs about 1 m. tall. Leaves about 10 - 15 cms. long.

Flowers purplish, lip spurred. Seeds smooth.

Gregarious. Noted under the shade of trees.

Flowers and Fruits. - August to September.

Abundant in the lower half of the hill, by the side of paths.

OZA 188, 944.

W. India; W. Himalaya.

#### RUTACEAE

##### Key to the Genera of the RUTACEAE

Leaves 3 - foliolate .....	<u>Aegle</u>
Leaves 1 - foliolate .....	<u>Citrus</u>
Leaves imparipinnate .....	<u>Feronia</u>



Aegle Correa (nom. cons.)

Aegle marmelos Corr. in TLS. 5:223, 1800; FBI. 1:516; C. 1:192;  
Gr. 24; D. & G. 31; Talb. 1:206, t. 125; G. 161; N. 48;  
Blatter in JBNHS. 36:320.

Small trees armed with spines. In Pavagadh, I have observed only 3 - foliolate leaves. Flowers whitish. Fruit is a large berry, globose or ovoid, rind yellowish, smooth; pulp edible.

Wild; not cultivated on the hill.

Local name: Bili.

Flowers. - February to May. Fruits. - March to May.

Local uses: Fruits used medicinally. This is a holy tree of Hindus. The leaves are used in religious ceremonies for Lord Shiv.

OZA, A few trees noted on the lower half of the hill, along the sides of the path; foot of the hill !

Konkan; Deccan; S. M. Country; throughout India, Jhelum to Assam, Travancore. W. Himalaya.

Citrus Linn.

Citrus medica Linn. Sp. Pl. 782, 1753; FBI. 1:514; C. 1:189.

A small tree cultivated for its fruits. Leaves 1 - foliolate, alternate, petiole winged; leaflets ovate - lanceolate, crenate. Flowers white. Fruit an oblong or globose berry, fleshy, many - celled, seeds few, rind leathery; greenish but yellow when ripe.

Local name: Limbu.

Flowers and Fruits. - Almost throughout the year.

Cultivated in the village Pavagadh, foot of the hill.

OZA 617.

Western ghats; Satpura range.

Any critical notes on the identity or on nomenclature:

Among the varieties of this species cultivated in Bombay, the one at Pavagadh seems to be var. acida (?) Pers. Syn. 2:73, 1808. On the subject, the interested readers are requested to refer Cheema & Bhat (1934) - "A Study of the Citrus varieties of the Bombay Presidency" in Curr. Sci. 2:298 - 304.

Feronia Correa.

Feronia limonia (Linn.) Swingle in Journ. Washington Acad. Sc.

4:328, 1914; Blatter in JBNHS. 36:320.

Schinus Limonia Linn. Sp. Pl. 389, 1753.

Feronia elephantum Corr. in TLS. 5:225, 1800; FBI. 1:516;

C. 1:191; Engler in Pfam. 3(4):193, f. 112; Gr. 24;

D. & G. 30; Wight, Icon. t. 15.

Large trees armed with spines. Leaves imparipinnate, alternate; leaflets 3 - 9, opposite, subsessile. Flowers in terminal or lateral panicles, polygamous. Fruits large, globose, many - seeded berry with woody rind.

Local name: Kauthi.

Flowers. - March to May. Fruits. - April to July.

Local uses: The pulp of the fruit is edible.

OZA, near the talao behind the dharamsala; about half way up the hill by the sides of main path; and in the plains surrounding the hill; fairly abundant !

Santapau 19885.

Konkan; Deccan; Kanara; Gujarat; throughout India; Punjab;  
W. Himalayas. Ceylon, Java.

## SIMARUBACEAE

Ailanthus Desf. (nom. cons.)

Ailanthus excelsa Roxb. Pl. Cor. 1:24, t. 23, 1795; FBI. 1:518;  
C. 2:193; DC. Prodr. 2:89; Gr. 37; D. & G. 46.

Large trees. Leaves large, alternate, imparipinnate;  
leaflets alternate or subopposite, 8-14 pairs. Flowers in much  
branched terminal or axillary panicles. Fruit a samara.

Host for Dendrophthoe falcata (Linn. f.) Etting. This is  
the first time that the family Simarubaceae has been touched by this  
parasite. About 54 plant families have been recorded as being  
parasitized by Dendrophthoe falcata and now the family Simarubaceae  
is an addition to the previous record.

Flowers. - January.

In farms along the road to Pavagadh; only one or two noted  
near the bus stand at the foot of the hill.

OZA 410.

Konkan; Deccan; Gujarat; N. W. India; Behar and W. Peninsula.

## BURSERACEAE

Garuga Roxb.

Garuga pinnata Roxb. Hort. Beng. 33, 1814, & Pl. Cor. 3:5, t. 208;  
1819; FBI. 1:528; C. 1:199; Gr. 43; Talb. 1:217, t. 130;  
Engler in Pfam. (ed. 1) 3(4):257, t. 150, & (ed. 2) 19  
A:416; Wight, Icon. tt. 1594 & 1595; Sant. 41.

Large trees. Leaves deciduous. Flowers yellowish, in much branched panicles. Fruit a drupe, fleshy, globose.

Leaves, flowers and fruits are noted at the ends of the branches. When in flowers, the leaves are not seen. In Pavagadh, the leaves are infected with insect galls of red colour.

Flowers. - January to March. Fruits. - March to May.

Common all over the hill.

OZA 772.

Konkan; Deccan; S. M. Country; Kanara; Gujarat; throughout India; Nilghiris; Himalaya; Birma. Malayan Archipelago, Philippines.

Any critical notes on the identity or on nomenclature:

The identification of my herbarium specimen seems to be doubtful !  
The material available at my disposal is very scanty. However, the occurrence of this plant in Pavagadh is certain: Santapau, Phatak & Joshi have recorded it from the area under observation.

#### MELIACEAE

##### Azadirachta A. Juss.

Azadirachta indica A. Juss. in Mem. Mus. Par. 19:221, 1830; C. 1:207;

Harms. in Pfam. 3(4):287, f. 160 M-S; Gr. 30; D. & G. 36;

Santapau in Pl. of Saur. 9.

Melia azadirachta Linn. Sp. Pl. 385, 1753; FBI. 1:544.

Large trees about 10 m. high with white flowers in axillary panicles. Fruit a drupe, 1 - seeded.

This Nim tree is planted along the roadsides but wild on the hill proper. Observed growing in association with the Palms.

Local name: Limdo.

Flowers. - March to May. Fruits. - April to May.

Local uses: Medicinal value.

Common. Planted along the roadsides and at the foot of the hill; occasionally on the hill, way up the hill.

OZA 621.

Konkan; Deccan. Cultivated throughout India and in many hot climates.

#### OPILIAEAE

Cansiera Juss. (nom. cons.)

Cansiera rheedii Gmel. Syst. 2:280, 1791; FBI. 1:582; C. 1:223; G. 193; Sleumer in Pfam. (ed. 2) 16 B:36, t. 19; Wight, Icon.t.1861; Sant. 47.

This is a climbing shrub; branches shining, yellowish-green, pubescent. Leaves slightly rough, ovate - lanceolate, alternate. Flowers in axillary spikes.

Flowers. - 26 March 1958.

In the forest, Pavagadh. Rare.

OZA 634.

Konkan; Deccan; S. M. Country; Kanara; Upper Gangetic Plain, in forests of Oude; W. Peninsula; E. Peninsula, in Hartaban and Malacca. Indian Archipelago, Hong Kong, N. Australia.

#### CELASTRACEAE

##### Key to the Genera of the CELASTRACEAE

Climbing shrubs; flowers greenish yellow ..... Celastrus

Small trees; flowers white ..... Gymnosporia

Celastrus Linn.

Celastrus paniculata Willd. Sp. Pl. 1:1125, 1798; FBI. 1:617;  
C. 1:231; Gr. 38; D. & G. 47; Losener in Pfam. 3(5):194,  
t. 120 E. H. & t. 122 K - L; Wight, Icon. t. 158; Talb.  
1:276, t. 163; Sant. 48.

Large climbing shrub; branches pendulous. Leaves obovate -  
ovate, crenulate, alternate. Flowers greenish yellow, in pendulous  
panicles.

Flowers. - 15 July 1958.

In the forest, by the sides of the paths. Rare.

OZA 877, 878.

Konkan; Deccan; S. M. Country; Gujarat; Tr. and Sub Tropical  
Himalaya; Punjab and throughout the hilly districts of India. Ceylon,  
Malay Archipelago, and Philippine Islands.

Gymnosporia (Wight & Arn.) Hook. f.

in Benth. & Hook. f. (nom. cons)\*

Gymnosporia spinosa (Forsk.) Fiori in Agric. Colon. 1911, 5.

Suppl. 2 (1912); Santapau in Fl. Purandhar 32.

Catha spinosa Forsk. Fl. Aegypt. - Arab. 64, 1775.

Gymnosporia montana Benth. Fl. Aust. 1:400, 1863; FBI. 1:621;

C. 1:233.

Celastrus senegalensis Lamk. Encycl. 1:661, 1783.

These are small trees. Leaves elliptic or obovate, crenate.  
Flowers white, in axillary cymes. Fruit a globose capsule, small.

Flowers and Fruits. - November to February.

Not abundant; half way up the slopes of the hill.

OZA 312, 313; Santapau 19846, 19847, 19848; Joshi 194.

Konkan; Deccan; Kanara; Gujarat; Sind. Throughout Central, South - Western, and North - Western parts of India. Afghanistan, Central Africa, Malay Archipelago; Australia.

Any critical notes on the identity or on nomenclature:

(1) Santapau, loc. cit. writes: "In Cooke's Flora this tree goes under the name of G. montana Benth.; some authors consider that the proper name of the plant ought to be G. senegalensis (Lamk.) Loes. based on Celastrus senegalensis Lamk. Lamark's plant, however, does not seem to agree with our plant, and for this reason the name G. senegalensis is not adopted here."

(ii) \* This is as given in the List of Nomina Conservanda under No. 4627 of the International Code of Botanical Nomenclature (1956).

#### RHAMNACEAE

##### Key to the Genera of the RHAMNACEAE

Trees or climbing shrubs usually armed ..... Zizyphus  
Climbing shrubs, unarmed ..... Ventilago

##### Zizyphus Tourn. ex Miller

(On the subject see Santapau in JBNHS. 51: 801 - 804, 1953)

##### Key to the species of Zizyphus adapted from Cooke

Petals 0 ..... rugosa

Petals 5:

Styles connate to the middle:

Fruit exceeding 1.27 cms. in diam.; leaves

tomentose beneath ..... mauritiana

Fruit under 1.27 cms. in diam.:

Leaves tomentose on both sides ..... nummularia

Leaves clothed with silky hairs beneath ..... oenoplia

Styles distinct or nearly so ..... xylopyra

Zizyphus rugosa Lamk. Encycl. 3:319, 1789; FBI. 1:636; C. 1:243;

Gr. 39; D. & G. 49; Talb. 1:298, t. 177; Sant. 51.

I have failed to find this climbing shrub in Pavagadh. The occurrence of this plant is given on the authority of Phatak & Joshi.

Konkan; Deccan; Sind; Tr. Himalaya, in Kumaon and Sikkim; Behar; Assam; W. Peninsula. Birma. Ceylon.

Zizyphus mauritiana Lamk. Encycl. 3:319, 1789; Bailey, Man. Cult.

Pl. 646, 1949; Santapau in JBNHS. 51:802; Sant. 39 (ed. 2).

Z. jujuba Lamk. Encycl. 3:318, 1789 (non Z. jujuba Miller,

Gard. Dict. (ed. 8) no. 1, 1768); FBI. 1:632; C. 1:240;

Gr. 39; D. & G. 49; Webberbauer in Pfam. 3(5):402, t. 198

A - D; Talb. 1:294, t. 175; Sant. 50.

Trees; much - branched, thorny. Leaves ovate - elliptic, suborbicular, softy hairy on the lower surface. Flowers greenish yellow. Fruit a drupe, smooth, globose or oblong; greenish yellow.

Cooke, loc. cit. mentions: "Not abundant in a truly wild state ....." But in Pavagadh this plant is found in a truly wild state. Occurring in bare grounds in the plains at the foot of the



hill, Z. mauritiana is somewhat shrubby in appearance. On most occasions, I have observed isolated clumps of Capparis decidua growing with it.

Local name: Bor.

Flowers. - August to October. Fruits. - October to February.

Local uses: Fruits edible, sweet.

Fairly common in the forest near the base of the hill; several trees in the forest proper on the slopes of the hill; occasional in the plains.

OZA 959, 960.

Throughout India, from N. W. frontier; Sind; Himalaya; Malacca. Ceylon, Afghanistan, Tropical Africa, Malay Archipelago, China, Australia.

Any critical notes on the identity or on nomenclature:

In accordance with the code the correct name of this plant has been discussed by Santapau in JBNHS. 51:802, which please see. The name Z. jujuba Lamk. is a later homonym of Z. jujuba Mill. and hence invalid. Z. jujuba was first employed by Miller for a different tree.

Zizyphus nummularia (Burm.) Wt. et Arn. Prodr. 162, 1834; FBI.

1:633; Gr. 247; D. & G. 49.

Rhamnus nummularia Burm. Fl. Ind. 61, 1768.

Zizyphus rotundifolia Lamk. Encycl. 3:319, 1789; C. 1:241.

Small shrubs about 2 m. high with zigzag branches. Leaves orbicular or ovate, tomentose. Flowers greenish. Fruit a globose drupe.

In open waste lands and on bare grounds.

Flowers. - October to December, occasionally upto January..

Fruits. - October to December.

OZA, Top of the hill; in the plains on the way to Pavagadh !

Konkan; Deccan; S. M. Country; Gujarat; W. Peninsula;

Punjab. Persia.

Zizyphus oenolia Mill. Gard. Dict. (ed. 8) no. 3, 1768; FBI. 1:634;

C. 1:242; Gr. 39; D. & G. 48; Talb. 1:296, t. 176; Sant. 50.

Small tree or large shrub, with scandent or subscandent branches. Leaves with silky hairs beneath, ovate or ovate - lanceolate, acute, oblique at the base. Flowers greenish. Fruit a drupe, globose or obovoid, black.

Flowers. - August to November. Fruits. - November.

Rare in the forest; base of the hill.

OZA 310, 972, 973; Santapau 19844.

Konkan; Deccan; S. M. Country; Kanara; throughout the hotter parts of India, from Punjab and N. W. Himalaya to Assam, Malacca. Ceylon, Tropical Asia and Australia.

Zizyphus xylopyra (?) (Retz.) Willd. Sp. Pl. 1:1104, 1797; DC.

Prodr. 2:21; Roxb. Fl. Ind. 1:611; FBI. 1:634; C. 1:242;

Gr. 39; D. & G. 49; G. 220; N. 60.

Rhamnus xylopyrus Retz. Obs. 2:11, 1781.

Zizyphus cuneata Wall. Cat. 7268.

This is a small tree; armed or unarmed. Leaves hairy, sub - orbicular. Flowers in paniculate cymes; greenish. Fruit is a globose drupe.

Flowers. - July. Fruits. - August to September; occasionally in January.

OZA, Foot of the Pavagadh Hill !

Santapau 19845.

Konkan; Deccan; S. M. Country; Kanara; N.W. India; Nepal; Rajputana; Oude; Behar; W. Peninsula. Ceylon.

Any critical notes on the identity or on nomenclature:

My predecessors have recorded this plant from Pavagadh. Santapau in his paper on - 'Excursion of the Indian Botanical Society to Pavagadh Hill near Baroda', enumerates this plant and writes:

"A common large shrub or small tree, in leaf and fruit; this tree is rather remarkable because in other parts of Bombay State it is practically replaced by Z. glaberrima Sant. The structure and hairiness of the leaves of the present tree leave no doubt about its identity". But recently, while going through my MS. of the Nomenclature of Pavagadh Plants, he put a question mark against this species and expressed some doubts about the occurrence of it in Pavagadh. In case it is not xylopyra, it should be Z. glaberrima Sant., the more commoner one along the Western Ghats. The synonymy comes to:

Zizyphus glaberrima Santapau in JBNHS. 51:803, 1953.

Z. xylopyra var. glaberrima Sedgwick in Ind. For. 45:71-72, 1919; Sant. 51.

The var. glaberrima of Sedgwick is Santapau's Z. glaberrima. According to Santapau, Z. Xylopyrus Willd. is not found in our parts of India. But the leaves of this tree are hairy and as such the plant should be Z. xylopyra !

Ventilago Gaertn.

Ventilago calyculata Tul. in Ann. Sc. Nat. (ser. 4) 8:124, 1857;

FBI. 1:631; C. 2:239.

A large climber, slightly hairy. Leaves elliptic - ovate, rounded and oblique at the base. Flowers in large panicles, yellowish. Fruit a nut with persisting calyx.

Noticed going over very high trees.

Flowers. - December to January. Fruits. - January to February.

In the forest at Machi; foot of the hill near the stream.

OZA 419; Santapau 19887; Joshi 145.

Konkan; S. M. Country; Kanara; hotter parts of India; from Kumaon; Himalaya and Nepal to Bhutan; Silhet; Tenasserim; and throughout W. Peninsula. Java.

## AMPELIDACEAE

Key to the Genera of the AMPELIDACEAE

Leaves 3 - foliolate or pedate; tendrils opposite

to the leaves; flowers hermaphrodite ..... Cayratia

Leaves simple or lobed; tendrils on the peduncles;

flowers polygamo - monoecious ..... Ampelocissus

Cayratia Juss. (nom. cons.)

Cayratia carnosa (Lam.) Gagnep. Lecomte, Not. Syst. t. 347, 1911;

G. 237.

Cissus carnosa Lam. Encycl. 1:31, 1783; Gr. 33; D. & G. 40.

Vitis carnosa Wall. Cat. 6018, 1828; FBI. 1:654 (excl. syn.

Cissus auriculata Roxb.); H. 62; Wight, Icon. t. 171.

Vitis trifolia non Linn.: Cooke 1:254, 1902.

A twining shrub, fleshy; tendrils slender. Leaves pubescent, 3 - foliolate, leaflets acute, dentate, ovate - lanceolate. Fruit a berry, whitish in colour. Seeds trigonus.

Noted in hedges.

Flowers. - August to September. Fruits. - September to October.

Base of the hill; plains along the road leading to Pavagadh; common.

OZA 1515.

Konkan; Deccan; S. M. Country; Kanara; throughout hotter parts of India; Tr. Himalaya; Punjab; Malacca. Birma, Ceylon.

Any critical notes on the identity or on nomenclature:  
On the question of identity of this species please see Cooke, loc. cit.

Ampelocissus Planch. (nom. cons.)

Ampelocissus tomentosa Planch. in Journ. Vigne Amer. 375, 1884.

Vitis tomentosa Heyne in Roth. Nov. Pl. Sp. 157; 1821; FBI. 1:650; C. 1:252.

Large vines, climbing; clothed with soft woolly hairs. Leaves simple, very variable; 3 - 7 - angled, or - lobed, orbicular, base cordate, minutely serrate. Flowers scarlet. Fruit a berry, subglobose. Seeds ovoid - oblong, wrinkled, furrowed.

Flowers. - March to May. Fruits. - April to July.

In the forest; rare.

OZA 1514.

S. M. Country; Kanara; W. Peninsula. Ceylon.

# SAPINDACEAE

## Key to the Genera of the SAPINDACEAE

Slender herbs climbing by tendrils ..... Cardiospermum  
Trees ..... Sapindus

### Cardiospermum Linn.

Cardiospermum halicacabum Linn. Sp. Pl. 366, 1753; FBI. 1:670;

C. 1:263; Gr. 28; D. & G. 34; Radlk. in Pfam. 3(5):308,

f. 159 A - C.

A delicate climbing herb; tendrils slender. Leaves thin, biternate; leaflets acuminate. Flowers white. Fruit typical; it is a membranous, inflated capsule. Seeds black, with white heart-shaped hilum.

Local name: Kagdoliyo.

Flowers. - September to February; buds in August. Fruits. - September to February.

In the forest, lower parts of the hill; fairly common.

OZA 104, 969, 1291; Joshi 36.

Throughout India; Malacca. Ceylon, Tropical and subtropical countries.

### Sapindus Linn.

Sapindus emarginatus Vahl, Symb. 3:54, 1794; C. 1:267; Gr. 29;

D. & G. 35.

S. trifolius Hiern in FBI. 1:682, pro parte, non Linn.

These are trees; bark grey coloured. Leaves paripinnate; leaflets emarginate at the apex, oblong, presence of soft hairs on the lower surface. Flowers pinkish - white; inner surface of the petals mostly glabrous. Fruit of 3 drupes, wrinkled, smooth to touch.

Local name: Aritha.

Flowers. - October to February. Fruits. - January to April.

Local uses: Fruits used as a substitute for soap: the fruits are soaked in water for some time and then the foam is used for washing purposes.

OZA, Foot of the hill; not common nor abundant !

Joshi 4(?)

Konkan; S. M. Country; Kanara; Bengal and S. India  
(cultivated).

Any critical notes on the identity or on nomenclature:  
Generally the two species mentioned in Indian floras are S. laurifolius Vahl and S. emarginatus Vahl : for the identification of these trees I have followed the below noted characters which may help escape confusion:

Leaves emarginate ..... S. emarginatus

Leaves acuminate ..... S. laurifolius

#### ANACARDIACEAE

##### Key to the Genera of the ANACARDIACEAE

Leaves simple ..... Mangifera

Leaves imparipinnate ..... Lannea

Mangifera Linn.

Mangifera indica Linn. Sp. Pl. 200, 1753; FBI. 2:13; C. 1:273;  
Gr. 41; D. & G. 51; Talb. 1:348; Sant. 58.

This is the Mango tree. Large trees; branches spreading; bark rough. Leaves alternate, oblong - lanceolate, entire, simple, shining, with undulate margins. Flowers in dense panicles; whitish. Fruit a large, fleshy drupe with a fibrous stone.

Cultivated. Host for Dendrophthoe falcata (Linn. f.) Etting.

Local name: Ambo.

Flowers. - December to March. Fruits. - March to May.

Local uses: Fruits are eaten raw and used in local preparations. Leaves used in religious ceremonies for decorations.

OZA, On the plains surrounding the hill !

Cultivated throughout India and in the Tropics generallay.

Tr. Himalaya, from Kumaon to Dhotan Hills and valleys of Behar, Khasia Mts., Oudh, and W. Peninsula from Kandeish southwards. Birma. E. Tr. Asia.

Lannea A. Rich. (nom. cons.)

Lannea coromandelica (Houtt.) Merrill in JAA. 19:353, 1939;

Santapau & Raizada in Ind. For. Rec. 4(6):128; Santapau in JIB. 34(2):167 - 68; Sant. 47 (ed. 2).

Dialium coromandelicum Houtt. Nat. Hist. II, 2:39, t. 5, f. 2, 1774.

Haberlia grandis Dennst. Schluss. Hort. Malab. 30, 1818, nom. nud.



Odina woodier Roxb. Hort. Beng. 29, 1814, nom. nud.; & Fl. Ind.  
2:293, 1832; FBI. 2:29; C. 1:277; Gr. 42; D. & G. 51; Talb.  
1:353, t. 207; G. 263; Wight, Icon. t. 60.

Lannea grandis Engler in Pfam. Nachtr. 1:213, 1897; Sant. 59.

Large trees. Leaves alternate, imparipinnate; leaflets  
3 - 4 pairs, glabrous, acuminate. Flowers purplish; monoecious or  
dioecious. Fruit a drupe.

Local name: Havedo.

Flowers. - January to April. Fruits. - March to May.

Fairly common on the slopes of the forest, Pavagadh.

OZA 418.

Konkan; Deccan; Kanara; Gujarat; hotter parts of India;  
Himalaya; Assam; Andaman Islands. Birma, Ceylon.

Any critical notes on the identity or on nomenclature:  
The subject of the nomenclature of this plant has been cleared by  
Santapau in JIB. 34(2): 167 - 68.

#### MORINGACEAE

##### Moringa Lamk.

Moringa oleifera Lamk. Encycl. 1:398, 1785; G. 269; Blatter in  
JBNHS. 31:907.

Guilandina moringa Linn. Sp. Pl. 1:381, 1753.

Moringa pterygosperma Gaertn. Fruct. 2:314, 1791; FBI. 2:45;  
C. 1:282; D. & G. 311; Talb. 1:364, t. 212; H. 70.

A small tree; bark corky, grey in colour. Leaves 3 - pinnate,  
the pinnae and the leaflets imparipinnate: leaflets rounded at the

apex, obovate. Flowers whitish; in axillary panicles. Fruit about 30 cms. long. Seeds 3 - angled, winged.

Cultivated.

Local name: Saragavo.

Flowers and Fruits. - January to March.

Local uses: Fruits edible and used as a vegetable.

About half a dozen trees planted near the village Pavagadh.

OZA 630, 631.

W. Himalaya, Oudh and cultivated elsewhere throughout India. Also cultivated in various tropical countries.

#### PAPILIONACEAE

##### Key to the Genera of the PAPILIONACEAE

Pods more than 1 - seeded and jointed:

Leaves pinnate:

Joints of pod twisted; stamens 5+5;

leaflets more than 4 ..... Smithia

Joints of pod straight; stamens 10,

united; leaflets always 2 ..... Zornia

Leaves simple or imparipinnate:

Secondary branches modified into thorns..... Alhagi

Secondary branches not modified into thorns:

Pods turgid ..... Alysicarpus

Pods flat ..... Desmodium

Pods not jointed, may be 1 - seeded:

Anthers apiculate ..... Indigofera

## Anthers obtuse:

Leaflets toothed ..... Melilotus

Leaflets entire or obscurely undulating:

Style bearded below the stigma:

Stigma oblique ..... Phaseolus

Stigma not oblique:

Leaves trifoliolate ..... Dolichos

Leaves imparipinnate; leaflets  
more than 3 (rarely 3 - foliate in  
Clitoria biflora):

Flowers blue, petal lengths

unequal ..... Clitoria

Flowers purple or red, petal

lengths subequal ..... Tephrosia

Style not bearded below the stigma:

Leaves pinnate ..... Abrus

Leaves simple or imparipinnate:

Anthers dimorphous:

Flowers yellow, keel cohering

into a beak:

Pod turgid ..... Crotalaria

Pod flat ..... Heylandia

Flowers blue or purple:

Pod turgid; keel longer

than standard and wings ..... Mucuna

Pod flat, beaked; petals

subequal in length ..... Teramnus

## Anthers uniform:

Leaflets alternate, 3 or more ..... Dalbergia

Leaflets always opposite when more than 1:

Pod 1 - seeded or with only one

developed seed:

Leaves gland-dotted ..... Psoralea

Leaves not gland-dotted:

Leaflets 5 - 7 ..... Pongamia

Leaflets 3 ..... Butea

Pod many - seeded:

Leaves gland - dotted:

Pod turgid; leaves simple or

digitate when trifoliate ..... Moghania

Pod flat; leaves trifoliate

not digitate ..... Rhynchosia

Leaves not gland - dotted:

Stamens monadelphous; flowers

purple ..... Canavalia

Stamens diadelphous; flowers

bright red ..... Erythrina

Smithia Ait. (nom. cons.)

Smithia conferta Sm. in Rees, Cycl. 33: no. 2, 1819; C. 1:336;

G. 329; Sant. 67.

S. geminiflora Roth, Nov. Pl. Sp. 352, 1821.

S. geminiflora var. conferta Baker in FBI. 3:149, 1876.

A sub-erect herb. Leaves abruptly pinnate; rachis about 1.27 cms. long; leaflets subsessile, 2-8 pairs, linear-oblong, presence of bristles. Flowers yellow; in pairs in the axils of leaves which are crowded at the ends of the branches. Fruit a lomentum.

Gregarious; noted among the grasses.

Flowers and Fruits. - October to February.

Undergrowth of the forest; higher parts of the hill, near the bridge.

OZA 562, 563.

Konkan; Kanara; S. M. Country; throughout India, Himalayas. Ceylon, Java, N. Australia.

Zornia Gmel.

Zornia diphylla (Linn.) Pers. Syn. 2:318, 1807; Taubert in

Pfam. 3(3):325, t. 125 D; FBI. 2:147; C. 1:334; G. 325;

Sant. 66.

Hedysarum diphyllum Linn. Sp. Pl. 747, 1753.

Zornia angustifolia Sm. : Gr. 48; D. & G. 62.

herb,

A prostrate, sometimes suberect. Stems about 20-30 cms. long. Leaves 2 - foliolate; lanceolate, glabrous, dotted with black glands. Flowers yellow. Pod covered with prickles, rough to touch.

Noted among the grasses.

Local name: Samara pani.

Flowers and Fruits. - August to September.

Fairly common at Machi.

OZA 81, 82; Joshi 43, 410.

Deccan; S. M. Country; plains from Himalayas to S. India; Kumaon. Birma, Ceylon. Everywhere in the tropics.

Alhagi Adans.

Alhagi camelorum Fisch. Ind. Hort. Gorenk. (ed. 2) 72, 1812;

C. 1:333.

Alhagi maurorum Baker in FBI. 2:145, 1876; Gr. 50; D. & G. 67.

Small shrubs armed with thorns. Leaves simple, obovate - oblong. Flowers dark purple.

Growing in large colonies.

Flowers. - March to April.

In the plains surrounding the hill.

OZA 1516.

S. M. Country; Gujarat; Sind; North and North - West Provinces of India. Baluchistan, Egypt, Arabia.

Alysicarpus Desv. (nom. cons.)

(Note: " The synonymy of Alysicarpus and Desmodium here adopted is rather doubtful and does not agree with that of Schindler in his various papers on these two genera. Until, however, a monograph be produced on the subject, I do not feel justified in departing from the commonly accepted synonymy". - Santapau, H. : Flora of Khandala, p. 70.)

Key to the species of Alysicarpus

Calyx shorter than first joint of pod:

Pod moniliform ..... moniliferus

Pod linear, not moniliform:

Calyx not longer than first joint of

pod; leaves suborbicular ..... procumbens

- Calyx as long as or slightly longer than first joint of pod; leaves lanceolate - oblong, much varied but not suborbicular ..... vaginalis
- Calyx much longer than first joint of pod:
- Pod neither veined nor rugose ..... bupleurifolius
- Pod veined:
- Pod transversely plicate, tetragonous ..... tetragonolobus
- Pod reticulately veined:
- Pedicels 1 - 3 mm. long ..... longifolius
- Pedicels 10 - 22 mm. long:
- Leaves orbicular, calyx 4 mm. long.. beddomei
- Leaves elliptic or oblong, calyx 10 - 12 mm. long ..... belgaumensis

Alysicarpus moniliferus (Linn.) DC. Prodr. 2:353, 1825; FBI.

2:157; C. 1:345; G. 338.

Hedysarum moniliferum Linn. Mant. 1:102, 1767.

Small herbs; prostrate, much - branched. Leaves 1 - foliolate; leaflets elliptic, obtuse, base cordate, mucronulate at the apex. Flowers pinkish, in axillary racemes. Pod moniliform.

Flowers and Fruits. - 4 March 1958.

Top of the hill in open places.

OZA 574.

S. M. Country; Tr. zone; Himalayas through India proper. Birma and Tenasserim. Nubia, Abyssinia.

Alysicarpus procumbens (Roxb.) Schindler in Fedde, Report.

21 : 11, 1925.

Hedysarum procumbens Roxb. Fl. Ind. 3:345, 1832.

Alysicarpus hamosus Edgew. in JASB. 21:171, 1853; FBI. 2:157;  
C. 1:346; G. 338.

A diffuse or prostrate hairy herb. Leaves suborbicular,  
1 - foliolate; leaflets hairy, mucronate. Flowers purplish.

Noted in cultivated lands.

Flowers and Fruits. - January to February.

Half way up the hill by the sides of the path; in plains  
surrounding Pavagadh; Cooke, loc. cit. mentions that the plant is  
rare. In Pavagadh and all over the district the plant is fairly  
common.

OZA 560, 561.

Konkan; S. M. Country; plains of Bundelkund and W. Peninsula.

Alysicarpus vaginalis (Linn.) DC. Prodr. 2:353, 1825; FBI.

2:158; C. 1:346; D. & G. 64; G. 338; Sant. 69.

Hedysarum vaginale Linn. Sp. Pl. 746, 1753.

Erect or prostrate herbs. Leaves lanceolate-oblong, much  
varied but not suborbicular. Flowers pinkish.

Flowers and Fruits. - December to February.

Undergrowth of the forest.

OZA 1293.

Konkan; Deccan; Gujarat; throughout India; N.W. Provinces;  
Himalayas; Malacca. Ceylon, Afghanistan and generally throughout  
the tropics of the Old World; introduced in America.

Alysicarpus bupleurifolius (Linn.) DC. Prodr. 2:352, 1825;

FBI. 2:158; C. 1:347; Gr. 50; D. & G. 64; G. 338; Sant. 70.



Hedysarum bupleurifolium Linn. Sp. Pl. 745, 1753.

A slender herb. Leaves 1 - foliolate; leaflets elliptic, acute, lower ones orbicular, glabrous. Flowers red. Pod neither veined nor rugose.

Flowers and Fruits. - Rainy season.

OZA, In the forest on the hill !

Konkan; S. M. Country; Gujarat; throughout India; Himalayas; Kumaon. Birma, Ceylon, Malay Isles, China, Philippines, Mauritius, Polynesia.

Alysicarpus tetragonolobus Edgew. in JASB. 21:169, 1853; FBI. 2:159; C. 1:349.

A. quadrangularis Edgew. MSS. ex Baker in FBI. 2:159, 1876.

A procumbent herb. Leaves 1 - foliolate; leaflets elliptic - oblong or lanceolate, slightly cordate. Pod transversely plicate, tetragonous.

Flowers and Fruits. - August to September.

On the slopes of the forest.

OZA 1517.

Konkan; Deccan; S. M. Country; Sind; plains of Bundelkund.

Any critical notes on the identity or on nomenclature:

(1) The fruit suggests the name of the plant.

(2) Is A. quadrangularis accepted by Baker?

Alysicarpus longifolius Wight & Arn. Prodr. 233, 1834; FBI. 2:159; C. 1:347; D. & G. 63; G. 338; Sant. 70.

A slender herb 100 - 150 cms. high. Leaflets linear - lanceolate, reticulate venation, minutely cordate. Flowers brownish yellow?; pedicels 1 - 3 mm. long. Pod reticulately veined.

Local name: Moto Samervo.

Flowers. - August to October. Fruits. - September to February.

Fairly common in the undergrowth of the forest; half way up the hill by the side of the paths.

OZA 71, 237, 1325.

Konkan; Deccan; Gujarat; throughout plains of India.

Alysicarpus beddomei Schindler in Fedde, Report. Beih. 49:244 - 45, 1928.

A. rotundifolius Prain in JASb. 66:385, 1897, pro parte

(quoad. spec. in herb. pro parte; excl. syn. cit.

Dalz. et Baker.)

Desmodium rotundifolium Baker in FBI. 2:172, 1876 (non Wall.);

C. 1:357 pro parte (excl. spec. cit. Ritchie no. 288);

Sant. 73.

An erect, slender herb with orbicular leaves. Flowers pinkish; calyx 4 mm. long. Pod reticulately veined.

In association with grasses.

Flowers. - August.

Base of the Pavagadh Hill, common.

OZA 61.

Deccan; S. M. Country. Apparently endemic.

Alysicarpus belgaumensis Wight, Icon. t. 92, 1840; FBI. 2:160;

C. 1:349; D. & G. 65; Sant. 70.

Plants erect, about 1 m. tall. Leaves 1 - and 3 - foliolate; elliptic or oblong. Flowers red; calyx 10 - 12 mm. long.

Found among grasses.

Flowers and Fruits. - September to October.

OZA, Top of the hill, scarce !

Konkan; Deccan; S. M. Country; Kanara. Apparently endemic.

Desmodium Desv. (nom. cons.)

Key to the species of Desmodium

Leaves uni - foliate, stems angled ..... gangeticum

Leaves trifoliate:

Erect shrubs, flowers in lax racemes ..... laxiflorum

Trailing herbs, flowers 2 - 3 in the axil ..... triflorum

Desmodium gangeticum (Linn.) DC. Prodr. 2:327, 1825; FBI. 2:168;

C. 1:356; Gr. 49; D. & G. 66; G. 345; Sant. 73.

Hedysarum gangeticum Linn. Sp. Pl. 746, 1753.

An erect herb about 60 cms. high; stems angled. Leaves uni-foliate; leaflets acute, ovate or lanceolate, membranous.

Flowers pinkish white. Joints of pod covered with hooked hairs.

Flowers. - August to February, occasionally in May.

Fruits. - September to May.

Undergrowth of the forest, not common; a few plants noted in the upper half of the forest.

OZA 133, 182, 751, 752, 753, 991; Santapau 19883.

Konkan; Deccan; S. M. Country; Kanara; Himalayas to Pegu. Ceylon, Tropical Africa, Malay Islands, Philippines, China, introduced in W. Indies.

var. maculatum Baker in FBI. 2:168, 1876; C. 1:356; G. 345.

Hedysarum maculatum Linn. Sp. Pl. 746, 1753.

An undershrub with ovate, cordate leaflets. Flowers pinkish white.

Flowers and Fruits. - September to November.

Rare; in the undergrowth of the forest.

OZA 278.

S. M. Country; Rohilkhand; Upper Bengal.

Any critical notes on the identity or on nomenclature:

The plant has been checked at the Blatter Herbarium.

Desmodium laxiflorum DC. in Ann. Sci. Nat. 4:100, 1825, &

Prodr. 2:335, 1825; FBI. 2:164; C. 1:353; Sant. 71.

D. recurvatum Wall.: Gr. 49; Wight, Icon. t. 374.

Erect shrubs about 150 cms. high. Leaves 3 - foliolate; leaflets membranous, ovate or lanceolate. Flowers whitish; in lax racemes.

Noted in hedges.

Flowers and Fruits. - September to November; fruits upto January.

OZA, At the edges of the undergrowth; foot of the hill; fairly common !

Konkan; Deccan; S. M. Country; Kanara; Himalayas; temp. and tropical regions; Kumaon to Assam; Sikkim; W. Peninsula; Ava; Pegu; Tenasserim. Java, Borneo, Philippines.

Desmodium triflorum (Linn.) DC. Prodr. 2:334, 1825; FBI. 2:173;

C. 1:355; Gr. 49; D. & G. 67; Wight, Icon. t. 292; Sant. 72.

Hedysarum triflorum Linn. Sp. Pl. 749, 1753.

Small herbs, prostrate or trailing. Leaves trifoliate; leaflets obovate, emarginate. Flowers bright purple; 2 - 3 in the axil.

In the crevices of the rocks.

Flowers and Fruits. - May to June.

Gregarious in the lower parts of the hill; a few found on still higher parts.

OZA 804.

Konkan; Deccan; S. M. Country; in the plains throughout India; Kumaon; Kashmir. Cosmopolitan in the Tropics.

Indigofera Linn.

Key to the species of Indigofera adapted from Gillett

Fruiting pedicels erect or spreading, or a few of the lower ones only reflexed:

Peduncle short, less than half as long as a fruit, or, if fruit very short, under 4 mm.:

Leaves simple:

Pods 1 - seeded, spherical; leaves

linear ..... linifolia

Pods 2 - seeded, oblong; leaves oval.. cordifolia

Leaves compound:

Stipules triangular, brownish,

scarious, glabrescent ..... enneaphylla

- Stipules narrow - lanceolate, greenish,  
thickly strigose ..... trigonelloides
- Peduncle longer, as long as a fruit, or  
over 4 mm.: leaflets small, elliptic -  
obovate, pubescent with glandular hairs .... colutea
- Fruiting pedicels reflexed, inflorescence  
more than 6 - flowered, usually more or less  
dense:
- Calyx lobes not more than twice as  
long as tube; corolla much longer than  
calyx; pods often curved:
- Fruit tetragonous; leaflets 3;  
fruits spreading outwards from the  
base which is bent ..... trita
- Fruit not tetragonous; leaflets,  
apart from exceptional leaves,  
5 or more:
- Pod torulose; seeds up to  
5 or 6; leaflets 3 - 5 rarely 7 .... articulata
- Pod not torulose, or, if  
somewhat so, then seeds more  
than 6, leaflets usually 11  
or more ..... tinctoria
- Calyx lobes many times as long as tube;  
corolla not twice as long as calyx;  
pods straight ..... astragalina

Indigofera linifolia (Linn. f.) Retz. Obs. 4:29, 1786 &

6:33, t. 2, 1791; FBI. 2:92; C. 1:310; Gr. 46; D. & G. 58; G. 309; Wight, Icon. t. 333; Sant. 64; Gillett in Kew Bull. (Add. Series I) 35, 1958.

Hedysarum linifolium Linn. f. Suppl. Pl. 331, 1781.

Prostrate herbs; branches wiry, spreading. Leaves simple, linear. Flowers reddish. Pods 1 - seeded; silvery, spherical.

Flowers and Fruits. - September to October.

Local uses: Not used locally. Gillett, loc. cit. 137 writes: "I. linifolia (L. f.) Retz. has been recorded as perhaps, or sometimes, poisonous without this having been proved by any thorough investigation."

On the hill, 461 m. and above.

OZA 236.

Konkan; Deccan; S. M. Country; throughout India, common. Ceylon, Abyssinia, Afghanistan, Malay Isles, N. Australia. Gillett, loc. cit. reports: "The apparent absence of this species from Tropical Arabia is difficult to understand."

Any critical notes on the identity or on nomenclature: On the subject of 1 - 2 - seeded pods of this species, please see, Gillett, loc. cit. 2.

Indigofera cordifolia Heyne ex Roth, Nov. Fl. Sp. 357, 1821;

FBI. 2:93; C. 1:311; D. & G. 58; G. 309; Gillett, loc. cit. 35.

A diffusely branched prostrate herb. Leaves simple, ovate - cordate, soft hairs present. Flowers red. Pods 2 - seeded, oblong.

In association with grasses, in moist places.

Flowers. - August to February. Fruits. - September to February.

Local uses: Gillett, loc. cit. 138 mentions:

"Watt records that the seeds of the following Indian species are used in times of famine. I. cordifolia Heyne ex Roth., ....., I. linifolia (L. f.) Retz." But I have never observed the local people in our district using the seeds of either of these species.

Fairly abundant, foot of the hill; Machi; near the banks of the upper talao.

OZA 117, 193, 194, 961, 962, 963.

Konkan; Deccan; S. M. Country; Sind; in the plains throughout India. Afghanistan, Baluchistan, Nubia, Malay Isles, N. Australia. Gillett, loc. cit. writes: "The apparent absence of this species from Tropical Arabia is difficult to understand."

Any critical notes on the identity or on nomenclature: When in leaf or fruit the present species may be mistaken for Heylandia latebrosa DC. which has yellow flowers. But Indigofera cordifolia has red flowers.

Indigofera enneaphylla Linn. Mant. 2:272, 1771; FBI. 2:94;

C. 1:312; D. & G. 58; G. 309; Wight, Icon. t. 403;

Gillett, loc. cit. 35.

A prostrate herb with compound leaves. Leaves 7 - 9 -



or more - foliolate, leaflets alternate. Flowers deep red. Pods covered with whitish hairs, 2 - seeded.

Flowers and Fruits. - August to January.

Local uses: None. But on the subject of usefulness of the present species the remarks of Gillett, loc. cit. 137 are worth noting: "The following species, originally thought innocuous, have been shown on investigation to be poisonous in certain forms, under certain growth conditions or when eaten in really large amounts, as may happen when other food is scarce.

L. enneaphylla L. responsible, when eaten in large quantities, for the "Birdsville" disease of horses which causes considerable financial losses in West Australia, see Austr. Vet. J. 27, 185 - 8 (1951). It is interesting that this species which is also common in India is not there recognised as poisonous. Indeed no species of Indigofera is listed in Chopra Badhwa & Gosh. "The poisonous plants of India" (1949). The species has also been recorded as a useful fodder plant both in Queensland Agr. J. 60, 5 - 13 (1945) and in India (Watt)."

Fairly common, half way up the hill.

OZA 1518.

Konkan; Deccan; S. M. Country; Gujarat; throughout the plains of India; Himalayas. Birma, Ceylon, Angola, Malay Isles, N. Australia.

Indigofera trigonelloides Jaub. & Spach. Illustr. 5:92, t. 482,

1856; non sensu FBI. 2:94; C. 1:312; Gillett, loc. cit. 35.

I. aeruginis Schwnf. Beitr. Fl. Aeth. 11, 1867.



Plants with trailing stems, 15 - 30 cms. long, hairy.  
Leaves compound; leaflets alternate. Flowers red; inflorescence  
in dense sessile heads. Pod somewhat tetragonal, not torulose,  
2 seeded (Cooke, loc. cit. 'torulose, seeds 3 - 4').

Flowers. - July to October. Fruits. - August to October.  
Foot of the Pavagadh hill; abundant.

OZA 1521.

Cooke, loc. cit. writes: "Confined to Sind; a rare plant".  
Punjab. Afghanistan, Abyssinia, Aden.

Indigofera colutea (Burm. f.) Merrill, Phil. J. Sci. 19:355,  
1921; Gillett, loc. cit. 65 - 67.

Galega colutea Burm. f. Fl. Ind. 172, 1768; non sensu Willd.  
Sp. Pl. 3:1246, 1803.

Indigofera viscosa Lamk. Encycl. 3:247, 1789; FBI. 2:95;  
C. 1:317.

Plants erect. Leaflets small, elliptic - obovate,  
pubescent with glandular hairs. Flowers pinkish. Fruits - pods  
hairy, cylindric.

Flowers and Fruits. - September.

Noted on slopes of the Forest at Pavagadh.

OZA 165.

Cooke, loc. cit. "A rare plant in the Bombay Presidency.  
Sind. Sparingly throughout India". Birma, Ceylon, Trop. Africa,  
Afghanistan, Malay Isles, N. Australia.

Any critical notes on the identity or on nomenclature:  
On the subject of typification of Galega colutea and the Merrill's

combination in place of Lamarck's long established name, please see, Gillett, loc. cit.

Indigofera trita Linn. f. Suppl. Pl. 335, 1781; C. 1:315; Gr. 46; D. & G. 60; G. 310; Wight, Icon. tt. 315, 386; Gillett, loc. cit. 101.

This is a shrub 130 - 150 cms. tall. Leaflets 3. Colour of the flowers not noted. Fruits spreading outwards from the base which is bent.

Fruits. - 29 December 1954.

Rare; on the hill.

DP 2188, 2189.

Deccan; S. M. Country; Gujarat; throughout the plains of India; Himalayas. Birma, Ceylon, Tropical Africa, Malay Isles, N. Australia.

Any critical notes on the identity or on nomenclature: The occurrence of this plant in Pavagadh is on the authority of the student from Bombay School, who has successfully carried out the work on the Pea - flower family of Western India. The herbarium specimens cited above are from Pavagadh and were examined by me in the Blatter Herbarium, during the course of this work.

I have in my collection, one specimen, OZA 1302 which seems to belong to I. subulata Vahl ex Poir., since the note given by Gillett, loc. cit. fits to some extent in this case. It requires further careful study before coming to the final conclusion.

Indigofera articulata Gouan, Illustr. et Obs. 49, 1773; C. 1:315; G. 312; Gillett, loc. cit. 101.

I. argentea Linn. Mant. 273, 1771; FBI. 2:98.

A hairy shrub 60 cms. high. Leaflets 3 - 5 rarely 7, obovate, emarginate. Flowers reddish. Pods 3 - 4 - seeded, covered with minute silvery hairs.

Flowers and Fruits. - August.

Local uses: Valuable for Indigo production.

OZA, A few plants noted in the forest in the lower parts of the hill !

Chiefly confined to Sind, rare in the Deccan. Arabia, Egypt, Abyssinia. Gillett, loc. cit. remarks: "Plant of unknown origin ..... "

Any critical notes on the identity or on nomenclature:

On the subject, please see, Cooke, loc. cit.

Indigofera tinctoria Linn. Sp. Pl. 751, 1753; FBI. 2:99; C. 1:318; Gr. 46; D. & G. 59; G. 312; Gillett, loc. cit. 106 - 07.

A shrub 100 - 130 cms. high. Leaflets green, membranous, oblong. Flowers red; presence of whitish hairs on the inflorescence. Fruit greyish black in colour, straight, over 20 mm. long, 8 - 12 - seeded.

Gregarious. Cooke, loc. cit. mentions: "The Indigo - plant, widely cultivated in many parts of India, doubtfully wild, but found as an escape in localities not far removed from human influence." FBI. loc. cit. "Whether it be truly wild is doubtful". On Pavagadh, the plant is definitely in wild state.

Local name: Gali.

Flowers and Fruits. - November to January.

Local uses: Source of Indigo. Gillett. loc. cit. 138; recommended for cover crops and green manures, etc.

Gregarious near the dharamsala; a few plants noted at about 461 m. and above.

OZA 409; Santapau 19864, 19865.

Universally cultivated.

Any critical notes on the identity or on nomenclature: Gillett, loc. cit. follows previous workers on Indigofera in Africa and has not attempted to separate the plant in to any of the forms. The characters of the Pavagadh plant suggest that it does come under the Linnean plant.

Indigofera astragalina DC. Prodr. 2:228, 1825; Gillett, loc. cit. 110, 1958 and in Kew Bull. 14(2):290-95, 1960.

I. hirsuta Linn. sensu Baker, FBI. 2:98, 1879, p. p. non Linn.; C. 1:319; D. & G. 60; G. 312.

An erect herb 60 - 100 cms. tall, pubescent. Leaflets up to 9, sometimes up to 11 or 13. Peduncle short, rarely double the length of the pod. Flowers pinkish. Fruits 2 - 6 seeded, with white hairs on the dorsal side.

Flowers and Fruits. - August.

A few plants noted in the lower parts of the hill, in the forest proper; in the undergrowth of the forest.

OZA 77, 1519, 1520.

Konkan; S. H. Country; throughout the plains of India; Himalayas. Ava; Tenasserim. Ceylon, Trop. Africa, Trop. America, Java, Philippines, N. Australia.

Any critical notes on the identity or on nomenclature: There seems to be a lot of confusion over the Linnaean plant

Indigofera hirsuta & De Candolle's Indigofera astragalina. Dr. Ali recognises I. hirsuta (including I. astragalina) as a single polymorphic species. However, Gillett, loc. cit. recognises I. astragalina and I. hirsuta as distinct species. Both the species in question come very near each other and may be easily confused in the field.

My plants have been checked at Kew by Mr. J. B. Gillett. It is interesting to note that I. astragalina sensu stricto is not described in our common floras; Baker, loc. cit. has listed a plant under the name of I. hirsuta Linn. and has referred to De Candolle. Cooke in describing the Bombay plant gives reference to Baker. Gillett in his papers on Indigofera makes brief statements as to the occurrence of the plant from various parts of India including Bombay. But in this context it may be remarked that Gillett himself has put little reliance on the literature in working out distributions, in view of the doubtful nature of many identifications in Indigofera.

We are inclined to follow Gillett. The conclusion is that the valid species in the Bombay Presidency is I. astragalina and not I. hirsuta as taken by Cooke, which is mostly known in the Western India.

In the end, it will not be out of place if we quote Gillett, loc. cit. 110, 1958. "It is remarkable that, while botanists dealing with African plants have, since 1825, more or less consistently distinguished I. astragalina from I. hirsuta, those dealing with Indian plants have, until now, confused them. This may be because De Candolle's type seems to belong to an

unusually few - seeded form of the species which may not exist in India. The two species are certainly closely related and it seems that introgressive hybridisation may take place in areas where both occur. For example many southern Rhodesian specimens are more or less intermediate between the two species. ...."

Melilotus Juss.

Melilotus indica All. Fl. Pedem. 1:308, 1785; C. 1:305; G. 303; Sant. 63.

M. parviflora Desf. Fl. At. 2:192, 1800; FBI. 2:89; Gr. 46; D. & G. Suppl. 21.

Erect herbs, about 30 cms. tall. Leaves 3 - foliolate; leaflets toothed. Flowers small, yellow; in racemes. Pod ellipsoid, 1 - seeded.

In the cultivated lands.

Flowers and Fruits. - January to March.

In the plains; abundant.

OZA 1522, 1523.

Deccan; Sind. Europe, S. Persia, Afghanistan, and introduced in many other regions.

Phaseolus Linn.

Key to the species of Phaseolus

Erect or suberect herb when young, later on with some support a climber; pods spreading; seeds green .... radiatus  
Stems suberect or flexuose, but not twining; pods erect or suberect; seeds black ..... angularis

Phaseolus radiatus Linn. Sp. Pl. 725, 1753; Sant. 79.

Ph. sublobatus Roxb. Hort. Beng. 54, 1814 & Fl. Ind. 3:288, 1832; C. 1:377.

Ph. trinervius Heyne in Wall. Cat. 5603, 1831 - 1832; FBI. 2:203; Gr. 51, 1839; D. & G. 71.

Erect or suberect herb when young, later on with some support a climber. Leaves variable in shape : trifoliate; petioles 4 - 8 cms. long, leaflets ovate, reaching 9.5 x 6.5 cms., acute, terminal leaflets equal - sided, lateral leaflets unequal-sided, all the leaflets of the same size. Flowers yellowish. Pods spreading, cylindric, sutures hairy. Seeds green.

Twining on Holarrhena antidysenterica (Linn.) Wall. ex A. DC.

Flowers and Fruits. - September to October, occasionally flowering in February.

In the forest, lower parts of the hill; and at the foot of the hill.

OZA 107, 196.

Wild and cultivated - Konkan; Deccan; S. M. Country; Behar to S. India; N. W. Himalayas. Ceylon.

Any critical notes on the identity or on nomenclature: My specimens have been checked at the Elatter Herbarium.

Phaseolus angularis (Willd.) W. F. Wight in U. S. Dept. Agric.

Bur. Pl. Ind. Bull. 137:17, 1909; Sant. 79.

Dolichos angularis Willd. Sp. Pl. 3:1051, 1803.

Phaseolus mungo auctorum, non Linn.

Ph. radiatus auctorum, non Linn.



Plants with suberect or flexuose stems, but not twining.,  
Leaflets ovate, acuminate, reaching 7 x 6.5 cms., all the leaflets  
of the same size, terminal equal - sided, lateral ones unequal -  
sided. Flowers yellow. Pods erect or suberect. Seeds black.

Wild; noted on hedges; but probably an escape from  
cultivation !

Flowers and Leaves. - 1 February 1959.

Lower parts of the hill, in the forest.

OZA 1288.

Cultivated in India.

Any critical notes on the identity or on nomenclature:  
The plant has been checked at the Forest Research Institute,  
Dehra Dun.

Dolichos Linn.

Dolichos biflorus Linn. Sp. Pl. 727, 1753; FBI. 2:210; G. 367;

Sant. 82.

D. uniflorus Lamk. Encycl. 2:299, 1786; Gr. 52; D. & G.

Suppl. 23.

Johnia coniesta Dalz. & Gibs. Bom. Fl. 69, & Suppl. 23, 1861.

A slender climber. Leaflets ovate, acute. Flowers in pairs  
in the axils of leaves, each flower on a short pedicel; yellow.  
Pods flat, about 4 cms. long, 6 - seeded.

Flowers and Fruits - August to December.

Rare; in the upper half of the forest, and in the  
undergrowth.

OZA 83; also December 1957, August 1958; Joshi 3.

Cultivated throughout India. Birma, Ceylon. Tropics of the 'Old World.

Clitoria Linn.

Key to the species of Clitoria

Twining or scandent perennials; flowers solitary;  
pod 50 - 100 mm. long ..... ternatea  
Erect annuals; flowers geminate, rarely one due  
to abortion; pod 34 - 45 mm. long ..... biflora  
Clitoria ternatea Linn. Sp. Pl. 753, 1753; FBI. 2:208; C. 1:380;  
Gr. 47; D. & G. 68.

Twining or scandent perennials. Leaves imparipinnate.  
Flowers solitary; colour blue with yellowish centre. Pod  
50 - 100 mm. long.

Noted on hedges.

Plate No. - 8.

Flowers and Fruits. - 26 March 1958.

Fairly common by the side of the main road near the  
Pavagadh hill.

OZA 611.

Throughout Bombay and tropical Zone; Himalayas. Birma,  
Malacca, Ceylon, cosmopolitan in the tropics.

Clitoria biflora Dalz. in Kew Journ. Bot. 2:35, 1850; FBI. 2:208;  
C. 1:380; D. & G. 68; Sant. 81.

Erect annuals. Leaves imparipinnate; leaflets 5,  
membranous, elliptic - oblong, lanceolate. Flowers geminate; blue  
in colour. Pod 34 - 45 mm. long.

Flowers and Fruits. - August to October.

A few plants noted in the forest, on the hill.

OZA 957, 958.

Konkan; apparently endemic.

Tephrosia Pers. (nom. cons.)

Key to the species of Tephrosia

Leaves simple; branches slender, pedicels filiform ..... strigosa

Leaves imparipinnate; branches and pedicels stout:

Racemes lax, flowers 4 - 30:

Pods covered with dense villous tomentum ..... hirta

Pods pilose or glabrescent ..... purnurea

Flowers axillary, 1 - 3 ..... nauciflora

Tephrosia strigosa (Dalz.) Santapau & Maheshwari in JBNHS.

54:804, 1957.

Macronyx strigosus Dalz. in Hook. Kew Journ. 2:35, 1850.

Tephrosia tenuis Wall. Cat. no. 5970, 1823, nom. nud.;

FBI. 2:111; C. 1:323; D. & G. 61; G. 318.

Plants caespitose, branches slender. Leaves simple.

Flowers yellow; pedicels filiform. Pods about 2.5 cms. long, slightly hairy.

Flowers. - July to October. Fruits. - August to October.

In the undergrowth of the forest.

OZA 1524; also August 1957, July 1958.

Konkan; Deccan; S. M. Country; Sind; Punjab.

Any critical notes on the identity or on nomenclature:

Tephrosia tenuis is a nomen nudum in Wallich's Catalogue and therefore invalid. The oldest valid name is Dalzell's Macronyx strigosus.

Tephrosia hirta Ham. in Trans. Linn. Soc. 13:546, 1822.

T. villosa Wt. & Arn. Prodr. 212, 1834; FBI. 2:113  
(excl. some synonyms).

Erect undershrubs, 60 - 100 cms. high. Flowers red in colour. Pods covered with dense villous tomentum.

Flowers. - July to October. Fruits. - August to October.

Undergrowth of the forest.

OZA 1525.

S. M. Country; Gujarat; throughout the plains of India.  
Ceylon, Mauritius, Tropical Africa.

Tephrosia purpurea (Linn.) Pers. Syn. Pl. 2:329, 1807; FBI.

2:112; C. 1:325; Gr. 47; D. & G. 61; G. 320; Phatak &  
Oza in JBNHS. 55:535.

Galega purpurea Linn. Sp. Pl. 1172, 1753; Roxb. Fl. Ind.  
3:386.

An undershrub, about 1 m. high. Flowers purple. Pods pilose or glabrescent.

Gregarious; noted in dense patches in waste lands and on road sides.

Plate No. - 9.

Local name: Sarapankho.

Flowers and Fruits. - June to November, occasionally in January.

Local uses: The plant is a tonic and has the property of purifying the blood. A decoction of the root is used for urinary troubles and its smoke stops cough. Oil from the seeds is best for eczema.

Fairly abundant at the foot of the hill and on road sides along the main road leading to Pavagadh.

OZA 1526, also January 1958, 1959.

Konkan; Deccan; S. M. Country; Gujarat. Ceylon. Malacca, Siam, everywhere in the tropics.

Tephrosia pauciflora Grah. in Wall. Cat. no. 5635, 1828, nom. nud.; FBI. 2:114; C. 1:327.

A slender herb. Flowers axillary, 1 - 3; pinkish - yellow in colour. Pods 2 cms. long, mucronate, covered with minute hairs.

Flowers and Fruits. - August.

Cooke, loc. cit. reports that the plant is rare in the Bombay Presidency. The plant is noted to be common everywhere on Pavagadh; particularly in the undergrowth of the forest.

OZA 63.

Sind; Punjab. Birma, Afghanistan.

Any critical notes on the identity or on nomenclature: Tephrosia pauciflora is nom. nud. in Wall. Cat. But the species is validly published in Flora of British India, loc. cit.

Abrus Linn.

Abrus precatorius Linn. Syst. Nat. ed. 12:472, 1767; FBI. 2:175; C. 1:359; Gr. 51; D. & G. 76; G. 349.

Glycine abrus Linn. Sp. Pl. 753, 1753.

A slender climber with ripe dehiscent fruits. Leaves abruptly pinnate; leaflets opposite, membranous, ligulate - oblong. Flowers pinkish white. Seeds shining, scarlet coloured with black spots.

Found on hedges.

Local name: Chanothi.

Flowers. - July to October. Fruits. - July to December, occasionally in January.

Local uses: Used by jewellers as weights and for ornaments.

Fairly common at an altitude of 461 m., in the forest.

OZA 52.

Konkan; Deccan; Kanara; Gujarat; Himalayas; and throughout India. Siam, Ceylon, cosmopolitan in the tropics, often planted.

Crotalaria Linn.

Key to the species of Crotalaria

Leaves simple:

Pod glabrous:

Stipules present:

Stem terete; pod 1 - 2 cms. long ..... mysorensis

Stem fluted; pod 3 - 4 cms. long ..... retusa

Stipules absent:

Seeds 4 - 10 ..... linifolia

Seeds 6 - 12 ..... albida

Pod silky or hairy:

Erect or trailing herbs:

Stems quadrangular ..... triquetra

Stems terete ..... bifaria

Erect shrubs or undershrubs:

Pod exserted, 2 - 3 cms. long ..... junceae

Pod included or slightly exserted,

less than 1 cm. long ..... burhia

Leaves trifoliate ..... medicagineae

Crotalaria mysorensis Roth, Nov. Pl. Sp. 338, 1821; FBI. 2:70;

C. 1:294; G. 295; Sant. 61.

Erect herbs about 1 m. tall; stems and branches covered with long, spreading hairs, brownish in colour. Leaves subsessile, linear - oblong; stipules distinct, linear. Flowers yellow, racemes long. Pod 1 - 2 cms. long.

Flowers and Fruits. - October to December, occasionally in fruits in February.

Foot of the hill.

OZA 1286, 1287.

Konkan; Deccan; Gujarat; throughout India. Ceylon.

Crotalaria retusa Linn. Sp. Pl. 715, 1753; FBI. 2:75 (excl. syn.

D. & G.) ; C. 1:298; G. 293; Sant. 62.

C. leschenaultii Graham, Cat. 44, 1839; D. & G. 54 (non DC.).

A shrub, 1 m. high; branches striate, pubescent. Leaves obtuse, slightly hairy beneath, hairs white; stipules subulate.

Flowers in erect terminal racemes, yellow; bracts subulate. Pod 3 - 4 cms. long.

Flowers. - November to January. Fruits. - November to February.

OZA, On the slopes of the forest !

Konkan; Deccan; S. M. Country. Malacca, Ceylon, China, Malaya, N. Australia, Tropical Africa and America.

Crotalaria linifolia Linn. f. Suppl. 322, 1781; FBI. 2:72;

C. 1:297; Gr. 45; D. & G. 56; G. 294; Sant. 62.

C. sobolifera Graham in Wall. Cat. 5420 A.

A herb about 30 cms. high; branches clothed with fine minute hairs. Leaves oblanceolate or linear, obtuse, mucronate. Flowers in terminal, slender racemes, deep yellow in colour. Pods oblong, brownish. Seeds 4 - 10.

Mixed up with grasses.

Flowers and Fruits. - September.

Rare; foot of the hill.

OZA 131; also September 1958.

Konkan; Deccan; Gujarat; Western Peninsula; Sikkim.

Birma, Ceylon, Pegu, Malay Isles, China, Philippines, N. Australia.

Crotalaria albida Heyne ex Roth. in Nov. Fl. Sp. 333, 1821;

FBI. 2:71; C. 1:295; G. 297; Sant. 62.

C. punctata Graham in Wall. Cat. no. 5401, 1831 - 1832.

C. epunctata Dalz. in Kew Journ. Bot. 3:210, 1851; D. & G. 56.

Plants suberect or prostrate. Leaves pellucido - punctate, obtuse. Flowers yellowish, in terminal racemes. Seeds 6 - 12.



Flowers and Fruits. - October to November.

OZA, Near the stream, at the base of the hill !

Konkan; Deccan; Kanara; Gujarat; throughout the plains of India. Malaya, Ceylon, China, Philippines.

Crotalaria triquetra Dalz. in Hook. Kew Journ. Bot. 2:34, 1850; FBI. 2:71; C. 1:295; D. & G. 56; Sant. 61.

A herb 15 - 30 cms. high; stems hairy, quadrangular. Leaves elliptic - oblong, subsessile. Flowers yellow.

Noted among the grasses.

Flowers. - September to January. Fruits. - January to February.

Fairly common near the top of the hill.

OZA 122.

Konkan; Deccan; W. Peninsula. Ceylon.

Crotalaria bifaria Linn. f. Suppl. 322, 1781; FBI. 2:69; C. 1:294; Gr. 45; D. & G. 55; Wight, Icon. t. 30; Sant. 61.

A straggling herb; stems terete. Leaves variable, oblong to lanceolate. Flowers yellow; racemes all lateral, 1 - 2 - flowered. Pods hairy, inflated, obtuse.

On 14 October 1954, Rev. Fr. Cecil Saldanha of Bombay collected the plant from Pavagadh, growing on walls of Champaner. Fort; seeds 6 ?

Flowers and Fruits. - September to December.

Fairly abundant at the foot of the hill; walls of Champaner Fort.

OZA 172; also September 1958; CS 1753; DP 2190, 2191 of 29 December 1954.

S. M. Country; tropical regions of W. Peninsula. Ceylon.  
Crotalaria juncea Linn. Sp. Pl. 714, 1753; FBI. 2:79; C. 1:301;  
G. 297; Sant. 63.

An erect shrub clothed with silky hairs, 60 - 150 cms. high. Leaves linear. Flowers yellow. Pod exserted, 2 - 3 cms. long.

Noted in wild state; probably an escape from cultivation.

Local name: Shan.

Flowers. - August to October. Fruits. - December.

Local uses: Usually cultivated for its fibre -

" Sunn Hemp".

Fairly abundant in open lands at the base of the hill; and in the surrounding plains along the main road leading to Pavagadh.

OZA 64.

Cultivated throughout India. Ceylon, Birma, Pegu, Malay islands, Australia.

Crotalaria burhia Ham. in Wall. Cat. 5386, 1828, nom. nud.;

FBI. 2:66; C. 1:292; D. & G. 54.

An undershrub about a meter high; branches stiff, slightly hairy. Leaves small, subsessile, oblong, mucronate. Flowers yellow. Pod included or slightly exserted, less than 1 cm. long. Seeds 3 - 4.

By the side of the fort walls.

Flowers. - 19 - 20 February 1958.

Scarce; on the higher parts of the hill.

OZA 570, 571.

Gujarat; Punjab; Sind. Afghanistan, Beluchistan.

Any critical notes on the identity or on nomenclature:

Crotalaria burhia is nom. nud. in Wall. Cat. In this matter, I had written to Father Santapau and in his letter of 12th October 1960, the reply was: "..... but see Bentham in Hook. Lond. Journ. Bot. 1843." The reference was not in our library. So with a view to find out the validly published name, we wrote to Dr. Bor at Kew. In the letter of 13th January 1961, he wrote; " ..... C. burhia has a good Latin description in Hooker's Lond. Journ. Bot., but were this not so, the species is validly published in Flora of British India ....."

Crotalaria medicaginea Lamk. Encycl. Method. 2:201, 1786;

FBI. 2:81; C. 1:302; G. 299.

A herb 45 cms. high. Leaves trifoliate; leaflets small, obtuse, emarginate. Flowers yellow, in few - flowered racemes. Pods sub - globose.

Flowers and Fruits. - June to October.

Fairly common and abundant in the village Pavagadh and at the foot of the hill; dominating in the plains at village Baska.

OZA 163; Joshi 51.

Tropical regions from W. Himalayas to the south of India. Birma, Ceylon, Malay isles, Afghanistan, China and Australia.

Any critical notes on the identity or on nomenclature:  
Cooke, loc. cit. writes: " I have seen no specimens of the true C. medicaginea from Bombay". From my field experience, I am of the opinion that this plant varies to a great extent in different habitats.

I, for one, therefore, do not dare to go to either of the varieties mentioned by Cooke. On the subject, Gamble, loc. cit. writes; " A common very variable plant, found in three fairly well - marked varieties, which, however, are more or less connected by intermediates". I think, in such cases one should see the original type - material. Since, I could not consult such a type necessary for this case, I realise that I may not be correct in my opinion!

Heylandia DC.

Heylandia latebrosa DC. Mem. Leg. 201, 1825; FBI. 2:65; C. 1:291; Gr. 44; D. & G. 54; G. 280; Sant. 60.

A prostrate herb covered with soft hairs. Leaves simple, alternate, subsessile, ovate, cordate. Flowers axillary, solitary; yellow. Pod flat.

Flowers and Fruits. - August to February.

Abundant in open lands near the foot of the hill.

OZA 1527.

Throughout Tropical India; very common in Deccan. Ceylon.

Mucuna Adans. (nom. cons.)

Mucuna prurita Hook. Bot. Misc. 2:348, 1831; Gr. 53; D. & G. 70; G. 356; Sant. 74.

M. pruriens Baker in FBI. 2:187, 1876; C. 1:365 (nom DC. 1825).

A climber. Leaves 3 - foliolate; leaflets minutely hairy on the underside. Flowers purplish. Pod turgid, covered with brown bristles which cause irritation on a slight touch. This is a very difficult plant to handle. I quote here Santapau, loc. cit. with a view to help the field - workers. " The irritation caused by the fine bristles on the pods is very intense, and may last for several hours; handling of this plant requires great care, as the stinging hairs come off readily and may spoil the whole of a day's collection. I have found application of Ammonnia considerably to reduce the burning sensation produced by this plant." In our district, local people apply the cow-dung to reduce the burning sensation.

Local name: Kavach; Kuch.

Flowers. - August to January. Fruits. - October to January.

Fairly common by the sides of the path in the forest slopes.

OZA 408; Joshi 438.

Konkan; Deccan; Gujarat; throughout the plains of India. Cosmopolitan in the tropics. FBI., loc. cit. often cultivated ! I have never heard of the plant in cultivation, at least in our

parts of India. The species is very common in the hedges and is collected for medicinal purposes from the plants growing wild.

Any critical notes on the identity or on nomenclature:

On the question of the real identity of the plant, we have followed Gamble, loc. cit.

Teramnus Sw.

Teramnus labialis (Linn. f.) Spreng. Syst. 3:235, 1826; FBI.

2:184; C. 1:363; G. 352; Sant. 74.

Glycine labialis Linn. f. Suppl. 325, 1781; D. & G. 68;

Wight, Icon. t. 168.

G. warreensis Dalz. in Kew Journ. Bot. 3:210, 1851; D. & G. 68.

A climbing herb with slender stems. Leaves 3 - foliolate; leaflets ovate, acute. Flowers in axillary racemes; red in colour. Pods about 2 - 3 cms. long, hairy, curved at the apex.

Flowers. - August to October. Fruits. - August to January.

Fairly common in the undergrowth of the forest; sides of the paths, up the hill.

OZA 75; Joshi 393.

Konkan; Deccan; S. M. Country; Gujarat; throughout the plains of India. Birma, Penang, Ceylon, cosmopolitan in the tropics, Natal.

Dalbergia Linn. f. (nom. cons.)

Key to the species of Dalbergia

Stamens monadelphous (9) .....	<u>latifolia</u>
Stamens diadelphous (5 + 5) .....	<u>lanceolaria</u>

Dalbergia latifolia Roxb. Pl. Cor. 2:7, t. 113, 1798; Fl. Ind.

3:221, 1832; D. & G. 77; Gr. 55; Prain in ARBGC.

10(1):80, t. 62; C. 1:396; Wight, Icon. t. 1156; Sant. 85.

Large trees with greyish, smooth bark. Leaves imparipinnate; leaflets ovate or orbicular, emarginate. Flowers white; axillary or in corymbose panicles. Pod indehiscent, 1 - 3 seeded. Seeds reniform, brownish in colour.

Local name: Sisam.

Flowers. - August to October, occasionally up to November.

Fruits. - December to March, occasionally with old fruits on the trees in July and August.

Local uses: A valuable 'timber tree' known for its hard wood in the market; in the preparation of articles of furniture.

OZA, Fairly common and abundant along the deciduous forest, in the lower parts of the hill !

Santapau 19896.

Konkan; Deccan; S. M. Country; Kanara; Common through the W. Peninsula; Behar; Sikkin; Bundelkhand.

Dalbergia lanceolaria Linn. f. Suppl. 316, 1781; FBI. 2:235;

C. 1:399; D. & G. 78; Prain, loc. cit. 93, t. 76; Sant. 86.

D. frondosa Roxb. Hort. Beng. 53, 1814 & Fl. Ind. 3:236, 1832.

Large trees; bark grey coloured, smooth. Leaflets oblong - elliptic, with distinct nerves. Flowers whitish ? (Prain, loc. cit. blueish - white). Pods tapering at both the ends, indehiscent, usually 1 - 3 - seeded, rarely 4 - 5 - seeded. Seeds reniform.

Flowers. - March to May. Fruits. - June to October, occasionally in December, January.

OZA, Base of the hill !

Santapau 19893, 19894, 19895.

Konkan; Deccan; Kanara; throughout the plains of India. Ceylon.

Psoralea Linn.

Psoralea corylifolia Linn. Sp. Pl. 764, 1753; FBI. 2:103;

C. 1:321; Gr. 46; D. & G. 60; G. 314; Sant. 64.

Plants erect up to 1 m. tall. Leaves hairy, simple, broadly elliptic, dentate, gland - dotted. Flowers bluish. Pods ovoid, pitted.

Flowers and Fruits. - November to December.

Abundant; in the forest, on the hill.

OZA 1153, 1154.

Konkan; Deccan; S. M. Country; throughout India in the plains. Ceylon.

Pongamia Vent. (nom. cons.)

Pongamia pinnata (Linn.) Pierre, Fl. For. Cochin. sub t. 385, 1899; Sant. 86.

Cytisus pinnatus Linn. Sp. Pl. 741, 1753.

Pongamia glabra Vent. Jard. Malm. 28, 1803; FBI. 2:240;

C. 1:402; Gr. 55; D. & G. 77; Wight, Icon. t. 59.

Large trees about 10 m. high. Leaves imparipinnate; leaflets ovate, acute. Flowers in racemes; pinkish - white. Pods green, thick, oblong, oblique, compressed, curved at the apex,



tapering at both the ends.

It has been observed that the leaves of these trees in the district are infected by insects.

Local name: Karanj.

Flowers. - February to June. Fruits. - Almost throughout the year.

Local uses: The oil - "Karanjiyu" from the seeds is used for skin - diseases. Usually the red powder - "Kampilo" from the fruits of Mallotus philippensis (Lamk.) Muell. - Arg. is mixed in the "Karanjiyu" oil and applied. Incidentally, both these trees are found in Pavagadh and locally have high repute in curing the diseases of the skin.

OZA, A few trees noted near the stream, at the foot of the hill !

OZA Fruits preserved in the museum !

Konkan; Deccan; Central and E. Himalayas; throughout India - banks of rivers and streams especially near the coast. Malay isles, N. Australia, Polynesia, Seychelles.

Butea Ch. Koen. ex Roxb. (nom. cons.)

Butea monosperma (Lamk.) Taub. in Engl. & Prantl, Pfam. 3(3):

366, 1894; Stearn in Blatt. & Mill. Some Beaut. Ind. Tr.

(ed. 2) 12, 1955; Sant. (ed. 2) 60.

Erythrina monosperma Lamk. Encycl. 1:391, 1783.

Butea frondosa Koenig ex Roxb. in As. Res. 3:469, 1792 &

Pl. Cor. 1:21, t. 21, 1795; FBI. 2:194; C. 1:371; Gr. 54;

D. & G. 71; G. 357.

Plaso monosperma (Lamk.) O. Kuntze, Rev. Gen. Pl. 1:202, 1891.

Large trees. Leaves 3 - foliolate; leaflets large, coriaceous, broadly obovate. Flowers orange coloured.

Local name: Kesudo; Khakharo.

Flowers. - February to March, occasionally up to May.

Fruits. - March to May.

Local uses: Locally the leaves are collected to prepare the dinner plates - popularly known as 'Patarala'.

Occasional on the plains along the road leading to Pavagadh; fairly common and abundant in the forest near the foot of the hill; rare in the forest, on the hill proper.

OZA 723, 791.

Konkan; Deccan; Gujarat; throughout the plains of India. Birma, Ceylon.

Any critical notes on the identity or on nomenclature: The case presented here comes under Article 33(2) of the Int. Code of Bot. Nomenclature (1956); and accordingly the combination, B. monosperma must be attributed to Taub. & not to O. Kuntze.

Moghania St. Hill.

Moghania strobilifera (Linn.) St. Hill. ex Jackson in Ind. Kew.

2:252, 1894; Sant. 84; Mukerjee in Bull. Bot. Soc. Bengal.

6:10, 1953; Li in Am. Journ. Bot. 31:227.

Hedysarum strobiliferum Linn. Sp. Pl. 746, 1753.

Flemingia strobilifera R. Br. ex Ait. Hort. Kew (ed. 2)

4:350, 1812; F&B. 2:227 (excl. vars.); C. 1:390; Gr. 51;

D. & G. 75; G. 377.

Large shrubs; erect, much - branched, up to 150 cms. high. Flowers white; bracts large and persistent, enclosing the flowers and fruits.

Flowers. - March. Fruits. - March to April.

OZA, On the higher parts of the hill, not common !

Joshi 249.

Throughout India; Himalayas from Simla and Kumaon to Assam, Khasia. Chittagong, Siam, Malacca, Ceylon, Malayan Islands, Philippines, Timor. Introduced in Mauritius and W. Indies.

Any critical notes on the identity or on nomenclature: Mukerjee, loc. cit. writes: "In Revisio Generum Plantarum, Vol. I, p. 199 (1891), Otto Kuntze suggested that the name Flemingia Roxb. for a small genus belonging to the family Leguminosae should be replaced by Moghania St. Hill. Recently Hu Lin Li published an article in the American Journ. of Bot. 31(4):224, 1944 where after a critical examination of all the evidences he cleared up the existing confusion and proved beyond doubt that Moghania St. Hill. should be the valid name for the genus, designated by Roxburgh as Flemingia." On the subject, please see, Li's remarks in Bull. Bot. Soc. Bengal 6:7, 1953.

Rhynchosia Lour. (nom. cons.)

Key to the species of Rhynchosia

Woody climber; leaflets 6 - 13 cms. long;  
corolla 14 mm. long ..... rothii  
Trailing annual; leaflets 1 - 3 cms. long;  
corolla 5 mm. long ..... minima

Rhynchosia rothii Benth. ex Aitchison Cat. Pl. Punjab &  
Sindh 50, 1869; Raizada in Sci. & Cult. 26: 282-83,  
1960.

Dolichos tomentosus Roth, Nov. Pl. Sp. 345, 1821; DC.  
Prodr. 2:401, 1825.

Rhynchosia sericea Spanoghe in Linnaea 15:195, 1841  
nom. illegit. non Hook. & Arn. (1833); FBI. 2:225;  
Shah & Panthaki in JBNHS. 57:440-41, 1960.

A woody climber. Leaflets 6 - 13 cms. long, broadly  
ovate, acute. Flowers purplish; corolla 14 mm. long.

Flowers. - 1 September 1957.

Foot of the hill.

OZA 105.

Central and Western Himalayas and hills of W.  
Peninsula. Malaya.

Any critical notes on the identity or on nomenclature:

(i) Raizada, loc. cit. has shown that the only correct  
name is Rhynchosia rothii; R. sericea is invalid being a later  
homonym of R. sericea Gill. ex Hook. & Arn. (1833).

(ii) This plant is not listed in Cooke's Flora; Shah &  
Panthaki, loc. cit. have given it as a new record for Bombay !

(iii) The specimen OZA 105 has been identified by  
Rev. Fr. Santapau of Bombay.

Rhynchosia minima (Linn.) DC. Prodr. 2 : 385, 1825; FBI.

2 : 223; C. 1 : 388; G. 375.

Dolichos minimus Linn. Sp. Pl. 1020, 1753.

Rhynchosia medicaginea DC. Prodr. 2 : 386, 1825; D. & G.

74.

Trailing annual. Leaflets 1-3 cms. long, obtuse.

Flowers yellowish; corolla 5 mm. long.

Noted on hedges.

Flowers and Fruits. - November to December.

OZA, Foot of the hill !

Joshi 340.

Konkan; Deccan; S. M. Country; Gujarat; Sind;  
throughout India. Ceylon, Tropics generally, United States.

Canavalia DC. (nom. cons.)

Canavalia gladiata (Jacq.) DC. Prodr. 2 : 404, 1825; Gr.

52; D. & G. Suppl. 23; Sant. 77; Chatterjee in

JIB. 28 : 86.

Dolichos gladiatus Jacq. Coll. Bot. 2 : 276, 1788.

Canavalia ensiformis Baker in FBI. 2:195, 1876, et alior.  
auct. (non DC. nec Dolichos ensiformis Linn.).

A twiner with glabrous stems. Leaflets ovate, acute, glabrous. Flowers deep purple. Fruit a pod, linear - oblong, beaked; edible. Seeds ellipsoid, usually red, rarely whitish; hilum 15 - 20 mm. long.

On hedges.

Flowers and Fruits. - October to January.

On the plains along the main road.

OZA December 1957.

Throughout India, wild and commonly cultivated. Everywhere in the tropics. Native of the old world tropics?

Any critical notes on the identity or on nomenclature:

This plant is often confused with an American plant C. ensiformis (Linn.) DC.; and the existence of true C. ensiformis in India is doubtful ! On the subject of the identity and nomenclature of the true old world plant - C. gladiata, occurring in India, please see, Chatterjee, loc. cit.

Erythrina Linn.

Erythrina suberosa Roxb. Fl. Ind. 3:253, 1832; FBI. 2:189;

C. 1:367; Gr. 54; D. & G. 70.

Large trees. Bark is whitish, outer layer papery which comes out easily; presence of thorns on the branches. Leaflets rhomboid ovate, obtuse, tomentose beneath. Flowers scarlet coloured.

Flowers. - January to April.

Several trees in the forest; on the slopes of forest;  
above Machi.

OZA 667.

Deccan; Gujarat; throughout India. Ceylon.

#### CAESALPINIACEAE

##### Key to the Genera of the CAESALPINIACEAE

Leaves 1 - foliate ..... Bauhinia.

Leaves simply pinnate:

Corolla with 5 perfect petals ..... Cassia.

Corolla with 3 perfect, 2 imperfect petals ..... Tamarindus.

Leaves bipinnate ..... Caesalpinia.

##### Bauhinia Linn.

Bauhinia racemosa Lamk. Encycl. 1:390, 1783; FBI. 2:276;

C. 1:431; Gr. 64; D. & G. 82; Sant. 92.

Small trees. Leaves 1 - foliate, divided into two lobes;  
leaflets round at the apex, connate for about half their length.  
Flowers pale yellow. Pod stalked, falcate.

Generally noted in leaf.

Local name: Asundro; Aasatari; Sonu.

Flowers. - April. Fruits. - December.

Local uses: This is the sacred tree of the Hindus :  
adored on Dasera festival. Locally, the leaves are collected to  
wrap tobacco in the preparation of bidis.

Base of the hill near the bus station, not common; also on the slopes of the forest, along the paths.

OZA 702, 1296.

Common throughout India especially in Bombay, in the deciduous forests; Konkan; Deccan; Punjab; Garwhal. Ceylon, Pegu, China, Malay isles, Timor.

Cassia Linn.

Key to the species of Cassia

Herbs:

- Leaflets 2 pairs ..... absus  
 Leaflets 3 pairs ..... tora  
 Leaflets 3 - 5 pairs ..... occidentalis

Undershrubs or shrubs:

- Leaflets 20 - 40 pairs; plants undershrubs,  
 erect or suberect, at times prostrate ..... pumila  
 Leaflets 8 - 12 pairs; plants shrubs, erect ..... auriculata

Tree ..... fistula

Cassia absus Linn. Sp. Pl. 376, 1753; FBI. 2:265; C. 1:424;

Sant. 91; H. C. D. De Wit in da Webbia 279.

A herb. Leaflets 2 pairs, oblique, ovate. Flowers reddish yellow. Pods broad, thin, viscous, hairy.

In waste lands.

Local name: Chimed.

Flowers and Fruits. - December to January.

Common, along the main road to the hill Pavagadh. OZA 1528.

Konkan; Deccan; throughout India. Ceylon, Tropical Africa, Asia, Australia.



Cassia tora Linn. Sp. Pl. 376, 1753; FBI. 2:263, pro parte;  
C. 1:420; Gr. 63; D. & G. 81, pro parte; Sant. 90;  
Phatak & Oza in JBNHS. 55:535; H. C. D. De Wit, loc. cit.  
276.

Erect herbs, 30 - 60 cms. tall. Leaflets 3 pairs, obovate -  
oblong. Flowers yellow. Pods curved.

Gregarious.

Local name: Kunvadiyo.

Flowers and Fruits. - July to October.

Local uses: Used as a pot-herb, only after the first  
showers of rain, and has the property of curing cough, asthma,  
leprosy, and gastric troubles. It kills intestinal worms. Good for  
headache and promotes urinary discharges. The roots and seeds  
are applied on swollen parts and skin diseases. The roots purify  
the blood. An infusion of the plant is given to the animals  
infested with worms.

Fairly common and abundant, all over the hill and at the  
foot of the hill.

OZA 1531.

Throughout India. Ceylon, cosmopolitan in the tropics.

Cassia occidentalis Linn. Sp. Pl. 377, 1753; FBI. 2:262; C. 1:418;  
Gr. 63; D. & G. 81; H. C. D. De Wit, loc. cit. 256; Phatak  
& Oza, loc. cit. 535.

Senna occidentalis Roxburgh, Fl. Ind. (ed. Carey. 2) 343, 1832.

A herb, 60 - 150 cms. high. Leaflets 3 - 5 pairs, ovate,  
acuminate. Flowers yellow.

In waste lands.

Local name: Kasundaro.

Flowers and Fruits. - January to May; but flowering profusely in August to December.

Local uses: Externally, the seeds and leaves are applied on skin diseases, and for swellings. The roots are used in snake bite. Leaves are good for asthma, cough, and indigestion. The fruits are also used for cough.

In dense patches on the higher parts of the hill; fairly common and abundant at the foot of the hill, by the side of roads; gregarious in the plains.

OZA 1529.

Throughout India. Cosmopolitan in the tropics.

Cassia pumila Lamk. Encycl. 1:651, 1784; FBI. 2:266; C. 1:424; D. & G. 82; Sant. 91; H. C. D. De Wit, loc. cit. 288.

Plants erect or suberect, at times prostrate undershrubs, 25 - 45 cms. high. Leaflets 20 - 40 pairs. Flowers small, yellow, in short pedicels.

Flowers. - August to October. Fruits. - October.

Abundant in the undergrowth of the forest.

OZA 1530.

Konkan; Deccan; S. M. Country, Kanara; throughout India. Ceylon, Malay isles, Trop. Australia.

Cassia auriculata Linn. Sp. Pl. 379, 1753; FBI. 2:263; C. 1:421; Gr. 63; D. & G. 81; H. C. D. De Wit, loc. cit. 234.

A shrub 100 - 130 cms. high. Branches covered with soft yellow hairs. Leaves with subulate glands between each pair of leaflets; leaflets 8 - 12 pairs, elliptic - obtuse; stipules foliaceous, oblique, cordate, at the base of the leaflet. Flowers yellow. Pods flat, papery, obtuse.

Local name: Aaval.

Flowers. - January to August. Fruits. - February.

Occasional on the plains; fairly common at the foot of the hill and by the sides of the paths near old fort walls, on the hill.

OZA 404.

Konkan; Deccan; S. M. Country; Gujarat; Central Provinces; W. Peninsula. Ceylon.

Cassia fistula Linn. Sp. Pl. 377, 1753; FBI. 2:261; C. 1:417;

Gr. 62; D. & G. 80; Blatt. & Mill. Beaut. Ind. Tr. 20 & t. opp. p. 20; Sant. 90; H. C. D. De Wit, loc. cit. 207.

C. rhombifolia Roxb. Hort. Beng. 31, 1814; Wight, Icon. t. 269.

A small tree. Leaflets 4 - 8 pairs, ovate, acute. Flowers in long pendulous racemes, yellow. Pods brown - black in colour, 30 - 45 cms. long.

Host for Dendrophthoe falcata. The tree is generally found in fruit.

Local name: Garmalo.

Flowers. - January to May. Fruits. - Almost throughout the year. Leaves. - Absent in May.

Local uses: Locally the pulp of the pod is known as 'Garmala no Gol' and is sold in the market: used as a purgative.

Fairly common: in the forest on the hill; half way up the hill, by the side of the path; Machi; foot of the hill.

OZA 715.

Common throughout Bombay in deciduous forest; Konkan; Deccan; throughout India. Malacca, Ceylon, China, Malaya.

Tamarindus Linn.

Tamarindus indica Linn. Sp. Pl. 34, 1753; FBI. 2:273; C. 1:429; Gr. 62; D. & G. 82.

Popularly known as the 'Tamarind' tree; often planted for its shade and pods. Trees large. Leaves simply pinnate; leaflets 10 - 20 pairs, small, subsessile, opposite, oblong, glabrous. Flowers in racemes at the ends of the branches; yellowish with pink stripes. Pods thick, incurved, linear - oblong, slightly compressed; epicarp brittle, mesocarp pulpy, endocarp leathery septate. Seeds obovate - orbicular, smooth, shining and brown in colour.

Local name: Ambli.

Flowers. - May to July. Fruits. - April to December.

Local uses: Pods edible. Medicinally, the tree is of high repute, all its parts being used in some way or the other.

A few trees found near the Pavagadh village, at the foot of the hill and in the plains surrounding the hill; on the hill near the dharamsala at about 461 m.

OZA 691.

Cultivated and self - sown throughout India and the Tropics generally, probably indigenous in Africa.

Caesalpinia Linn.

Key to the species of Caesalpinia

Climbing shrub with prickles; pods covered with wiry prickles ..... crista  
 Shrub or a small tree, unarmed; pods not covered with wiry prickles ..... pulcherrima

Caesalpinia cristata Linn. Sp. Pl. 380, 1753.

Caesalpinia bonducella Fleming. in Asiat. Res. 11:159, 1810; FBI. 2:254; C. 1:410.

A climbing shrub with prickles. Leaves with pinnate stipules; leaflets 6 - 9 pairs, elliptic - oblong, obtuse, mucronate. Flowers yellow. Pods oblong, covered with wiry prickles. Seeds greyish in colour.

Noticed on the hedges.

Local name: Kachaka.

Flowers. - August. Fruits. - December.

Local uses: Medicinally, the seeds are of great value.

Fairly common near the lower talao, on the hill; the surrounding plains.

OZA 67; Santapau 19884.

Deccan; Kanara; Sind; throughout India. Cosmopolitan in the tropics.

Caesalpinia pulcherrima (Linn.) Swartz. Obs. 166, 1791; FBI.

2:225; C. 1:413; G. 394; N. 95; Bor & Raizada in Some  
Beaut. Ind. Clim. & Shr. 56, t. opp. p. 56.

Poinciana pulcherrima Linn. Sp. Pl. 380, 1753; Gr. 61;

D. & G. Suppl. 27.

A shrub or a small unarmed tree. Flowers in subcorymbose  
racemes; yellow or scarlet coloured.

Cultivated.

Local name: Shankhashur.

Flowers. - Almost throughout the year.

In the Pavagadh village and in the plains at Halol.

OZA 744, 745.

Cultivated throughout India and elsewhere in the tropics.

Native country not clearly known. Not apparently wild in S. E.

Asia; may have come from America (Cooke, loc. cit).

#### MIMOSACEAE

##### Key to the Genera of the MIMOSACEAE

Stamens definite:

Pods straight, turgid ..... Prosopis

Pods twisted, thin ..... Dichrostachys

Stamens indefinite:

Stamens more or less free ..... Acacia

Stamens monadelphous:

Pods straight, flat ..... Albizia

Pods coiled ..... Pithecellobium

Prosopis Linn.

Prosopis spicigera Linn. Mant. 68, 1767; FBI. 2:288; C. 2:439;  
Gr. 57; D. & G. 84.

A small tree about 6 m. high, armed with prickles. Leaves 2 - pinnate; pinnae usually 2 pairs; leaflets subsessile, linear - oblong, oblique. Flowers - yellow spikes. Pods straight, slender, cylindric, torulose, turgid.

Local name: Sami.

Flowers and Fruits. - December to May.

Local uses: Worshiped on the Dasera Festival; a holy tree of Hindus.

Foot of the Pavagadh, near the bus stand.

OZA 3; also May 1958.

Gujarat; Sind; Punjab; Rajputana; Bundelkhand; W. Peninsula. Beluchistan, Afghanistan, Persia.

Dichrostachys Wight & Arn. (nom. cons.)

Dichrostachys cinerea (Linn.) Wight & Arn. Prodr. 271, 1834;  
FBI. 2:288; C. 1:440; Gr. 57; D. & G. 84; Wight, Icon.  
t. 357.

Mimosa cinerea Linn. Sp. Pl. 520, 1753.

A small tree; branches thorny. Leaves 2 - pinnate; pinnae 8 - 14 pairs; leaflets small, sessile, linear, oblique, subacute. Flowers in axillary or extra - axillary spikes; upper half of the spike yellow, the lower half brownish red. Fruits much twisted, thin.

Flowers. - July to February. Fruits. - August to February.

Several trees noted in the lower parts of the forest; and at the base of the hill near the bus stand.

OZA 42, 42(a), 74, 861, 862, 974, 975.

Deccan; S. M. Country; Kanara; N. W. Provinces; Central India; Rajputana; W. Peninsula. Ceylon, Malay isles, N. Australia.

Any critical notes on the identity or on nomenclature:

The plant resembles with Acacia arabica (Lamk.) Willd.; but the characteristic spikes and the twisted fruits in the present spec. distinguish it clearly from the popularly know 'Babul' tree.

#### Acacia Willd.

#### Key to the species of Acacia

##### Trees:

Pods moniliform; flowers in globose heads,

peduncles axillary ..... arabica

Pods flat, not moniliform; flower - heads

in large terminal panicles ..... leucophaea

Climbing shrub ..... pennata

Acacia arabica (Lamk.) Willd. Sp. Pl. 4:1085, 1805; FBI. 2:293;

C. 1:443; Gr. 59; D. & G. 86; Sant. 95; G. 425; N. 102.

Mimosa arabica Lamk. Encycl. 1:16, 1783.

Small trees armed with stipular spines which are white, straight, about 5 cms. long; bark rough, black. Leaves 2 - pinnate; pinnae 4 - 8 pairs; leaflets subsessile, linear - oblong, obtuse.



Flowers in globose heads, peduncles axillary; yellow. Pods moniliform, compressed, covered with whitish hairs.

Local name: Baval.

Flowers. - June to January. Fruits. - March to April.

Local uses: The tree is of great importance. Yields the useful gum. Leaves and pods serve as fodder. Bark and pods serve the purpose of glycerine. Young branches used as a tooth - brush. Timber used as fuel.

Rare in the forest on the hill; fairly common at the foot of the hill and on the plains along the road.

OZA March, April 1958.

Throughout the greater part of India; Deccan; Gujarat; Sind; W. Peninsula. Ceylon, Arabia, Egypt, Tropical Africa, Natal. Acacia leucophlaea Willd. Sp. Pl. 4:1083, 1805; DC. Prodr. 2:462; FBI. 2:294; C. 2:447; Gr. 59; D. & G. 86.

Small trees. Presence of spines. Leaves 2 - pinnate; pinnae 5 - 15 pairs; leaflets subsessile, linear. Flowers in large terminal panicles, yellow. Pods flat, thin, yellowish brown in colour because of the tomentum.

Host for Dendrophthoe falcata. Also noticed a 'gall - like' structure on the branches of many trees.

Flowers. - September. Fruits. - January to May.

Abundant on the lower slopes of the hill.

OZA 195, 541, 542; Santapau 19836, 19837.

Deccan; S. M. Country; N. W. Provinces. Birma, Ceylon, Malay isles, Timor.

Acacia pennata (Linn.) Willd. Sp. Pl. 4:1090, 1805; FBI. 2:297;  
C. 1:451; Gr. 59; Sant. (ed. 2) 76.

Mimosa pennata Linn. Sp. Pl. 1507, 1753 (excl. syn.).

This is a stout climbing shrub, armed with prickles.  
Leaves 2 - pinnate; leaflets glabrous, linear, obtuse. Flowers in  
large terminal panicles; white when fresh, then yellowish. Pods  
thin, flat, strap - shaped.

Noted on hedges.

Flowers. - September to December. Fruits. - December to  
January.

OZA, Foot of the hill, abundant !

Santapau 19890.

Konkan; Deccan; S. M. Country; Kanara; C. and E. Himalayas;  
Behar; E. and W. Peninsulas. Birma, Ceylon, Malay isles, Trop.  
Africa, Natal.

#### Albizia Durazz.

Albizia odoratissima (Linn. f.) Benth. in Hook. Lond. Journ.

Bot. 3:88, 1844; FBI. 2:299; C. 1:452; D. & G. 88; Sant. 97.

Mimosa odoratissima Linn. f. Suppl. 437, 1781.

Acacia odoratissima Willd. Sp. Pl. 4:1063, 1806; Gr. 58.

A large tree. Leaves dark green in colour, bipinnate;  
pinnae 4 pairs; leaflets 8 - 15 pairs, sessile, oblong, base  
obliquely rounded, pubescent beneath. Flowers in large terminal  
panicles, whitish. Pods brown, straight.

Flowers. - April to June.

OZA, A few trees noted on the slopes of the forest !  
Konkan; Deccan; Kanara; throughout India. Ceylon.

Pithecellobium Mart. (nom. cons.)

Pithecellobium dulce (Roxb.) Benth. in Hook. Lond. Journ. Bot.

3:199, 1844; FBI. 2:302; C. 1:456; Sant. 98.

Mimosa dulcis Roxb. Pl. Cor. 1:67, t. 99, 1795.

Inga dulcis Willd. Sp. Pl. 4:1105, 1806; Gr. 56; D. & G.

Suppl. 25; Wight, Icon. t. 198.

Trees about 5 m. high. Leaves 2 - pinnate; pinnae 1 pair, each with 1 pair of leaflets. Flowers in heads in terminal panicles, whitish. Pods twisted - coiled; edible pulp usually white, sometimes deep red in colour. Seeds brownish or black.

Cultivated for its fruits; and as a hedge plant in villages.

Local name: Gorasamli.

Flowers. - January to March. Fruits. - March to May.

Local uses: Fruits edible; locally sold in the market.

Very common; in almost all the villages, on the way to Pavagadh.

OZA 622.

Cultivated throughout India, but not indigenous. A native of Mexico (Trop. America).

Any critical notes on the identity or on nomenclature:  
The only correct spelling of the generic name of this plant is Pithecellobium, not Pithecolobium, as is often given in our Floras. The correct spelling has been conserved in the List of Nomina

Conservanda of the Int. Code of Bot. Nomenclature (1956).

SAXIFRAGACEAE

Vahlia Thunb.

Vahlia digyna (Retz.) O. Kuntze, Rev. Gen. Pl. 227, 1891;  
Sant. 99.

Oldenlandia digyna Retz. Observ. 4:23, 1786.

Vahlia viscosa Roxb. Hort. Beng. 86, 1814 & Fl. Ind. 2:89,  
1832; FBI. 2:399; C. 1:463; D. & G. 90; Wight, Icon.  
t. 563.

An erect herb about 15 - 30 cms. high; presence of glandular hairs. Leaves subsessile, oblong - lanceolate, acute. Flowers in pairs or solitary in most of the upper axils, subsessile; yellowish in colour. Cooke, loc. cit. 'Petals white (Dalzell, following Roxburgh, says yellow)'. Fruit a subglobose capsule with minute seeds.

Observed in drying pools and cultivated lands.

Flowers and Fruits. - November to January.

Scarce -; near the foot of the hill in drying pools;  
on the plains.

OZA 1532.

Konkan; Gujarat; Sind; throughout India in dry localities.  
Persia, Egypt, Tropical Africa.

COMBRETACEAE

Key to the Genera of the COMBRETACEAE

## Petals 0:

Flowers in small dense heads ..... Anogeissus.

Flowers in spikes or racemes ..... Terminalia.

## Petals 4 - 5:

Calyx - tube short, constricted above the  
ovary ..... Combretum.

Calyx - tube very long, produced above  
the ovary ..... Quisqualis.

Anogeissus Wall.

Anogeissus latifolia Wall. Cat. 4015, 1831; FBI. 2:450;

C. 1:482; Talb. 2:22, t. 301; Sant. 104.

Conocarpus latifolia Roxb. Hort. Beng. 34, 1814, & Fl.

Ind. 2:442, 1832; DC. Prodr. 3:17; Gr. 70; D. & G. 91;

Wight, Icon. t. 994.

A tree; bark smooth, grey in colour. Leaves elliptic or oblong - elliptic, obtuse at the apex, base usually rounded, sometimes cordate. Flowers in small dense heads, usually in cymes. Fruit winged; wings entire.

Flowers. - May to July. Fruits. - October to January, occasionally up to May.

Fairly common in the forest near the dharamasala; abundant on the slopes of the hill.

OZA 769, 770; Santanau 19849, 19850.

Konkan; Deccan; S. M. Country; throughout the greater part of India, not in the Transgangetic Peninsula. Ceylon.

Terminalia Linn. (nom. cons.)Key to the species of Terminalia

Fruit not winged; tomentose ..... bellirica.

Fruit winged; glabrous ..... crenulata.

Terminalia bellirica (Gaertn.) Roxb. Pl. Cor. 2:54, t. 198,  
1798; FBI. 2:445; C. 1:478; Gr. 69; D. & G. 91; Talb.  
2:13, t. 294; Blatter in JIB. 8:251; Sant. 102.

Myrobalanus bellirica Gaertn. Fruct. 2:90, t. 97, 1791.

A large tree. Leaves at the ends of the branches, coriaceous, alternate, broadly elliptic. Flowers in spikes, greenish yellow. Fruit a subglobose drupe with brownish tomentum; not winged, but slightly 5 - ridged when dry; known as Myrobalan: tannin extracted from the fruits.

Local name: Baida; Beheda.

Flowers. - February to May. Fruits. - March onwards; persisting on the tree for long periods.

OZA, In the forest, by the side of the main path up the hill; not common nor abundant !

Konkan; Deccan; S. M. Country; throughout India, except Sind and the desert region of the West. Malacca, Ceylon, Malaya. Terminalia crenulata Roth, Nov. Pl. Sp. 380, 1821; Santapau in

JBNHS. 50:305 - 07; Sant. 103; Phatak & Oza in Cur. Sci. 29:25.

Pentaptera crenulata Roxb. Hort. Beng. 34, 1814 & Fl. Ind. 2:438, 1832.

Terminalia tomentosa var. crenulata Clarke in FBI. 2:448,  
1878.

T. tomentosa Cooke, Fl. Pres. Bombay 1:479, 1902; Talb.  
2:18, t. 297 (non: Wight & Arn. nisi partim, nec Mart.).

Large deciduous trees. Leaves opposite or subopposite,  
glabrous below, elliptic or obovate - oblong, apex obtuse or  
acute, glands some way up the midrib. Flowers yellow; panicles  
lax. Fruits glabrous, winged.

Noticed Viscum articulatum Burmannus on this tree.  
Phatak & Oza, loc. cit. " ..... Writers of our popular  
floras, who mention the fruits of this plant, state that they are  
5 - winged. The fruits are normally 5 - winged, as indicated even  
by the synonym Pentaptera crenulata and on numerous occasions we  
have noted it to be so. However, on 23rd April 1959, we found  
many 4 - winged fruits. This has not been recorded in our floras.  
The 4 cm. long fruit is glabrous, about 4 cm. diam. including the  
4 thin wings; venation of the wings includes numerous faint  
nerves which run horizontally from the axis to the edges ....."

Plate No. - 10.

Local name: Sajad.

Flowers. - May to August. Fruits. - December to April.

Local uses: Affords a valuable timber, next to 'Teak'  
in this district.

Fairly common in the forest; also noted after the 1st  
gate on the hill by the sides of the main path.

OZA 31, 705, 767, 768; 4 - winged fruits preserved in the Museum ! Santapau 19851.

Konkan; Deccan; the sub - Himalayan tracts of the N. W. Provinces, Nepal and Sikkim. Burma, Ceylon.

Any critical notes on the identity or on nomenclature: The specimen OZA 705 is definitely T. crenulata, but the underneath portion of the leaves is villous. Twigs slightly villous.

Cooke & other authors consider this tree to be identical with T. tomentosa Wt. et Arn.; for a complete description and synonymy of the Bombay plant see Santapau (1951) in JBNHS. 50:305 - 07.

Combretum Linn. (nom. cons.)

Combretum ovalifolium Roxb. Hort. Beng. 28, 1814 & Fl. Ind.

2:226, 1832; FBI. 2:458; C. 1:484; Gr. 70; D. & G. 90; Talb. 2:26, t. 303; Sant. 104.

A climber. Leaves opposite, ovate - lanceolate. Flowers whitish, in large panicles. Fruit with 4 papery wings.

Leaves turning red before falling. This climber has the scent of honey and hence the local name.

Local name: Madhvel.

Flowers. - January to March. Fruits. - March to May.

Very common in the forest on the lower half of the hill.

OZA 766; also December 1957.

Konkan; Deccan Peninsula; S. M. Country, Gujarat. Ceylon.



Quisqualis Linn.

Quisqualis indica Linn. Sp. Pl. (ed. 2) 556, 1763; FBI. 2:459;  
C. 1:486; Gr. 70; D. & G. Suppl. 33; G. 469; N. 113;  
Talb. 2:27 - 28, t. 304; Sant. (ed. 2) 82.

A large climber. Leaves elliptic, acuminate. Flowers in large spikes or racemes; showy; flower colour changing from white to deep red. Regarding fruiting, Cooke, loc. cit. writes; 'It rarely if ever produces fruit in the Bombay Presidency, .....

I have not seen the fruits in Pavagadh. The plant is cultivated; noted on hedges and in the gardens.

Flowers. - March to August.

OZA, On the plains in villages; also in the village Pavagadh !

Cultivated in the gardens of Bombay. A native of Java and the Malay Archipelago.

## MYRTACEAE

Key to the Genera of the MYRTACEAE

Trees large; ovary 2 - celled; fruit juicy,

1 - or few - seeded ..... Syzygium.

Trees small; ovary many - celled; fruit

not juicy, many - seeded ..... Psidium.

Syzygium Gaertn.

Syzygium cumini (Linn.) Skeels in U. S. Dept. Agric. Bur. Pl.

Ind. Bull. 248:2, 1912; Alston in Trim. Hand. Fl. Ceyl.

6:116; Merrill & Perry in JAA. 19:108; Sant. 105.

Myrtus cumini Linn. Sp. Pl. 471, 1753.

Eugenia jambolana Lamk. Encycl. 3:198, 1789; FBI. 2:499;

C. 1:492; Wight, Icon. t. 535.

Syzygium jambolanum DC. Prodr. 3:259, 1828; Gr. 73; D. & G.

93.

Large trees. Leaves shining, smooth, pale green in colour; variable in shape, lanceolate, elliptic - oblong, acuminate, presence of the intramarginal nerve. Flowers whitish. Fruit is a juicy globose drupe, purple - coloured.

Planted.

Local name: Jambudo.

Flowers. - April to May. Fruits. - May to June.

Local uses: Fruits edible. The seed from the fruit is powdered and used in the treatment of diabetes.

OZA, In the plains; and by the sides of the main road leading to Pavagadh; common !

Konkan; Deccan; Kanara; Gujarat; throughout India.

Ceylon, Malay Archipelago, Australia.

Any critical notes on the identity or on nomenclature: According to Merrill, the real Eugenia is not found in our parts of India.

Psidium Linn.

Psidium guajava Linn. Sp. Pl. 470, 1753; FBI. 2:468; C. 1:498;

G. 472; Talb. 2:30; Sant. 107.

P. pyriferum Linn. Sp. Pl. (ed. 2) 672, 1762; Gr. 72;

D. & G. Suppl. 34.

Trees small; bark white. Flowers white. The inside of the fruits is found to be yellowish white or reddish.

Cultivated; but run wild on the slopes of the hill.

Local name: Jamfal.

Flowers. - March to May. Fruits. - Almost throughout the year.

Local uses: Fruits eaten raw.

Fairly common; cultivated in the villages round about Pavagadh; run wild on the slopes of the hill below Machi, occasional.

OZA 626.

Cooke, loc. cit. ' a native of Mexico and possibly other parts of Tropical America, is cultivated throughout and naturalized in India and in most tropical countries.'

#### LYTHRACEAE

##### Key to the Genera of the LYTHRACEAE

Herbs ..... Ammannia.

Shrubs:

Flowers white; stamens 8 ..... Lawsonia.

Flowers red; stamens 12 ..... Woodfordia.

Ammannia Linn.

##### Key to the species of Ammannia

Petals 0 or minute ..... baccifera.

Petals 4 ..... multiflora.

Ammannia baccifera Linn. Sp. Pl. (ed. 2) 175, 1762; FBI. 2:569; C. 1:509; D. & G. 97; Koehne in Pfreich. 17:53; Blatter & Hallberg in JBNHS. 26:215; Sant. 111.

A. vesicatoria Roxb. : Gr. 67.

A. salicifolia Hiern in Oliv. Fl. Trop. Afr. 2:278, 1871 (excl. syn.; non Monti); FBI. 2:569; C. 1:509; D. & G. 97.

An erect herb, about 30 cms. high. Leaves oblong - lanceolate, subacute, much narrowed or slightly cordate at the base. Petals 0 or minute. Fruit a globose capsule, reddish.

Noted in moist situations.

Flowers and Fruits. - November to February.

A few plants noted near the lower talao on the hill.

OZA 1170, 1300, 1301.

Konkan; Deccan; Kanara; Sind; Gujarat; throughout Tropical India. Ceylon, Afghanistan, Malaya, China, Australia, Tropical Africa, Europe (where it is probably introduced).

Any critical notes on the identity or on nomenclature: Blatter & Hallberg, loc. cit. write: "We have united A. salicifolia as understood by Hiern & Clarke (not of Monti) with A. baccifera Linn., not even retaining them as subspecies as was done before by Koehne. Clarke says: The only character by which A. baccifera can be distinguished from A. salicifolia are the attenuated leaves. We have examined hundreds of specimens and found that this distinction does not hold good."

I have followed Blatter & Hallberg in uniting A. baccifera Linn. with A. salicifolia Hiern (non Monti, as Cooke et al. put it).

Ammannia multiflora Roxb. Fl. Ind. 1:447, 1820; FBI. 2:570;  
C. 1:509; D. & G. 97; Koehne, loc. cit. 48; Blatter  
& Hallberg, loc. cit. 212; Sant. 112.

An erect herb about 45 cms. high. Leaves linear -  
oblong, auriculate - cordate. Flowers red in colour; petals 4.  
Fruit is a globose capsule, reddish.

Noted in moist soils.

Flowers and Fruits. - November to February.

Rare; near the upper talao; also near Budhiya darvaja  
(2nd gate) at about 153 m.

OZA 311.

Konkan; Deccan; S. M. Country; throughout India on the  
plains. Afghanistan, Persia, N. W. & S. Australia, Tropical  
Africa, Madagascar. Andamans to the Philippines and Japan.

Lawsonia Linn.

Lawsonia inermis Linn. Sp. Pl. 349, 1753; Koehne in Pfreich.  
17:270, t. 59; C. 1:511; G. 514; Sant. 114.

L. alba Lamk. Encycl. 3:106, 1789; FBI. 2:573; Gr. 67;  
D. & G. 97; Talb. 2:60.

Shrubs. Leaves small, elliptic or broadly lanceolate,  
acute. Flowers white, fragrant. Fruit a globose capsule.

I have seen the plant growing wild in Pavagadh. But  
generally cultivated as a hedge plant.

Local name: Mendi.

Flowers and Fruits. - Almost throughout the year;

profusely flowering in April to July.

Local uses: Locally, the ladies use the leaves for dyeing their skin which gives the bright red impression. The plant has the cooling properties and is used in the preparation of hair-oil.

In hedges on the plains; in wild state in open lands exposed to Sun on the plains; cultivated in a small garden at Machi.

OZA 942, 943.

Cultivated throughout India. Cabul, Persia, cultivated in many tropical and warm temperate regions.

Woodfordia Salisb.

Woodfordia fruticosa (Linn.) Kurz in JASB. 40:56, 1871; Koehne in Pfreich. 17:79, t. 12 A; G. 511; Sant. 114.

Lythrum fruticosum Linn. Sp. Pl. (ed. 2) 641, 1762.

Woodfordia floribunda Salisb. Parad. Lond. t. 42, 1806;

FBI. 2:572 (excl. syn. Grislea unifl. & G. micropet.);

C. 1:510; Talb. 2:58, t. 322.

Grislea tomentosa Roxb. : Gr. 67; D. & G. 97.

A shrub, 1 - 1.5 m. high. Leaves lanceolate, opposite or subopposite, acute, base rounded or cordate. Flowers showy, numerous, red in colour. Fruit an ellipsoid capsule. Seeds smooth, cuneate.

Growing on the old walls.

Flowers. - December to May. Fruits. - January to May.

OZA, On the old walls, near Machi; and upper parts of the fort on the hill; abundant !

Joshi 234.

Deccan; Kanara; throughout India. Ceylon, Baluchistan, Tropical Africa, Madagascar, China, Japan, Sumatra, Java.

Any critical notes on the identity or on nomenclature: The subject of the valid name of this plant has been discussed by Santapau (1951) in the Journ. of Sci. & Ind. Research 10 B : 49, which please see.

#### CARICACEAE

Carica Linn.

Carica papaya Linn. Sp. Pl. 1036, 1753; FBI. 2:599; C. 1:524;

Gr. 80; D. & G. Suppl. 37; Harms in Pfam. (ed. 2)

21:512, t. 235, p. 513, t. 236, p. 517, t. 237

A, C; Sant. 117.

This is a small, soft - wooded tree, generally devoid of branches; occasionally branched. Stems hollow. Leaves large, pinnatifid and palminerved. Flowers yellowish: males in long drooping panicles; females in short clusters. Fruit : pulp yellowish red in colour, sweet. Seeds many, black.

Cultivated.

Local name: Papaiyu; Papaya.

Flowers and Fruits. - December to July; but in fruits almost throughout the year.

Local uses: Fruits edible. Unripe fruits used as a vegetable. The fruit is said to cure bowel troubles.

Cultivated in the garden near the dharamsala on the hill; also noted at Halol and on the plains surrounding the foot of the hill.

OZA December 1957, 1958; May to July 1958.

Introduced from South America. Cooke, loc. cit.

' Considered by DeCandolle to be a native of the W. Indies, the shores of the Gulf of Mexico and doubtfully of Brazil ..... '. Cultivated throughout and naturalized in various parts of India.

Any critical notes on the identity or on nomenclature: For interested readers, there is an article - 'The Papaya, its Botany, Culture and Uses' by Kumar & Abraham in JBNHS. 44:252-56.

#### CUCURBITACEAE

##### Key to the Genera of the CUCURBITACEAE

Anther cells flexuose or conduplicate :

Corolla rotate or campanulate, 5 - partite  
to the base:

Petals fimbriate ..... Trichosanthes.

Petals not fimbriate:

Stamens free, inserted on the  
mouth of the calyx; calyx with  
scales at the bottom ..... Momordica.

Stamens free, inserted on the  
tube of the calyx:

Male flowers racemose; fruit  
dry, fibrous, dehiscing  
operculately ..... Luffa.



Male flowers solitary or fascicled:

Seeds pyriform, surrounded by a  
thick crenulate ring ..... Bryonopsis.

Seeds not as above but compressed,  
usually smooth:

Tendrils simple; connective  
of anthers produced beyond the  
cells ..... Cucumis.

Tendrils 2 - 3 - fid; connective  
of anthers not produced beyond  
the cells ..... Citrullus.

Corolla companulate, divided to the middle  
or slightly lower:

Flowers white; tendrils simple;  
filaments connate ..... Coccinia.

Flowers yellow; tendrils divided;  
filaments free ..... Cucurbita.

Anther cells straight or curved, not flexuose ..... Melothria.

#### Trichosanthes Linn.

Trichosanthes cucumerina Linn. Sp. Pl. (ed. 1) 1008, 1753,  
& (ed. 2) 1432, 1763; FBI. 2:609; C. 1:527; Gr. 79;  
D. & G. 102; Chakravarty, Mon. Ind. Cucur. (in RBSI.  
17(1), 1959) 31.

T. pachyrrhachis Kundu & T. brevibracteata Kundu in  
Journ. Bot. 77:9 - 10, 1939.

A slender climber. Stem furrowed, slightly hairy. Leaves deeply 5 - lobed, lobes acute, denticulate, orbicular - reniform or broadly ovate. Flowers whitish; petals fimbriate. Fruit about 7 cms. long, ovoid - fusiform, greenish with white strips when fresh, but scarlet coloured when ripe. Seeds ovate - oblong, compressed.

I have not seen this plant in Pavagadh; and its occurrence in Pavagadh is given on the authority of Phatak & Joshi.

Flowers. - July to September. Fruits. - August to October.

Konkan; Deccan; Kanara; Gujarat; throughout India.

Ceylon, Malaya, N. Australia, Java, Philippines.

Momordica Linn.

Momordica denudata (Thwait.) Clarke in FBI. 2:618, 1879; Cogn.

in DC. Monog. Phan. 3:448; Trimen, Fl. Ceyl. 2:249;

Chakravarty, loc. cit. 98, f. 40, map 47.

M. dioica var. denudata Thwait. Enum. Pl. Zeyl. 126,  
1858 - 64.

A slender climber; stem glabrous, furrowed. Tendrils slender. Leaves 7 - 8 x 6 - 6.5 cms., membranaceous, ovate - cordate, mucronate - acuminate, denticulate, slightly roughish to the touch, some of the leaves appear to be three lobed, 5 - nerved, petiole 3 - 4 cms. long. Flowers yellowish, dioecious. Male peduncle many - flowered. Female peduncle 1 - flowered, 1 - 2 cms. long. Fruit slightly globose, rostrate.

Seen on a hedge.

Flowers and Fruits. - 12 July 1959.

At the foot of the hill; rare.

OZA 1535

Index Kewensis gives Zeylan. as the home of this plant.

The plant seems to be endemic in S. India. Ceylon.

Any critical notes on the identify or on nomenclature:

The specimen OZA 1535 has been checked at the Indian Botanic Garden, Calcutta. I thank late Dr. D. Chatterjee for helping in the identification.

This plant has not been recorded from Bombay nor listed by Cooke in his Flora of the Presidency of Bombay. A note on the subject has been accepted for publication in a subsequent issue of the Journal of the Bombay Natural History Society. And we are grateful to Rev. Fr. Santapau for kindly confirming the validity of our note.

#### Luffa Mill.

##### Key to the species of Luffa

Stamens 5 ..... cylindrica.

Stamens 3 ..... acutangula.

Luffa cylindrica (Linn.) M. V. Roem. Fam. 2:64, 1846; Cogniaux & Harms in Pfreich. 88:62; Chakravarty, loc. cit. 75.

Momordica cylindrica Linn. Sp. Pl. (ed. 1) 1009, 1753;  
(ed. 2) 1433, 1763.

Luffa aegyptiaca Mill. Dict. 4:500, 1785; FBI. 2:614;  
C. 1:532.

This is a fairly large climber. Stem 5 - angled, glabrous. Leaves scabrous, orbicular - reniform, palmately 5 - lobed, lobes acute or acuminate, presence of glands on the leaf surface. Flowers yellow. Fruit cylindric, large, 12 - 30 cms. long, obtuse; when old densely fibrous inside. Seeds smooth.

Observed on the hedges; commonly cultivated, but often run wild.

Local name: Galaka.

Flowers and Fruits. - Rainy season, occasionally up to February.

Local uses: Fruits used as a vegetable when in the young stage; thereafter it becomes fibrous and as such of no use.

At the foot of the hill.

OZA 573.

Doubtfully indigenous. Cultivated throughout India and the tropics; native country uncertain (Naudin). China, Japan, Malaya, Australia, New Zealand, Africa and America.

Any critical notes on the identity or on nomenclature: The shape and structure of the fruits of this species are like those of Luffa acutangula (Linn.) Roxb. var. amara (Roxb.) Clarke. In the present species the fruits are larger in size, and not angular.

Luffa acutangula (Linn.) Roxb. Hort. Beng. 70, 1814 & Fl. Ind.

3:713, 1832; Cogniaux & Harms in Pfreich. 88:68; FBI.

2:615; C. 1:532; Gr. 77; D. & G. Suppl. 36; Chakravarty, loc. cit. 79.

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

A climber with 5 - angled stem, angles scabrous. Leaves glabrous, roundish, palmately 5 - 7 - angled or sublobate, cordate. Flowers yellowish. Fruit tapering towards the base, clavate - oblong, 10 - angled, apex obtuse. Seeds black, ovate, compressed.

The plant is not cultivated on the hill.

Local name: Turiya.

Flowers. - August to September. Fruits. - September onwards for a very long time i.e. till the next season.

Local uses: Used as a vegetable.

Forest slopes on the hill; not common.

OZA 939.

S. M. Country; Kanara; Cultivated in N. W. India, Sikkim, Assam and Bengal. Ceylon, Malaya, China, Australia, Africa, America.

var. amara (Roxb.) C. B. Clarke in FBI. 2:615, 1879; Cogniaux & Harms in Pfreich. 88:69; C. 1:533; Sant. 118; Chakravarty, loc. cit. 81.

Luffa amara Roxb. Hort. Beng. 70, 1814, & Fl. Ind. 3:715, 1832; Gr. 77; D. & G. 102.

A climber noted on herbs or shrubs. Leaves pubescent in the beginning, then scabrid, palmately 5 - 7 - lobed, orbicular - cordate. Flowers yellowish. Fruit 5 - 10 cms. long, obovoid, obtusely conical at both ends, 10 - ribbed or with 10 sharp angles, bitter in taste. Seeds black.

Dried fruits noted on the plant for a long time.

Local name: Kadava Turiya.

Flowers. - September. Fruits. - September till the rainy season.

Local uses: The plant is said to be of medicinal importance; but I have not been able to ascertain this.

Forest slopes, near the main path; scarce.

OZA 106.

Konkan; S. M. Country; Gujarat; W. Peninsula. Ceylon.

Any critical notes on the identity or on nomenclature:

The remarks given in FBI. loc. cit. : Naudin, who retains L. amara as a species, says it is "exceedingly near L. acutangula but distinguished by the leaves a little smaller and sometimes whitish". The typical L. amara has the leaves softly pubescent at least while young, for they become in age scabrous.

Bryonopsis Arn.

Bryonopsis laciniosa (Linn.) Naud. Ann. Sc. Nat. ser. 4,

12:141, 1859, ser. 5, 6:30, 1867; Cogn. & Harms in

Pfreich 88:160; Chakravarty, loc. cit. 135; C. 1:534.

Bryonia laciniosa Linn. Sp. Pl. (ed. 1) 1013, 1753, (ed. 2)

438, 1763; Roxb. Fl. Ind. 3:728; FBI. 2:622; Gr. 78;

D. & G. 101; Wight, Icon. t. 500.

A slender climber with angular stems. Leaves scabrid above, smooth beneath; deeply palmately 5 - lobed, cordate, denticulate. Flowers greenish yellow or yellow, minute. Fruit a globose berry. Seeds - shape is typical (seeds pyriform, surrounded by a thick crenulate ring), hence the local name

of Shivlingi.

Climbing on shrubs and hedges.

Local name: Shivlingi.

Flowers and Fruits. - September to January.

Fairly common in the forest, lower half of the hill;  
near the base of the hill.

OZA 111, 407.

Deccan; S. M. Country; throughout India. Ceylon, Pegu,  
Malaya, Mauritius, Tropical Africa, Australia, China.

Cucumis Linn.

Key to the species of Cucumis

Fruit setose ..... setosus.

Fruit not setose; but pubescent or glabrous:

Perennial; leaves scabrid ..... callosus.

Annual; leaves slightly villose ..... melo.

Cucumis setosus Cogn. in DC. Monog. Phan. 3:491, 1881;

Chakravarty, loc. cit. 106, f. 44, A - D & f. 45,

map 51; Chavan & Oza in JBNHS. 57:699, t. 1, 1960.

A slender climber; monoecious. Stem furrowed, clothed  
with minute coarse hairs. Tendrils slender. Leaves 2 - 2.4 x  
2.1 - 2.6 cm., membranaceous, deltoid, feeling roughist to the  
touch, acute, minutely dentate, 3 - lobes, 5 - nerved, petiole  
6 - 9 mm. long. Flowers small, solitary, yellowish. Calyx tube  
campanulate, hairy. Corolla glabrous. Ovary globose, oblong;  
covered with short soft hairs. Fruit setose (covered with  
bristles).

Plate Nos.- 11, 12.

Flowers and Fruits. - 26 September 1959.

Rare; in the forest at an altitude of 461 m., on the hill itself.

OZA 1533.

Index Kewensis gives India as the home of this plant.

Chakravarty, loc. cit. mentions only two sheets so far available. Of these two sheets, the one of Ritchie is from Eastern India and that of Witt is probably from Peninsular India without any further details. The plant seems to be endemic in S. India.

Any critical notes on the identity or on nomenclature: This cucurbit is not described in our common floras. Chakravarty (1959) in his recent monograph on the Indian Cucurbitaceae describes this plant. My specimen has been checked at the Indian Botanic Garden, Calcutta : I thank late Dr. D. Chatterjee, for his help in identifying the plant.

This plant has not been recorded from Bombay. Chavan & Oza, loc. cit. have pointed it out as a new record for Bombay. But before communicating this matter to the press, I did care to carry the herbarium materials with me to Bombay to have a look at it by Rev. Fr. Santapau. And Rev. Fr. Cecil Saldanha in his letter of 9 October, 1960, wrote the following comment on the same; " ..... As regards Cucumis setosus Cogn. your specimens seem to tally with the type description as regards vegetative characters. But unless the flowers are studied carefully no satisfactory conclusion can be arrived at since the keys are based on flower structure."



Rev. Fr. Santapau has obliged me by checking the herbarium sheet, kindly going through the MS. and for his valuable suggestions given during the preparation of our note (loc. cit.). I take this opportunity to thank him for his help.

Cucumis callosus (Rottl.) Cogn. in Pfreich. 88:129, 1924;

Sant. 119; Chakravarty, loc. cit. 100.

Bryonia callosa Rottl. in Neue Schrift. Ges. Nat. Freund.

Berl. 4:210, 1803 ("collosa").

Cucumis trigonus Roxb. Hort. Beng. 70, 1814 & Fl. Ind.

2:619, 1824 and 3:722, 1832; FBI. 2:619 (excl. syn.);

C. 1:535; D. & G. 103; G. 535; Wight, Icon. t. 497.

Perennial. Climber with slender stems which are covered with rough hairs. Leaves scabrid, suborbicular, cordate, deeply palmately 5 - lobed. Flowers yellow, monoecious. Male flowers solitary. Ovary softly hairy. Fruit yellowish with green stripes, rounded, obovoid. Seeds whitish.

Flowers. - August. Fruits. - October to next season.

In the forest and by the side of the paths, half way up the hill.

OZA 934, 938.

Deccan; Sind; throughout India. Ceylon, Malaya, N.

Australia, N. Africa, Afghanistan, Persia, China.

Cucumis melo Linn. Sp. Pl. 1011, 1753; FBI. 2:620; C. 1:536;

Chakravarty, loc. cit. 102.

Annual. Plants with prostrate stem. Leaves slightly villose, suborbicular to reniform, cordate, usually 5 - angular

or 3 - 7 - lobed. Flowers yellowish in colour. Fruits smooth, pubescent or glabrous. Seeds white.

Wild.

Flowers and Fruits. - September.

Foot of the hill, on way to Shivarjpur.

OZA 1534.

Cultivated throughout India and in most hot countries.

Citrullus Schrader (nom. cons.)

Key to the species of Citrullus

Annual; fruit oblong or ellipsoid, more than

25 cms. in diam.; leaf-lobes broad ..... vulgaris.

Perennial; fruit globose, more than 7 cms.

in diam.; leaf-lobes narrow ..... colocynthis.

Citrullus vulgaris Schrader in Ecklon & Zeyher, Enum.

Pl. Afr. Austr. Extratrop. 279, 1836; FBI. 2:621;

C. 1:537; D. & G. 102.

Colocynthis citrullus (Linn.) O. Kuntze, Rev. Gen. 1:256,

1891; Chakravarty in Sci. & Cult. 15:31, 1949 &

loc. cit. 114, 1959.

Cucurbita citrullus Linn. Sp. Pl. (ed. 1) 1010, 1753;

(ed. 2) 1435, 1762.

This is an annual herb with villose stem. Leaves thin, ovate, cordate, lobes broad. Flowers yellow. Fruits large, edible; oblong or ellipsoid, more than 25 cms. in diam., greenish in colour; pulp sweet, colour varying from white to deep red. Fruits with whitish pulp are generally not sweet.

Seeds usually black.

This is the popularly known 'Water Melon'. The plant is not at all cultivated on Pavagadh : apparently wild. The plant is under cultivation on the plains in this district.

Local name: Tadabuch.

Flowers. - August. Fruits. - March to May.

Local uses: Fruits edible.

By the side of the paths, half way up the hill.

OZA 937.

Cultivated throughout India and in all warm countries of the World. Indigenous in Tropical Africa. Europe, Japan, China, Malaya, Polynesia, Tropical and sub - tropical America.

Any critical notes on the identity or on nomenclature: Chakravarty, loc. cit. 31, under the genus Colocynthis Ludwig writes : "Uptill now this genus is known as Citrullus after Forskal. (Forskal, P. Flora Aegyp. - Arab, 167, (1775). This name has been adopted by authors in different countries of the World, and the fact that Ludwig (Ludwig, C. G. Inst. reg. veg. ed. 2. 139, 1757) had published the genus Colocynthis (= Citrullus) earlier in 1757 was overlooked ....."

On the subject of the Conservation of Citrullus, recently, I have also gone through a note by A. D. J. Meese in Taxon 10:29 - 30, 1961, where the author is of the opinion that Citrullus Schrader should be deleted from the list of conserved generic names; in short it should be deconserved.

But the genus Citrullus is nom. cons. as given in the List of Nomina Conservanda under no. 8598, of the Int. Code of Bot. Nomenclature, 1956. Moreover, Rickett & Stafleu in their revision of Nomina Generica Conservanda et Rejicienda Spermatophytorum in Taxon 9:121, 1960, have varified and evaluated the present case in the light of the current rules of nomenclature, and have still conserved Citrullus Schrader against Anguria P. Miller (1754) & Colocynthis P. Miller 1754.

Conservation does maintain the stability in botanical nomenclature. And on the subject of the uses of Conservation I beg to refer the reader to Rickett & Stafleu in Taxon 8:219 - 22, 1959.

For the present Flora, I give or correct the names under Citrullus. I had presented both these cases to Dr. Stafleu; and he has given his suggestions to correct under Citrullus.

Citrullus colocynthis (Linn.) Schrader in Linnaea 12:414, 1838;

FBI. 2:620; C. 1:537; D. & G. 101; Wight, Icon. t. 498.

Cucumis colocynthis Linn. Sp. Pl. (ed. 1) 1011, 1753;

(ed. 2) 1435, 1762; Gr. 77.

Colocynthis vulgaris Schrader, Ind. Sem. Hort. Gotting.

2, 1833; Chakravarty, ll. cc. 31 and 113.

Perennial. Trailing herbs with hirsute stems. Leaves variable; ovate, cordate, lobes narrow. Flowers yellow. Fruit globose, more than 7 cms. in diam., variegated green and white; pulp bitter.

Wild.

Flowers. - January. Fruits. - February.

Half way up the hill.

OZA 1299.

Konkan; Deccan; Sind; Gujarat; throughout India, wild or sparingly cultivated. Ceylon, W. Asia, Arabia, Africa, Spain, Europe.

Coccinia Wight & Arn.

Coccinia cordifolia (Linn.) Cogn. in DC. Monog. Phan. 3:529, 1881; Chakravarty, loc. cit. 117.

Bryonia cordifolia Linn. Sp. Pl. (ed. 1) 1012, 1753, (ed. 2) 1438, 1763.

Coccinia indica Wight & Arn. Prodr. 347, 1834; C. 1:538; Gr. 78; D. & G. 103; Phatak & Oza in JBNHS. 55:535.

Cephalandra indica Naud. Ann. Sc. Nat. ser. 5, 5:16, 1859; FBI. 2:621 (excl. Syn.).

A slender climber with grooved stems. Tendrils simple. Leaves variable; entire to palmately lobed, 5 - angled. Flowers white. Fruit oblong, greenish with white stripes when fresh or in young <sup>stages</sup> but on ripening it turns to red or scarlet colour. Seeds whitish - yellow, obovoid.

Observed on hedges; growth luxuriant. Also seen on Zizyphus mauritiana Lamk.

Local name: Tindora; Gholi; Gilodi.

Flowers. - July to February. Fruits. - January to February.

Local uses: The juice of the leaves and roots has a cooling effect and is used in diabetes. The flowers are used

in disorders of the bile and jaundice. The fruits are applied on swollen parts and are used for disorders of the blood. As a pot herb it cures anaemia.

Rare; in the lower parts of the hill; in the forest.

OZA 32, 261, 876, 929.

Deccan; S. M. Country; Sind; Gujarat; throughout India. Ceylon, Malaya, Tropical Africa, China, C. America.

Cucurbita Linn.

Cucurbita maxima Duch. in Lamk. Encycl. 2:151, 1786; FBI.

2:622; C. 1:547; Sant. 121; Chakravarty, Loc. cit. 123.

Prostrate herbs. Tendrils divided. Leaves 5 - lobed, lobes round, dentate. Flowers yellow. Fruits very large and heavy.

Phatak & Joshi list this plant in their paper : I have failed to see it in Pavagadh. The plant is under cultivation in the district.

Local name: Lal Kolu.

Flowers. - August to September.

Cultivated throughout India and in all warm and temperate regions of the World. China, Java, Philippines.

Melothria Linn.

Key to the species of Melothria

Flowers dioecious ..... heterophylla.  
Flowers monoecious ..... maderaspatana.

Melothria heterophylla (Lour.) Cogn. in DC. Mon. Phaner.:

3:618, 1881 & in Pfreich. 66:121-124, t. 28; C. 1:540;

G. 539; Sant. 120; Chakravarty, loc. cit. 159.

Selena heterophylla Lour. Flor. Cochinch. 2:629, 1793.

Bryonia umbellata Klein in Willd. Sp. Pl. 4:618, 1805;

Gr. 78; D. & G. 101.

Zehneria umbellata Thwait. Enum. 125, 1858; FBI. 2:625

pro parte.

A climber; slender, dioecious: Leaves polymorphic (Cogniaux in Pfreich. 66:121 - 124, t. 28 distinguishes 12 forms of leaves) : ovate, or 3 - 5 - lobed, cordate, acute. Flowers yellow. Fruit oblong, ribbed, 4 - 5 cms. long, reddish in colour. Seeds smooth.

Flowers. - June to October. Fruits. - July to January.

A few plants noted on the upper parts of the hill.

OZA July 1957.

Konkan; Deccan; S. M. Country; throughout India. Ceylon, China, Java, Malaya.

Melothria maderaspatana (Linn.) Cogniaux in DC. Mon. Phaner.:

3:623, 1881; C. 1:539; G. 539; Sant. 120; Chakravarty,

loc. cit. 141.

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

Bryonia scabrella Linn. f. Suppl. 424, 1781; Gr. 78; Wight,

Icon. t. 501.

Mukia scabrella Arn. in Hook. Journ. Bot. 3:276, 1841;

FBI. 2:623; D. & G. 100.

A slender climber, hairy. Leaves variable in size and shape; ovate - sub - deltoid, 3 - 5 - lobed, acute, cordate, denticulate. Flowers minute, yellow; monoecious. Fruit globose, greenish yellow, afterwards turning red in colour. Seeds ovoid - oblong, greyish.

Flowers and Fruits. - July to October.

A few plants noted in the undergrowth of the forest; not common.

OZA 35, 247, 935.

Kenkan; Deccan; S. M. Country; Sind; Gujarat; throughout India. Ceylon, Africa, Malaya, Australia, China, New Zealand.

#### CACTACEAE

Opuntia Haw.

Opuntia elatior Mill. Gard. Dict. (ed. 8) no. 4, 1768; G. 548; Sant. 123.

O. dillenii Graham, Cat. 546, 1839; FBI. 2:657 pro parte; D. & G. Suppl. 39.

O. nigricans Woodrow in RBSI. 1:89, 1895; C. 1:552.

Shrub. Branches jointed, joints fleshy, ovate, flattened. Leaves small, deciduous, green, scale - like, seen on young branches; presence of two stipule - like cushions of hairs on each side of the leaf base; several large spines in the axil of the leaf (on each cushion) which are straight and yellowish brown in colour. Flowers are showy noted on the edge of the branch; colour not constant : in the earlier stages it is yellow, then



pinkish, and ultimately changing to deep red : I, for one, consider the final colour as the standard one, which may help in differentiating one spec. from the other. Fruit a berry; green in the beginning, red when ripe.

This plant is not found on the hill proper. Observed in open lands, waste places and in hedges, etc.

Plate No. - 13.

Local name: Thor ?

Flowers and Fruits. - January to March; but at random during the year.

Occasional in the plains surrounding the foot of the hill; abundant in the village Jarod of this district, near the railway - line.

OZA Preserved in the museum !

Throughout Bombay.

Any critical notes on the identity or on nomenclature: The plant in the district is definitely Opuntia elatior Mill. and this is commonly met with in Bombay. Cooke, loc. cit. speaks of O. dillenii and O. nigricans as the Bombay plants. But on the subject, we have followed Burkill. Gamble, loc. cit. has given the Opuntia - analysis, after Burkill. And the description of O. elatior seems to fit my specimens. O. dillenii has yellow flowers.

## MOLLUGINACEAE

Key to the Genera of the MOLLUGINACEAE

Stamens inserted on the calyx - tube ..... Trianthema.

Stamens hypogynous:

Flowers in axillary fascicles ..... Glinus.

Flowers in terminal cymes ..... Mollugo.

Trianthema Linn.

Trianthema portulacastrum Linn. Sp. Pl. 223, 1753; Fl. Males.

(ser. 1) 4(3): 274, 1951; G. 550; Santapau, Pl. of  
Saur. 17.

T. monogyna Linn. Mantiss. 1:69, 1767; FBI. 2:660;

C. 1:554; Phatak & Oza in JBNHS. 55:535.

T. obcordata Roxb. Hort. Beng. 34, 1814; D. & G. 14;

Wight, Icon. t. 288.

A prostrate succulent herb. Leaves somewhat fleshy; petioles dilated. Flowers solitary, sessile, almost sheathed by the base of the petiole; pinkish; petals 0. Fruit a small capsule.

A weed, often noted in waste places.

Plate No. - 148

Local name: Vasu.

Flowers and Fruits. - April to November.

Local uses: The juice of the plant is a tonic for old age. A decoction of the roots is used for fevers, swellings and scorpion - sting.

Fairly abundant; feet of the hill; and near the bus stand.

OZA 1535.

Deccan; Sind; throughout India. Ceylon, Malaya, W. Asia, Africa, Tr. America.

Any critical notes on the identity or on nomenclature:

On the subject of the typification of T. portulacastrum, the generic limits of Trianthema Linn., and the splitting of Trianthema sensu stricto into two subgenera, I beg to refer the reader to C. Jeffrey (Notes on tropical African Aizoaceae) in Kew Bull. 14(2) : 235 - 38, 1960.

Now-a-days this plant is put under the family Aizoaceae; for the present Flora I have put it under Molluginaceae.

Glinus Linn.

Key to the species of Glinus

Leaves stellate - hairy; pedicels short ..... lotoides.

Leaves not stellate - hairy, glabrous;

pedicels long, filiform ..... oppositifolius.

Glinus lotoides Linn. Sp. Pl. 463, 1753; Gr. 82; D. & G. 16

and 311; Fl. Males. 4(1):269; Phatak & Oza in Journ.

M.S.Univ. Baroda. 6(2):102, 1957; Sant (ed. 2) 97.

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

G. 552; Sant. 123.

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

C. 1:557.

Herbs prostrate or suberect. Presence of stellate - hairs on the leaves; leaves obovate - orbicular. Flowers in axillary fascicles; pedicels short; pinkish - white, occasionally greenish - white. Fruit is an ovoid capsule.

In the bed of the stream and in drying spots.

Flowers and Fruits. - February to August.

Fairly abundant along the main road near the base of the hill and along the banks of the upper talao on the hill itself.

OZA 1312.

Konkan; Deccan; S. M. Country; Sind; throughout India. Ceylon, all warm regions of the World.

Glinus oppositifolius (Linn.) Aug. DC. in Bull. Herb. Boiss.

(ser. 2) 1:559, 1901; Pax & Hoffm. in Pfam. (ed. 2) 16 c:222, f. 95 A - D, 1934; Fl. Males. 4(1):270, t. 1; Phatak & Oza, loc. cit. 103; Sant. (ed. 2) 97.

Mollugo oppositifolia Linn. Sp. Pl. 89, 1753; C. 1:558;

G. 552; Sant. 124.

M. spargula Linn. Syst. (ed. 10) 881, 1759; FBI. 2:662;

Gr. 12.

A slender prostrate herb, glabrous. Stems reddish. Leaves glabrous; linear - lanceolate or oblanceolate. Flowers in axillary fascicles; pedicels long, filiform; white, and also yellow. Fruit is an ellipsoid capsule.

Noted in moist soils. Growth luxuriant; in dense patches.

Flowers and Fruits. - July to February.

Abundant near the lower talao; base of the hill.

OZA 36, 516, 856, 857.

Deccan; S. M. Country; Kanara; Gujarat; W. Peninsula.

Birma, Ceylon, Tropical Africa, Australia.

Mollugo Linn.

Key to the species of Mollugo

Seeds tuberculate; reddish - brown ..... pentaphylla.

Seeds not tuberculate, reticulate; golden-brown .. cerviana.

Mollugo pentaphylla Linn. Sp. Pl. 89, 1753; C. 1:558; Gr. 12;

D. & G. 16; G. 553; Sant. 124; Fl. Males. 4(1):268.

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

D. & G. 16.

M. triphylla Lour. (non Burm.) : Gr. 12.

A slender herb. Stems quadrangular. Leaves linear - lanceolate to obovate. Flowers white; petals 0. Fruit a subglobose capsule. Seeds tuberculate, reddish - brown in colour.

Flowers and Fruits. - August.

On the slopes of the hill.

OZA 982, 983.

Deccan; S. M. Country; throughout India. Ceylon, Malacca, China, Japan, Fiji.

Mollugo cerviana (Linn.) Seringe ex DC. Prodr. 1:392, 1824;

FBI. 2:663; C. 2:559; Fl. Males. 4(1):268.

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

Mollugo umbellata Seringe ex DC. loc. cit. 393, 1824.

A very slender erect herb; branched from the base. Leaves linear, very narrow. Flowers on long filiform pedicels, greenish; petals 0. Fruit a subglobose capsule. Seeds reticulate, without tubercular points, golden - brown in colour.

In moist places.

Flowers and Fruits. - September.

Near the banks of the lower talao, on the hill; abundant.

OZA 109, 109 (a).

S. M. Country; Sind; Gujarat; W. Peninsula; Punjab.

Ceylon, Tropical Africa, Australia.

#### UMBELLIFERAE

Trachyspermum Link. (nom. cons.)

Trachyspermum stictocarpum (Clarke) Wolff var. stictocarpum

Carum stictocarpum Clarke in FBI. 2:681, 1879; C. 1:564.

A slender, erect herb 45 - 60 cms. high. Leaves finely divided. Flowers pale lilac or white. Fruits with 1 vitta in each furrow, brown in colour, glabrous or slightly hairy.

Noted on old walls and crevices of stones, also growing on the soil by the side of the walls.

Flowers and Fruits. - September to January.

Fairly common on the upper parts of the hill; half way up the hill, by the sides of walls.

OZA 230; Joshi 79.

Konkan; Deccan; W. Peninsula. Ceylon.

Any critical notes on the identity or on nomenclature:

(i) The spelling of the generic name is that given in the List of Nomina Conservanda under No. 6014 of the International Code of Botanical Nomenclature (1956). Our floras give it as Trachispermum; the only correct spelling is Trachyspermum.

(ii) Very often this plant is known as Trachyspermum stictocarpum (Clarke) Wolff var. typicum Wolff in Pfreich. 43:89, 1927; Sant. 125 & (ed. 2) 96. var. typicum - this is no more allowed; should be var. stictocarpum. See Article 71 of the Int. Code of Bot. Nomenclature (1956). No author !

According to the present Code such names as typical, genuine, true, etc. varieties are not accepted. In place of such expressions, the Code orders that the specific name be repeated for the variety and then without the name of author. In the case I have presented it is Trachyspermum stictocarpum (Clarke) Wolff var. stictocarpum. This means that the type of species is included in the variety.

(iii) Santapau, loc. cit. under the genus Trachyspermum remarks: "The genus Carum, as distinct from Trachispermum, is not found in Bombay".

#### ALANGIACEAE

Alangium Lam. (nom. cons.)

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

Alangiac. 9, 1910; G. 572.

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

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

C. 1:576; D. & G. 109; N.137; Talb. 2:79, t. 333.

Alangium decapetalum Lam. : Gr. 72; Wight, Icon. t. 194.

A small tree about 450 cms. high. Leaves oblong or elliptic - lanceolate. Flowers in fascicles, on leafless branches, whitish. Fruit is an ellipsoid berry; presence of a calyx - limb; pubescent.

Host for Dendronthoe falcata (Linn. f.) Etting.

Flowers and Fruits. - January to May.

Fairly common on the hill near Machi at about 461 m. and on the plains.

OZA 405, 406.

Konkan; Deccan; S. M. Country; Kanara; Gujarat; N. W. Himalaya; throughout India. Ceylon, Malaya, S. China, Philippines, E. Africa.

#### RUBIACEAE

##### Key to the Genera of the RUBIACEAE

##### Herbs:

Ovules numerous ..... Oldenlandia.

Ovules few, 1 - 6 only:

Seeds plano - convex or globose,

with a ventral cavity ..... Anotis.

Seeds oblong, ventrally grooved ..... Borreria.

##### Shrubs or Trees:

Ovules numerous:

Flowers in globose heads ..... Mitragyna.

Flowers not in globose heads, but in

cymes ..... Randia.



Ovules solitary:

Corolla - lobes twisted ..... Ixora.

Corolla - lobes valvate ..... Morinda.

Oldenlandia Linn.

Oldenlandia corymbosa Linn. Sp. Pl. 119, 1753; FBI. 3:64;

C. 1:588; G. 600; Blatter & McCann in JBNHS. 36:784;

Sant. 131; Phatak & Oza in JBNHS. 55:536.

Hedyotis burmanniana R. Br. in Wall. Cat. 868 pro parte,  
1829; Gr. 90; D. & G. 116.

A small, delicate herb, 6 - 30 cms. high. Leaves linear, subsessile. Flowers white, pedicelled, 2 or more, on axillary peduncle. Fruit a globose capsule, valves short.

Noted in wet areas.

Local name: Pitpapdo.

Flowers and Fruits. - July to October.

Local uses: The juice of the plant has a cooling effect.

Used in jaundice. It is a blood purifier.

Foot of the hill near the stream; Machi.

OZA 162; also July 1957, 1958; Joshi 81.

Konkan; Deccan; S. M. Country; throughout India. Ceylon, Tropical E. Asia to Java and the Philippines, Tr. Africa and America.

Anotis DC.

Anotis foetida (Dalz.) Benth. & Hook. Gen. Pl. 2:59, 1873;

FBI. 3:74; C. 1:595; G. 605; Blatt. & Mc C. 786; Sant. 132.

Hedyotis foetida Dalz. in Hook. Journ. Bot. 2:134, 1850;  
D. & G. 116.

A slender herb. Leaves linear. Flowers pinkish.  
On rocky grounds.

This plant is included on the authority of Phatak & Joshi; it is mentioned in their paper on Pavagadh. I have not seen the plant from Pavagadh.

Flowers and Fruits. - Rainy season.

On the hill, rocky grounds.

Konkan; Deccan; S. M. Country; Kanara. Apparently endemic.

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

Key to the species of Borreria

Mericarps dehiscent ventrally, septum persistent .... hispid.

Mericarps dehiscent ventrally without a  
persistent septum ..... stricta.

Borreria hispid (Linn.) Schum. in Pfam. 4(4):144, 1891;

G. 654; Sant. 137; Blatt. & McC. 795; Phatak & Oza in JBNHS. 55:536.

Spermacoce hispid Linn. Sp. Pl. 102, 1753; FBI. 3:200;

C. 1:624; Gr. 93; D. & G. 111.

A procumbent hispid herb, stems quadrangular. Leaves sessile, oblong or elliptic, acute. Flowers white. Mericarps dehiscent ventrally, septum persistent.

Observed in wet situations.

Local name: Madhuri Jadi.

Flowers and Fruits. - July to October.

Local uses: The plant is used in toothache.

Very common; foot of the hill near the stream; undergrowth of the forest.

OZA 43, 164.

Konkan; S. M. Country; throughout India, from the W. Himalaya to Assam. Ceylon, S. China, Malayan Archipelago.

Borreria stricta (Linn. f.) Schum. in Pfam. 4(4):143, 1891;

G. 654; Sant. 137; Blatt. & McC. 794.

Spermacoce stricta Linn. f. Suppl. 120, 1781; FBI. 3:200;

C. 1:623.

Erect herbs about 30 - 40 cms. high. Branches furrowed. Leaves subsessile, linear or lanceolate. Flowers white. Mericarps dehiscent ventrally without a persistent septum.

Gregarious. On moist grounds.

Flowers. - August to October, occasionally to February.

Fruits. - August to February.

Fairly common; foot of the hill near the stream, and also in open lands; forest slopes.

OZA 559, 987, 988, 989, 990, 1319.

Konkan; Deccan; S. M. Country; Tr. Himalaya from Kashmir eastwards, and throughout India. Ceylon, Tropical Asia and Africa.

Mitragyna Korthals (nom. cons.)

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

C. 1:581; G. 585; Blatt. & McC. 782; Sant. 129.

Stephegyne parvifolia Korth. Verh. Nat. Ges. Bot. 161, 1840;  
FBI. 3:25; Talb. 2:86 - 87, t. 335.

Nauclea parvifolia Roxb. Pl. Cor. 1:40, t. 52, 1795; Gr. 87.  
N. parviflora Dalz. & Gibs. Bomb. Fl. 118.

Large deciduous trees; bark smooth, brownish in colour.  
Leaves obtuse with large stipules. Flowers fragrant, faint yellow;  
in heads. Fruit a globose head of capsules.

Local name: Kadamb.

Flowers. - June to July. Fruits. - Almost throughout  
the year.

Local uses: A holy tree of the Hindus; very popularly  
known in the district.

Very common; lower slopes of the forest; base of the hill.

OZA 871, 872, 873; also June 1957, 1958.

Konkan; Deccan; S. M. Country; Kanara; Gujarat; throughout  
the drier parts of India. Ceylon.

#### Randia Linn.

Randia brandisii Gamble, Fl. Madr. 616, 1921; Blatt. & McC. 787;  
Sant. 133.

R. dumetorum Lamk. : FBI. 3:110, 1880; C. 1:599; Talb. 2:98,  
t. 341, omnes pro parte.

R. longispina DC. Prodr. 4:386, 1830; Gr. 89; D. & G. 119.

A small tree armed with spines. Leaves tomentose, elliptic  
or obovate, nerves prominent. Flowers white in the beginning,  
yellowish afterwards; calyx - tube and lobes clothed with rough

hairs. Fruit a berry : ovoid - globose, ribbed, about 2.5 cms. in diam. Seeds minutely reticulate, smooth.

Viscum articulatum Burmannus is found on this tree.

Local name: Mindhal.

Flowers. - March to June. Fruits. - March to December.

Local uses: In the Hindu marriage ceremony, the fruit is tied on the wrist.

In the forest, on the hill.

OZA Fruits preserved in the museum ! Also December 1957, 1958.

Konkan; Deccan; S. M. Country; Kanara; throughout India, especially the W. Peninsula. Ceylon, Java, Sumatra, S. China, E. Tropical Africa.

Any critical notes on the identity or on nomenclature:

(i) On the question of the real identity of the Bombay plant, I have followed Gamble, loc. cit. He has split the Randia dumetorum - complex into several species. The plant commonly found in our parts of India is R. brandisii.

(ii) Blatt. & McC. loc. cit. have given their remark under R. dumetorum : " We have not been able to examine specimens from all the localities mentioned by Cooke, and are, therefore, not sure whether they refer to the true R. dumetorum, to R. longispina or to the following species, R. Brandisii."

And under R. Brandisii they mention : "The following remark by Gamble (Kew Bull. 1912, 314) should induce botanists to search for the true facts regarding the distribution of R. dumetorum :

' I have come to the conclusion that almost the whole of the material in the Kew and other Herbaria from the W. Ghats and Coasts belongs to this species, which is quite distinct from R. dumetorum Lam.' "

Ixora Linn.

Ixora arborea Roxb. ex Sm. in Rees, Cycl. 19: no. 5, 1811; Sant. 136.

I. parviflora Vahl, Symb. 3:11, t. 52, 1794 (non Lamk.); FBI. 3:142; C. 1:611; Gr. 92; D. & G. 113; G. 631; Wight, Icon. t. 711; Talb. 2:114, t. 350; Blatt. & McC. 791.

Large shrubs. Leaves coriaceous, elliptic or obovate, obtuse, base rounded or cordate. Flowers fragrant, white; buds ellipsoid; style densely hairy.

Flowers and Fruits. - March to April.

In the forest, occasional.

OZA 627.

Konkan; Deccan; S. M. Country; Kanara; hilly districts of W. Bengal, Behar and the W. Peninsula, from the Satpura range southwards. Ceylon, Chittagong, Pegu.

Morinda Linn.

Morinda tinctoria Roxb. var. tomentosa (Heyne) Hook. f. FBI.

3:156, 1880; C. 1:614; Blatt. & McC. 793.

M. tomentosa Heyne in Roth, Nov. Pl. Sp. 147, 1821; D. & G. 114.

A small tree with corky bark. Leaves tomentose, oblong - lanceolate, or elliptic. Flowers white, in globose heads.

Local name: Aladi? (Marathi)

Flowers and Fruits. - May to July, occasionally to January.

Fairly common and abundant on the slopes of the forest;  
base of the hill.

OZA 795, 863.

Deccan; S. M. Country; Kanara; Central Provinces; Bengal.

#### COMPOSITAE

Key to the Genera of the COMPOSITAE adapted from Santanau

All florets on the same head white:

Florets all tubular:

Stems with white cottony pubescence:

leaves deeply pinnatifid, spinous;

cottony beneath ..... Echinops.

Stems without cottony pubescence:

Stems glabrous; plant suberect

or prostrate; pappus of 2 scales ..... Caesulia.

Stems more or less pubescent, erect ..... Ageratum.

Outer florets ligulate, inner tubular:

Leaves sessile; paleae of the receptacle

flat, narrow; achenes compressed with

narrow wing ..... Eclipta.

Leaves petiolate:

Paleae narrow, flat; pappus of

2 - 4 retrorsely hispid slightly

spreading awns ..... Bidens.





Involucres not hard and tough, nor two-beaked:

Lower leaves petioled, the upper amplexicaul  
and auricled ..... Emilia.

Leaves all petiolate:

Pappus of 5 scales ..... Ageratum.

Pappus uniseriate ..... Blumea.

Pappus 2 - many - seriate ..... Vernonia.

Florets of two or more colours on the same head:

Leaves compound ..... Bidens.

Leaves simple ..... Tridax.

All florets deep blue in colour ..... Cichorium.

Florets all yellow:

Leaves lobed:

Leaves opposite:

Pappus of 2 - 4 rigid, retrorsely  
hispid hairs ..... Bidens.

Pappus of many, aristate, feathery  
bristles ..... Tridax.

Leaves mainly radical:

Pappus absent ..... Cyathocline.

Pappus of many simple hairs ..... Launaea.

Leaves alternate:

Prostrate plants ..... Grangea.

Erect plants ..... Senecio.

Leaves entire or serrate, but not (or only  
obscurely) lobed:

## Leaves mainly radical:

Florets outer ligulate, inner tubular ..... Senecio.

Florets all ligulate ..... Launaea.

## Leaves opposite:

Achenes spinous, with 2 long horn-like  
spines at the top ..... Acanthospermum.

Achenes not as above, nor ciliate:

Achenes cuneiform, pappus of  
2 - 5 unequal bristles ..... Blainvillea.

Achenes not cuneiform ..... Sclerocarpus.

## Leaves alternate:

Outer florets ligulate, inner tubular:

Leaves sessile or subsessile:

Involucral bracts 1 - 2 - seriate,  
equal ..... Senecio.

Involucral bracts few - seriate,  
subequal ..... Pulicaria.

Involucral bracts many - seriate,  
unequal and with scarious margins .... Vicoa.

Leaves petiolate:

Achenes truncate, triquetrous ..... Blainvillea.

Achenes not truncate, nor triquetrous:

Achenes glabrous:

Leaves white cottony beneath.. Senecio.

Leaves not white cottony

beneath ..... Sclerocarpus.

## Achenes hairy:

Rigid, erect herb ..... Vicoa.

## Not rigid herb:

Heads drooping ..... Vicoa.Heads not drooping ..... Senecio.

Florets all tubular, or tubular and ligulate on  
the same head, but ligular ones small, inconspicuous:

Leaves petiolate ..... Blumea.

## Leaves sessile or subsessile:

Pappus 2 - seriate ..... Pulicaria.

## Pappus 1 - seriate:

Heads in dense clusters ..... Gnaphalium.Heads solitary ..... Blumea.Echinops Linn.Echinops echinatus Roxb. Fl. Ind. 3:447, 1832; FBI. 3:358;

C. 2:54; Gr. 95; D. &amp; G. 131; G. 724; Clarke, Comp.

Ind. 211.

A herb; spiny, much - branched, about 1 m. tall. Leaves  
pinnatifid, spinous, lobes triangular. Flowers white. Achenes  
elongate, villous.

Noted in large clumps in open places exposed to the Sun.  
For the clear localisation of this plant and its distribution,  
see the introductory remarks.

Flowers and Fruits. - November to May.

On the way to temple of Bhadrakalimata; top of the hill, up to 804 m; also along the main road leading to Pavagadh; rare.

OZA 742, 743.

Konkan; Deccan; S. M. Country; Sind; U. Gangetic plain; N. W. Himalaya, and the Punjab, from Benares Westward; Behar. Afghanistan.

Any critical notes on the identity or on nomenclature: Since the Flora Indica was published two years earlier than Wight's Contrib. 24, 1834, the name is attributed to Roxburgh (1832) & not to DC. in Wight's Contrib. (1834) as given by Hook. f. & Gamble, ll. cc.

Caesulia Roxb.

Caesulia axillaris Roxb. Pl. Cor. 1:64, t. 93, 1795; FBI. 3:291; C. 2:35; Gr. 96; D. & G. 126; Clarke 116; G. 702; Wight, Icon. t. 1102; Sant. 149.

A suberect or prostrate herb, at times erect, about 25 - 40 cms. high. Leaves lanceolate, serrulate, narrow. Heads axillary; flowers white. Achenes flat, obovoid, winged on each side, sparsely hairy; pappus - scales 2, ovate, above the wings.

In dense masses, often gregarious; usually found in moist spots and ditches.

Flowers and Fruits. - September to February.

On the banks of the upper talao on the hill; along the main road leading to Pavagadh.

OZA 1278, 1279, 1280, 1281.

Konkan; Deccan; S. M. Country; throughout the greater part of India in rice fields.

Ageratum Linn.

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

C. 2:14; Clarke 30; G. 677; Sant. 141; Phatak & Oza in  
JBNHS. 55:536.

An erect herb 30 - 60 cms. high; stems more or less pubescent. Leaves petioled, ovate, crenate, opposite or the upper ones alternate. Flowers generally white, at times bluish. Achenes black, 5 - angled; pappus of 5 scales.

Gregarious; noted in moist places. The plant emits a goat's smell, hence the local name of Ajgandha.

Local name: Makadmari; Ajgandha.

Flowers and Fruits. - August to February.

Local uses: The plant is used for leprosy and diseases of the skin. The leaves heal cuts.

Fairly abundant on the hill near the lower talao on the banks.

OZA 1536.

Deccan; S. M. Country; Himalayas; throughout India.

All hot countries.

Eclipta Linn. (nom. cons.)

Eclipta prostrata (Linn.) Linn. Mant. 2:286, 1771; Santapau in

JBNHS. 54:475-76 & Fl. Pur. 68; Gr. 99; D. & G. 127;

Phatak & Oza in JBNHS. 55:536; Sant. (ed. 2) 118.

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

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

V. pseudo - acmella Linn. Sp. Pl. 901, 1753.

Cotula alba Linn. Syst. (ed. 12) 564, 1767.

Eclinta erecta Linn. Mant. 2:286, 1771; C. 2:38; D. & G. 127.

E. alba (Linn.) Hassk. Pl. Jav. Rar. 528, 1848; FBI. 3:304;  
G. 705; Clarke 134; Hoffmann in Pfam. 4(5):227, t. 115  
E - H; Sant. 150.

An erect 30 - 40 cms. tall or a prostrate herb. Leaves sessile, oblong - lanceolate, strigose. Flowers white. Achenes compressed with narrow wing.

The plant varies in different habitats; it can tolerate almost any set of climatic conditions. It is noted in moist soils as well as sandy and rocky grounds.

Local name: Bhangro.

Flowers and Fruits. - Almost throughout the year; profusely in July to December.

Local uses: The root is useful for skin diseases. The plant has a cooling effect for the eyes, and keeps hair black if mixed with the oil. Used for cough, asthma, leprosy, and anaemia. It checks sexual appetite.

Fairly abundant; near the upper talao; a few plants noted occasionally on the top of the hill.

OZA 858, 1330.

Konkan; Deccan; Sind; Himalaya; throughout India, - Bengal, C. India, Punjab, W. Peninsula. Ceylon, Birma, Malaya, Cosmopolitan in warm climates.

Any critical notes on the identity or on nomenclature:

(i) The nomenclature of this plant is complex : it does call

for a note of explanation. And this has been duly cleared by Santapau, ll. cc., which please see.

(ii) My plant, OZA 1330 differs from the Linnaean plant in having all the leaves white - veined. The spec. is definitely not infected. This requires critical study. I shall have to send my specimens at Kew to some competent authority on the subject with a request to help in the determination.

Bidens Linn.

( On the identity of the Genus Bidens of Bombay, see Chavan & Oza in Ind. For. 87:251, 1961)

Key to the species of Bidens

Leaflets are all or virtually all 1 - 2 - pinnate ..... bipinnata.

Basal leaflets may be compound (tripartite) ..... bitermata.

Bidens bipinnata Linn. Sp. Pl. 832, 1753; FBI. 3:309;

Chavan & Oza, loc. cit. 251.

Small erect herbs about 20 - 60 cms. tall. The leaflets are all or virtually all 1 - 2 - pinnate. Flowers yellowish white.

Flowers and Fruits. - September.

Common everywhere on the hill.

OZA 112, 136.

Very well distributed in India.

Any critical notes on the identity or on nomenclature:

(i) In our critical study to find out the identity of the plant, the result seemed to turn out interesting and as such the plants were first of all referred to the Indian Botanic Gardens at

Calcutta, where they were identified as Cosmos sulphureus Cav. But we were confident of our identification that they belonged to Bidens. The plants were then sent to Dr. Sherff, U.S.A., for determination. In his letter of September 14, 1960 - the report on the identity of the material confirmed that, " ..... The plants sent are in no way whatever Cosmos sulphureus Cav. as you say they were determined to be by the Indian Botanic Gardens at Calcutta. They are merely rather small plants of Bidens bipinnata Linn., a species well distributed in India ..... " This shows that at first the plant bears a strong resemblance to Cosmos sulphureus Cav.

(ii) The synonymy of Bidens bipinnata Linn., B. biternata (Lour.) Merrill & Sherff, & B. pilosa Linn. is so extensive that Dr. Sherff has advised us to write to a large botanical library to secure photostatic copies of the synonymy portions of the respective treatments of these species.

(iii) My plants OZA 112, 186 have been checked by Dr. Earl E. Sherff of Michigan, U.S.A. and I must record my sense of gratitude to him for his kind help in the identification. Thanks are also due to Rev. Fr. Santapau, Bombay, for his help in the preparation of our note on the identity of the genus Bidens of Bombay, loc. cit. The occurrence of the Linnean plant - B. bipinnata at Pavagadh, is an addition to the species of Bidens in the Bombay Presidency. It has not been recorded from Bombay. It is, therefore, a new record for Bombay !



Bidens biternata (Lour.) Merr. & Sherff in Bot. Gaz. 88:293,  
1929; Sant. 151; Chavan & Oza, loc. cit. 251.

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

Bidens wallichii DC. Prodr. 5:598, 1836; Gr. 101; D. & G. 128.

B. pilosa auctor. non Linn.; FBI. 3:309; C. 2:44; G. 709.

An erect herb 20 - 60 cms. high. The basal leaflets  
may be compound (tripartite). Flowers yellowish white.

Flowers and Fruits. - August to September.

Common everywhere on the hill, particularly the higher  
parts.

OZA 968, 1080; Joshi 302.

Deccan; Himalaya; throughout India. Ceylon, and all  
warm countries.

Any critical notes on the identity or on nomenclature:  
The fairly common western Indian plant, as given in Indian floras  
and listed by Cooke (1908) in his Flora of the Presidency of  
Bombay, loc. cit., is Bidens pilosa Linn. But Sherff in his  
monograph on the genus Bidens has shown that the common Western  
Indian plant is not Bidens pilosa Linn. Accordingly, the up-to-date  
nomenclature of the plant is Bidens biternata (Lour.) Merrill  
& Sherff.

Blainvillea Cass.

Blainvillea latifolia (Linn. f.) DC. in Wight, Contrib. 17,  
1834; FBI. 3:305; D. & G. 127; Clarke 135; Santapau  
in Pl. of Saur. 20.

Eclipta latifolia Linn. f. Suppl. 378, 1781.

Blainvillea rhomboidea Cass. in Dict. Sc. Nat. 29:494,  
1823; C. 2:40; G. 706.

Erect herbs, 30 - 60 cms. high, hispid. Leaves ovate, serrate, 3 - nerved, opposite, petioled. Flowers yellowish or whitish. Achenes cuneiform.

In waste lands.

Flowers and Fruits. - August to September.

OZA, Foot of the hill near the village Pavagadh !

Joshi 83.

Deccan; W. India; Sind; from the upper Gangetic plain westwards, Kumaon; throughout the greater part of India. Ceylon, Java, Tr. Asia, Africa, America and Australia.

Cichorium Linn.

Cichorium intybus Linn. Sp. Pl. 813, 1753; FBI. 3:391;  
C. 2:68; Clarke 250.

This is the popularly known 'Chicory' plant. Stem strong, erect, viscid. Lower leaves runcinate, upper lanceolate amplexicaul. Heads axillary in pairs; flowers bluish to deep blue in colour.

Not cultivated in the district; growing wild at Pavagadh.

Flowers. - December to March.

Foot of the hill; rare.

OZA 1537.

N. W. India; Kumaon. Westward to the Atlantic.

Sphaeranthus Linn.

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

C. 2:28; Sant. 148; Phatak & Oza in JBNHS. 55:536.

S. mollis Roxb. Hort. Beng. 62, 1814; Gr. 96; D. & G. 123.

S. hirtus Willd. Sp. Pl. 3:2395, 1804; Clarke 97.

A herb varying in its habit; usually prostrate or suberect, occasionally erect plants about 30 cms. high. Leaves decurrent in to the stem; obovate - oblong, serrate, villous. Heads in dense globose, terminal masses; purple. Achenes glabrous, angular.

Noted in pure stands in waste localities; also in moist spots and in cultivated lands.

Local name: Bodiyo Kalhar; Kalar; Gorakh Mundi.

Flowers and Fruits. - December to February.

Local uses: The plant is a tonic used for ulcers, cough, anaemia, and asthma. The juice of the plant cures jaundice, leprosy, gastric troubles, wounds, and disorders of the bile. The fruits are applied for rheumatism.

Fairly abundant near Machi and on the banks of the upper talao at about 461 m.; very common in the plains.

OZA 403, 1331, 1332.

Konkan; Deccan; S. M. Country; Gujarat; throughout India - Tr. Himalaya, Kumaon to Sikkim; Assam. Ceylon, Africa, Malay Islands, Australia.

Vernonia Schreb. (nom. cons.)

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

3:233; C. 2:10; Gr. 96; D. & G. 121; G. 676; Clarke 20; Sant. 139; Phatak & Oza in JBNHS. 55:536.

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

An erect herb 15 - 30 cms. high. Leaves ovate or lanceolate, margins irregularly toothed. Flowers purplish violet. Pappus hairs white, 2 - many - seriate.

Local name: Shahadevi.

Flowers and Fruits. - July to January.

Local uses: The plant juice cures piles. The root is useful for dropsy. The juice of the roots is used in fever.

Base of the hill; top of the hill; a few plants noted.

OZA 211, 212.

Konkan; Deccan; S. M. Country; Kanara; Sind; throughout India - Himalaya; Khasia and Peninsular Mountains. Tropical Asia, Africa and Australia.

Any critical notes on the identity or on nomenclature: On the question of the duration and variability of the plant, see Santapau, loc. cit.

Tricholepis DC.

Tricholepis glaberrima DC. Prodr. 6:754, 1837; FBI. 3:381;

C. 2:56; D. & G. 131; G. 722; Clarke 240; Sant. 154;

Phatak & Oza in JBNHS. 55:536.

Serratula indica Willd(?) Sp. Pl. 3:1642, 1804; Gr. 95.

An erect, spinous herb. Leaves linear - oblong, serrate. Flowers purple. Pappus 0 or of a few short hairs.

In cultivated fields.

Local name: Utkatari; Utkanti.

Flowers and Fruits. - December to April.

Local uses: The plant is a tonic. The roots and seeds are useful. The root bark is used in urinary troubles. The roots are applied on snakebites and scorpion-stings. The roots if taken internally cure cough.

Higher parts of the hill; in the plains.

OZA 1538.

Konkan; Deccan; S. M. Country; Kanara; Central India;  
W. Peninsula.

Amberboa Less. (nom. cons.)

Volutarella Cass.

Amberboa ramosa

Volutarella ramosa (Roxb.) Santapau in Pl. Saur. 22, 1953,  
& Fl. Purandhar 71.

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

Volutarella divaricata Benth. et Hook. f. Gen. Pl. 2:476,  
1873 (excl. syn. quibusdam); FBI. 3:383; C. 2:57; G. 727;  
Clarke 242.

Tricholenis procumbens Wight, Icon. t. 1139, 1846; D. & G.  
131.

A herb. Leaves oblong or obovate, pinnatifid, lobes undulate. Flowers purple coloured. Pappus paleaceous, many-seriate.

Plate No. - 18.

Flowers and Fruits. - January to February.

Base of the hill; rare.

OZA Preserved in the museum !

Konkan; Deccan; Sind; Gujarat; Central, Western, and Southern India; N. W. Himalayas. Afghanistan, Beluchistan.

Any critical notes on the identity or on nomenclature: As I see, in the list of Nomina Conservanda (1956 edition of the Code), the genus Amberboa Less. (1832) has been conserved against Amberboi Adans. (1763), Volutaria Cass. (1816), Chryseis Cass. (1817), Lacellia Viv. (1824), Volutarella Cass. (1826).

The correct name of a plant is decided by the use of the name in the proper genus. And since Rev. Fr. Santapau, Bombay, had asked me to check the nomenclature of this plant, I tried to work out the details.

Volutarella Cass. was a superfluous name for Amberboi Adanson & hence illegitimate. Our plant should therefore carry the name Amberboi Adanson in case we consider Amberboi and Amberboa as different genera. However, I do not think that we will do this and in that case we have to adopt Amberboa, the conserved generic name.

Recently, this matter was referred to Rev. Fr. Santapau, for which I have received the reply in his letter of March 29, 1961 : "The combination Amberboa ramosa has already been made, but I am sorry I cannot tell you who the author is or the reference; I think it is someone in one of the European continental Botanical Gardens. I cannot trace the letter which the author sent me some time ago. We are reorganising the whole department ..... it is not possible for me to get at my

correspondence files. However, the transfer to Amberboa has definitely been made."

I, therefore, cannot give the authority for this name.

Centratherum Cass.

Centratherum phyllolaenum (DC.) Benth. ex Clarke, Comp. Ind. 4, 1876; FBI. 3:228; C. 2:7; G. 667; Sant. 138.

Decaneurum phyllolaenum DC. Prodr. 7:264, 1838.

D. molle Dalz. & Gibs. Bomb. Fl. 122, 1861 (non DC.).

An erect herb. Leaves with dense, white, woolly tomentum beneath; elliptic, acute or acuminate, serrate. Flowers purplish? Achenes 8 - 10 ribbed; pappus reddish.

Flowers and Fruits. - September.

Fairly common near the lower talao.

OZA 108.

Konkan; S. M. Country; Kanara; Gujarat; W. Peninsula.

Xanthium Linn.

Xanthium strumarium Linn. Sp. Pl. 987, 1753; FBI. 3:303; C. 2:37; G. 703; Clarke 132; Sant. 150; Phatak & Oza in JBNHS. 55:536.

X. indicum Koen. ex Roxb. Hort. Beng. 67, 1814 & Fl. Ind. 3:601, 1832; Gr. 101; D. & G. 127; Wight, Icon. t. 1104.

A herb 100 - 150 cms. tall. Leaves scabrid, 3 - lobed, triangular - cordate, irregularly toothed. Involucre of fertile heads hard, tough, two - beaked.

In dense clumps near human habitations. Hooked fruits help its dispersal.

Plate No. - 19.

Local name: Gadarium.

Seedlings. - July. Flowers. - September to April.

Fruits. - Almost throughout the year.

Local uses: It is useful in malaria and improves appetite.

Rare on the top of the hill; very abundant in the plains along the main road leading to Pavagadh.

OZA 869, 870.

Konkan; Deccan; W. Himalaya; throughout the hotter parts of India. Ceylon, warmer parts of the world.

Emilia Cass.

Emilia sonchifolia (Linn.) DC. in Wight, Contrib. 24, 1834 &

Prodr. 6:302; FBI. 3:336; C. 2:49; G. 715; Clarke 174;

Sant. 152.

Cacalia sonchifolia Linn. Sp. Pl. 835, 1753; Gr. 98.

A slender herb. Lower leaves petioled, the upper amplexicaul and auricled; lyrate - pinnatifid leaf is a characteristic. Flowers pinkish or purplish. Achenes hispid on the angles.

Gregarious.

Flowers and Fruits. - August to November.

By the side of the roads on the way to Pavagadh.

OZA 1539.



Konkan; Deccan; S. M. Country; throughout India. Ceylon, Asia, Africa, most tropical and subtropical regions.

Blumea DC. (nom. cons.)

Key to the species of Blumea

Heads few; in axillary and terminal corymbs:

- Leaves membranous - thin; achenes angled,  
angles with a few hairs ..... eriantha.
- Leaves thick; achenes flattened, hairy ..... malcolmi.

Heads many:

- Heads in spiciform cymes or panicles ..... glomerata
- Heads in peduncled open corymbs ..... membranacea.

Blumea eriantha DC. in Wight, Contrib. 15, 1834; FBI.

3:266; C. 2:22; G. 686; Sant. 146.

A slender, erect herb. Leaves membranous, obovate.

Flowers yellow. Achenes angled, sparsely hairy.

Flowers. - January to February.

OZA, Top of the hill !

Konkan; Deccan; S. M. Country; W. Peninsula.

Blumea malcolmi (Clarke) Hook. f. in FBI. 3:266, 1881;

C. 2:23; G. 686; Sant. 146.

Pluchea malcolmi Clarke, Comp. Ind. 95, 1876.

Plants clothed with white, soft hairs. Leaves thick, obovate. Flowers yellow. Achenes flattened, hairy.

Flowers. - January to February.

OZA, Top of the hill !

Konkan; Deccan; S. M. Country. Apparently endemic in the Bombay Presidency.

Any critical notes on the identity or on nomenclature:  
I have in my collection two herbarium sheets : I am not in a position to determine the exact species of a Blumea collected from Pavagadh. The specimens are ' Intermediate between B. eriantha DC. & B. malcolmi (Clarke) Hook. f.' This identification has been confirmed from Dehra Dun. We had sent these specimens to Mr. John Lewis of British Museum (Nat. Hist.), Great Britain, for further identification. Mr. Lewis passed these specimens to his colleague Mr. J. F. M. Cannon. In his letter of 5-1-1961 he writes : '.... I am in no position to give a critical opinion on the supposed hybrid specimens, as I have no special experience with this most complex and difficult genus. In addition we have no material of one of the supposed parents in our collections.'

The specimens will have to be sent to the Director of the Royal Botanic Gardens, Kew, with a request for information.

Blumea glomerata DC. in Wight, Contrib. 15, 1834; FBI. 3:262;

C. 2:20; D. & G. 125.

B. fasciculata DC. Prodr. 5:442, 1836; Clarke 81.

Erect herbs. Leaves oblanceolate, coarsely toothed, often pinnatifid. Flowers yellow. Achenes 4 - angled, and ribbed, slightly hairy.

Noted a few dry or nearly dry plants about 30 cms. high near the fort walls.

Flowers. - December to February. Fruits. - February to May.

Abundant on the upper parts and near the top of the hill.

OZA 554, 757.

Konkan; Deccan; Tr. Himalaya; from Kumaon to Sikkim, and throughout the plains to Assam. Birma, China, Java, Philippine Islands.

Any critical notes on the identity or on nomenclature: Cooke, loc. cit. includes this plant on the authority of Dalzell & Gibson & remarks : " I have seen no specimens from the Bombay Presidency. There are none in Herb. Kew., & Woodrow (in JBNHS. 11:648, 1898) in his list quotes Dalzell as the authority for its occurrence in the Konkan."

My plant from Pavagadh has been checked at the Indian Botanic Garden, Calcutta. Also checked at the British Museum (Nat. Hist.), London, for which Mr. Cannon writes : '..... I have compared the specimens of B. glomerata and B. membranacea with the material in our herbarium. They appear to be correctly named .....

The species reported nearly a century ago in the Bombay Flora by Dalzell & Gibson is fairly abundant in the area under observation.

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

C. 2:21; G. 687; Sant. 145.

Erect herbs about 60 - 100 cms. high. Leaves pubescent, obovate, or oblanceolate, coarsely toothed. Flowers yellow.

Flowers. - November to January.

Abundant near the dharamsala.

OZA 284, 285, 537, 556; Santapau 19863.

Konkan; Deccan; S. M. Country; throughout India. Ceylon, Malay Islands.

Any critical notes on the identity or on nomenclature:

All my specimens have been checked and confirmed at the Forest Research Institute, Dehra Dun. Out of these specimens, OZA 284 has been checked at British Museum (Nat. Hist.), London.

Tridax Linn.

Tridax procumbens Linn. Sp. Pl. 900, 1753; FBI. 3:311; C. 2:45; G. 711; Clarke 142; Sant. 151.

A small hairy herb, 30 - 60 cms. high; at times procumbent. Leaves inciso - dentate or pinnatisect. Flowers yellow or yellowish white. Achenes oblong, silky; pappus of many, aristate, feathery bristles.

Form large colonies.

Local name: Pardesi Bhangro.

Flowers and Fruits. - Almost throughout the year.

Local uses: The paste prepared from the plant is said to heal the cuts and bruises.

Fairly abundant and common everywhere in Pavagadh; the plant has reached the top of the hill also.

OZA 34, 189, 730, 954.

This is an introduction from America : naturalized in various parts of India.

Cyathocline Cass.

Cyathocline purpurea (Don) Kuntze, Rev. Gen. Pl. 338, 1891;

Sant. 141.

Tenacetum purpureum Don, Prodr. 181, 1825.

Cyathocline lyrata Cass. in Ann. Soc. Sci. Nat. (ser.1)

17:420, 1829; FBI. 3:246; C. 2:15; Clarke 37; G. 679;

Wight, Icon. t. 1098.

C. stricta DC. : D. & G. 124.

Very slender erect herbs. Leaves sessile, pinnatifid.

Flowers yellowish? Achenes small and smooth, oblong; pappus absent.

In moist situations.

Flowers. - September to November, occasionally in January.

Fruits. - November to January.

Rare at about 461 m. - Machi Khapra Jhaveri Mahel, on the foot steps, two to three plants noted; a few near the stream at Machi; but fairly common and abundant on the higher parts near the top of the hill.

OZA 201, 201(A), 1169.

Konkan; Deccan; S. M. Country; Kanara; N. W. Himalayas, from Kashmir, and Kumaon to Nepal and Bhotan; Oude; Behar; C. India; Bengal; Assam; W. Peninsula. Birma.

Launaea Cass.

Launaea nudicaulis Hook. f. in FBI. 3:416, 1881; C. 2:62;

Sant. 155; Phatak & Oza in JBNHS. 55:537.

L. obtusa Clarke, Comp. Ind. 261, 1876 (excl. plur. syn.; non Benth.).

Herbs prostrate spreading or suberect. Leaves mainly radical, obovate - oblong, pinnatifid, with rounded or obtuse segments, margins with cartilaginous teeth. Flowers yellow; florets all ligulate. Achenes ribbed; pappus of many simple hairs.

Local name: Bhonypatri.

Flowers and Fruits. - June to March.

Local uses: It checks fever.

A few plants noted on the top of the hill near the foot steps.

OZA 1540.

Deccan; S. M. Country; Kanara; Sind; throughout the plains of India. Afghanistan and Westwards to the Atlantic.

Grangea Adans.

Grangea maderaspatana (Linn.) Poir. Encycl. Suppl. 2:825, 1811; FBI. 3:243; C. 2:16; D. & G. 124; G. 680; Clarke 37; Wight, Icon. t. 1097; Sant. 143; Phatak & Oza in JBNHS. 55:536.

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

A prostrate spreading herb. Leaves alternate, sinuately pinnatifid, lobes opposite. Flowers yellow. Achenes glandular; pappus tubular with fimbriate mouth.

In waste lands.

Plate No. - 16.

Local name: Mundi.

Flowers and Fruits. - April to July.

Local uses: The juice of the plant is useful for irregular menses and pains of the ear.

On the hill near Machi.

OZA 1541; Joshi 269.

Konkan; Deccan; S. M. Country; Kanara; Sind; throughout India, from the Punjab eastwards and southwards. Ceylon, Tropical and Subtropical Asia and Africa.

Senecio Linn.

Senecio dalzellii Clarke, Comp. Ind. 201, 1876; FBI. 3:346; C. 2:52; G. 723; Sant. 153.

S. lawii Clarke, loc. cit. 201, 1876; FBI. 3:347.

Erect herbs. Leaves white cottony beneath, linear - oblong, margins often recurved. Heads on slender peduncles; flowers yellow. Achenes scabrid with short hairs; pappus white, rigid, feathery.

Flowers and Fruits. - December to January.

OZA, A few plants noted on the higher parts of the hill !

Konkan; Deccan; W. Peninsula. Apparently endemic.

Any critical notes on the identity or on nomenclature:

The nomenclature of the plant calls for reference to Article 57 of the Int. Code of Bot. Nomenclature (1956).

Acanthospermum Schrank

Acanthospermum hispidum DC. Prodr. 5:522, 1836; G. 604;

Santapau in JBNHS. 45:445 - 46; Sant. 157.

An erect herb 30 - 45 cms. high; this is a conspicuous plant on account of its following characteristics: presence of rough hairs, forking branches, achenes spinous, with 2 long horn - like spines at the top. Flowers yellowish.

Noted in large patches.

Plate No. - 15.

Flowers and Fruits. - August to February.

Base of the hill; Machi; also on the plains surrounding the hill; this plant is very common in the district.

OZA 221, 222, 223, 1274.

Several parts of the Bombay Presidency. American plant. Introduced.

Any critical notes on the identity or on nomenclature: This weed is not mentioned in Cooke's Flora. For a full description of the plant, please see Santapau in JBNHS. 45:445-46, 1945, where it has been described as a new record for Bombay.

Sclerocarpus Jacq.

Sclerocarpus africanus Jacq. Icon. Pl. Rar. 1:17, t. 176, 1782; FBI. 3:305; C. 2:39; D. & G. 129; Clarke 134.

An erect herb, 45 cms. high. Leaves with rough hairs, ovate, acute, serrate. Flowers yellow. Achenes ribbed, beaked.

In dry localities.

Flowers and Fruits. - August to September.

Half way up the hill; fairly common and abundant.

OZA 168, 948, 949.



Konkan; Deccan; Gujarat; W. Himalaya; W. Peninsula.

Tropical Africa.

Pulicaria Gaertn.

Pulicaria wightiana (DC.) Benth. ex Clarke, Comp. Ind. 128, 1876;

FBI. 3:298; C. 2:33; G. 702.

Callistephus wightianus DC. Prodr. 5:275, 1836; D. & G. 123;

Wight, Icon. t. 1089.

An erect herb, 15 cms. high. Leaves pubescent, linear - oblong, serrate. Flower heads yellow.

Flowers and Fruits. - September to March, occasionally up to May but dried.

Rare; upper parts of the hill.

OZA 229, 805.

Konkan; Deccan; W. Peninsula.

Any critical notes on the identity or on nomenclature:  
My plants from Pavagadh have been checked at the Indian Botanic Gardens, Calcutta and the Forest Research Institute, Dehra Dun.

Vicoa Cass.

Vicoa indica (Willd.) DC. in Wight, Contrib. 10, 1834; Gr. 97;

D. & G. 126; G. 701; Clarke 127; Wight, Icon. t. 1148;

Sant. 149.

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

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

1829; FBI. 3:297; C. 2:32.

An erect herb 30 - 60 cms. high. Leaves oblong - lanceolate, or lanceolate, amplexicaul. Flowers yellow. Pappus of ray - flowers 0.

Plate No. - 17.

Local name: Sonasali.

Flowers and Fruits. - October to March.

Rare; foot of the hill.

OZA 576, 1334.

Konkan; Deccan; S. M. Country; W. Himalaya; throughout the drier parts of India. Birma, Ceylon.

Gnaphalium Linn.

Key to the species of Gnaphalium

Herbs usually erect : but suberect or prostrate

in dry localities; heads in spikes ..... indicum.

Herbs prostrate : heads in subglobose,

axillary or terminal leafy clusters ..... pulvinatum.

Gnaphalium indicum Linn. Sp. Pl. 852, 1753; FBI. 3:289;

C. 2:30; Gr. 97; D. & G. 130; G. 697; Clarke 114;

Sant. 148.

Erect herbs, about 20 cms. high; clothed with white soft hairs. Leaves linear - obovate or - spatulate. Heads shining, yellow, in spikes.

Noted in dense patches in the moist soils. The plants of dry localities are suberect or prostrate.

Flowers. - December to February.

Fairly abundant on the banks of both the talaos on the hill itself.

OZA 512.

Konkan; Deccan; S. M. Country; Sind; Himalaya; throughout India. Birma, Africa, China, Japan, Australia. Gnaphalium pulvinatum Delile, Descript. de l'Egypte 266, t. 44, 1812; FBI. 3:289; C. 2:31.

G. crispatum Clarke, Comp. Ind. 115, 1876 (not of Delile).

A prostrate, woolly herb. Leaves spatulate. Heads in subglobose, axillary or terminal leafy clusters; flowers yellow.

In moist soils.

Flowers. - January to February.

On the banks of the talaos.

OZA 1542.

Deccan; Sind; throughout the plains of India. Egypt.

#### PLUMBAGINACEAE

#### Plumbago Linn.

Plumbago zeylanica Linn. Sp. Pl. 151, 1753; FBI. 3:480; C. 2:78; Gr. 166; D. & G. 220; G. 744; Pax in Pfam. 4(1):120, t. 66 E; Sant. 158.

A herb 60 - 100 cms. high. Leaves thin, ovate. Flowers in spikes, white; calyx glandular, persistent. Fruit is a glandular capsule, oblong.

In the shades of Carissa congesta Wight.

Flowers and Fruits. - September to March.

Very abundant near Machi, by the sides of the paths and in the undergrowth of the forest.

OZA 202, 249, 275; Joshi 114.

Konkan; Deccan; throughout India, much cultivated, wild in the W. Peninsula and probably in Bengal. Birma, Ceylon, throughout the tropics of the Old World.

#### PRIMULACEAE

##### Anagallis Linn.

Anagallis arvensis Linn. var. coerulea (Schreb.) Gren. et

Godr. Fl. France 2:467, 1852; Pax & Knuth in Pfreich. 22:323.

A. coerulea Schreb. Fl. Lips. 5, 1771.

A. arvensis Dalz. & Gibs. Bom. Fl. 136, 1861; FBI. 3:506; C. 2:80; G. 747.

An erect herb about 15 cms. high. Leaves deep green in colour; opposite, ovate, acute. Flowers blue; peduncled, axillary, solitary. Fruit a small circumsciss capsule. Seeds brown.

Occasionally in cultivated lands.

Flowers. - January to March. Fruits. - February to May.

Rare; in the undergrowth of the forest; at times also in the plains surrounding the hill.

OZA 538, 539, 735.

Deccan; more or less throughout India - Bengal, N.W. India, and the Himalaya from Nepal Westwards, C. India, the Nilgherry hills. Ceylon, Europe, W. Asia, and introduced into most temperate regions.

Any critical notes on the identity or on nomenclature: Cooke, loc. cit. mentions red or blue (rarely white) flowers for the genus. Hooker, loc. cit. writes : 'Both the blue and red flowered varieties are found in W. India ....' I have not seen red or white flowers as mentioned by these writers. The colour of the flowers in Pavagadh is always blue or bright blue.

#### SAPOTACEAE

Manilkara Adans. (nom. cons. prop.)

Manilkara hexandra (Roxb.) Dubard in Ann. Mus. Col. Mar - seille (ser. 3) 3:9, 1915.

Mimusops hexandra Roxb. Pl. Cor. 1:16, t. 15, 1795; FBI. 3:549; C. 2:95; Gr. 106; D. & G. 140.

A large tree about 20 m. tall. Bark smooth. Leaves coriaceous, elliptic - obovate, obtuse or emarginate. Flowers whitish. Fruit an ellipsoid berry, usually 1 - seeded occasionally 2 - seeded, greenish - yellow but turning reddish - yellow when ripe. Seeds ovoid, reddish - brown, shining.

At about 738 m. on the upper parts of the hill, near the path leading to the temple of Goddess Kalika, there is a tree which supports a large population of epiphytic orchid - Aërides maculosum Lindl.

Local name: Rayan.

Flowers. - September to November. Fruits. - January to May.

Local uses: Fruits sweet, edible. Wood useful.

Many trees noted in the dense forest about Machi - 461 m. and on the slopes of the forest; a large tree at about 738 m. near the upper talao.

OZA 721.

- Konkan; Deccan; S. M. Country; Gujarat; W. Peninsula; cultivated in N. W. India. Ceylon.

#### EBENACEAE

#### Diospyros Linn.

Diospyros melanoxylon Roxb. Pl. Cor. 1:36, t. 46, 1795; FBI.

3:564; C. 2:99.

D. tupru Buch. - Ham. in TLS. 15:111, 1827; Clarke in FBI.

3:563.

D. wightiana Wall. Cat. 4406, nom. nudem.

D. exsculpta Buch. - Ham. in TLS. 15:110, 1827; D. & G. 142.

A large deciduous tree, reaching approximately the same height as that of Tectona grandis Linn. f. ; - about 10 - 15 m. Trunks cracked; bark greyish - black. Branches, leaves and inflorescence covered with greyish hairs. Leaves elliptic. Male flowers in short cymes, tomentose, female flowers solitary; flowers whitish? Fruit globose.

Local name: Timbru.

Flowers. - February to April, occasionally in July.

Fruits. - March.

Local uses: Fruits edible. Leaves used for wrapping bidis, locally known as 'Timbru bidi.' The hard 'ebony' wood is obtained from this tree.

Occasional, in the lower parts of the hill.

OZA July 1957, 1958.

Konkan; Deccan; S. M. Country; W. Peninsula. Ceylon.

#### APOCYNACEAE

##### Key to the Genera of the APOCYNACEAE

Leaves opposite:

Armed plants ..... Carissa.

Unarmed plants:

Corolla with coronal scales;

anthers exserted ..... Wrightia.

Corolla naked, without coronal

scales; anthers included ..... Holarrhena.

Leaves whorled ..... Nerium.

Carissa Linn. (nom. cons.)

Carissa congesta Wight, Icon. t. 1289, 1848; G. 803; Sant. 164.

C. carandas Graham, Cat. 116, 1839; FBI. 3:630 (pro parte);

C. 2:124 (non Linn.); D. & G. 143.

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

Large shrubs, erect, suberect or scandent. Presence of curved or straight spines. Leaves ovate, subacute or obtuse,

at times emarginate, cuneate or rounded at the base. Flowers white, sweet scented. Fruit a 4 - seeded berry, spherical or ellipsoid; greenish but purplish when ripe.

Epiphytic mosses observed on the twigs of this shrub. In the forest proper, the plants are observed going high over the trees.

Local name: Karanda; Karamda.

Flowers. - February to March, occasionally to May.

Fruits. - April to July.

Local uses: Fruits sweet, edible; collected and sold on the hill itself.

Fairly common and abundant; half way up the hill, near Machi; higher parts of the hill and on the forest slopes.

OZA 773, 774, 798, 881; Santapau 19875, 19876.

Konkan; Deccan; Kanara; throughout India, native or cultivated. Ceylon, Birma, Malacca, Java, Timor.

Any critical notes on the identity or on nomenclature: Santapau, loc. cit. writes : "All the specimens in Kew Herb. mentioned by Cooke in his Flora as Carissa carandas, have been corrected by O. Stapf as C. congesta. These two species seem to have been confused by most of the authors of Indian Floras ....."

Wrightia R. Br.

Key to the species of Wrightia

Leaves glabrous; follicles slender, glabrous ..... tinctoria.

Leaves softly tomentose; follicles stout,

rough with white tubercles ..... tomentosa.



Wrightia tinctoria R. Br. in Mem. Wern. Soc. 1:73, 1809; FBI.

3:653; C. 2:137; Gr. 114; D. & G. 145; G. 815; Sant. 168.

A small tree about 4 - 5 m. high. Leaves glabrous, elliptic - ovate or oblong, acuminate or caudate. Flowers white, scented. Follicles slender, glabrous. Seeds with coma at the base.

Local name: Mitho Indrajav.

Flowers. - March to June. Fruits. - March to December.

Local uses: The plant is reputed of high medicinal value in the Ayurvedic medicine.

Fairly common; in the forest, lower parts of the hill; also in the plains.

OZA 12/A, 47.

Konkan; Deccan; S. M. Country; Central India; W. Peninsula. Birma, Ceylon, Timor.

Any critical notes on the identity or on nomenclature: The plant may be confused with Holarrhena : for the separation of Wrightia from Holarrhena, please see the key to the Genera of the APOCYNACEAE.

Wrightia tomentosa Roem. & Schult. Syst. 4:414, 1819; FBI.

3:653; C. 2:137; Gr. 114; D. & G. 145; Talb. 2:222;

Wight, Icon. t. 443.

W. wallichii A. DC. in DC. Prodr. 8:405, 1844; Wight, Icon. t. 1296.

A small tree up to 4 - 5 m. tall. Leaves softly tomentose, ovate or obovate. Flowers yellowish. Follicles

stout, rough with white tubercles. Coma of the seeds at the base.

Flowers. - June to July. Fruits. - July to September.

Not common as the preceding species; in the plains and lower parts of the forest on the hill.

OZA 12; also July 1958.

Konkan; Kanara; Himalaya; throughout tropical India.

Birma, Penang, Ceylon.

Holarrhena R. Br.

Holarrhena antidysenterica (Linn.?) Wall. ex A. DC. Prodr.

8:413, 1844; FBI. 3:644; C. 2:133; D. & G. 145; G. 811;

Talb. 2:217; Sant. 167; Chavan & Oza in J. M. S. Univ.

Baroda. 9(2): 75-76, t. 1.

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

Echites antidysenterica Roxb. : Gr. 249.

Holarrhena codaga G. Don. : Wight, Icon. t. 1297.

Shrubs to small trees, about 240 cms. high. Bark pale. Leaves glabrous or pubescent, ovate to ovate - oblong or elliptic. Flowers white, scented. Follicles long, cylindric, pendulous, at times dotted with white spots.

Plate No. - 20.

Local name: Kadavo Indrajav.

Flowers. - June to August. Fruits. - June to January.

Local uses: The plant is reputed of high medicinal value in the Ayurvedic medicine.

Fairly common; lower parts of the hill in the forest; also along the plains.

OZA 13, 14, 46.

Konkan; Deccan; S. M. Country; Kanara; Tr. Himalaya; throughout India. Malacca.

Any critical notes on the identity or on nomenclature:

(i) DC. bases this species on Chonemorpha antidysenterica Don. Gen. Syst. 4:76. If L. is a nom. amb., we have to ignore it; then it is better not to cite (Linn.). But this cannot be established without looking at the types. We have not seen the Linnean type, and therefore, leave it as it is at the moment.

(ii) Ordinarily, the leaves of this plant species are entire and simple. But we have come across a fasciated leaf. For the details, please see Chavan & Oza, loc. cit.

Nerium Tourn. ex Linn.

Nerium indicum Mill. Gard. Dict. (ed.8) no. 2, 1768; Sant. 170.

N. odorum Ait. Hort. Kew 1:297; 1789; FBI. 3:655;

C. 2:143; Gr. 114; G. 821.

A milky shrub about 2 m. high. Leaves linear - lanceolate. Flowers white, red, sweet smelling. Follicles long. Seeds with brownish coma.

Cultivated.

Local name: Karen.

Flowers. - Almost throughout the year. Fruits. - January, February 1958; January 1959.

Local uses: Cultivated for its flowers which are used in the Hindu pujas for Lord Shri Ganesh.

Cultivated near the top of the hill, near Dudhiya Talao, at about 769 m.; in the village Pavagadh; plains surrounding the foot of the hill.

OZA 523, 748.

Cultivated throughout Bombay. C. India; Sind; Himalaya. Afghanistan, Japan.

Cooke, loc. cit. writes: " A native of the W. Himalaya and Nipal, grown in gardens throughout the Presidency and sometimes found as an escape, though not truly wild, on the banks of streams in the Deccan. It is widely planted in Sind, but not indigenous."

On the subject of the home of this plant, Santapau, loc. cit. quotes Merrill, Enum. 3:336, 1923 - " A native of tropical or subtropical Asia now pantropic; ....."

#### ASCLEPIADACEAE

##### Key to the Genera of the ASCLEPIADACEAE

Erect plants ..... Calotropis.

Climbing and twining plants:

    Anthers incumbent on the style - apex

    without a membranous appendage ..... Leptadenia.

    Anthers with membranous appendage:

        Pollen-masses pendulous:

            Stem and leaves sub-hispidly hairy ..... Pergularia.

            Stem and leaves glabrous ..... Pentatropis.

        Pollen - masses erect ..... Telosma.

Calotropis R. Br.Key to the species of Calotropis

Corona - lobes shorter than the staminal - column,  
 with two obtuse auricles just below the apex ..... gigantea.  
 Corona - lobes equalling or longer than the  
 staminal - column, without auricles below the  
 apex ..... procera.

Calotropis gigantea (Linn.) R. Br. in Ait. Hort. Kew

(ed. 2) 2:78, 1811; FBI. 4:17; C. 2:151; Gr. 120;

D. & G. 149; G. 832; Blatt. & McC. in JBNHS.

36:526; Sant. 171; Phatak & Oza in JBNHS. 55:537.

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

A tall milky shrub up to 3. high, covered with  
 soft, shining hairs. Bark is whitish - yellow. Leaves large,  
 sessile, ovate or obovate, cordate. Flowers showy, purplish,  
 in umbellate or racemose cymes. Fruit of 2 large fleshy,  
 follicles.

The light haired seeds easily float in the air,  
 helping its dispersal.

Plate No. - 21.

Local name: Aakado.

Flowers. - Almost throughout the year. Fruits. -  
 March to July.

Local uses: The plant is a superlative remedy for  
 leprosy, piles, intestinal worms, cough, dropsy, and skin  
 diseases. It is good for digestion. Application of the milky

juice relieves ordinary pains of the body. It is purgative. The roots are used for jaundice and its bark enhances perspiration. Oil boiled with the leaves is applied in paralysis. The leaves are used for headache and snake bite. The flowers cure fevers and cough.

Noted only at the foot of the hill; also along the main road leading to Pavagadh; very common.

OZA 717; fruits preserved in the museum !

Konkan; Deccan; S. M. Country; Kanara; Gujarat; throughout India - Himalaya, from Punjab to Assam. Ceylon, Singapore, Malay Islands, S. China.

Any critical notes on the identity or on nomenclature: The size of the corona is about twice as long as in C. procera (Ait.) R. Br.

Calotropis procera (Ait.) R. Br. in Ait. Hort. Kew (ed. 2)

2:78, 1811; FBI. 4:18; C. 2:151; D. & G. 149; Blatt.

& McC. loc. cit. 526; Phatak & Oza loc. cit. 537.

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

A small shrub, very much resembling with the preceding species. Flowers white.

Local name: Dholo Aakado.

Flowers. - Almost throughout the year. Fruits. - March to July.

Local uses: Its uses are the same as those of C. gigantea (Linn.) R. Br.

Rare; near the village Pavagadh - in the plains.

OZA May 1957.

Deccan; Sind; W. & C. India; Punjab to Behar. Ava,  
Persia, Tropical Africa.

Lentadenia R. Br.

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

47, 1834; FBI. 4:63; C. 2:172; Gr. 118; D. & G. 152;

Talbot. 2:260; Blatt. & McC. in JBNHS. 36:533;

Wight, Icon. t. 350; Phatak & Oza in JBNHS. 55:537.

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

A twining shrub. Leaves ovate, acute. Flowers greenish -  
yellow. Follicles thick, sub - woody, with a curved obtuse beak.

Twining and spreading on Lawsonia inermis Linn. and

Streblus asper Lour. Growth luxuriant.

Plate No. - 22.

Local name: Nani Dodi.

Flowers. - May to October.

Local uses: The plant is a tonic and a substitute for  
vegetables.

Machi.

OZA 1543.

Konkan; Deccan; S. M. Country; Kanara; Gujarat; Punjab;  
W. Peninsula. Birma, Singapore, Ceylon, Ava.

Pergularia Linn. (non auct.)

Pergularia daemia (Forsk.) Chiov. Result. Sc. Miss. Stefan. -

Paoli Somal. Ital. 1:115, 1916; Blatt. & McC. in

JBNHS. 36:528, 1933.

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

Pergularia extensa N. E. Br. in Dyer Fl. Cap. 4:758,  
1908; G. 837.

Daemia extensa R. Br. in Mem. Wern. Soc. 1:50, 1809; FBI.  
4:21; C. 2:155; Talbot 2:243; Wight, Icon. t. 596.

Asclepias echinata Roxb. Fl. Ind. 2:44, 1832.

Raphistemma ciliatum Hook. f. in Bot. Mag. t. 5704, 1868.

A twining herb with milky juice. Stems hispid. Leaves suborbicular, cordate. Flowers greenish-yellow or greenish. Follicles reflexed, lanceolate, presence of soft spines.

Growth luxuriant. Noted in hedges. Also in association with Euphorbia nerifolia Linn.

Local name: Varsad Dodi?

Flowers. - July to February. Fruits. - December to February.

Fairly abundant at the foot of the hill; very common and abundant along the paths on the slopes of the hill.

OZA 22, 1290, 1295, 1329; Santapanu 19843.

Konkan; Deccan; S. M. Country; Sind; Gujarat; Rajputana; throughout India - N. W. Himalaya to Lower Bengal. Ceylon, Afghanistan, Arabia, tropical and S. Africa, Madagascar.

Any critical notes on the identity or on nomenclature: Blatt. & McC. loc. cit. write: "According to N. E. Brown (Kew Bull. 1917, 323) the genus Pergularia as established by Linnaeus (Mantissa i, 8) has hitherto been misunderstood. Now



it has become clear that 'Linnaeus has very accurately and unmistakably described the generic structure of the plants on which Robert Brown afterwards founded the genus Doemia (usually but incorrectly written Daemia).'

For this reason the species given by Cke. ii, 155 as 'Daemia extensa' must be transferred to Pergularia ....."

Pentatronis Wight & Arn.

Key to the species of Pentatronis

Flower - buds subglobose; corolla - lobes  
deltoid, not tailed; corona - lobes acute at the  
base ..... capensis.

Flower - buds acuminate; corolla - lobes with  
long linear tails; corona - lobes rounded  
at the base ..... spiralis.

Pentatronis capensis (Linn. f.) Bullock in Kew Bull.

1955:284, 1955.

Cynanchum capense Linn. f. Suppl. 168, 1781.

Pentatronis microphylla (Roxb.) Wight & Arn. in Wight,

Contr. 52, 1834; FBI. 4:20; C. 2:154; Gr. 120;

D. & G. 149; Blatt. & McC. in JBNHS. 36:527; Wight

Icon. t. 352.

Asclepias microphylla Roxb. Fl. Ind. 2:35, 1832.

A slender climber. Leaves ovate, obtuse, mucronate.  
Flowers purplish; flower - buds subglobose; corolla - lobes  
deltoid, not tailed; corona - lobes acute at the base.

The plant is included in this Flora on the authority of Phatak & Joshi.

Flowers. - October to December.

Konkan; Deccan; Gujarat; W. Peninsula; Bengal, Pegu. Ceylon.

Any critical notes on the identity or on nomenclature: Bullock, loc. cit. writes : "N.E. Brown pointed out in the Flora Capensis that Cynanchum capense Linn. f. was described from a specimen collected in India by Koenig which is identical with Pentatropis microphylla. The Indian plant therefore unfortunately requires to be renamed P. capensis (L. f.) Bullock."

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

(ser. 2) 9:327, t. 11 E, 1838; FBI. 4:19; Blatt. & McC. loc. cit. 527.

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

Pentatropis cynanchoides R. Br. in Salt. Voy. Abyss.

App. 64, 1814; C. 2:154.

A slender, twining herb. Leaves variable, ovate or oblong or elliptic or linear, acute or obtuse, mucronate. Flowers greenish - yellow; flower - buds acuminate; corolla - lobes with long linear tails; corona - lobes rounded at the base.

Noted on hedges. Growth luxuriant.

Flowers. - August.

Common near Machi at an altit. of about 461 m.

OZA 68; also August 1958.

Sind; Punjab. Afghanistan, Beluchistan, Arabia,  
Tropical Africa.

Telosma Coville.

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

G. 844; Blatt. & McC. in JBNHS. 36:531.

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

Pergularia pallida Wight & Arn. in Wight, Contr. 42, 1834;

FBI. 4:38; C. 2:164; Talbot 2:251; Wight, Icon. t. 585.

A slender climber. Leaves ovate, acuminate. Flowers  
yellowish. Follicles long.

Flowers. - July to August.

OZA, in the dense forest, occasional !

Deccan; S. M. Country; Gujarat; Tropical Himalaya;  
Sikkim; Central India; Behar. Birma.

PERIPLOCACEAE

Cryptolepis R. Br.

Cryptolepis buchanani Roem. & Sch. Syst. 4:409, 1819; FBI.

4:5; C. 2:147; Gr. 113; D. & G. 148; G. 826; Wight,

Icon. t. 194; Blatt. & McC. in JBNHS. 36:524; Sant. 171.

A typical climber with exocortivating bark. Leaves  
greenish above, whitish beneath, elliptic or elliptic - oblong,  
apiculate. Flowers whitish - yellow. Follicles rigid, lanceolate.

Flowers. - June to July. Fruits. - December to January.

Fairly common and abundant; in the undergrowth of  
the forest.

OZA 874, 875.

Konkan; Deccan; S. M. Country; Kanara; throughout India, from W. Kashmir to Assam, Himalaya and Southwards to Travancore. Birma, Ceylon, China.

Any critical notes on the identity or on nomenclature:

(i) My specimens from Pavagadh have been checked at the Indian Botanic Garden, Calcutta and the Forest Research Institute, Dehra Dun.

(ii) Almost all the Indian Floras put this plant under the family Asclepiadaceae. In recent years, this plant is transferred to the new family Periplocaceae, erected by Bullock (1956) in Kew Bull.

#### GENTIANACEAE

##### Key to the Genera of the GENTIANACEAE

Ovary 2 - celled ..... Exacum.

Ovary 1 - celled:

Corolla regular; flowers always white ..... Enicostema.

Corolla irregular; flowers always rosy,

rarely white..... Canscora.

#### Exacum Linn.

##### Key to the species of Exacum

Leaves sessile, 3 -7- nerved; flowers

white - whitish purple ..... bicolor.

Leaves petioled, 5 - nerved, thin; flowers blue ..... petiolare.

Exacum bicolor Roxb. Hort. Beng. 83, 1814 & Fl. Ind. 1:413,  
1820; FBI. 4:96; C. 2:187; Gr. 123; D. & G. 156;  
Grisebach in DC. Prodr. 9:45; G. 873; Wight, Icon. t.  
1321; Sant. 179.

Sebaea carinata Graham, Cat. 124, 1839 (non Spreng.).

An erect herb, about 60 cms. high. Leaves sessile,  
ovate or oblong - lanceolate, acuminate, 3 - 7 - nerved. Flowers  
white - whitish purple.

In moist places.

Flowers. - October.

In the lower half of the hill.

OZA 1544.

Konkan; Deccan; S. M. Country; W. Peninsula; Orissa.

Exacum petiolare Griseb. in DC. Prodr. 9:46, 1845; FBI.  
4:98; D. & G. 157; G. 874; Wight, Icon. t. 1324;  
Sant. 180.

E. pedunculatum var. petiolare Trim. Hand. Fl. Ceyl.  
3:182, 1893; C. 2:188.

A slender, erect herb up to 30 cms. high. Leaves thin,  
petioled, 5 - nerved, ovate, acute. Flowers blue in colour.

Flowers and Fruits. - September.

Foot of the hill, in open lands.

OZA 124; also September 1958.

Konkan; S. M. Country; W. Peninsula. Ceylon.

Any critical notes on the identity or on nomenclature:  
The specimen from Pavagadh has been identified at the Indian

Botanic Garden, Calcutta.

Enicostema Blume (nom. cons.)

Enicostema verticillatum (Linn.) Engler, Pflanzenw. Ost. -

Afr. 6:313, 1895; Phatak & Oza in JBNHS. 55:537; idem.

in J. M. S. University, Baroda 6(2) 104.

Gentiana verticillata Linn. Syst. (ed. 10) 952, 1759.

Enicostemma littorale Blume, Bijdr. 848, 1826; FBI.

4:101; C. 2:189.

An erect herb, 15 - 35 cms. high; at times branching from the base. Leaves sessile, linear or linear - oblong or lanceolate. Flowers white; sessile, in dense axillary clusters on the stem. Fruit is an ellipsoid capsule. Seeds minute, numerous, brown in colour.

In association with grasses.

Local name: Kadavi Nai.

Flowers. - June to September. Fruits. - October.

Local uses: The plant purifies the blood. It is also used for hernia.

Fairly common and abundant in open lands at the base of the hill.

OZA 51, 51(a), 203, 204.

Konkan; S. M. Country; Sind; Gujarat; Punjab; Gangetic plains; throughout India. Ceylon, Malaya, Tropical Africa, W. Indies.

Any critical notes on the identity or on nomenclature:  
The spelling of the generic name is that given in the List of Nomina Conservanda under No. 6484 of the International Code of Botanical Nomenclature, 1956. The only correct spelling therefore is Enicostema, not Enicostemma, as is often given in our Floras.

Canscora Lamk.

( To me, the separation of Canscoras of Pavagadh seems to be a difficult problem. The more critically the plants are examined, the more complications noticed.)

Key to the species of Canscora

Stem 4 - angled ..... diffusa.

Stem - 4 - winged:

Pedicels 12 mm. long:

Pedicels not enlarged below the calyx ..... decurrens.

Pedicels more or less enlarged below

the calyx ..... nauciflora.

Pedicels 10 mm. long ..... khandalensis.

Canscora diffusa R. Br. Prodr. 451 in Obs. 1810; FBI.

4:103; C. 2:191; Gr. 123; D. & G. 158; G. 878; Sant. 181.

C. lawii Wight, Icon. t. 1327, 1848 (non Clarke).

A slender herb, much - branched. Stem 4 - angled. Lower leaves petioled, elliptic, upper leaves sessile, ovate - lanceolate - ovate, acute. Flowers rosy.

On old walls. Most of the leaves fall off after the rains, with the result that very often the plants in the fields

are leafless or nearly so.

Flowers and Fruits. - October to January.

OZA, Fairly common on the old walls of the hill !

Konkan; Deccan; S. M. Country; Kanara; Gujarat; throughout India. Ceylon, Malaya, Australia, E. Tr. Africa.

Canscora decurrens Dalz. in Kew Journ. Bot. 2:136, 1850; FBI.

4:103; C. 2:192; D. & G. 157; G. 878; Sant. 182.

A slender, erect herb 15 cms. high. Stem winged. Leaves sessile or shortly petiolate, the lower leaves oblong - lanceolate or - elliptic, attenuated at the base, the upper leaves ovate - lanceolate. Flowers rosy; pedicels not enlarged below the calyx.

Noted on old walls of the fort.

Flowers. - October to March. Fruits. - December to March.

Near the lower talao and on old walls; common.

OZA 225, 226, 417; Santapanu 19872.

Konkan; Deccan; Kanara; W. Peninsula.

Canscora pauciflora Dalz. in Kew. Journ. Bot. 2:136, 1850;

FBI. 4:103; C. 2:192; G. 878; Sant. 182.

Herbs erect, slender. Leaves sessile, lower leaves ovate, obtuse, upper leaves ovate, acute. Flowers pale rosy in colour; pedicels more or less enlarged below the calyx.

Noted among grasses.

Flowers and Fruits. - November.

In the deciduous forest, on the hill.

OZA 281, 282, 1179.

Konkan; W. Peninsula.



Canscora khandalensis Santapau in Kew Bull. 1948 : 485, 1949;  
Sant. 182.

A slender herb, 10 - 15 cms. high. Stem 4 - winged.  
Leaves sessile or subsessile, ovate, elliptic or lanceolate,  
subacute or obtuse, attenuated towards the base, decurrent  
into an obscure petiole, upper leaves sessile, acute. Flowers  
rosy; pedicels 10 mm. long.

For a full description of the plant see Santapau, ll. cc.

On old walls.

Flowers. - 2nd, October 1957; 30th, September 1958.

Fairly common on old walls of the fort on the hill  
proper.

OZA 224.

Deccan; Khandala; Gujarat : Pavagadh.

Any critical notes on the identity or on nomenclature:  
The description of this new species published by Santapau fits  
in very closely with my Pavagadh specimen. I have compared my  
specimen with those in the Blatter Herbarium and it appears  
that now I have correctly named the plant ! At the time of the  
collection of this plant, I took it as C. decurrens Dalz.

#### BORAGINACEAE

##### Key to the Genera of the BORAGINACEAE

Trees or shrubs ..... Cordia.

Herbs or undershrubs:

Plants erect; flowers blue ..... Trichodesma.

Plants erect or prostrate; flowers white ..... Heliotropium.

Plants prostrate; flowers pale yellow ..... Coldenia.

Cordia Linn.

Cordia dichotoma Forst. f. Prodr. 18, 1786; Sant. 185.

C. obliqua Willd. Phytogr. 4, t. 4, 1794; FBI. 4:137  
excl. vars.; G. 887.

C. latifolia Roxb. Fl. Ind. 2:330, 1824; Gr. 136; D. & G.  
173.

C. myxa auct. plur.; C. 2:199 (non Linn.).

A large tree about 6 m. high. Leaves variable; ovate to suborbicular, shortly and obtusely acute at the apex, obtuse or cuneate at the base. Flowers white; in lax cymes, peduncles 2.5 - 5 cms. long. Fruit is an ovoid berry, supported by the accrescent calyx; pulp mucilaginous; greenish - yellow in colour.

Presence of insect galls on the leaves. The parasite - Dendrophthoe falcata (Linn. f.) Etting. is noted on several trees. The tree is commonly cultivated in the district but not on the hill proper.

Local name: Mota Gunda.

Flowers. - March to April. Fruits. - April to May.

Local uses: Fruits edible; usually pickled.

In the deciduous forest; also on the slopes of the forest in the lower parts of the hill.

OZA 701, 741.

Konkan; Deccan; Sind; Gujarat; throughout India, wild and cultivated. Ceylon, Egypt, Cochinchina, Tropical Australia, often cultivated.

Trichodesma R. Br. (nom. cons.)Key to the species of Trichodesma

Calyx-teeth round at the base ..... zeylanicum.  
 Calyx-teeth hastate at the base ..... amplexicaule.

Trichodesma zeylanicum (Linn.) R. Br. Prodr. 496, 1810; FBI.

4:154; C. 2:215; Gr. 134; D. & G. 173.

Borago zeylanica Linn. Mant. 202, 1767.

An erect herb, 30 - 60 cms. high. Stems rigid and covered with hairs. Leaves hispid, oblong - lanceolate. Flowers blue; calyx-teeth round at the base.

On old walls.

Local name: Hetmuriya?

Flowers. - July to April. Fruits. - February.

Fairly common by the sides of the paths and on old walls.

OZA 950, 1295.

Konkan; Deccan; S. M. Country; Kanara; Gujarat; W.

Peninsula. Ceylon, Malaya, Australia, Mascarene Islands.

Trichodesma amplexicaule Roth, Nov. Pl. Sp. 104, 1821; FBI.

4:153; D. & G. 173; Brand in Pfreich. 72:39; Sant. 187.

T. indicum var. amplexicaule Cooke, Fl. Pres. Bomb.

2:215, 1904.

A small herb, 15 - 30 cms. high, covered with coarse hairs. Leaves oblong, cordate. Flowers blue; calyx-teeth hastate at the base.

On old walls.

Flowers and Fruits. - August to May.

Seen almost on all the walls of the hill and by the sides of the paths; foot of the hill; gregarious but not common.

OZA 40, 65, 176, 749, 750; Santapau 19877.

Very common in Western India.

Any critical notes on the identity or on nomenclature: My predecessors have recorded this plant as Trichodesma indicum. But the plant is definitely Cooke's variety: all my Pavagadh specimens have been checked at Blatter Herbarium and found to agree with T. indicum var. amplexicaule which must cede to T. amplexicaule. This is the species, which seems to be common in our parts of India, with the auricles at the base of the calyx turning inwards.

#### Heliotropium Linn.

##### Key to the species of Heliotropium

Anthers free, not connate by their connectives:

Calyx divided but less than 1/3 the length of the tube; nutlets margined, rounded and tuberculate on the back; leaves elliptic or ovate, obtuse ..... supinum.

Calyx deeply divided; nutlets acute at the apex, pubescent; leaves obovate - spatulate, obtuse ..... ovalifolium.

Anthers connate by their produced connectives, afterwards separating and with a small disc at their apex; nutlets subglobose, pubescent; leaves ovate, lanceolate, or linear-lanceolate ... scabrum.

Heliotropium suninum Linn. Sp. Pl. 130, 1753; FBI. 4:149; C. 2:209;

D. & G. 171; G. 896; Wight, Icon. t. 1387; Sant. 186.

Piptoclaina malabarica G. Don: Gr. 135.

A prostrate herb with white hairs all over the plant; spreading up to 15 - 30 cms. from the centre. Leaves elliptic or ovate, obtuse. Flowers small, white. Nutlets 2 - 3; margined, rounded and tuberculate on the back.

In moist places. Noted in pure stands. In association with Coldenia procumbens Linn.

Flowers and Fruits. - January.

Fairly common near both the talaos on the hill proper; abundant in drying pools along the main road leading to Pavagadh.

OZA 414; Santapau 19886.

Konkan; Deccan; S. M. Country; Sind; Gujarat; W. Peninsula; Punjab; Upper Gangetic plain. Ceylon, W. Asia, S. Europe, N. & S. Africa, Canary Islands.

Heliotropium ovalifolium Forsk. Fl. Aegypt. - Arab. 38, 1775;

FBI. 4:150; C. 2:211; G. 896-897; Sant. 186.

H. coromandelianum Retz. Obs. 2:9, 1781; Gr. 135; D. & G.

171; Wight, Icon. t. 1388.

A decumbent herb, hairy, about 30 cms. in length. Leaves clothed with soft hairs, obovate - spatulate, obtuse. Flowers white, in ebracteate pairs of spikes. Nutlets acute at the apex, pubescent.

Noted in moist places and in the cultivated fields. Gregarious.

Plate No. - 23.

Local name: Velala Hathi Shundhan.

Flowers and Fruits. - September.

On the hill near the upper talao; in the plains surrounding the hill.

OZA 161.

Deccan; S. M. Country; Kanara; Sind; W. Peninsula; Bengal. Tropical Africa, Australia.

Heliotropium scabrum Retz. Obs. 2:8, 1781; Santapau in Pl. of Saur. 25.

H. marifolium Retz. Obs. 2:8, 1781, pro parte; FBI. 4:152; C. 2:213; D. & G. 171; DC. Prodr. 9:547; Wight, Icon. t. 1390; Phatak & Oza in JBNHS. 55:537.

H. marifolium var. wallichii C. B. Clarke in FBI. 4:152, 1885.

H. rottleri D. & G. 171, 1861.

A decumbent herb with appressed hairs. Leaves hairy, ovate, lanceolate, or linear - lanceolate. Flowers white, in axillary and terminal bracteate spikes at least 2.5 cms. long. Nutlets subglobose, pubescent.

Local name: Hathi Shundhan.

Flowers and Fruits. - June to September.

Local uses: Tender shoots of the plant cure ulcers. The leaves are applied on scorpion - sting.

Foot of the hill.

OZA 1545; also September 1957, 1958.

Konkan; Deccan; Kanara; Gujarat; Rajpootana; throughout India. Ceylon.

Coldenia Linn.

Coldenia procumbens Linn. Sp. Pl. 125, 1753; FBI. 4:144; C. 2:205; Gr. 135; D. & G. 171; Sant. 185; Phatak & Oza in JBNHS. 55:537.

A procumbent herb, hairy; branches spreading, 15 - 30 cms. long. Leaves obovate - oblong, crenate. Flowers pale yellow.

In association with Glinus lotoides Linn. Noted in moist soils.

Local name: Okhrad.

Flowers. - August to October.

Local uses: The leaves are used for boils and rheumatism.

Abundant; near the banks of two talaos.

OZA 1546; also August 1957.

Konkan; Deccan; S. M. Country; Kanara; Sind; throughout India. Ceylon, Asia, Africa, Australia, America.

CONVOLVULACEAE

Key to the Genera of the CONVOLVULACEAE

Parasitic leafless plants ..... Cuscuta.

Plants not parasitic, leaves present:

Pollen grains spinulose:

Fruit indehiscent:

Corolla salver - shaped ..... Rivea.

Corolla funnel - shaped ..... Argyreia.

Fruit dehiscent (if indehiscent thin and fragile - walled): corolla campanulate ..... Ipomoea.

Pollen grains not spinulose:

Styles 2, free or partly united below:

Plants usually erect ..... Cressa.

Plants usually prostrate ..... Evolvulus.

Style entire, stigmas usually 2:

Stigma lobes elongate:

Plants erect or prostrate, rarely

twining or climbing ..... Convolvulus.

Plants climbing or twining ..... Jacquemontia.

Stigma 2 - globose ..... Merremia.

#### Cuscuta Linn.

Cuscuta reflexa Roxb. Pl. Cor. 2:3, t. 104, 1798; FBI. 4:225;

C. 2:224; Gr. 134; N. 206; Santapau in JBNHS. 47:339

(non Decne.); Santapau & Patel in JBNHS. 54:712, t. 1,

A; Sant. 189.

C. grandiflora Wall. Cat. 1318, 1829, non H. B. K.

Parasitic leafless plants. Branches stout, fleshy, yellow - greenish yellow. Flowers whitish; style 1, stigmas 2, ovoid, acute, diverging; scales at the base of the corolla. Fruit is a succulent capsule.

Noted on hedges. Very common on the following hosts:

Streblus asper Lour., Clitoria ternatea Linn. and several spec. of Euphorbia, especially E. hirta Linn. Very often Streblus asper is seen completely covered with this parasite.



Flowers. - 26 March 1958.

Fairly common at the foot of the hill, in open lands; also along the main road leading to Pavagadh.

OZA 609, 610.

Konkan; S. M. Country; Gujarat; Bengal; throughout northern India. Ceylon, Malaya, Afghanistan, China, Java.

Any critical notes on the identity or on nomenclature:

(i) Santapau & Patel, loc. cit. remark : " The type of this species is not definitely known, but seems to be of Indian origin, probably from Andhra State."

(ii) The plants belonging to this genus are parasitic herbs without roots and leaves. Perhaps on this basis, in recent years (Dr. Hutchinson, 1959) the genus Cuscuta is mentioned under a separate family the CUSCUTACEAE. For the present Flora, I have put it under the family CONVOLVULACEAE, since the flower - structure and the habit resemble with other Convolvulaceous plants. Even the most recent works on Indian Botany put the genus Cuscuta under the family CONVOLVULACEAE.

#### Rivea Choisy

Rivea hypocrateriformis Choisy, Convolv. Orient. in Mem. Soc.

Phys. Genev. 6:408, 1833; FBI. 4:184; C. 2:254; Gr. 127; D. & G. 168.

R. fragrans Nimmo in Grah. Cat. 127, 1839.

R. bona-nox Choisy, Convolv. Orient. loc. cit. 409, 1833; D. & G. 168.

A large climber. Leaves orbicular, obtuse, base cordate, presence of silky hairs on the lower surface. Flowers white; peduncles 1-flowered.

Noted on hedges.

Flowers. - December to January.

OZA, On the plains; rare !

Konkan; Deccan; Sind; W. Peninsula; Assam; Behar; Mysore.

Any critical notes on the identity or on nomenclature:

On the subject of Rivea, Santapau in JBNHS. 47:350 quotes van Ooststroom in Blumea 5:354-355, 1943 : " It was Choisy, 1833, who established the genus Rivea, based on the species of Lettsonia with linear - oblong stigmas and with indehiscent dry fruit. In 1845 the very natural limits of Rivea became blurred, when he added several American spec. of Ipomoea to it, all with big lobular stigmas. Other authors, however, have maintained the original limits of the genus ..... In my opinion Rivea has to be brought back to its previous limits, as indicated by Choisy in 1833 and corresponding with Hallier's section Eurivea ..... The representatives of Argyreia are confined to tropical Asia, the Malay Archipelago and the Philippine Islands. Rivea only occurs in tropical Asia. Legendrea is of American origin with one representative also in the Canary Islands."

Argyreia Lour.

Argyreia nervosa (Burm. f.) Boj. Hort. Maurit. 224, 1837;

Santapau 350; Sant. 194.

Convolvulus nervosus Burm. f. Fl. Ind. 48, t. 20, f. 1, 1768.

Argyreia speciosa Sweet, Hort. Brit. 289, 1827; FBI. 4:185;  
C. 2:255; Gr. 128; D. & G. 168; G. 907; Wight, Icon. t.  
851.

This is a large climber. Leaves ovate, cordate, acute.  
Flowers purple coloured.

I have seen no Argyreia in Pavagadh : however, the  
inclusion of this plant in the present Flora, is on the authority  
of Phatak & Joshi.

Flowers. - August to September.

Konkan; Deccan; S. M. Country; Assam; Mysore; Bengal;  
throughout India, often cultivated. Java, China, Mauritius.

#### Ipomoea Linn.

( Phatak & Joshi in their list of the plant species of Pavagadh  
mention a few Ipomoeas. I have not seen their collection of  
Ipomoeas from Pavagadh. Moreover, I have not been able to  
collect more information regarding their distribution in  
Pavagadh, etc. from the authors. During the course of my  
exploration, I have searched for these plants in vain. Possibly  
the plants must have been collected from Baroda ! Anyway, the  
occurrence of such plants in Pavagadh is only on the authority  
of the earlier explorers.)

#### Key to the species of Ipomoea

Flowers white (at times pinkish or with purplish tinge):

Plant prostrate ..... coptica.

Plants twining or climbing:

Leaves entire:

- Sepals obtuse; flowers white ..... maxima.
- Sepals acute; flowers white with  
purplish tinge ..... obscura.
- Leaves 5 - lobed (at times entire); flowers  
white or pinkish ..... pes-tigridis.
- Flowers light blue, pinkish when fading ..... nil.
- Flowers red, pinkish, purple:
- Plant aquatic ..... aquatica.
- Plants not aquatic:
- Plants prostrate ..... sindica.
- Plants climbing or twining:
- Leaves entire ..... eriocarpa.
- Leaves lobed:
- Leaves deeply pinnately dissected  
into linear filiform segments;  
flowers red ..... guamoclit.
- Leaves palmately pedate, 5 - 7 -  
lobed; flowers purple ..... cairica.

Ipomoea contica (Linn.) Roth, apud R. et Schult. Syst.

4:208, 1819; Gr. 132; D. & G. 166; Santapau 347.

Convolvulus conticus Linn. Mant. 2, Append. 559, 1771.

Ipomoea dissecta Willd. Phytogr. 5, t. 2, 1794; FBI. 4:200;

C. 2:249.

A prostrate herb. Leaves pedately 5 - foliolate, lobes  
linear - lanceolate, serrate. Flowers small, white.

The occurrence of this plant in Pavagadh is given on  
the authority of Phatak & Joshi.

Western India, not common. Ceylon, Tropical Africa, Australia.

Ipomoea maxima (Linn. f.) Don in Sweet, Hort. Brit. (ed. 2) 372, 1830; Santapau 346.

Convolvulus maximus Linn. f. Suppl. 137, 1781.

Ipomoea sepilaria Koenig ex Roxb. Fl. Ind. 2:90, 1824, et 1:499, 1832; FBI. 4:210; C. 2:246; Gr. 131; D. & G. 166; Wight, Icon. t. 838.

A slender twiner. Leaves small, entire, ovate, acute, cordate, basal lobe round. Flowers white, small. Fruit a capsule, ovoid. Seeds minutely hairy.

On the hedges.

Flowers. - August to February.

Common everywhere; in the Pavagadh village; foot of the hill; on hedges, around the base of the hill and road-sides; also along the main road leading to Pavagadh.

OZA 66, 565.

Konkan; Deccan; Kanara; Gujarat; throughout India. Ceylon, Malacca, Malaya.

Any critical notes on the identity or on nomenclature: Compared to other species of the genus Ipomoea of Bombay, the flowers and leaves are smaller. The specific name therefore is a mistaken name !

Ipomoea obscura (Linn.) Ker - Gawl. in Bot. Reg. t. 239, 1817; FBI. 4:207; C. 2:248; Gr. 131; D. & G. 166; G. 916; Santapau 347.

Convolvulus obscurus Linn. Sp. Pl. 220, 1762.

Ipomoea solanifolia Burm. f. Fl. Ind. 49, 1768, et alior.  
auct. (non Linn.).

A twiner with slender stems. Leaves entire, thin, glabrous, ovate, acuminate, cordate. Flowers white with purplish tinge.

On hedges.

Flowers. - 26th March 1958.

Foot of the Pavagadh hill.

OZA 608.

Konkan; Deccan; S. M. Country; Gujarat; throughout India. Ceylon, Malaya, Mascarene Islands, E. Africa.

Ipomoea pes-tigridis Linn. Sp. Pl. 162, 1753; FBI. 4:204;

C. 2:250; Gr. 132; D. & G. 165; G. 918; Wight, Icon. t.

836; Santapau 348; Sant. 193.

I. pes-tigridis var. hepaticifolia Clarke in FBI. 4:204, 1883.

A climber, hairy. Leaves 5 - lobed; at times entire; lobes ovate - acuminate, narrowed at the base. Flowers white or pinkish.

The occurrence of this plant in Pavagadh is given on the authority of Phatak & Joshi.

Flowers. - September to November.

Common in hedges - Konkan; Deccan; S. M. Country; Gujarat; Punjab; throughout India. Ceylon, Malacca, Malaya, China, Polynesia, Tropical Africa.

Any critical notes on the identity or on nomenclature:  
Sant. loc. cit. writes : " The number of lobes in leaves seems to depend on the age of the leaf : near the end of the branches, leaves are 3 - lobed, lower down they are mostly 5 - 7 - lobed." Ipomoea nil (Linn.) Roth, Cat. Bot. 1:36, 1797; Santapau 348;

Sant. 192.

Convolvulus nil Linn. Sp. Pl. 219, 1762.

Ipomoea hederacea Clarke in FBI. 4:199, 1883; C. 2:252

(et al. plur. auct. non Jacq.).

A showy twiner. Leaves palmately 3 - lobed, sometimes nearly entire; ovate - cordate, lobes ovate - acuminate. Flowers light blue in colour, pinkish when fading; the structure of the calyx is noteworthy. Seeds black, hence the local name of Kala Kunpa or Kala Dana.

Observed on shrubs.

Local name: Kala Kunpa, Kala Dana.

Buds. - September. Flowers. - September to November, occasionally in April. Fruits. - September to January.

Lower parts of the hill; foot of the hill; scarce.

OZA 121, 704, 1168.

Common in Bombay. E. Africa.

Any critical notes on the identity or on nomenclature:  
The occurrence of this plant on the Pavagadh hill suggests that it is not introduced and therefore native !

Sant., loc. cit. quotes the remarks of Ooststroom in Blumea 3:497 : " Several authors have interpreted this species

as being identic with the North American Ipomoea hederacea (Linn. ) Jacq. and have mentioned it under that name ..... The true I. hederacea is probably now and then cultivated in gardens ....."

Verdcourt in his Notes on Ipomoea L., in connection with the preparation of the account of the family Convolvulaceae for the Flora of Tropical East Africa, in Taxon 7:84-85, 1958, remarks : " .....Ipomoea hederacea Jacq., the common American species, which differs from I. nil (L.) Roth in having a shorter corolla and shorter sepals, the tips of which are spreading or recurved, not erect."

Ipomoea aquatica Forsk. Fl. Aegypt. - Arab. 44, 1775; FBI.

4:210; C. 2:246; Santapau 346.

Convolvulus repens Vahl, Symb. 1:17, 1790 (non Linn.).

Ipomoea reptans Poir in Lamk. Encycl. Suppl. 3:460, 1814;

Gr. 130; D. & G. 164; G. 916.

A creeper. Leaves with long petioles, ovate or lanceolate or triangular, hastate or cordate at the base, basal lobes rounded. Flowers purple. Fruit is an ovoid capsule. Seeds covered with soft, minute hairs.

Noted in ditches; floating on the surface of the water.

Local name: Pani Vel - Bhaji.

Flowers and Fruits. - December to April.

Abundant on the plains surrounding the hill.

OZA 319.

Common throughout India; very common in Bombay. Ceylon, Tropical Asia, Africa and Australia.



Ipomoea sindica Stapf in Kew Bull. 346, 1894; C. 2:244.

Plants with slender, prostrate stems. Leaves oblong - hastate, acute, cordate. Flowers pinkish.

The occurrence of this plant in Pavagadh is given on the authority of Phatak & Joshi.

Flowers. - October.

Sind; North Western India.

Ipomoea eriocarpa R. Br. Prodr. 484, 1810; FBI. 4:204;

C. 2:243; Santapau in Fl. Pur. 85.

Convolvulus hispidus Vahl, Symb. 3:29, 1794.

Ipomoea hispida (Vahl) Roem. et Schult. Syst. 4:238, 1819;

G. 915; Santapau 346 (non I. hispida Zuccagni, 1809).

I. sessiliflora Roth, Nov. Pl. Sp. 116, 1821; D. & G. 166;

Wight, Icon. t. 169.

Plants twining, slender. Leaves villous, ovate or ovate - oblong, acute, apiculate, cordate. Flowers pinkish.

The occurrence of this plant in Pavagadh is given on the authority of Phatak & Joshi.

Flowers. - September to December. Fruits. - October to December.

Konkan; Deccan; S. M. Country; Kanara; Gujarat; throughout India. Ceylon, Afghanistan, Tropics of the Old World.

Ipomoea quamoclit Linn. Sp. Pl. 159, 1753; FBI. 4:199; Santapau

349; Sant. 191.

Quamoclit vulgaris Choisy in Mem. Soc. Phys. Hist. Nat.

Geneve 6:434, 1833; C. 2:261; D. & G. Suppl. 59.

A herbaceous climber. Leaves deeply pinnately dissected into linear filiform segments. Flowers red.

The occurrence of this plant in Pavagadh is given on the authority of Phatak & Joshi.

Flowers. - September to December.

Common in gardens throughout India. A native of Tropical America.

Ipomoea cairica (Linn.) Sweet, Hort. Brit. 237, 1827; G. 918

(excl. syn. I. pulchella Roth); Santapau 343; Sant. 193.

Convolvulus cairicus Linn. Syst. (ed. 10) 922, 1759.

Ipomoea palmata Forsk. Fl. Aegypt. - Arab. 43, 1775; FBI.

4:214; C. 2:250.

I. pulchella Wight, Icon. t. 156, 1839 (non Roth).

A twining climber. Leaves palmately pedate, 5 - 7 - lobed, middle lobe elliptic - lanceolate, acute, mucronate, the remaining lobes obtuse. Flowers purple. Fruit an ovoid capsule. Seeds clothed with white hairs.

Noted on hedges. Cultivated.

Flowers. - January 1958, 1959; August 1958.

Local uses: This beautiful climber is cultivated in the district for its showy flowers.

In the Pavagadh village; lower parts of the hill; and along the main road leading to Pavagadh.

OZA 472, 930.

Konkan; Deccan; S. M. Country; Kanara; Gujarat; W. Peninsula. Ceylon, Malacca, Tr. Asia, Africa, Australia and

America.

Any critical notes on the identity or on nomenclature:  
On the subject of the nomenclature of this plant, see Santapau,  
loc. cit.

Cressa Linn.

Cressa cretica Linn. Sp. Pl. 223, 1753; FBI. 4:225; C. 2:228;

D. & G. 162; Peter in Pfam. 4(3)A:15, f. 7, D - G.

C. indica Retz. Obs. 4:24, 1786; Gr. 133.

An erect hairy herb, 15 cms. high. Leaves elliptic,  
acute. Flowers white. Fruit a capsule.

In cultivated fields; and moist situations.

Local name: Padiyo?

Flowers. - July.

A few plants spotted near the banks of the talaos on  
the hill; also in the plains.

OZA 21.

Konkan; Deccan; Kanara; Sind; Gujarat; Punjab;  
throughout India. Ceylon, and all warm regions.

Evolvulus Linn.

Evolvulus alsinoides Linn. Sp. Pl. (ed. 2) 392, 1762; FBI.

4:220; C. 2:229; G. 923; Santapau 340; Sant. 190;

Phatak & Oza in JBNHS. 55:537.

Convolvulus alsinoides Linn. Sp. Pl. 157, 1753.

Evolvulus hirsutus Lamk. : Gr. 133; D. & G. 162.

A small prostrate herb, hairy; stems spreading up to  
30 cms. Leaves distichous, lanceolate, oblong, ovate. Flowers

blue; solitary or in pairs, peduncle axillary. Fruit a capsule.  
Seeds glabrous.

Noted in dry grounds exposed to Sun.

Local name: Jini Fudardi.

Flowers and Fruits. - June to December, occasionally up to March.

Local uses: The plant is used in dysentery and is a good tonic for asthma.

A few plants noted on the upper parts of the hill.

OZA 1547; also January, March 1958.

Konkan; Deccan; Sind; Gujarat; throughout India. Ceylon, tropical and subtropical area of the globe.

Any critical notes on the identity or on nomenclature: Santapau, loc. cit. quotes van Ooststroom in Mon. Gen. Evol. 26, 1934 : " The forms on which Linnaeus based this species is the common British India form spread throughout S. E. Asia."

#### Convolvulus Linn.

##### Key to the species of Convolvulus

Plants prostrate, trailing; stem hirsute; leaves 2.2 - 3.2 x .4 - .6 cm., petiolate, lanceolate, gradually tapering towards the base, mucronate, slightly clothed with rough hairs; sepals .7 cm. long ..... microphyllus.  
Plants prostrate, but often twining on the nearby support; stem villous; leaves 1.5 x .5 cm., sessile (sitting on the stem), linear, villous; sepals .4 cm. long ..... pluricaulis.

Convolvulus microphyllus Sieb. ex Spreng. Syst. 1:611, 1825;  
 DC. Prodr. 9:402; FBI. 4:218; C. 2:233; D. & G. 164;  
 Wight, Icon. t. 1367; Phatak & Oza in JBNHS. 55:538.

A prostrate herb, trailing; at times spreading from the centre like the rays of the Sun. Stem hirsute; 15 - 45 cms. long. Leaves 2.2 - 3.2 x .4 - .6 cm., petiolate, lanceolate, gradually tapering towards the base, mucronate, slightly clothed with rough hairs. Sepals linear, .7 cm. long. Flowers pinkish - white in colour; Cooke, loc. cit. : 'Corolla rose - yellow (C. B. Clarke).'

Usually the plant grows in patches, in association with other prostrate herbs of the locality; gregarious.

Plate No. - 24.

Local name: Shankhavali.

Flowers. - June to January, profusely in December to January. Fruits. - December to January.

Local uses: The juice of the plant with honey stops nausea, and is a tonic for delirious persons.

Abundant at the foot of the hill; fairly common and abundant in the district.

OZA 445; also January 1959.

Sind; Gujarat. Beluchistan to Egypt and Nubia.

Convolvulus pluricaulis Choisy, Convolv. Or. 95, 1833 (?);  
 DC. Prodr. 9:403; FBI. 4:218.

A prostrate herb but often twining on the nearby herbs or shrubs. Stem villous. Leaves 1.5 x .5 cm., sessile,

(sitting on the stem), linear, villous. Sepals linear, .4 cm. long. Flowers in long spikes; pinkish - white in colour.

Plate No. - 25.

Flowers. - 19/20 February 1958.

Rare; foot of the hill.

OZA 572.

Plains of Hindostan and Behar.

Any critical notes on the identity or on nomenclature:

My specimen from Pavagadh OZA 572 has been checked at the Indian Botanic Garden, Calcutta. I record my sense of gratitude to late Dr. D. Chatterjee, for helping with the identification of the plant.

Some research students of the Bombay School, consider both the species of Convolvulus as conspecific; hence during my stay in Bombay, this matter was referred to Rev. Fr. Santapau. On this subject I received the reply in a letter of 9 October, 1960; from Rev. Fr. C. Saldanha, in which he wrote : " ..... I have been asked to inform you that as far as we are able to make out, Convolvulus microphyllus and C. pluricaulis seem to be conspecific. This view has been confirmed by anatomical and chemical analysis of the two plants. A paper on the matter is just going to the press ....."

I hope my field - notes on the subject may help in finding out the real identity of the plants !

Convolvulus mironhyllus & C. pluricaulis in Bombay

These two herbs are of medicinal value; the first is listed in Cooke's Flora of the Presidency of Bombay, and is

confined to Gujarat and Sind according to him. The second is not mentioned in Cooke's Flora : however, it has been given by Saxton & Sedgwick (1918) among the Plants of N. Gujarat. Hooker gives its distribution as plains of Hindostan and Behar (Wallich, H. f. & T., & C.).

Both these species were collected by us from Pavagadh Hill, 46.6 km. NE. of Baroda. The identification of these plants posed a problem in the field since the habitat (open grounds exposed to Sun) and the flowering period for both the species are roughly the same.

The distinctive characters and our own observations which were helpful in separating the two species have been given under the plants proper.

Choisy in his account on the Family CONVULVULACEAE has clarified the position, the details of which are reproduced below (Choisy in DC. Prodr. 9:402-403).

<u>Convolvulus microphyllus</u> Sieb.	<u>Convolvulus pluricaulis</u>
ex Spreng.	Choisy
"Stem hirsute.	"Stem villous, with patent hairs.
Leaves lanceolate not attenuated to petiole.	Leaves linear, apex dilated.
Petiole very short.	Petiole nil.
Leaves $1/4 - \frac{1}{2}$ x upto $1/6$ in.	Leaves $1/4 - 1.1/4$ in. long.
Flowers axillary, solitary or 2 - 3 together, sessile or nearly so.	Flowers long spicate in axils, solitary or 2 - 3 together, subsessile.

Sepals linear acuminate, hirsute,  
dilated at base 1/4 in long.  
Corolla villous, scarcely  
2 cc. as long as calyx."

Sepals linear acuminate,  
hirsute, 1/8 in. long.  
Corolla glabrous, 2 cc.  
as long as calyx."

From this, it is evident that the two plants are different from each other. It seems, in the past, these Convolvulaceous plants must have been easily confused in the field, making their identification a difficult matter.

Since the plants are important from the medicinal point of view, a word about their local names which vary from place to place. There is a lot of confusion as the name Shankhavali is being attributed to both the plant species. C. microphyllus is of high repute in ayurvedic medicine and is used as a brain tonic. We make bold to suggest in the light of experience in the field, that C. microphyllus is Shankhavali or Shankhapushpi - the real name used in the region of Gujarat. This has been corroborated by almost all the local persons referred to in this matter. Even the literature on the subject supports our statement. The colour and the shape of the twisted flowers which resemble a conch suggest the local name !

#### Jacquemontia Choisy

#### Key to the species of Jacquemontia

Flowers white ..... paniculata.  
Flowers blue ..... pentantha.



Jacquemontia paniculata (Burm. f.) Hall. f. in Engler Bot.

Jahrb. 16:541, 1893; C. 2:235; G. 926; Santapau 343.

Ipomoea paniculata Burm. f. Fl. Ind. 50, t. 21, f. 3, 1768.

Convolvulus parviflorus Vahl, Symb. 3:29, 1794; FBI. 4:220

(non Dalz., nec Desr.).

A twining pubescent herb. Leaves ovate or cordate, acuminate. Flowers white. Fruit a globose capsule. Seeds trigonous, slightly winged.

Observed on hedges.

Flowers and Fruits. - November.

A few plants noted on the plains near the hill.

OZA 308.

Konkan; Deccan; S. M. Country; Gujarat; W. Peninsula; Assam. Ceylon, Malaya, Australia, Tropical Africa.

Jacquemontia pentantha (Jacq.) G. Don. in Gen. Syst. 4:283,

1837; Chavan & Oza in Ind. For. 86:319.

Convolvulus pentanthus Jacq. Coll. 4:210, 1790.

Convolvulus violaceus Vahl in Symb. Bot. 3:29, 1794.

Jacquemontia violacea Choisy in Mem. Soc. Phys. Genev.

8(1):61, 1838.

Jacquemontia caerulea Cooke 2:236, 1905 (non Choisy in

Mem. Soc. Phys. Genev. 6:476, 1833); FBI. 4:220.

In my field - diary for 12 - 8 - 1958, I find the following entry: "A twiner with slender, hairy stems. The leaves are ovate, acute, not at all cordate and about less than half

the size of those of the cultivated species; presence of minute hairs; arrangement of leaves entirely on one side.

Probably an escape from cultivation ..... Flowers blue."

This plant was noted on hedges. It is apparently growing wild as none of the Jacquemontias are cultivated either on the hill or in the plains which surround the base of the hill. Baroda, a place about 46.6 km. away from the present hill is the only spot where this species is cultivated in the gardens.

Flowers. - August to November.

In the forest at the foot of the Pavagadh hill.

OZA 1004, 1005; also November 1958.

Cultivated in gardens in Bombay. Native of Tropical America.

Any critical notes on the identity or on nomenclature:

(i) The identification of the specimens has been confirmed in Blatter Herbarium as being J. pentantha (Jacq.) G. Don. We have checked our plant with the description given in the floras and it differs to a great degree.

(ii) Cooke in his Flora of the Presidency of Bombay noted this plant under the name of J. caerulea. A look at the synonyms reveals that it has also been placed under the genus Convolvulus thus confusing the nomenclature. Choisy (1845) in his introduction to the CONVOLVULACEAE (DC. Prod. 9(1845) ) concludes that the synonymy of the species is already obscure. We do not wish to make it more obscure by bringing into existence a new species and proposing a new name ! In fact, we did find our plant among the Jacquemontias.

Merremia Dennst. ex Hallier f.Key to the species of Merremia

Prostrate herbs; leaves simple; flowers yellow ..... emarginata.

Climbing plants; leaves palmately compound;

flowers creamy yellow ..... quinquefolia.

Merremia emarginata (Burm. f.) Hall. f. in Engler, Bot. Jahrb.

16:552, 1893; C. 2:236; G. 928; Santapau in Pl. of  
Saur. 27; & in JBNHS. 47:344; Phatak & Oza in JBNHS.  
55:538.

Evolvulus emarginatus Burm. f. Fl. Ind. 77, t. 30, f. 1,  
1768.

Convolvulus reniformis Roxb. Fl. Ind. 2:67, 1824 and  
1:481, 1832.

Ipomoea reniformis Choisy, Convolv. Orient. in Mem. Soc.  
Phys. Genev. 6:446, 1833; FBI. 4:206; Gr. 131;  
D. & G. 164.

I. emarginata O. Kuntze, Rev. Gen. Pl. 444, 1891.

A small herb, prostrate, creeping. Leaves reniform  
or ovate - cordate, toothed. Flowers yellow. Fruit a globose  
capsule.

In moist grounds.

Plate No. - 26.

Local name: Under Kani.

Flowers and Fruits. - July to October.

Local uses: The juice of the plant is used in cases  
of rat - bite.

Foot of the hill near the stream.

OZA 1548; also July 1957, 1958.

Konkan; Deccan; S. M. Country; W. Peninsula. Ceylon,  
S. E. Asia, Tropical Africa.

Merremia quinquefolia (Linn.) Hall. f. in Bot. Jahrb. 16:552,  
1893; Ooststroom in Fl. Males. 4(4):446, f. 28, 1953;  
Santapau & Patel in JBNHS. 53:215, f. 2.

Ipomoea quinquefolia Linn. Sp. Pl. 162, 1753.

Convolvulus quinquefolius Linn. Syst. (ed. 10) 923, 1759.

This is a climber. Stems sparsely hairy. Leaves  
alternate, petiolate, palmately compound; leaflets sessile or  
subsessile, oblong - lanceolate, acute, serrate or entire.  
Flowers creamy yellow. Fruit globose capsule.

Plate No. - 27.

Flowers and Fruits. - November 1957, 1958.

Rare; Machi.

OZA 316, 1549; Patel 1190, 1191, 1192.

Common in Western India.

Any critical notes on the identity or on nomenclature:

Santapau & Patel have given this plant as a new record for  
Bombay. For a full description see the authors in JBNHS.  
53:215, f. 2.

## SOLANACEAE

Key to the genera of the SOLANACEAE

Fruit a berry:

  Anthers connivent in a cone, longer than  
  the filaments:

    Anthers opening by apical pores or  
    by short slits ..... Solanum.

    Anthers dehiscing by longitudinal  
    slits ..... Lycopersicon.

  Anthers not connivent in a cone, not  
  longer than the filaments, dehiscing  
  by lateral slits:

    Pedicels solitary ..... Physalis.

    Flowers clustered ..... Withania.

Fruit a capsule:

  Flowers axillary, solitary; corolla lobes  
  plicate ..... Datura.

  Flowers terminal, in panicles; corolla  
  lobes induplicate valvate ..... Nicotiana.

Solanum Linn.

Key to the species of Solanum

Plants unarmed ..... nigrum.

Plants armed with prickles:

  Herbs ..... surattense.

  Shrubs ..... incanum.

Solanum nigrum Linn. Sp. Pl. 186, 1753; FBI. 4:229; C. 2:263;  
 Dunal in DC. Prodr. 13(1):50; G. 936; Santapau in JBHHS.  
 47:652; Sant. 195; Phatak & Oza in JBHHS. 55:538.

S. rubrum Mill. : Wight, Icon. t. 344.

S. incertum Dunal : Gr. 137.

Erect herbs, 30 - 45 cms. tall. Leaves glabrous, thin, ovate - lanceolate, acute or acuminate, entire or sinuate - toothed. Flowers in umbellate, long - peduncled cymes; white. Fruit a globose berry.

Local name: Piludi.

Flowers. - June to January. Fruits. - December to January.

Local uses: The juice of the plant is useful for piles and stops blood - vomits. The fruits are used in fever. An infusion of the leaves is used to remove the effects of opium. The plant is used as a pot herb for disorders of the bile.

A few plants noted at about 461 m. near the temple at Nachi.

OZA 1550; also December 1957.

Konkan; Deccan; S. M. Country; throughout India. Ceylon, all temperate and tropical parts of the world.

Solanum surattense Burm. f. Fl. Ind. 57, 1768 (excl. syn. Pluk. et Raj.); Sant. (ed. 2) 154.

S. xanthocarpum Schrad. & Wendl. Sert. 1:8, t. 2, 1795;  
 FBI. 4:236; C. 2:265; G. 938; Santapau, loc. cit. 653;  
 Sant. 196; Phatak & Oza, loc. cit. 538.

S. jacquini Willd. : Gr. 139.

A prostrate, spreading, spiny herb. Prickles numerous, straight, yellow. Leaves ovate or elliptic, acute, sinuate or subpinnatifid. Flowers dark blue, in few - flowered cymes. Fruit a globose berry, yellowish.

Gregarious.

Local name: Bhony Ringani.

Flowers and Fruits. - December to May. Young seedlings. - July.

Local uses: The plant is used in asthma and relieves pains of the body. A decoction of the roots is good for cough and fevers. The fruits are smoked to relieve pain caused by decayed teeth. The application of the juice of the plant with honey is highly praised as a remedy for baldness.

Base of the hill along the roadsides; rare on the hill itself, upper talao; Machi.

OZA 575.

Konkan; Deccan; Sind; Punjab; Assam; throughout India. Ceylon, Malacca, S. E. Asia, Malaya, Trop. Australia, and Polynesia. Solanum incanum Linn. Sp. Pl. 188, 1753; C. 2:267.

S. sanctum Linn. Sp. Pl. (ed. 2) 269, 1762.

S. coagulans Forsk. Fl. Aegypt. - Arab. 47, 1775; FBI. 4:236.

A shrub about 1 - 1.5 m. high, armed with prickles. Leaves ovate - elliptic, sinuately lobed. Flowers purplish. Fruit a berry, ovoid.

Flowers and Fruits. - January.

Near Machi.

OZA January 1958, 1959; Santapau 19840.

Sind; Punjab; W. Peninsula. S. W. Asia, Arabia, Egypt.

Lycopersicon Mill.

Lycopersicon esculentum Mill. Gard. Dict. (ed. 8), n. 2, 1768;  
Santapau, loc. cit. 660; Sant. 199.

Lycopersicum esculentum Mill. : Clarke in FBI. 4:237;  
C. 2:275; Gr. 139; G. 941.

This is the popularly known Tomato plant. Branches hairy.  
Leaves pinnatisect. Flowers yellow. Fruit a red berry.

Cultivated herb in the garden. Often noted as an escape  
from cultivation on the slopes of the hill and by the side of  
roads in Shivarajpur.

Local name: Tameta.

Flowers and Fruits. - December to March.

Local uses: Used as a vegetable.

Top of the hill in the garden; a few plants noted on the  
slopes of the hill and on the plains.

OZA 320, 521; Joshi November 1954.

Commonly cultivated in India; often found growing wild.  
Native of Tr. America.

Any critical notes on the identity or on nomenclature:  
The correct spelling of the generic name is Lycopersicon, not  
Lycopersicum; as is often given in our Floras.

Santapau, loc. cit. 659 - 660, writes the note on spelling.  
" The generic name Lycopersicon was first validly published by



Miller (Gard. Dict. Abr. ed. 1754) in 1754. In the same year, as well as the preceding, Linnaeus treated the tomato species as a Solanum species, a concept in which he was followed subsequently by Miller (Gard. Dict., Posth. Edit., 1807) and others ..... When the genus was finally recognized generally as being distinct from Solanum, Miller's name was used to designate it, but Hill's erroneous spelling (Veg. Syst. 9:32, 1765), Lycopersicum, was adopted, and it was not until Druce (Rep. Bot. Exch. Cl. Brit. Isl. 1913 : 433, 1914) in 1914 pointed out the error, that Miller's original name was taken up again ..... " (Muller, Rev. Gen. Lycopers. 2, 1940).

Physalis Linn.

Physalis minima Linn. Sp. Pl. 183, 1753; FBI. 4:238; C. 2:270; Gr. 140; Santapau, loc. cit. 657; Sant. 197; Phatak & Oza, loc. cit. 538.

P. pubescens Wight, Ill. t. 166 B, f. 6 (non Linn.).

A herb 15 - 30 cms. high, at times somewhat procumbent. Branches hairy. Leaves pubescent, ovate, acute, sinuate or toothed; often with numerous perforations. Flowers solitary; yellowish. Fruit a typical berry, enveloped in the bladder - like calyx, about 2 - 2.5 cms. long.

Local name: Popti.

Flowers. - August to February. Fruits. - September to February.

Local uses: The plant is a tonic. It increases secretion of milk.

Rare; foot of the hill and on the lower parts of the hill.

OZA 190, 522.

Deccan; S. M. Country; throughout India, in the tropical region. Ceylon, Tr. Asia, Africa, and Australia.

Withania Pauquy (nom. cons.)

Withania somnifera (Linn.) Dunal in DC. Prodr. 13(1): 453, 1852;

FBI. 4:239; C. 2:271; Santapau, loc. cit. 657; Phatak &

Oza, loc. cit. 538.

Physalis somnifera Linn. Sp. Pl. 182, 1753; Gr. 139; D. & G.

175; Wight, Icon. t. 8553.

A small hairy undershrub 30 - 100 cms. high. Leaves ovate, entire. Flowers in axillary fascicles; greenish or pale yellow. In Pavagadh the colour of the flowers is pale yellow : in Baroda specimens I have observed greenish flowers. Fruit is a globose berry.

Noted in cultivated fields and in dry soils.

Local name: Ghoda Aasun.

Flowers. - September to March. Fruits. - March.

Local uses: The plant cures weakness and is good for fever.

Near the Pavagadh village, not common.

OZA 577.

Konkan; Deccan; Gujarat; Sind; throughout drier, subtropical India. Ceylon, Mediterranean regions, Canaries, Cape of Good Hope.

Datura Linn.

(On the subject of the identity and nomenclature of Daturas,  
please see Santapau in JBNHS. 47 : 657 - 659, 1948.)

Key to the species of Datura

Plants pubescent; fruit armed with long, weak spines .... inoxia.

Plants glabrous or subglabrous; fruit armed with

short spines or tuberculate ..... metel.

Datura inoxia Mill. Gard. Dict. (ed. 8) n. 5, 1768; Santapau,  
loc. cit. 659; Sant. 198.

D. metel Sims in Curtis Bot. Mag. t. 1440, 1812; FBI. 4:243;  
C. 2:273, et al. auct. recent. non Linn.

Plants pubescent. Leaves ovate - lanceolate, acute, base  
unequal. Flowers white; corolla single, 10 - toothed. Fruit is a  
capsule armed with long, weak spines.

Cultivated.

Local name: Dhanturo.

Flowers and Fruits. - January to February.

Local uses: A medicinal plant. Flowers of both the species  
are used in Hindu pujas for Lord Shiv.

A few plants noted near Machi.

OZA 568.

An American plant, introduced into India.

Any critical notes on the identity or on nomenclature:

(i) Fosberg in his paper on Nomenclatural Notes on Datura L. in  
Taxon 8:55, 1959, remarks : " Datura inoxia Mill. Gard. Dict.  
ed. 8. 1768 (unpaginated). Miller's original spelling of the

specific epithet with a single n has generally been ignored following its "correction" to innoxia by de Chazelles & Holandre, translators of the Gardeners Dictionary into French (Belgian edition) in 1787. With the present rather ambiguous wording of Article 73 of the Code it is hard to be positive as to the correctness of either spelling of this epithet. It seems to be a fact that Miller deliberately spelled the word with one n. He uses the adjective "inoxia" spelled with one n twice in the paragraph describing this species, and apparently considered this the preferable spelling. Therefore the case seems to be comparable to the first two examples accompanying this article, where we are instructed to retain the spellings Mesembryanthemum L. and Amaranthus L. in preference to the philologically preferable spellings because Linnaeus deliberately chose these spellings. The correct spelling according to the Code would then seem to be "inoxia."

(ii) In our popular floras this American plant is listed under the name of Datura metel - the true Asiatic species.

Datura metel Linn. Sp. Pl. 179, 1753; Santapau, loc. cit. 657;

Sant. 197; Phatak & Oza, loc. cit. 538.

D. fastuosa Linn. Syst. Nat. (ed. 10) 2: 932, 1759; FBI.

4:242; C. 2:273; G. et al. recent. auct. indici passim;

Gr. 141; Wight, Icon. t. 1396.

D. alba Nees in TLS. 17:73, 1837; Gr. 141; D. & G. 174;

Wight, Icon. t. 852.

D. fastuosa var. alba Clarke in FBI. 4:243, 1883; C. et al.

recent. auct. passim.

Plants glabrous. Stems black. Flowers white; at times purple coloured with corolla double or triple. Leaves triangular - ovate, unequal - sided at the base. Fruit a nodding capsule, armed with short spines or tuberculate. Seeds flat, whitish - brown.

Most probably cultivated.

Plate No. - 28.

Local name: Dhanturo.

Flowers. - Almost throughout the year, profusely in September to March. Fruits. - December to February.

Local uses: The fruit boiled in sweet oil is a superlative remedy for skin diseases. All parts of the plant are smoked in to cure cough. The juice of the plant is used for mumps and guinea-worm. The leaves and roots are applied on scorpion-sting and swollen parts.

Base and top of the hill.

OZA 1297, 1298.

Indigenous. Very common in Bombay.

Any critical notes on the identity or on nomenclature:

Fosberg, loc. cit. 53, under D. alba remarks : ' Datura alba Rumph. ex Nees, Trans. Linn. Soc. 17 : 73. 1837.

It seems that a strict interpretation of the Code, Art. 46, Rec. 46A, & Rec. 50D requires that in this case the author citation be as given above in spite of the fact that Rumphius was a pre - 1753 author. This name was published by Nees but ascribed to Rumphius, with, in addition, of course, a citation of a Rumphian polynomial. The point of difference between this and cases to which Rec. 50D applies is that Nees published this name

after 1753 with Rumphius indicated as author. It might be argued that since there is, in effect, a reference to a description by Rumphius the two authors should be connected by in rather than ex. However, this is a name which was "proposed but not validly published by one author and is subsequently validly published and ascribed to him by another author", so Rec. 46A seems to apply'.

Nicotiana Linn.

Nicotiana tabacum Linn. Sp. Pl. 180, 1753; FBI. 4:245; C. 2:276; Gr. 140; D. & G. Suppl. 62; G. 941; Santapau, loc. cit. 660; Sant. 199; Goodspeed, Gen. Nicot. 372-375, f. 74, 1954.

Tobacco plant. Herbs up to 1 m. high with very showy pinkish white flowers, in terminal panicles. Plants viscidly pubescent. Leaves ovate - lanceolate, acuminate, base cuneate or of the lower decurrent and semi-amplexicaul. Fruit is a capsule.

Cultivated in the district. Not found on the hill.

Local name: Tamaku.

Flowers. - November to March.

Local uses: Cultivated for its leaves, which are made into cigars.

OZA, On the plains !

Cooke, loc. cit. writes : " ..... grown more or less throughout India, and, in the Bombay Presidency, largely throughout the Deccan and Gujarat. Its native country is not known with absolute certainty, but it is generally supposed to be a native of S. America. It does not exhibit much tendency to spread as weed (Clarke)."

Any critical notes on the identity or on nomenclature:

Goodspeed, loc. cit. remarks : " There is to-day no well -  
authenticated record of occurrence of this spec. in the wild state."

# SCROPHULARIACEAE

## Key to the Genera of the SCROPHULARIACEAE adapted from Gamble

Leaves all alternate; corolla subregular, the tube short;  
large erect herbs; stamens 4-5 ..... Verbascum.

Leaves all or nearly all opposite; corolla tube  
usually elongate:

Corolla spurred in front at the base; capsule  
opening by pores ..... Kickxia.

Corolla not spurred, capsule opening by valves:

Corolla lobes subequal; anthers 1-celled;  
capsule septicidal ..... Sutera.

Corolla distinctly bilabiate:

Stamens 4, included in corolla tube:

Calyx campanulate, corolla palate  
with two folds; anther cells stipitate;  
capsule loculicidal ..... Lindenbergia.

Calyx 5-partite; corolla without  
folds; capsule both loculicidal and  
septicidal:

Anther cells stipitate ..... Stemodia.

Anther cells contiguous, not  
stipitate ..... Bacopa.

Stamens, if 4 the anterior (or lower) pair, if  
 2 the staminodes, attached to the corolla throat;  
 the posterior or only perfect pair of stamens  
 inserted within the corolla tube; capsule  
 septicidal ..... Lindernia.

Corolla tube elongate, the lobes spreading;  
 stamens 4, didynamous; anther cells distinct,  
 equal or one imperfect or wanting; calyx tubular,  
 ribbed, 5-lobed; semiparasitic herbs:

Corolla tube abruptly incurved near the middle,  
 the 2 upper lobes the smaller ..... Striga.

Corolla tube straight; anthers 2-celled ..... Sonubia.

Verbascum Linn.

Verbascum chinense (Linn.) Santapau in Fl. Pur. 90, 1958;  
 Sant. (ed. 2) 157.

Scrophularia chinensis Linn. Mant. 2:250, 1771.

Celsia chinensis Druce in Rep. Bot. Soc. & Exch. Club.  
 1916, Suppl. 2:612, 1917.

Celsia coromandeliana Vahl, Symb. Bot. 3:79, 1794; Benth. in  
 DC. Prodr. 10:246; FBI. 4:251; C. 2:281; D. & G. 176;  
 Wight, Icon. t. 1406.

Verbascum coromandelianum O. Kuntze : Sant. 200, 1953;  
 Santapau in JBNHS. 49:25.

An erect herb 45 - 100 cms. high. Leaves lyrate -  
 pinnatifid at the base, gradually becoming smaller up the stem.



Flowers yellow, in simple or branched terminal racemes. Fruit a subglobose capsule.

Noted in moist soils and in the cultivated fields.

Local name: Kalhar.

Flowers and Fruits. - August to March. Dried plants with fruits in May.

A few plants noted at Machi near the Mend Talao; occasional on the plains in cultivated lands.

OZA 69, 724.

Konkan; Deccan; Gujarat; Sind; Punjab; throughout India. Ceylon, Pegu, Afghanistan, Ava, China.

Any critical notes on the identity or on nomenclature: In Cooke's Flora and the other Indian Floras, this plant goes under the name of Celsia coromandeliana; on the subject of Verbascum and Celsia, see Santapau, loc. cit.

Kickxia Dumort.

Key to the species of Kickxia

Plants hairy; corolla hairy; leaves not hastate ..... incana.

Plants glabrous; corolla glabrous; leaves hastate .... ramosissima.

Kickxia incana (Wall.) Pennell, Scrop. West. Himal. 59, 1943; Santapau in JBNHS. 49:27, 1950.

Linaria incana Wall. Pl. As. Rar. 2:43-44, 1831; Benth. in DC. Prodr. 10:270, 1846; FBI. 4:252.

L. cabulica Benth. in DC. Prodr. 10:270, 1846; C. 2:283.

L. cabulica var. pubescens Hook. f. FBI. 4:251, 1883.

A slender hairy herb branching from the base, pendulous. Leaves small; specimens with larger leaves are met with in monsoon. Flowers yellow; corolla hairy : Pennell, loc. cit. upper lip purplish and palate purple spotted. Fruit an ovoid capsule.

Moisture loving plants. Lithophytic.

Flowers. - September to March, occasionally to May.

Fruits. - September to May. Leaves only. - July.

Abundant and common everywhere on the old fort walls, at about 461 - 804 m.

OZA 127, 279; Santapau 19878, 19879.

Bombay; W. and C. Himalaya; from Kashmir to Nepal. Beluchistan.

Any critical notes on the identity or on nomenclature: Santapau in his Flora of Purandhar 90 - 91 writes : " I have united Linaria incana Wall. with Linaria cabulica Benth., following Pennell; Cooke ( 2:283 ) places L. cabulica among the Excluded Species on the plea that there is no evidence of its occurrence within the boundaries of Bombay State; Perrottet, according to Bentham in DC. Prod. 10:270, found the plant on the walls of Deccan forts; in Purandhar it is a rather striking plant, and a common one, too, but is only found on the highest parts of the hill."

Kickxia ramosissima (Wall.) Janchen in Oesterr. Bot. Zeitschr. 82:152, 1933; Santapau, loc. cit. 27.

Linaria ramosissima Wall. Pl. As. Rar. 2:43, t. 153, 1831;

FBI. 4:251; C. 2:282; D. & G. 176; G. 946.

Linaria sp. Graham, Cat. 142.

Elatinoides ramosissima (Wall.) Wettstein in Engl. & Prantl,  
Pfam. 4(3b):58, 1891.

A herb in large pedulous masses, glabrous. Leaves variable; triangular - hastate, lobed. Flowers yellow; corolla not hairy. Fruit a capsule, ovoid or subglobose.

On the walls of the fort.

Flowers and Fruits. - 1st May 1958.

Rare; Sadan Shah gate, Pavagadh.

OZA 718, 719, 720; Joshi 123, 123 A.

Konkan; Deccan; S. M. Country; Gujarat; Sind; Punjab; throughout India, on rocks and stony places. Ceylon, Chittagong, Afghanistan, Ava.

Any critical notes on the identity or on nomenclature:

The generic name of this plant is very complicated. On the subject Santapau, loc. cit. 26-27 writes: "Wettstein in Eng. & Prantl, Pflanzenfam. 4 (3b) : 58, 1891, separated the Indian Linaria ramosissima Wall. from the genus Linaria and placed it under Elatinoides (Chav.) Wettst. The oldest name for the genus is Elatine Hill, Brit. Herb. 113, 1756; but the name is already preoccupied by Elatine Linn. Sp. Pl. 367, 1753, which is applied to quite a different genus. The oldest valid name is then Kickxia Dumort. Fl. Belg. 35, 1827, and this is the name proposed by Pennell, in spite of the fact of the existence of Kickxia Blume, 1828, for a genus of the Apocynaceae."

Sutera Roth

Sutera dissecta (Del.) Walp. Repert. 3:271, 1844; Santapau,  
loc. cit. 28; Sant. 200.

Capraria dissecta Del. Fl. Egypte 95, t. 32, f. 2, 1812.

Sutera glandulosa Roth, Nov. Pl. Sp. 291, 1821; FBI. 4:258;  
C. 2:285; G. 946; Wight, Icon. t. 856.

An erect, glandular hairy herb, branching somewhere near its base. Leaves pinnatifid. Flowers small, white in colour. Fruit a septicidal capsule, ovoid - oblong.

In moist situations.

Flowers and Fruits. - December to January.

Not common nor abundant; on the plains; did not notice it on the hill.

OZA Preserved in the museum !

Konkan; Deccan; W. Peninsula; Behar; Bengal. Arabia, Egypt, Nubia.

Any critical notes on the identity or on nomenclature: Bruce in Kew Bull. 1940 (2) : 63 - 64 gives some interesting remarks on the genus Sutera : I beg to refer the reader to Bruce's remarks.

Lindenbergia Lehm.

Lindenbergia indica (Linn.) O. Kuntze, Rev. Gen. Pl. 462, 1891;  
Santapau, loc. cit. 45; Phatak & Oza in JBNHS. 55:539;  
and in J. M. S. Univ. Baroda. 6:106.

Dodartia indica Linn. Sp. Pl. 633, 1753.

Lindenbergia ruderalis Voigt. Hort. Sub. Calcut. 501, 1845.

Stemodia ruderalis Retz. Obs. 5:25, 1789.

Lindenbergia urticaefolia Lehm. in Link & Otto, Ind. Sem.

Hort. Hamb. 1829:5, 1830; FBI. 4:262; C. 2:307; Gr. 143;

D. & G. 176; Blatter & Hallberg in JBNHS. 25:424,

L. polyantha Royle ex Benth. Scroph. Ind. 22, 1835; FBI.

4:262; C. 2:307.

A hairy herb, in large pendulous masses, stems 30 - 45 cms. long; at times very small plants having erect stems have been noted. Leaves thin, ovate, cuneate, serrate. Flowers yellow. Fruit a loculicidal capsule.

Lithophyte. Is this 'atypical' spec. parasitic on Canscora pauciflora ?

Local name: Bhint Chatti.

Flowers. - July to November, occasionally to March.

Fruits. - September to November.

Local uses: The juice of the plant is used in chronic bronchitis.

Fairly abundant; on old walls near the dharamsala at Machi; higher parts of the hill; in the forest proper.

OZA 208, 209, 277, 287, 288, 854, 1180; Joshi 122.

Konkan; Deccan; Gujarat; Sind; W. Peninsula; Himalaya; Punjab; Behar; E. Bengal. Afghanistan, Burma.

Any critical notes on the identity or on nomenclature: My specimens OZA 287, 288 from Pavagadh have been identified by Rev. Fr. C. Saldanha of Bombay. The present plant includes both L. urticaefolia Lehm. and L. polyantha Royle. Blatter & Hallberg,

loc. cit. have discussed these two plants, which please see. In our floras this plant is listed under the name of L. urticaefolia.

Stemodia Linn. (nom. cons.)

Stemodia viscosa Roxb. Fl. Cor. 2:33, t. 163, 1798; FBI. 4:265; C. 2:288; Gr. 143; D. & G. 176; G. 949; Wight, Icon. t. 1408; Santapau, loc. cit. 32; Sant. 201.

Erect herbs up to 30 cms. tall; aromatic, viscid, presence of glandular hairs. Leaves sessile, oblong, cordate, amplexicaul. Flowers blue - purple.

Flowers and Fruits. - September to March.

Fairly common; noted all over the hill.

OZA 1551; also September 1957, 1958; Joshi 256.

Konkan; Deccan; Gujarat; Central and Western India.

Afghanistan.

Bacopa Aubl. (nom. cons.)

Bacopa monnieri (Linn.) Pennell in Proc. Acad. Nat. Sci. Philad. 98:94, 1946; Santapau, loc. cit. 30; Sant. 201; Phatak & Oza in JBNHS. 55:538; and in J. M. S. Univ. Baroda. 6:105.

Lysimachia monnieri Linn. Cent. Plant. 2:9, 1756.

Moniera cuneifolia Cooke, Fl. Pres. Bomb. 2:285, 1904; G. 953.

Herpestis monniera Benth. Scroph. Ind. 30, 1835; FBI. 4:272; Gr. 144.

Herpestes monniera Dalz. & Gibs. Bomb. Fl. 178, 1861.

Bramia monnieri Pennell in Proc. Acad. Nat. Sci. Philad. 71:243, 1920.

A prostrate, spreading, succulent, herb. Leaves obovate - oblong, obtuse. Flowers pale blue. Fruit an ovoid capsule.

In moist places.

Local name: Jalnevari; Bam.

Flowers and Fruits. - August.

Local uses: Useful as a tonic in nerve weakness, asthma, and rheumatism.

Near the ponds.

OZA 1552; also August 1957, 1958.

Konkan; Deccan; Sind; Punjab; throughout India in wet places. Ceylon, Singapore, all warm countries.

Any critical notes on the identity or on nomenclature:  
On the subject of the nomenclature of this plant, see Santapau, loc. cit.

#### Lindernia All.

##### Key to the species of Lindernia.

Leaves sharply, deeply and closely serrate; flowers  
white - pinkish blue, in lax terminal racemes,  
bracts subulate ..... ciliata.  
Leaves shortly and distantly serrate; flowers  
purplish violet, in axillary racemes, bracts  
setaceous ..... oppositifolia.

Lindernia ciliata (Colsm.) Pennell in JAA. 24:253, 1943;

Mukerjee in JIB. 24:133; Santapau, loc. cit. 39;

Sant. 204.

Gratiola ciliata Colsmann, Prodr. Descr. Grat. 14, 1793.

Bonnaya brachiata Link & Otto, Icon. Pl. Sel. 25, t. 11, 1820;  
 FBI. 4:284; C. 2:297; Gr. 143; D. & G. 178; Blatt. & Hallb.  
 in JBNHS. 25:418.

Erect herbs, measuring 5 - 7.5 cms., small and delicate.  
 Leaves glabrous, sessile, oblong, obtuse or subacute, spinous -  
 serrate (sharply, deeply and closely serrate). Flowers white -  
 pinkish blue; in lax terminal racemes, bracts subulate. Fruit a  
 linear - oblong capsule.

In wet soils.

Flowers and Fruits. - August to October.

On the banks of the lower pond.

OZA 1553; Joshi 93.

Konkan; Gujarat; Himalaya; Punjab; Travancore; throughout  
 India. Malacca, Ceylon, Java, China, Philippine Islands.

Lindernia oppositifolia (Retz.) Mukerjee in JIB. 24:134, 1945;

Santapau, loc. cit. 40.

Gratiola oppositifolia Retz. Obs. 4:8, 1786 (non Linn.,  
 ut scribit Mukerjee).

Bonnaya oppositifolia Spr. Syst. 1:41, 1825; Benth. in DC.

Prodr. 10:421; FBI. 4:286; C. 2:298; Gr. 143; D. & G.  
 179; G. 962.

Ilysanthes oppositifolia Urban in Berl. Deutsch. Bot. Ges.  
 2:445, 1884.

Vandellia oppositifolia Haines, Bot. Bih. & Or. 634, 1922.

Herbs erect, about 5 - 7.5 cms. high. Leaves sessile,



linear - oblong, shortly and distantly serrate. Flowers purplish violet : Cooke, loc. cit. blue (Roxb.); in axillary racemes, bracts setaceous.

In wet soils.

Flowers and Fruits. - August to October.

Fairly common on the banks of both the ponds; rare on the top of the hill.

OZA 980, 981.

Konkan; Deccan; W. Peninsula.

### Striga Lour.

#### Key to the species of Striga

Flowers white, calyx 15 - ribbed; stems not purple coloured ..... euphrasioides.

Flowers purple - pinkish, calyx 5 - ribbed; stems purple coloured ..... gesneroides.

Striga euphrasioides (Vahl) Benth. in Comp. Bot. Mag. 1:364, 1836; FBI. 4:299; C. 2:303; Gr. 145; D. & G. 181; G. 968; Santapau, loc. cit. 44; Sant. 208; Phatak & Oza in JBNHS. 55:539.

Buchnera euphrasioides Vahl, Symb. Bot. 3:81, 1794; Wight, Icon. t. 855.

An erect herb 15 - 25 cms. high. Leaves scabrous, linear. Flowers white. Fruit an oblong - ellipsoid capsule.

The Strigas turn black on drying. This plant is a root - parasite on grasses.

Local name: Dholo Aagiyo.

Flowers and Fruits. - July to October.

Local uses: The plant improves appetite.

Abundant; in the forest; lower half of the forest.

OZA 191; Joshi 72.

Konkan; Himalaya; Punjab; throughout India in the plains.

Ceylon, Java.

Striga gesneroides (Willd.) Vatke ex Engl. Abhandl. Preuss. Akad. Wiss. 28, 1894; Santapau, loc. cit. 42; Sant. 206.

Buchnera gesneroides Willd. Sp. Pl. 3:338, 1801.

Striga orobanchioides Benth. in Comp. Bot. Mag. 1:361, t. 19, 1836; FBI. 4:299; C. 2:302; D. & G. 181; G. 967; Wight, Icon. t. 1414.

Erect herbs with purple coloured stems, and scale - like leaves. Flowers purple - pinkish. Fruit a capsule, oblong - ellipsoid.

Parasitic on the roots of Lepidagathis cuspidata (Wall.)

Nees.

Local name: Rato Aagiyo.

Flowers and Fruits. - October to December.

Higher parts of the hill.

OZA 1554.

Konkan; Deccan; Gujarat; W. Peninsula. Ceylon, Tropical and S. Africa, Arabia.

Sonubia Buch. - Ham.

Sonubia delphinifolia (Roxb.) G. Don, Gen. Syst. 4:560, 1837;

FBI. 4:302; C. 2:305; Gr. 145; D. & G. 182; G. 970; Blatt. & Hallb. in JBNHS. 25:428; Santapau, loc. cit. 45; Sant. 208.

Gerardia delphinifolia Roxb. Pl. Cor. 1: t. 90, 1795.

Erect herbs up to 30 cms. high. Leaves pinnatisect; lobes filiform, passing into simple floral bracts. Flowers purple, 2 - 2.5 cms. long. Fruit is an oblong capsule.

Parasitic on the roots of Setaria glauca (Linn.) Beauv. and Arthraxon spec.

Flowers and Fruits. - August 1958.

Fairly abundant; higher parts of the hill; base of the hill.

OZA 940, 941.

Konkan; Deccan; Gujarat; W. Peninsula; Behar. Ceylon.

#### OROBANCHACEAE

##### Orobanche Linn.

Orobanche cernua Loefl. It. Hsp. 152, 1758, var. desertorum

Ritter Beck, Mon. Orob. in Biblioth. Bot. Heft. 19:142, f. 33(1), 1890; C. 2:314.

O. nicotianae Wight, Ill. 2:179, t. 158, 1850; FBI. 4:326; Phatak & Oza in JBNHS. 55:539.

Erect herbs, 15 - 30 cms. high. Stems brownish. Flowers: Corolla - blue limb and white tube. Fruit is an ellipsoid capsule.

In my field-diary for 26-3-1958, I find the following entry : "Root parasite on tobacco plants : fairly abundant; in a few fields the distribution of the plant suggested that it was cultivated !"

Plate No. - 29.

Local name: Vakunbo.

Flowers and Fruits. - December to March.

Local uses: A fodder for cattle.

Abundant; in the cultivated fields, - surrounding plains of the hill.

OZA 615, 616.

Cooke, loc. cit. remarks : " I have seen no specimens of this plant from the Deccan, where it is said to occur on tobacco, nor it is included in Woodrow's list. Dalzell's specimen in Herb. Kew. is from Coimbatore." In Pavagadh, and all over the district, this plant is fairly common and abundant. W. Peninsula; W. Himalaya; from Nepal to Kashmir and W. Tibet; Punjab. Westwards to N. Africa and Spain, extra - tropical Australia.

#### GESNERIACEAE

Didymocarpus Wall. (nom. cons.)

Didymocarpus pygmaea Clarke in DC. Mon. Phan. 5(1):82, 1883;

et in Hook. f. FBI. 4:345, 1884; G. 988; Santapau et

Saldanha in JBNHS. 53:212 - 13, f. 4.

Roettlera pygmaea O. K. Rev. Gen. Pl. 2:476, 1891.

A small, delicate herb, pubescent. Stem short. Usually single - leaved, at time more than two, hairy, thin, sessile, entire, ovate to ovate - oblong, penninerved, obtuse, cordate. Flowers white. Fruit a cylindrical capsule.

In moist places; on the rocky walls of the fort, protected from the Sun. About this plant, I find the following entry in my field diary (16-11-1958) : " This plant from one and the same locality has been recorded by earlier explorers as : Didymocarpus or Chirita or Roettlera. The distinction

between Chirita and Didymocarpus is not quite clear to us. Our other sheets show bifid as well as rounded capitate stigmas on the same plant.

We shall have to pay more attention, rather critical study to the plant in question !"

Plate No. - 30.

Flowers and Fruits. - September to February.

Abundant; on old walls near Machi, at 461 m.

OZA 125, 126, 511, 1157, 1158; Joshi 209; C. Saldanha 1783, 1784, 1786.

Pavagadh (Gujarat); C. India; Chota Nagpore; Bihar; Orissa; N. Madras.

Any critical notes on the identity or on nomenclature:

(i) Santapau et Saldanha, loc. cit. have given this plant as a new record for Bombay : for a full description see the authors.

(ii) The Identity of the GESNERIACEAE Plant from Pavagadh : Burt (1960) in Notes Roy. Bot. Gard. Edin. 23:96, has identified the plant as Chirita cristata (Dalz.) Burt, a new combination of Didymocarpus cristatus Dalz.

Burt, loc. cit. writes:

" Chirita cristata (Dalzell) B. L. Burt, comb. nov.

Syn. : Didymocarpus cristatus Dalzell in Hook. Journ. Bot. and Kew Gard. Misc. 3:225 (1851); Dalzell & Gibson, Bombay Fl. 134 (1861).

Through the kindness of Prof. A. R. Chavan of the University of Baroda, we have been able to cultivate this plant, on which he has published some organogenetic data (Chavan &

Deshmukh in Journ. M. S. Univ. Baroda, 1(2), 73 - 77 : 1952 and 5(2), 29 - 36 : 1956). Prof. Chavan's material comes from the walls of the fort at Pavagadh, north-east of Baroda, and this is the locality from which Dalzell described the species. C. B. Clarke (in DC. Mon. Phan. 5(1), 128 : 1883) reduced it to Chirita hamosa R. Br., but the corolla of that species is larger, funnel-shaped rather than tubular in the upper part, and it also has larger fruits.

More recently Santapau & Saldanha (in Journ. Bombay Nat. Hist. Soc. 53(2), 212 : 1955) have recorded this plant as Didymocarpus pygmaeus C. B. Cl., a species usually found further east (Bihar and Orissa etc.), and I am indebted to Father Santapau for the loan of material from the Blatter herbarium. Living material of Chirita cristata clearly has the bifid stigma of Chirita, as Prof. Chavan has described. Even should Didymocarpus pygmaeus prove to be the same plant, C. cristata would stand as the earlier name."

In this context, we had written to Mr. Burtt, with the details of the plant, out of which some of the remarks are given below:

Is the Pavagadh plant really Didymocarpus cristatus Dalz? We have not seen the type description in Hooker Journ. Bot. iii, 225, 1851, but his description in Dalz. & Gibson, Bomb. Fl. 134, 1861, is given below as a partial extract:

" Stems 8 to 9 inches ... Leaves large, opposite-petioled ... Inflorescence in the opposite axils ... Capsules long slender, curved." None of these characters fit this plant. Until further

evidence is available, our plant does not seem to be Didymocarpus cristatus Dalz. We are inclined to follow Clarke in FBI. 4:360, 1884, and Cooke, Bomb. Fl. 2 : 322, who consider Didymocarpus cristatus Dalz. as synonymous to Chirita hamosa Clarke, where stems, leaves and fruits are as described by Dalzell. For the question of priority we quote Santapau (1949) in JBNHS. 48:490.

Didymocarpus Wall.

" The generic name Didymocarpus Wall. in Edinb. Phil. Journ. 1:378, 1819 is nomen conservandum against Roettlera Vahl, Enum. 1:87, 1805.

1. Didymocarpus hamosa Wall. Cat. no. 788, 1829, nom. nud.

Chirita hamosa (Wall.) R. Br. in Benn. Pl. Jav. Rar.

117, 1840; Clarke in Comm. et Cyrt. Beng. 110, t. 78, 1874; id. in DC. Monogr. Phan. 5(1) : 128, 1883; id. in Hook. f. FL. Brit. Ind. 1:360, 1884; Cooke 2:322.

Didymocarpus cristata Dalz. in Hook. Kew. Journ.

Bot. 3:225, 1851; Dalz. & Gibbs. Bomb. Fl. 134.

Roettlera hamosa (Wall.) O. Kuntze, Rev. Gen. Pl. 415, 1891; Fritsch in Engler, Pflanzenfam. 4(3b) : 148, 1895.

Wallich published the name of Didymocarpus hamosa in his Catalogue or List, but in the absence of a description, the publication was not valid; the plant was first described by R. Brown under the name of Chirita hamosa, the name Didymocarpus hamosa Wall. being cited as a synonym by Brown, the date 1840

must therefore be considered as the earliest date for the valid publication of Chirita hamosa as well as Didymocarpus hamosa."

Santapau & Saldanha (1955) in JBNHS. 53:212, t. 4, have described the Pavagadh plant as:-

Didymocarpus pygmaea Clarke in DC. Mon. Phan. 5(1) :

82, 1883, et in Hook. f. Fl. Brit. Ind. 4 : 345,  
1884; Haines, Bot. Bih. & Or. 648; Gamble, Fl. Madr.

988; Burt in Notes R. Bot. Gard. Edinb. 21 : 202, 1954.

Roettlera pygmaea O. K. Rev. Gen. Pl. 2 : 476, 1891.

Chavan & Deshmukh (1952, 1956) in Journ. M. S. Univ., Baroda 1(2):73, & 5(2):29, state that the Pavagadh plant is Roettlera hamosa (R. Br.) O. Kz. var. unifolia (Cl.) O. Kz. Santapau & Saldanha, loc. cit. 211, t. 3, have given another plant - Chirita hamosa R. Br. var. unifolia Clarke in Hook. f. Fl. Brit. Ind. 4:361, 1884. (T. R. D. Bell 3171 in Herb. Sedgwick, collected in N. Kanara in 1917. The specimen is preserved in Blatter Herbarium, but bears no further indication of the exact locality where the plant was collected).

Dalzell had never been to Pavagadh : the species described by him is not from this locality. The locality as given in Cooke's Flora of the Presidency of Bombay (2:323) & Dalz. & Gibson, Bomb. Fl. (p. 134) is Parva Ghat situated in Southern Maratha Country, a place far away from Pavagadh. In the literature, especially in the Flora of Bombay, no reference has been made to Pavagadh.



A look at the MS. reveals that the plant from one and the same locality has been recorded by earlier explorers as: Didymocarpus or Chirita or Roettlera. The distinction between Chirita and Didymocarpus is not quite clear to us. Our sheets show bifid as well as rounded capitate stigmas on the same plant.

Is our plant therefore, the same as that of Dalzell's D. cristatus or Clarke's Didymocarpus pygmaea ?

For this we have received a reply from Mr. Burt. In the letter of 9th January, 1961, he wrote; " ..... Now, about Chirita cristata. You are ofcourse perfectly correct that I made a ..... mistake in mixing up Pavagadh and Parvaghat. When at Kew I was able to examine Dalzell's type specimens of Chirita cristata. These are unfortunately all in fruit. The size of the plant varies from a rather large unifoliate plant to one about 15 cms. high, and in this agrees with the plants I raised from your Pavagadh seed. The only difference between Dalzell's plant and those cultivated here is that the fruits of the latter are somewhat longer : the longest fruits on my Pavagadh plants equal the shortest on Dalzell's material. The lack of corollas on the types is most unfortunate as Dalzell's description is insufficient to allow one to say whether they would have agreed better with your plant or Chirita hamosa.

You will see the difficulty. Although I made a mistake about the locality, I am not yet absolutely certain that I made a mistake about the plant. If I am wrong in saying the Pavagadh plant is Chirita cristata, is it Didymocarpus pygmaeus ?

All the herbarium specimens I have yet seen of this plant are very small and single-leaved, and all have been from Orissa, N. Madras and eastern Madya Pradesh.

I have asked people in India to get me seed of this Didymocarpus and I am also trying to get true Chirita cristata, and also true C. hamosa. Without this material I do not really feel in a position to judge. This makes it very difficult for your student working on the Pavagadh flora, but I do not think it is possible to give a certain answer to the problem from the available materials. If you know of anyone who can get seed of the other plants in this group I hope you will encourage them to do so .....

Rev. Fr. Cecil Saldanha of Bombay has kindly examined some of my sheets of the GESNERIACEAE plant from Pavagadh. He still considers our plant to be Didymocarpus pygmaea Clarke and not the plant of Dalzell.

I am indebted to Rev. Fr. Saldanha & Mr. B. L. Burtt of Royal Botanic Garden, Edinburgh, for their help in my attempt to find out the real identity and synonymy of the Pavagadh plant.

#### BIGNONIACEAE

##### Tecoma Juss.

Tecoma stans (Linn.) H. B. K. Nov. Gen. and Spec. 3:144, 1819;

Bor & Raizada in JBNHS. 41:683, f. 1, tt. opp. pp.

683 and 684; Sant. 217; Chavan & Oza in JBNHS.

Bignonia stans Linn. Sp. Pl. (ed. 2) 871, 1763.

Stenolobium stans Seem. in Journ. Bot. 1:88, 1863; C. 2:335.

A small tree. Flowers bright yellow.

Wild or possibly planted. Parasitized by Dendrophthoe falcata (Linn. f.) Etting.; the parasite has attacked a new species in the genus Tecoma. Our note on the subject, has been accepted for publication in the subsequent issue of JBNHS.

Flowers. - January to March.

Foot of the Pavagadh hill.

OZA 413; also March 1958, January 1959.

Cultivated in Bombay. West Indian plant.

#### PEDALIACEAE

##### Sesamum Linn.

Sesamum indicum Linn. Sp. Pl. 634, 1753; FBI. 4:387; C. 2:338;

D. & G. 161; G. 1002; Sant. 217.

S. orientale Linn. Sp. Pl. 634, 1753; Gr. 126.

Erect plants, about 1 m. high. Upper leaves entire, lanceolate; lower leaves lobed, serrate. Flowers white or purple. Fruit is an oblong capsule, 2.5 cms. long. Seeds smooth, black or white, obovate.

The plant is cultivated in the district. Noted as an escape from cultivation; growing wild.

Local name: Tal.

Flowers. - August to October, occasionally to February.

Fruits. - October to February.

Local uses: Cultivated for the seeds which yield the oil used in cooking.

Foot of the hill and in the forest.

OZA 984 of 12-8-1958; 1305, 1306, 1307 of 1-2-1959.

Cooke, loc. cit. writes : " It is probably a native of Tropical Africa, but its original habitat is not known with certainty. It has been cultivated in India from a very remote period, and is grown in many of the tropical regions of the world."

Any critical notes on the identity or on nomenclature: This has reference to Article 57 of the International Code of Botanical Nomenclature (1956).

#### ACANTHACEAE

#### Key to the Genera of the ACANTHACEAE adapted from Santapau

Erect or prostrate, not climbing; seeds not supported on hard retinacula; ovules many in each cell; calyx 4-partite; stamens 2; bracts rigid; peduncle of spike covered with alternate scales ..... Elytraria.

Erect or prostrate, not climbing; seeds supported on hard retinacula:

Corolla without an upper lip; lower lip large, expanded, 3-lobed; ovules 2 in each cell; lower filaments with an excurrent process ..... Elepharis.

Corolla 2 - lipped or with 5 subequal lobes:

Corolla lobes twisted to the left in bud:

Ovules more than 2 in each cell;

capsule 6 - or more - seeded:

Corolla distinctly 2 - lipped:

Inflorescence spinous ..... Asteracantha.

Inflorescence not spinous ..... Hygrophila.

Corolla subequally 5 - lobed:

Inflorescence of single axillary  
flowers, or in axillary triads,  
or 2 - 3 flowers superposed ..... Dipteracanthus.

Inflorescence more or less  
elongate in simple spikes  
with one uniform colour of  
bracts ..... Hemigraphis.

Ovules 2 in each cell; capsule 4 - or  
fewer - seeded; anthers not spurred at  
base:

Corolla tube slender, long linear;  
stamens 2 ..... Eranthemum.

Corolla tube infundibuliform;  
stamens 4 ..... "Strobilanthes".

Corolla lobes imbricate in bud:

Ovules 3 - 10 in each cell; capsule  
normally 6 - or more - seeded:

Flowers in panicle often unilateral  
racemes without axillary cladodes .... Andrographis.

Flowers clustered in the midst of  
axillary cladodes ..... Haplantus.

Ovules 2 ( or 1 ) in each cell:

Corolla lobes 5, subequal; anthers  
2 - celled:

Calyx 4 - partite, lobes unequal;

stamens 2 only perfect ..... Barleria.

Calyx 2 - lipped, 5 - lobed; stamens 4 ..... Neuracanthus.

Corolla distinctly 2 - lipped:

Stamens 4, anthers 2 - celled ..... Lepidagathis.

Stamens 2, anthers 2 - celled:

Placentas separating elastically from  
the valves, from the base upwards:

Bracts in unilateral spikes ..... Rungia.

Bracts clustered in leaf axils

or laxly cymose ..... Dicliptera.

Placentas not separating elastically  
from the valves; anther cells one  
higher than the other:

Anther cells, at least the lower  
ones, with a white basal spur ..... Justicia.

Anther cells not spurred at base:

Anther cells apiculate ..... Adhatoda.

Anther cells not apiculate;

bracts larger than the bracteoles,

in opposite, valvate pairs;

corolla rose purple ..... Peristrophe.

Elytraria L.C.Rich. (nom.cons.)

Elytraria acaulis (Linn. f.) Lindau in Engl. & Prantl, Pfam.

1:304; 1897; G. 1009; Santapau in Bot. Mem. Univ.

Bomb. 2:11.

Justicia acaulis Linn. f. Suppl. 84, 1781.

Tubiflora acaulis O. Kuntze, Rev. Gen. Pl. 500, 1891; C. 2:345.

A small herb with radical leaves, spatulate, decurrent into the petiole, obovate, crenate, obtuse. Flowers on long bracteate scapes, simple; white. The colour of the flowers in Pavagadh and the whole of the district is always white; I have not seen bluish flowers, as mentioned by Cooke for the genus. Fruit an ovoid capsule.

Noted in dense patches.

Flowers and Fruits. - June to September, occasionally to January.

Fairly abundant; half way up the hill by the sides of the path in the forest. Cooke, loc. cit. mentions that the plant is not common; our findings are that the plant is fairly common all over the district.

OZA 1555; also June 1957, 1958; Santapau 19857.

Gujarat; W. Peninsula, extending north to Delhi and to the E. Himalaya. Ceylon, Tropical and S. Africa, Tropical and N. America.

Blepharis Juss.

Blepharis maderaspatensis (Linn.) Roth, Nov. Pl. Sp. 320, 1821; Santapau, loc. cit. 15.

Acanthus maderaspatensis Linn. Sp. Pl. 892, 1753.

Blepharis boerhaviaefolia Pers. Syn. Pl. 2:180, 1806;

C. 2:349; Gr. 160; D. & G. 192; G. 1013; Wight, Icon. t. 458.

A prostrate herb; stems 15 - 40 cms. long. Leaves membranous, coarsely toothed. Flowers bluish with a yellow spot on the lower lip.

Local name: Utingan.

Flowers and Fruits. - September to March.

Rare; in the forest; half way up the hill by the sides of the path on the slopes of forest.

OZA 1313.

Konkan; Deccan; S. M. Country; Gujarat; W. Peninsula; Pegu, Behar. Ceylon, Ava, Tropical and S. Africa.

Asteracantha Nees

Asteracantha longifolia (Linn.) Nees in Wall. Pl. As. Rar. 3:40, 1832; Wight, Icon. t. 449; D. & G. 189; C. 2:352; G. 1015; Sant. 219; Santapau, loc. cit. 17.

Barleria longifolia Linn. Cent. Plant. 2:22, 1755 & Amoen.

Acad. 4:320, 1759; Gr. 161.

Hygrophila spinosa Anders. in Thwait. Enum. 225, 1860; FBI. 4:408.

A hispid herb about 30 cms. high; presence of yellow spines in the leaf - axil. Leaves in whorls of 6, lanceolate. Flowers blue. Fruit is a linear - oblong capsule.

Noted in ditches and wet soils by the side of the talaos, in dense clumps. Gregarious.

Plate No. - 31.

Local name: Aekharo.



Flowers. - October to March. Fruits. - February to March.

Fairly common and abundant; on the hill, by the sides of the paths at about 769 m.; in open places, higher parts of the hill; upper talao; on the plains in ditches and by the road sides.

OZA 250, 251, 291, 292.

Konkan; Deccan; Himalaya; throughout India. Ceylon, Tropical and S. Africa.

Hygrophila R. Br.

Hygrophila polysperma (Roxb.) Anders. in JLS. 9:456, 1867; FBI.

4:406; C. 2:353; G. 1015; Sant. 219; Santapau, loc. cit. 19.

Justicia polysperma Roxb. Hort. Beng. 3, 1814 and Fl. Ind.

1:119, 1832.

Hemiadelphis polysperma Nees in Wall. Pl. As. Rar. 3:80, 1832;

Wight, Icon. t. 1492.

Prostrate herbs, rooting at the nodes; rarely sub - erect. Leaves ovate or oblong, obtuse. Flowers in terminal spikes : generally the colour of the flowers in Bombay is blue; in Pavagadh the flowers are whitish; fertile stamens 2. Fruit a capsule, narrowly oblong, pubescent. Seeds 20 or more.

Gregarious. Noted in wet grounds; form dense mats.

Flowers and Fruits. - January to May.

Not abundant; on the banks of the upper talao, on the hill; on the plains, by the side of the ponds.

OZA 473, 533, 534, 535, 536, 754, 755, 756.

Deccan; S. M. Country; Kanara; Sind; Gujarat; Punjab; throughout India in wet places. Afghanistan.

Any critical notes on the identity or on nomenclature:  
The presence of large number of seeds does suggest the specific name of the plant.

Dipteracanthus Nees, emend. Brem.

Dipteracanthus prostratus (Poir.) Nees in Wall. Pl. As. Rar.

3:81, 1832; Sant. 220; Santapau in Ind. For. 79:321, and loc. cit. 24.

Ruellia prostrata Poir. in Lam. Encycl. 6:349, 1804; FBI. 4:411.

Dipteracanthus dejectus Nees, loc. cit. 82.

R. prostrata Poir. var. dejecta Clarke in FBI. 4:412, 1884; C. 2:355.

Erect herbs 15 - 30 cms. high, at times suberect. Leaves ovate or elliptic, acute, sparsely hairy. Flowers purple, turning pale yellow when dry. Fruit is a pubescent capsule.

Noted in moist parts.

Flowers and Fruits. - July to November, occasionally to January.

Fairly abundant; in the undergrowth of the forest.

OZA 151, 175, 286, 868, 945, 946.

Konkan; Deccan; S. M. Country; Behar; throughout India. Ceylon, East Africa.

Any critical notes on the identity or on nomenclature:  
For the change of the species of Ruellia to the genus Dipteracanthus, please see Santapau in Indian Forester 79:321-23, 1953.

Hemigraphis Nees

Hemigraphis latebrosa Nees var. heyneana Brem. in Mat. Mon. Strob.

139, 1944; Sant. 220; Santapau, loc. cit. 26.

H. latebrosa Nees in DC. Prodr. 11:723, 1847; FBI. 4:423;

C. 2:358; Wight, Icon. t. 1504.

Ruellia elegans Bot. Mag. t. 4489, 1835; Gr. 162; D. & G. 186.

An erect herb, 30 - 60 cms. high, hairy. Leaves ovate, acuminate, crenate - serrate. Flowers blue; at times purplish - white. Fruit a hairy capsule. Seeds 6.

Gregarious; noted in dense patches.

Flowers and Fruits. - November to March, occasionally to May.

Fairly common and abundant; on the higher parts of the hill; Machi; in the undergrowth of the forest.

OZA 276, 317, 318, 758, 759, 760, 761, 1159, 1160;

Joshi 186.

Konkan; Deccan; Kanara; W. Peninsula.

Eranthemum Linn.

Eranthemum roseum (Vahl) R. Br. Prodr. 477, 1810; D. & G. 195;

G. 1024; Sant. 222; Santapau, loc. cit. 34.

Justicia rosea Vahl, Enum. 1:165, 1804.

Daedalacanthus roseus Anders. in JLS. 9:487, 1867; FBI.

4:419; C. 2:363.

Plants about 1 m. high. Stems quadrangular. Leaves with long petioles, lanceolate or oblong - lanceolate, acuminate, base

tapering and decurrent. Inflorescence : in terminal and axillary spikes, solitary or in elongate panicles; bracts obovate, obtuse, mucronate or shortly apiculate, gland - strigose; flowers blue, turning pale or brick red on drying.

Local name: Dashmuli.

Flowers. - November to March.

Fairly abundant; undergrowth of the forest; half way up the hill, by the sides of the paths.

OZA 269, 270, 271; also December 1957, March, November 1958; Santapau 19856.

Konkan; Deccan; S. M. Country; Kanara; W. Peninsula.

Carvia Brem.

Carvia callosa (Nees) Brem. in Mat. Mon. Strob. 187, 1944; Sant. 224; Phatak & Oza in JBNHS. 56:676 - 77; Santapau, loc. cit. 46.

Strobilanthes callosus Nees in Wall. Pl. As. Rar. 3:85, 1832; FBI. 4:451; C. 2:368; D. & G. 188 (excl. descr. semin.); Santapau in JBNHS. 44:605, and 49:320.

S. grahamianus Wight, Icon. t. 1520, 1850; D. & G. 188.

S. ciliata Graham, Cat. 162, 1839 (non nees).

Soon after I started working in the exploration of Pavagadh, I was indeed fortunate enough to observe and record a rare general flowering of Carvia callosa, on the slopes of the hill ( up to about 523 m.) in September - November 1957. For the description of the plant and the notes on its flowering, please see, Phatak & Oza, loc. cit.

Cooke, loc. cit. writes : " The stems which, if kept regularly cut down, grow to the thickness of a walking - stick, are used by the natives for making mud walls, the stems being placed close together and covered with a plaster of mud and cowdung." I give support to this statement. Recently, on 16-5-1961, I had been to Pavagadh and had an occasion to see the local people collecting dried stems of this plant. Practically all the walls of the huts and hotels on the Pavagadh Hill contain Carvia stems.

Plate No. - 32.

Local name: Karev.

Flowers. - September to November 1957, 1958.

Very abundant; on the slopes of the Pavagadh Hill in pure formations.

OZA 103, 262; Joshi 326.

Endemic. Konkan; Deccan; Kanara; W. Peninsula; Central India.

Any critical notes on the identity or on nomenclature: In Cooke's Flora this plant goes under the name of Strobilanthes callosus. On the subject of the change in the name of the plant, see Santapau in Bot. Mem. Univ. Bomb. 2:38.

Andrographis Wall.

Andrographis echiioides (Linn.) Nees in Wall. Pl. As. Bar.

3:117, 1832; FBI. 4:505; C. 2:374; D. & G. 198; G. 1051;

Santapau, loc. cit. 51.

Justicia echiioides Linn. Sp. Pl. 16, 1753; Gr. 164.

An erect hairy herb. Leaves oblong or elliptic, obtuse. Flowers whitish; erect, in axillary unilateral racemes, placed along the upper side of a horizontally spreading rachis. Fruit a hairy capsule. Seeds pitted, dark.

Flowers and Fruits. - August to September.

A few plants noted on the hill in the forest.

OZA 931.

Deccan; S. M. Country; Gujarat; Punjab; tropical India, in the drier districts. Ceylon.

Haplanthus Nees

Haplanthus verticillatus (Roxb.) Nees in DC. Prodr. 11:513,

1847; FBI. 4:506; C. 2:375; D. & G. 197; G. 1053

("verticillaris"); Sant. 225; Santapau, loc. cit. 51.

Justicia verticillata Roxb. Fl. Ind. 1:135, 1832; Gr. 165.

Herbs 60 - 100 cms. high. Leaves with long petioles, ovate, rounded at the base and decurrent. Flowers whitish; clustered in the midst of axillary cladodes. Fruit is a glabrous capsule.

Growth luxuriant. Gregarious; noted in masses.

Flowers. - November to February. Fruits. - December to February.

Fairly abundant; in the undergrowth of the forest; Machi, in the forest proper; higher parts of the hill.

OZA 266, 267, 520, 1292; Joshi 118.

Konkan; Deccan; S. M. Country; W. Peninsula; Mt. Abu.

Any critical notes on the identity or on nomenclature:

The specific name of this plant is based on Roxburgh's Justicia verticillata : the only correct name is verticillatus, not verticillaris, as is often given in our Floras.

Barleria Linn.

Key to the species of Barleria

Plants spiny; flowers yellow ..... prionitis.

Plants not spiny; flowers bluish - purple ..... prattensis.

Barleria prionitis Linn. Sp. Pl. 636, 1753; FBI. 4:482; C. 2:379;

Gr. 60; D. & G. 189; Wight, Icon. t. 452; G. 1058;

Sant. 226; Santapau, loc. cit. 57.

The plants noted are about 100 cms. high. Presence of whitish spines. Leaves elliptic, acuminate, mucronate. Flowers yellow.

Gregarious.

Local name: Kanta Shelio.

Flowers. - September to May. Fruits. - November to May.

Fairly common and abundant; on the slopes of the hill by the sides of paths; along the edges of the undergrowth of the forest.

OZA 215, 216, 217, 218, 1164.

Konkan; Deccan; Gujarat; Sind; Himalaya; throughout India.

Ceylon, Tropical Asia, Tropical and S. Africa.

Barleria prattensis Santapau in Kew Bull. 1948 : 487, 1949, and

loc. cit. 62; Sant. 227.

Erect plants 60 - 100 cms. high. Leaves membranous, glabrous, entire, ovate or elliptic, attenuated at both the ends, decurrent into the petiole. Flowers solitary, axillary; bluish, turning purple. Bracteoles linear. Fruit a capsule, glabrous. Seeds black, compressed, orbicular, glabrous.

Flowers. - September to November. Fruits. - December to January.

Fairly common and abundant; in the forest; on the lower slopes of the forest along the sides of the path.

OZA 110, 173, 1161, 1162, 1163; Joshi 305.

Common in Bombay : Konkan; Deccan; Kanara; W. Peninsula.

Any critical notes on the identity or on nomenclature: Cooke in his Flora of the Presidency of Bombay 2:384, has listed a plant under the name of B. montana : the real B. montana is a Madras plant. Our common Bombay plant is B. prattensis. For a full description of the plant and its relations with the real montana, please see, Santapau, ll. cc.

#### Neuracanthus Nees

Neuracanthus sphaerostachyus (Nees) Dalz. in Kew Journ. Bot.

2:140, 1850; FBI. 4:491; C. 2:387 (sphaerostachys per sphalm.); D. & G. 190; Bole & Santapau in JBNHS.

50:428; Sant. 229; Santapau, loc. cit. 66.

Lepidagathis sphaerostachya Nees in DC. Prodr. 11:254, 1847.

Neuracanthus lawii Wight, Icon. t. 1531, 1850.

Erect herbs, 30 - 60 cms. high. Leaves sessile, elliptic - oblong, obtuse, base rounded, subcordate. Inflorescence -



usually a spherical ball, at times in elongated spikes, blue coloured. Fruit an ovoid capsule.

Gregarious : growth luxuriant; noted in large and dense patches under the shade of Terminalia crenulata Roth and Tectona grandis Linn. f. Leafless, dried plants noted after the month of February, till the following rainy season. On the subject of the fruiting of the plant, one finds in the literature that the plant is said rarely to produce fruits and seeds. Santapau, in his paper on the Excursion of the Indian Botanical Society to Pavagadh Hill ..... remarks : " ..... this is not correct according to our findings, and further the very great abundance of the plant on Pavagadh Hill cannot be explained except on the assumption that the plant produces large numbers of viable seeds." Bole & Santapau, loc. cit. have dealt with the subject in detail; I beg to refer the reader to this interesting article.

Flowers. - August to February. Fruits. - January onwards, till the following monsoon.

Rare; lower parts of the forest : fairly common and abundant; in the undergrowth of the forest; and near the lower talao.

OZA 123, 174, 970, 971, 1171; Joshi 21, 303.

Apparently endemic. Konkan; Deccan; S. M. Country; W. Peninsula.

Lepidagathis Willd.

Key to the species of Lepidagathis

Leaves spinous - pointed; fruit a 4-seeded capsule .... cuspidata.

Leaves not spinous-pointed; fruit a 2-seeded capsule .. trinervis.

Lepidagathis cuspidata (Wall.) Nees in Wall. Pl. As. Rar. 3:97,  
1832; FBI. 4:519; C. 2:396; G. 1067; Sant. 231; Santapau,  
loc. cit. 73.

Ruellia cuspidata Wall. Cat. 2405, 1830.

Erect undershrubs about 100 cms. high. Leaves on the main stem large, lanceolate, acute or acuminate, decurrent into the petiole; on the branches the leaves are smaller, linear, sessile or subsessile, points spinous. Flowers whitish; in terminal spikes; bracts and bracteoles spiny. Fruit a 4-seeded capsule.

Gregarious; in dense and large patches. Parasitized by Striga gesneroides (Willd.) Vatke ex Engl. The plants in the hot months are noted in dried stage; growth not luxuriant.

Flowers. - January to May. Fruits. - March to May.

Fairly common and abundant; base of the hill; higher parts of the hill, on rocky stones, at 461 m. and above.

OZA 420, 722, 792; Santapau 19880; Joshi 215.

Konkan; Deccan; W. Himalaya; tr. India.

Lepidagathis trinervis Wall. ex Nees in Wall. Pl. As. Rar. 3:96,  
1832; FBI. 4:517; C. 2:393; Sant. 230; Santapau, loc. cit.  
72.

Small, diffuse herbs, much branched near the base. Leaves not spinous - pointed; sessile, linear, subacute. Flowers whitish with purplish tinge; the spikes are in the form of large spherical balls; bracts spiny. Fruit a 2-seeded capsule.

Noted on rocky soils. Leafless by end of April, when only

the floral heads can be noticed on the ground; new leaves begin to appear by the end of May.

Flowers. - January to April, occasionally to May. Fruits. - April to May.

Very abundant; on the higher parts of the hill.

OZA 416, 746.

Konkan; Deccan; Gujarat; W. Peninsula; C. India; N. W. Himalaya.

Rungia Nees

Key to the species of Rungia

Fertile bracts glabrous except the ciliate margins ..... parviflora.

Fertile bracts villous ..... pectinata.

Rungia parviflora Nees in Wall. Pl. As. Rar. 3:110, 1832;

and in DC. Prodr. 11:469 (excl. syn.); FBI. 4:550;

G. 1071; Phatak & Oza in JBNHS. 55:539; Santapau, loc. cit. 76.

R. repens T. Anders. in Journ. Linn. Soc. 9:518, 1867

(non Nees).

R. longifolia Beddome, Icon. t. 266 (non Nees).

A decumbent herb. Leaves membranous, ovate or lanceolate or linear spathulate. Flowers blue; fertile bracts are glabrous except the ciliate margins.

Noted among grasses.

Local name: Khadsheliyo.

Flowers and Fruits. - August to October.

Local uses: Used in fever and cough.

Rare; foot of the Pavagadh Hill.

OZA 1556.

Throughout India. Ceylon. Santapau, loc. cit. writes : ".... this species does not seem to occur in Bombay, or at least I have seen no specimens of it either in Kew Herb. or in India."

Any critical notes on the identity or on nomenclature:  
My specimen from Pavagadh has been checked at the Forest Research Institute, Dehra Dun.

Rungia pectinata (Linn.) Nees in DC. Prodr. 11:469, 1847,  
pro parte; Wight, Icon. t. 1547; Sant. 232; Santapau,  
loc. cit. 77.

Justicia pectinata Linn. Amoen. Acad. 4:299, 1759; Gr. 165.

Rungia parviflora Nees var. pectinata Clarke in FBI. 4:550,  
1885; C. 2:400; G. 1071.

R. parviflora var. muralis Clarke, loc. cit.

An erect herb 30 cms. high. Leaves variable; elliptic - lanceolate or oblong - lanceolate, acute. Flowers minute, blue in colour; fertile bracts are villous.

On old walls.

Local name: Khadsheliyo.

Flowers and Fruits. - August to February.

Common everywhere on the hill; Machi; above the forest limit; top of the hill.

OZA 309, 1165, 1323, 1324.

Konkan; Deccan; Kanara; Himalaya; throughout India. Ceylon.

Any critical notes on the identity or on nomenclature:

Santapau, ll. cc. considers the two varieties of Clarke, pectinata and muralis, as the seasonal forms of the same plant. Accordingly, R. pectinata includes both these varieties.

Dicliptera Juss. (nom. cons.)

Dicliptera verticillata (Forsk.) Christens. in Dansk. Bot. Arkiv.

4(3) : 11, 1922; Sant. (ed. 2) 290.

Dianthera verticillata Forsk. Fl. Aeg. - Arab. 9, 1775.

Dicliptera micranthes Nees in Wall. Pl. As. Rar. 3:112, 1832;

FBI. 4:553; C. 2:402; D. & G. 197; Sant. 233; Santapau, loc. cit. 79.

Suberect herbs, much branched. Leaves ovate or elliptic. Flowers small, white; in axillary clusters. Fruit a capsule, pubescent at the apex.

Noted in large clumps.

Flowers and Fruits. - December to January.

A few plants noted in the forest.

OZA December 1957; Santapau 19854, 19855.

Konkan; Sind; Gujarat; W. Peninsula; C. India; Behar.

Tropical Africa.

Justicia Linn.

Key to the species of Justicia adapted from Santapau

Calyx 5-partite, segments equal or subequal; shrubs;  
flowers up to 15 mm. long, clustered in the spikes;  
bracts linear, very small, bracteoles 0 ..... gendarussa.

Calyx lobes 4; herbs; flowers up to 12 mm. long:

Bracts and bracteoles longer than the calyx lobes, or at least equally long:

Bracts and bracteoles linear or

nearly so ..... procumbens.

Bracts 2.5 mm. broad or even broader ..... simplex.

Bracts and bracteoles shorter than the calyx lobes:

Bracts and bracteoles about 2.5 mm.

long, fairly densely hairy ..... prostrata.

Bracts and bracteoles scarcely 1.2 mm.

long, more or less glabrous, except

for a bunch of hairs at the apex ..... diffusa.

Justicia gendarussa Burm. Fl. Ind. 10, 1768; FBI. 4:532;

C. 2:412; Gr. 164; D. & G. Suppl. 71; G. 1079; Santapau, loc. cit. 91.

Gendarussa vulgaris Nees in Wall. Pl. As. Rar. 3:104, 1832

and in DC. Prodr. 11:410, 1847; Wight, Icon. t. 468.

A shrub. Leaves lanceolate. Flowers whitish; clustered in the spikes; bracts linear, very small, bracteoles 0.

Cultivated.

Flowers. - January to May.

In the garden, on the top of the hill.

OZA 415, 739, 740; Joshi 250.

Cultivated throughout India. Ceylon, Malacca, Malaya, China, Philippines.

Justicia procumbens Linn. Sp. Pl. 15, 1753; FBI. 4:539; C. 2:412;  
G. 1080; Santapau, loc. cit. 90.

Rostellaria procumbens Nees in Wall. Pl. As. Rar. 3:101, 1832;  
D. & G. 193.

A diffuse herb. Leaves elliptic, lanceolate, or linear.  
Flowers purple coloured; bracts and bracteoles linear or nearly  
so.

Flowers and Fruits. - 12th January 1958.

OZA, Slopes of the hill; abundant !

Konkan; Deccan; W. Peninsula. Ceylon, Malaya, Australia.

Any critical notes on the identity or on nomenclature:

Santapau in his Flora of Khandala (ed. 2) 185, has put this plant  
under the genus Rostellularia Reichenb : the correct name,  
therefore, is Rostellularia procumbens (Linn.) Nees in DC. Prodr.  
11:371, 1847, based on the Linnean plant Justicia procumbens.

Justicia simplex D. Don, Prodr. Fl. Nep. 118, 1825; FBI. 4:539;  
C. 2:411; G. 1080; Santapau, loc. cit. 89.

A hairy herb; branching. Leaves ovate or oblong, or  
linear. Flowers pinkish or bluish purple; bracts 2.5 mm. broad  
or even broader. Fruit a capsule, pubescent at the apex.

In wet places.

Flowers and Fruits. - 5th August 1957.

On the slopes and paths of the hill.

OZA 44.

Konkan; Deccan; S. M. Country; Kanara; Sind; Gujarat;

W. Peninsula; C. India; Kashmir; Bengal. Abyssinia, Malay Islands.

Any critical notes on the identity or on nomenclature:

The specimen OZA 44 has been checked at the Indian Botanic Gardens, Calcutta.

Justicia prostrata (Clarke) Gamble in Fl. Madras. 1081, 1924;  
Santapau, loc. cit. 88.

Justicia diffusa var. prostrata Clarke, in FBI. 4:538, 1885;  
C. 2:410.

Prostrate herbs. Leaves orbicular or ovate, at times lanceolate. Flowers pinkish; spikes of flowers long and slender; bracts and bracteoles about 2.5 mm. long. Fruit is a slightly hairy capsule.

Noted in the crevices of the foot steps, and rocky grounds. Dried plants in May.

Flowers. - November to May. Fruits. - February to May.

Fairly abundant; near the temple of Kalika Mata, on the highest parts of the hill.

OZA 665, 666, 815, 1155, 1156.

Bombay, Deccan (Poona); Madras.

Justicia diffusa Willd. Sp. Pl. 1:87, 1789; FBI. 4:538; C. 2:410;  
G. 1081; Santapau, loc. cit. 87.

Rostellaria diffusa Nees in Wall. Pl. As. Rar. 3:100, 1832;  
D. & G. 193.

An erect herb 15 - 20 cms. high. Leaves ovate or lanceolate, obtuse or acute. Flowers deep purple; bracts and bracteoles scarcely 1.2 mm. long. Fruit a capsule, glabrous, pointed.



Flowers and Fruits. - August to September.

Common; in the undergrowth of the forest.

OZA 166, 1557; also September 1958.

Deccan; Sind; W. Peninsula; Punjab. Ceylon, Rangoon, Siam.

Any critical notes on the identity or on nomenclature:

My specimens from Pavagadh have been checked and confirmed at the Indian Botanic Gardens, Calcutta and at the Forest Research Institute, Dehra Dun.

Adhatoda Nees

Adhatoda vasica Nees in Wall. Pl. As. Rar. 3:103, 1832; FBI.

4:540; C. 2:414; D. & G. 194; G. 1082; Talb. 2:340, t. 448;

Sant. 235; Santapau, loc. cit. 92.

Justicia adhatoda Linn. Sp. Pl. 15, 1753; Gr. 164.

Tall shrubs up to 3 - 4 m. high. Leaves slightly hairy, large, lanceolate, acuminate. Flowers white with rosy centre.

Probably planted.

Local name: Adusi.

Flowers. - Almost throughout the year.

Local uses: The plant is of high repute in Ayurvedic medicine.

Noted a few plants at the foot of the hill.

OZA 618, 619.

Bombay; throughout India, often cultivated. Ceylon, Singapore, Malaya, S. E. Asia.

Any critical notes on the identity or on nomenclature:

Following recent Indian authors on the subject, I am inclined to

put Adhatoda separate from Justicia. For the remarks, see Santapau, loc. cit. 91-92.

Peristrophe Nees

Peristrophe bicalyculata (Retz.) Nees in Wall. Pl. As. Rar. 3:113,

1832; FBI. 4:554; C. 2:415; D. & G. 197; G. 1084; Sant.

236; Santapau, loc. cit. 93; Phatak & Oza in JBNHS. 55:539.

Dianthera bicalyculata Retz. in Act. Holm. 297, t. 9, 1775.

Justicia bicalyculata Vahl, Symb. 2:13, 1791; Gr. 164.

An erect herb 100 - 150 cms. high. Stems furrowed. Leaves hairy, ovate, acuminate. Flowers rosy, turning yellowish or pale when dry or on fading.

Gregarious; in dense clumps. Growth luxuriant. Mostly leafless in February.

Local name: Kali Anghedi.

Flowers and Fruits. - August to February.

Local uses: Used in snake bite.

Fairly common and abundant; forest slopes and sides of the paths on the hill; in the undergrowth of the forest.

OZA 113, 272, 1282, 1333; Joshi 71.

Konkan; Deccan; Kanara; Sind; Gujarat; Punjab; Assam; throughout India. Tr. Africa.

VERBENACEAE

Key to the Genera of the VERBENACEAE

Herbs ..... Phyla.

## Shrubs or trees:

Plants armed ..... Lantana.

## Plants unarmed:

Calyx enlarged in fruit, and bladder-like ..... Tectona.

Calyx neither or only slightly enlarged

in fruit, nor bladder-like:

Leaves 3-5-foliolate; flowers bluish

purple ..... Vitex.

Leaves simple, entire or toothed;

flowers white or pinkish ..... Clerodendrum.Phyla Lour.Phyla nodiflora (Linn.) Greene in Pittonia 4:46, 1899; Sant. 237;

Phatak &amp; Oza in JBNHS. 55:539.

Verbena nodiflora Linn. Sp. Pl. 20, 1753.Lippia nodiflora Michaux, Fl. Bor. Amer. 2:15, 1803; FBI.

4:563; C. 2:420; D. &amp; G. 198; Wight, Icon. t. 1463.

A prostrate, creeping herb. Leaves cuneate, spatulate, serrate. Flowers in globose or cylindric heads; pink, - (whitish brown ?). In moist soils, noted among the grasses.

Local name: Ratveliyo.

Flowers and Fruits. - June to October.

Local uses: An infusion of the leaves is given to children suffering from indigestion.

Abundant; near both the talaos.

OZA 136.

Deccan; Sind; Gujarat; throughout India. Ceylon, Africa, and most tropical and subtropical regions.

Lantana Linn.

Lantana camara Linn. var. aculeata (Linn.) Moldenke in Torreya 34:9, 1934; Sant. 236.

L. aculeata Linn. Sp. Pl. 627, 1753; Gr. 156; D. & G. Suppl. 68.

L. camara auct. (non Linn.) : FBI. 4:562; C. 2:419.

Shrubs with recurved prickles. Leaves scabrid, wrinkled; ovate or ovate - oblong, acute, crenate, subcordate. Flowers in corymbose spikes; reddish or orange in Pavagadh. Fruit a drupe.

A weed of the plains, has a strong hold on some slopes. Flowers and Fruits. - Almost throughout the year.

Base of the hill along the main road; slopes of the hill.

OZA 976, 977, 978, 979; also December 1957, June 1958.

Introduced; native of Tr. America. Run wild in India.

Ceylon.

Any critical notes on the identity or on nomenclature: The typical Linnean plant - L. camara is unarmed. The position of our common Bombay plant - armed with prickles, is Moldenke's variety aculeata.

Tectona Linn. f. (nom. cons.)

Tectona grandis Linn. f. Suppl. 151, 1781; FBI. 4:570; C. 2:424; Gr. 158; D. & G. 199; Sant. 238.

This teak tree reaches the height from 10 - 20 m.; with

tomentose, quadrangular branches. Bark greyish. Leaves large, elliptic or obovate, acute or acuminate; tawny tomentose beneath. Flowers white. Fruit a subglobose drupe, enclosed in greatly enlarged bladder-like calyx.

The upper layer of the forest, upto 523 m. altitude, at Pavagadh is covered with a dense dry " Deciduous Forest "; Tectona grandis is the dominating tree and is ordinarily met with in association with Terminalia crenulata which is fairly common in the forest. Economically, both are valuable timbers; and are noted growing in round about the same type of habitat.

Noticed Dendrophthoe falcata (Linn. f.) Etting. on this tree. Very often I have observed this tree with dry and infected leaves. Remains of inflorescence present for a long period.

We have been helped in the identification of the infection on leaves of Tectona grandis by Prof. J. D. Oza of Ahmedabad. It is Uncinula tectonae Salm. There is a paper on the study of the morphology, development and cytology of U. tectonae Salmon occurring on Tectona grandis Linn. f.; I beg to refer the reader to Kamala Damle in JIB. 39:243-58, 1960.

Local name: Sag.

Flowers. - July to August. Fruits. - September to October.

Rare in the lower parts of the forest; but dominant on the higher parts.

OZA 41, 232, 952.

W. Peninsula; C. India. Malacca, Birma, Malay Peninsula, Sumatra, Java.

Vitex Linn.

Vitex negundo Linn. Sp. Pl. 638, 1753; FBI. 4:583; C. 2:428;

Wight, Icon. t. 519; Sant. 239.

V. bicolor Willd. : D. & G. 201.

V. trifolia Graham, Cat. 155, 1839 (non Linn.).

A shrub with greyish bark. Leaves 3-5-foliolate; leaflets lanceolate, acuminate. Flowers bluish purple. Fruit a drupe.

Local name: Nagod.

Flowers and Fruits. - Almost throughout the year.

Local uses: Locally known for its medicinal value : the leaves cure headache.

Machi; on the higher parts near the last gate; on the plains by the roadsides.

OZA 859, 860.

Konkan; Deccan; Sind; throughout India. Ceylon, Nicobars, Afghanistan, E. Asia to the Philippine Islands.

Clerodendrum Linn.

Clerodendrum phlomidis Linn. f. Suppl. 292, 1781; FBI. 4:590;

C. 2:431; Gr. 157; D. & G. 200; Wight, Icon. t. 1473.

A large shrub. Leaves simple, slightly hairy on the lower surface, ovate - deltoid, sinuate or serrate. Flowers white or pinkish. Fruit is an obovoid drupe.

Flowers and Fruits. - January to February.

A few plants noted on the slopes and at the foot of the hill.

OZA 411; also February 1958, January 1959; Santapau 19841, 19842.

Konkan; Deccan; S. M. Country; Gujarat; N. W. Himalaya; Behar; throughout India in the drier climates. Ceylon.

Any critical notes on the identity or on nomenclature:  
The spelling of this plant calls for a note of explanation.

(i) The generic name: In our Floras it goes under the name of Clerodendron; the correct spelling as shown by Moldenke is Clerodendrum.

(ii) The specific name: Linne (1781) gave it as phlomidis; but most of the writers of our Indian Floras, except Cooke & Gamble, follow Willdenow (1800) in Sp. Pl. 3:386, who gave it as phlomoides. The only correct spelling is that of Linn. f., as given here.

#### LABIATAE

##### Key to the Genera of the LABIATAE adapted from Gamble

Stamens 4, all perfect and declinate; anther cells  
at length confluent:

Lip of corolla declinate, flat or slightly  
concave, generally narrower, but hardly longer  
than the 3-4-lobed upper lip:

Calyx deflexed in fruit; upper lobe  
widest, large, ovate, recurved, the  
margins decurrent on the tube; corolla  
tube short; lower tip flat; stigma 2-fid ..... Ocimum.

Calyx usually declinate in fruit;  
upper lobe widest, the margins not  
decurrent on the tube; racemes

paniculate ..... Moschosma.

Lower lip of corolla deflexed, concave,  
boat-shaped or saccate, much longer than  
the upper lip; calyx equally 5-toothed or  
somewhat 2-lipped, the upper 3 -, the lower  
2-toothed, or with upper lip large, rounded,  
reflexed, the other narrow, subulate;

filaments free ..... Plectranthus.

Stamens erect or spreading or ascending:

Anterior pair of stamens the longer:

Upper lip of corolla short, nearly  
flat; stamens exserted, the cells of  
the upper pair dimidiate, of the

lower pair transverse ..... Anisomeles.

Upper lip of corolla hooded, densely  
wooly; calyx 6-10-toothed; stamens  
included; anther cells divergent:

Lower lip of corolla longer

than the hood ..... Leucas.

Lower lip of corolla shorter

than the hood ..... Leonotis.

Posterior pair of stamens the longer; calyx  
tubular, 15-ribbed, 5-toothed; stamens not

exserted ..... Nepeta.



Ocimum Linn.Key to the species of Ocimum

Plants herbaceous:

Fruiting calyx large, glabrous ..... basilicum.

Fruiting calyx small, villous:

Pedicels shorter than the calyx ..... americanum.

Pedicels as long as or longer than the calyx .. sanctum.

Plants shrubby ..... gratissimum.

Ocimum basilicum Linn. Sp. Pl. 597, 1753; Roxb. Fl. Ind. 3:17;

FBI. 4:608; C. 2:442; Mukerjee, Lab. Ind. Emp. 18.

A small, herb with squarish stems and sweet scent.

Leaves large and varying; glabrous, ovate or lanceolate, acute, cuneate at the base, entire or dentate. Flowers pinkish white; racemes long and closely whorled.

Cultivated. The scent disappears on drying.

Local name: Damaro.

Flowers and Fruits. - August to March.

Kalika Temple garden, top of the hill.

OZA 76; also January 1958, 1959; March 1958.

Cultivated throughout tropical and hotter India, from Punjab (indigenous on low hills) to Ava, Travancore. Malacca, Ceylon, Hotter W. Asia, Africa, the Malay and Pacific Islands (perhaps always cultivated only).

Ocimum americanum Linn. in Cent. Pl. 1:15, 1755; Sant. 242.

O. canum Sims in Bot. Mag. t. 2452, 1824; FBI. 4:607; C.2:441;

Gr. 147; D. & G. 203; Mukerjee, loc. cit. 17.

An erect herb 20-60 cms. high, scented when fresh. Leaves with long petioles, elliptic - lanceolate, entire or slightly serrate. Flowers white. Fruit - Nutlets black.

In open lands. Cultivated; also run wild.

Local name: Ram Tulsi; Ran Tulsi.

Flowers and Fruits. - August to February.

Noted to be fairly abundant and common everywhere; at the base of the hill; Machi.

OZA 70, 265, 1318.

Konkan; Deccan; S. M. Country; plains and lower hills of India, - from Bengal, Behar and C. India to S. Deccan. Ceylon, Java, W. Asia, Trop. Africa, Madagascar, America - cultivated.

Ocimum sanctum Linn. Mant. 1:85, 1767; FBI. 4:609; C. 2:440;

Gr. 147; D. & G. 204; Mukerjee, loc. cit. 19; Sant. 242.

This is the sacred Tulsi plant of the Hindus. Plants 30 - 100 cms. high, much branched. Leaves pubescent, elliptic - oblong, obtuse or acute, entire or serrate. Flowers white.

Cultivated. Not observed wild.

Local name: Tulsi.

Flowers and Fruits. - Almost throughout the year.

Local uses: The plant with its inflorescence and leaves is used in Hindu pujas for Lord Shri Vishnu. Also made into beads for rosaries. Medicinally, of high repute.

Kalika Temple garden, top of the hill; Machi.

OZA December 1957, March 1958.

Cultivated throughout India. Ceylon, Malay Archipelago, Australia, W. Asia, Arabia..

Ocimum gratissimum Linn. Sp. Pl. 1197, 1753; Roxb. Fl. Ind. 3:17; FBI. 4:608; C. 2:441; Mukerjee, loc. cit. 20; Phatak & Oza in JBNHS. 55:539.

Plants about 1 m. high with quadrangular branches; shrubby. Leaves much larger and long - petioled, ovate, acute, cuneate at the base, coarsely crenate - serrate. Flowers in racemes; greenish yellow.

Noted in hedges.

Local name: Aavachi - Bavachi.

Flowers and Fruits. - 19 - 20 February 1958.

Local uses: The seeds are used for headache and dysentery. The juice of the plant stops nausea.

Foot of the hill.

OZA 558.

Konkan; Deccan; S. M. Country; Gujarat; throughout India, often cultivated; probably introduced : doubtful if indigenous. Chittagong, Ceylon, Java, Trop. Africa and America ( ? native).

Moschosma Reichb.

Moschosma polystachyum (Linn.) Benth. in Wall. Pl. As. Rar.

2:13, 1831; FBI. 4:612; C. 2:445; D. & G. 204.

Ocimum polystachyon Linn. Mant. 2:567, 1771.

Erect herbs up to 1m.tall; much branched, stems quadrangular. Leaves ovate, deltoid, acuminate, base truncate, crenate in the upper half, entire in the remaining portion. Flowers small, white, in slender racemes.

Flowers. - 1 February 1959.

On the top of the hill.

OZA 1289.

Konkan; Deccan; Gujarat; W. Peninsula; Bengal; Behar.

Ceylon, Burma, Java, China, Philippine Islands, Trop. Africa and N. Australia.

Any critical notes on the identity or on nomenclature:

My specimens from Pavagadh have been confirmed at the Indian Botanic Gardens, Calcutta and at the Forest Research Institute, Dehra Dun.

Plectranthus L' Her. (nom. cons.)

Plectranthus stocksii Hook. f. in FBI. 4:618, 1885; C. 2:446;

G. 1120; Mukerjee, loc. cit. 43.

P. wightii Gr. Cat. 148, 1839 (non Benth.); D. & G. 205.

An erect herb 30 - 45 cms. high; branches hairy. Leaves gland - dotted, glabrous or sparsely hairy, ovate, acute, truncate or cuneate, serrate. Flowers whitish; presence of red glands on the calyx.

Gregarious.

Flowers. - September.

Near Machi at about 461 m.

OZA 157; also September 1958.

Konkan; Deccan; S. M. Country; Kanara; W. Peninsula.

Anisomeles R. Br.

Key to the species of Anisomeles

Flowers purple or bright red ..... indica.

Flowers whitish ..... heyneana.

Anisomeles indica (Linn.) O. Kuntze in Haines Bot. Bih. & Oriss.

745, 1924; G. 1140; Mukerjee, loc. cit. 152; Phatak & Oza in JBNHS. 55:539.

Nepeta indica Linn. Sp. Pl. 571, 1753.

Anisomeles ovata R. Br. Ait. Hort. Kew, (ed. 2) 3:364, 1811; FBI. 4:672; C. 2:461; Gr. 153; D. & G. 210; Wight, Icon. t. 865.

An erect herb 100 - 150 cms. high; tomentose, stems quadrangular. Leaves ovate, acute, crenate, rounded or slightly cuneate at the base. Flowers purple or bright red. Nutlets smooth, black.

In large clumps; growth luxuriant.

Local name: Chodharo.

Flowers and Fruits. - September to April.

Local uses: The plant is used as a tonic in uterine affections and fevers.

Rare on the higher parts and top of the hill; open lands on way to Bhadrakali Mata, near the gate; occasionally seen on the lower parts; fairly abundant and common everywhere on the surrounding plains of the hill.

OZA 137, 245, 268, 1177; Santapau 19873, 19874.

Konkan; Deccan; S. M. Country; Gujarat; Himalaya; throughout India. Singapore, Ceylon, Malay Archipelago, China, Philippines.

Anisomeles heyneana Benth. in Wall. Pl. As. Rar. 1:59, 1830; FBI.

4:672; C. 2:460; D. & G. 210; G. 1140; Mukerjee, loc. cit. 152; Sant. 245.

Erect herbs, very tall. Leaves glabrous or sparsely hairy, ovate, acuminate, crenate - serrate, cuneate at the base. Flowers whitish.

Flowers and Fruits. - December to January.

OZA, Occasional at edge of forest, or near the path on the hill !

Konkan; Deccan; S. M. Country; W. Peninsula.

Leucas R. Br.

Key to the species of Leucas

Structure of the calyx star-like ..... stelligera.

Structure of the calyx not star-like:

Plants erect, usually growing on earth

banks; calyx-mouth oblique ..... aspera.

Plants procumbent or straggling, often

in pendulous masses, usually growing

on walls; calyx-mouth straight ..... biflora.

Leucas stelligera Wall. ex Benth. in Wall. Pl. As. Rar. 1:61, 1829; FBI. 4:686; C. 2:470; D. & G. 211; G. 1154; Mukerjee, loc. cit. 177; Sant. 245.

Erect herbs, pubescent. Leaves oblong - lanceolate, obtuse, crenate. Flowers white; calyx star - like (calyx - teeth stellately spreading).

Flowers and Fruits. - 12 August 1958.

A few plants found on the way to Bhadrakali Mata, near the gate.

OZA '932.

Konkan; Deccan; S. M. Country; W. Peninsula. Ceylon.

Leucas aspera Spr. Syst. 2:743, 1825; FBI. 4:690; C. 2:465;  
G. 1150; Mukerjee, loc. cit. 166; Phatak & Oza in JBNHS.  
55:539.

An erect herb, 15 - 30 cms. high with squarish branches.  
Leaves with short petioles, hairy, linear - or oblong - lanceolate,  
obtuse, entire or crenate. Flowers white; calyx - mouth oblique.

On earth banks.

Plate No. - 33.

Local name: Kubo.

Flowers and Fruits. - July to December.

Local uses: The juice of the leaves is used for scabies,  
jaundice, fevers and swellings.

Near the top of the hill and its paths; below the  
Dharamsala.

OZA 23, 231.

Konkan; Deccan; Behar; Punjab; throughout India, in the  
plains. Mauritius, Java, Philippine Islands.

Leucas biflora R. Br. Prodr. 504, 1810; FBI. 4:683; C. 2:469;  
Gr. 153; D. & G. 211; G. 1150; Mukerjee, loc. cit. 180;  
Wight, Icon. t. 866.

Plants procumbent or straggling; branches quadrangular.  
Leaves pubescent, ovate or elliptic, acute or obtuse, crenate -  
serrate. Flowers white; 2 at each node; calyx - mouth straight.

Large pendulous masses of these herbs were noted on old  
fort walls.

Flowers and Fruits. - September to May, occasionally to July.

Fairly common and abundant; Machi and above, at 461-769 m.

OZA 238, 239, 240, 241, 307, 731, 732, 733, 734, 797, 879, 880, 1294; Santanau 19870, 19871; Joshi 231, 319.

Konkan; Deccan; Gujarat; W. Peninsula. Ceylon.

Leonotis Pers.

Leonotis nepetaefolia (Linn.) R. Br. in Ait. Hort. Kew (ed. 2)

3:409, 1811; FBI. 4:691; C. 2:471; Gr. 153; D. & G. 212

& Suppl. 67; G. 1155; Mukerjee, loc. cit. 185

(" L. nepetaefolia"); Wight, Icon. t. 867.

Phlomis nepetaefolia Linn. Sp. Pl. 586, 1753.

Tall herbs up to 3 m. high. Leaves ovate, coarsely serrate. Flowers orange coloured; in axillary balls.

In large clumps.

Flowers. - December to January.

Local uses: Said to be useful in skin diseases.

On the plains, along the main road. Not noticed on the hill.

OZA December 1957.

Konkan; Deccan; Punjab; throughout hotter India, cultivated and naturalised. Doubtfully indigenous. Ceylon, Tr. Asia, Africa and America.

Nepeta Linn.

Key to the species of Nepeta

Calyx teeth aristate ..... hindustana.

Calyx teeth not aristate ..... bombaiensis.



Nepeta hindustana (Roth) Haines, Bot. Bihar & Orissa, 4:744, 1922;

Mukerjee, loc. cit. 133.

Glechoma hindostana Heyne ex Roth: Nov. Sp. Pl. 258, 1821.

Nepeta ruderalis Buch. - Ham. Benth. in Wall. Pl. As. Rar.

1:64, 1830; FBI. 4:661; C. 2:472.

Erect herbs 30 - 45 cms. high; hairy. Possibly two forms : plants purple flowered and branching near the roots; and plants in which branching is not noted, root system feebly developed, flowers white - yellow. Leaves broadly ovate, obtuse, crenate - serrate, subcordate.

In moist situations : observed on earth banks, and on rocks and walls.

Flowers. - September to February. Fruits. - October to February.

Abundant; higher parts and top of the hill.

OZA 128, 135, 236A, 236B.

Konkan; Deccan; Himalaya; tr. and subtropical India, from the Indus to Behar and C. India. Afghanistan.

Any critical notes on the identity or on nomenclature:

My specimens from Pavagadh have been checked at the Indian Botanic Gardens, Calcutta.

Nepeta bombaiensis Dalz. in D. & G. Bomb. Fl. 209, 1861; FBI.

4:661; C. 2:473; Mukerjee, loc. cit. 133.

Not found by me. My specimens are definitely N. hindustana. This plant is given here on the authority of Phatak & Joshi.

Flowers. - July to August.

Joshi 229, 320.

Konkan. Apparently endemic in the Bombay Presidency.

#### NYCTAGINACEAE

##### Key to the Genera of the NYCTAGINACEAE

Plant a cultigen; climbing shrub; presence of thorns ... Bougainvillea.

Plant not a cultigen; decumbent herb; absence of  
thorns ..... Boerhavia.

##### Bougainvillea Comm. ex Juss. (nom. cons.)

(About the spelling of the generic name, see Harms in Engl. &  
Prantl, Pflanzenfam. (ed. 2) 16 C:122.)

Bougainvillea spectabilis Willd. Sp. Pl. 2:348, 1799; C. 2:483;  
D. & G. Suppl. 72; Sant. 248.

Large climbing shrubs, showy; presence of thorns. Leaves  
ovate, somewhat hairy. Bracts are of various colours. In Pavagadh  
the bracts are bright red, yellow and purplish.

Cultivated as an ornamental plant.

Local name: Bagan Vel.

Flowers. - December to May.

In the gardens, along the main road to the hill Pavagadh;  
Pavagadh village : in small compound of Forest office; on the  
hill proper in the garden at an altitude of 769 m.

OZA 709.

Native of Brazil and is cultivated in gardens in Bombay.

Any critical notes on the identity or on nomenclature:  
The spelling of the generic name is that given in the List of

Nomina Conservanda under No. 2350 of the International Code of Botanical Nomenclature (1956).

Boerhavia Linn.

Boerhavia diffusa Linn. Sp. Pl. 3, 1753; C. 2:480; D. & G. 213; Sant. 247; Phatak & Oza in JBNHS. 55:539.

B. repens Linn. Sp. Pl. 3, 1753; FBI. 4:709; D. & G. 213.

B. procumbens Roxb. Fl. Ind. 1:146, 1820; Gr. 167; Wight, Icon. t. 874.

A decumbent herb; stems 60 - 100 cms. long. Leaves unequal in each pair, ovate, oblong, or suborbicular, acute or obtuse, rounded or subcordate at the base, margins entire, upper surface green and glabrous, whitish beneath. Flowers dark pink.

Plants near the Budhia gate have their leaves slightly larger than the normal ones.

Local name: Punnarnava; Satodo.

Flowers and Fruits. - March to November (almost throughout the year).

Local uses: The plant is applied on swollen parts and cures ulcers of animals. The plant is highly praised for its property of curing dropsy. It promotes urinary discharges. The roots are used in opthalmic troubles, jaundice, and asthma. It stops disorders of the brain and fever.

Very abundant in open lands near the foot and on slopes of the hill; also noted a few plants near the Budhia gate.

OZA 24, 867.

Decán; Gujarat; throughout India. Ceylon, tropical and

subtropical Asia, Africa and America.

#### AMARANTHACEAE

( A note on the spelling of the family : Following Bullock (1959) in Taxon 8:158 & Rickett & Stafleu (1959) in Taxon 8:267, I give the name of the family as AMARANTHACEAE A. L. de Jussieu, Gen. Pl. 87. 1789 ( 'Amaranthi' ). T. : Amaranthus Linnaeus.

Moreover, the attention is drawn to the following works where the spelling is given:

- (i) Bentham & Hooker (1880) in Genera Plantarum 3:20. - AMARANTACEAE (excl. Achatocarpaceae).
- (ii) Engler & Prantl (1934) in Naturlichen Pflanzenfamilien (ed. 2) 16C : 7. - AMARANTHACEAE.
- (iii) Hutchinson (1959) in Families of Flowering Plants (ed. 2) 1:440. - AMARANTHACEAE ).

#### Key to the Genera of the AMARANTHACEAE

Anthers 4 - celled:

Leaves alternate; perianth not hard:

Seeds several ..... Celosia.

Seeds solitary ..... Amaranthus.

Leaves opposite; perianth segments, bracts and

bracteoles hard ..... Achyranthes.

Leaves alternate or fascicled, or opposite and

alternate mixed, perianth not hard ..... Aerva.

Anthers 2 - celled:

Leaves alternate ..... Digera.

Leaves opposite:

Flowers in spikes:

Flowers white, minute, solitary or in  
clustered spikes ..... Nothosaerva.

Flowers greenish, fascicled in clusters  
- in simple or paniculate spikes ..... Pupalia.

Flowers in heads:

Flowers white, small, in sessile heads . Alternanthera.

Flowers white or yellow or crimson, .....  
large, in heads on long peduncles ..... Gomphrena.

Celosia Linn.

Celosia argentea Linn. Sp. Pl. 205, 1753; FBI. 4:714; C. 2:485;  
Gr. 167; D. & G. 215; Wight, Icon. t. 1767; Sant. 248.

An erect herb 60 - 100 cms. high. Leaves linear or  
linear - lanceolate. Flowers - pinkish white spikes. Seeds black,  
shining.

Growth of the plant varying to its habitat. Not  
cultivated in the area under observation.

Plate No. - 35.

Flowers and Fruits. - September to February.

Scarce; lower parts of the hill; very common and fairly  
abundant; higher parts of the hill; and half way up the hill,  
but not found beyond the Machi area.

OZA 134, 171, 219, 220, 1275; Joshi 93.

Throughout Bombay and India. Ceylon, Tropical Asia,  
Africa and America, cultivated or introduced.

Amaranthus Linn.Key to the species of Amaranthus

Plants with spines in the axils of leaves ..... spinosus.

Plants without spines in the axils of leaves:

Plants usually erect, fruit densely rugose ..... gracilis.

Plants usually prostrate, fruit slightly

rugose ..... polygamus.

Amaranthus spinosus Linn. Sp. Pl. 991, 1753; FBI. 4:718;

C. 2:489; Gr. 169; D. & G. 216; Wight, Icon. t. 513;

Sant. 248; Phatak & Oza in JBNHS. 55:540.

An erect, spinous herb 30 - 60 cms. high; spines in the axils of leaves. Leaves ovate or lanceolate, obtuse.

Local name: Kantalo Dabho.

Flowers and Fruits. - August to September, occasionally to March.

Local uses: The root is used in eczema. The leaves are sometimes used as a vegetable and have a cooling effect.

Foot of the hill, near the bus station.

OZA 1558.

Throughout Bombay and India. Ceylon, and many tropical countries.

Amaranthus gracilis Desf. Talb. Ec. Bot. 45, 1804; Schinz in

Pfam. (ed. 2) 16 C:38; Fl. Males. I, 4(2):76; Phatak & Oza 540.

A. viridis Linn. Sp. Pl. (ed. 2) 1405, 1763, pro parte; FBI.

4:720; C. 2:490; Gr. 169; G. 1171; N. 267; Sant. 249.

A. polystachyus Willd. Sp. Pl. 4:385, 1805.

An erect herb 30 - 60 cms. high. Leaves glabrous, long - petioled; ovate or deltoid, obtuse, emarginate, truncate or cuneate at the base. Flowers greenish white. Fruit densely rugose.

In waste lands or cultivated areas.

Local name: Dhimado.

Flowers and Fruits. - August to September.

Local uses: Young shoots are eaten.

Base of the hill.

OZA 1559.

Cooke, loc. cit. writes : " I have seen no specimens from the Bombay Presidency; there are none in Herb. Kew. Dalzell & Gibson do not include the plant in their Bombay Flora, while Woodrow (in JBNHS. 12:364, 1899), though including it in his list, assigns it no habitat." But the plant has been recorded by Santapau from Khandala, Purandhar, Dangs, etc. Deccan; Gujarat. Throughout India. Ceylon, all tropical and warm countries.

Any critical notes on the identity or on nomenclature: This plant is A. viridis Linn., pro parte of our Indian Floras. On the subject of the identity and nomenclature, see Fl. Males. loc. cit.

Amaranthus polygamus Linn. Amoen. Acad. 4:294 (not of Roxb.)

1759; FBI. 4:721; C. 2:491; Phatak & Oza 540.

A. polygonoides Willd. Sp. Pl. 4:389, 1805; Roxb. Fl. Ind.

3:602; Wight, Icon. tt. 512 and 719.

A prostrate herb. Leaves obovate, obtuse, cuneate.

In pasture lands; but often cultivated.

Local name: Tandalajo.

Flowers and Fruits. - August to September.

Local uses: Used as a vegetable and cures bowel trouble.

The leaves have a cooling effect. It stops cough and purifies blood. Used on scorpion - sting. A good tonic for dropsy.

Pavagadh village.

OZA 1560.

Throughout India. Ceylon, most hot countries.

Achyranthes Linn.

Achyranthes aspera Linn. var. porphyristachya Hook. f. FBI.

4:730, 1885; Sant. 251; Phatak & Oza 540.

A. porphyristachya Wall. Cat. 6925, 1832.

A. aspera Cooke, Fl. Bomb. Pres. 2:495, 1906, pro parte.

An erect herb 30 - 60 cms. high. Leaves thin, glabrous, ovate, acute or acuminate. Spikes long.

Local name: Anghedo.

Flowers and Fruits. - August to February.

Local uses: The entire plant and the seeds are useful. It is highly praised for stopping nausea. It cures fever, cough, indigestion, toothache, dropsy, swellings, and skin diseases. Its stem is very good for cleaning the teeth. The bark or the roots are applied on scorpion - sting. The leaves cure piles. An infusion of the young shoots or the seeds with honey is used for rat-bite.



Higher parts of the hill; also noted a few plants on the plains.

OZA 227, 1172.

Konkan; Deccan; Nilgiri Hills. Chittagong.

Aerva Forsk. (nom. cons.)

(For the spelling of the generic name, please see Thomas Archibald Sprague in Kew Bull. 1928 : 342.)

Key to the species of Aerva

Plants suberect undershrubs, often climbing; leaves alternate and opposite on the same plant; flowers in axillary and terminal spikes ..... sanguinolenta.

Plants erect herbs; leaves alternate; flowers in axillary spikes ..... lanata.

Aerva sanguinolenta (Linn.) Blume, Bijdr. 547, 1825; Backer in Fl. Males. I, 4(2):85; Sant. 250.

Achyranthes sanguinolenta Linn. Sp. Pl. (ed. 2) 294, 1762.

Achyranthes scandens Roxb. Hort. Beng. 19, 1814 & Fl. Ind. 1:676, 1832.

Aerva scandens Wall. Cat. 6911, 1829; Moq. in DC. Prodr. 13(2):302, 1849; FBI. 4:727; C. 2:492; D. & G. 217; Wight, Icon. t. 724 (excl. sem. & utr.); G. 1178.

A suberect undershrub, often climbing; branches striate, pubescent. Leaves pubescent, alternate and opposite, elliptic - lanceolate, acute, mucronate. Flowers in axillary and terminal spikes, whitish.

Flowers and Fruits. - September to May.

Fairly common, higher parts of the hill; half way up the hill; in the forest, at the edges and sides of paths.

OZA 138, 305, 540, 763, 764, 765; Santapanau 19858, 19859; Joshi 98, 99.

Konkan; Deccan; Kanara; Bengal; Assam; Punjab; Himalaya; C. India; Behar; W. Peninsula. Burma, China, Malay Islands, Philippines, E. and W. tr. Africa.

Aerva lanata (Linn.) Juss. in Ann. Muss. Par. 2:131, 1803; FBI.

4:728; C. 2:493; Gr. 168; D. & G. 217; Schinz in Pfam.

(ed. 2) 16C:52; Sant. 251; Phatak & Oza 540.

Achyranthes lanata Linn. Sp. Pl. 204, 1753 (non Celosia lanata Linn. ibid. 205).

Aerva floribunda Wight, Icon. t. 1776, pro parte, and 1776 bis A, 1852.

Erect herbs 30 - 45 cms. high. Leaves pubescent, alternate, elliptic, obovate or orbicular, obtuse or acute. Flowers white, in axillary spikes.

Plate No. - 34.

Local name: Kapuri Madhuri.

Flowers and Fruits. - Almost throughout the year.

Local uses: The root is useful for headache.

Fairly common; foot of the hill, by the sides of the paths; on the slopes of the hill; in the forest, sides of the paths.

OZA 315; Joshi 103.

Konkan; Deccan; S. M. Country; Bengal; Behar; C. India; throughout India. Ceylon, Arabia, trop. and S. Africa, Java, Philippines.

Digera Forsk.

Digera muricata (Linn.) Mart. in Beitr. Amer. 2:77, 1825; Fl.

Males. I, 4:80; Phatak & Oza, loc. cit. 540 and in J. M. S. Univ. Baroda. 6(2):107.

Achyranthes muricata Linn. Sp. Pl. (ed. 2) 295, 1762.

A. alternifolia Linn. Mant. 50, 1767.

Digera arvensis Forsk. Fl. Aegypt. - Arab. 65, 1775; Moq.

in DC. Prodr. 13(2):324; FBI. 4:717; C. 2:487; D. & G. 218.

A small herb. Leaves long - petioled, ovate or elliptic, acute or obtuse, margins reddish. Flowers dark pink in colour.

Very small forms noted; otherwise normally it attains a height of 30 - 60 cms.

Local name: Kanajero.

Flowers and Fruits. - July to September, occasionally to February.

Local uses: The plant is used as a vegetable and has a laxative effect.

Foot of the hill; abundant.

OZA 1328.

Konkan; Deccan; Sind; Gujarat; Bengal; N. W. India; W. Peninsula. Ceylon, Java, Afghanistan, Beluchistan, Arabia, N. Africa.

Nothosaerva Wight.

Nothosaerva brachiata (Linn.) Wight, Icon. 6:1, 1853; FBI. 4:726;  
C. 2:495; G. 1175; Backer in Fl. Males. I. 4(2):86.

Illecebrum brachiatum Linn. Mant. 23, 1767.

Aerva brachiata Mart. Beitr. Amrant. No. 3, 83, 1825; Moq.  
in DC. Prodr. 13(2):304; D. & G. 217.

Pseudanthus brachiatus Wight, Icon. 5:t. 1776 (excl. analyses)  
and 6:t. 1776 bis, f. B.

A glabrous herb, 15 - 45 cms. high. Leaves membranous,  
opposite, elliptic or lanceolate, acute. Flowers white spikes.

Noted in moist soils.

Flowers and Fruits. - October to January.

Fairly abundant; near the lower talao at 369 m.; and by  
the road sides near the Pavagadh village.

OZA 252; Santanau 19881.

Konkan; Deccan; Sind; Gujarat; Punjab; W. Peninsula.  
Ceylon, Burma, Mauritius, E. and W. tr. Africa.

Pupalia Juss. (nom. cons.)

Pupalia lappacea (Linn.) Juss. in Ann. Mus. Hist. Nat. Paris  
2:132, 1803; Moq. in DC. Prodr. 13(2):331; FBI. 4:724;  
C. 2:498; D. & G. 219.

Achyranthes lappacea Linn. Sp. Pl. 204, 1753.

Shrubby herbs 60 - 100 cms. tall; tomentose. Leaves  
elliptic or ovate, acute or obtuse, at times apiculate, base  
rounded. Flowers greenish.

Local name: Dholo Jipato.

Flowers and Fruits. - August to February.

Common on the sides of the paths of the hill; fairly common and abundant in the undergrowth of the forest; and higher parts of the hill.

OZA 158, 181, 246; Santapau 19838, 19839.

Deccan; S. M. Country; Sind; Gujarat; Behar; Punjab;  
W. Trop. Himalaya; W. Peninsula. Tropical Asia and Africa.

Alternanthera Forsk.

Key to the species of Alternanthera

Plants prostrate, never erect ..... pungens.

Plants prostrate, at length suberect or erect,  
in pure stands ..... sessilis.

Alternanthera pungens H. B. K. Nov. Gen. et Sp. 2:206, 1818

(P. Iso. !); Melville in Kew Bull. 13:174, f. 2, 1958.

Alternanthera repens (Linn.) Link, Enum. Pl. Hort. Berol.

1:154, 1821, non Gmelin, Syst. 2(1):106, 1791; O. Kuntze,

Rev. Gen. Pl. 2:540, 1891; Fl. Males. I, 4(2):91;

Santapau, Fl. Purandhar 112 and in RBSI. (ed. 2)

16(1):200.

Achyranthes repens Linn. Sp. Pl. 205, 1753 (Oxf. Holo. !).

Alternanthera achyrantha (Linn.) R. Br. Prodr. 417, 1810,

apud auct. plur.

Alternanthera achyrantha (Linn.) Sweet, Hort. Suburb. Lond.

48, 1818.

A prostrate herb, rooting at the nodes. Flowers white.

Occupy the wet situations.

Flowers and Fruits. - September.

Lower talao, near the banks; abundant.

OZA 130; also September 1958.

Santapau, loc. cit. 112 writes : " Urban in Symb. Antil. 4:21, 1905, makes this plant native of the Central American Islands, of the American mainland, and its distribution is extended from America to the Canary Islands. Kew Herbarium shows specimens from the Azores, Canary Islands, Madeira, Cadiz in the South of Spain, the Balearic Islands; in Kew there are no specimens from places between the Balearic Islands and India. It is a recent importation into India, and the plant seems to be spreading rapidly all over the country ..... "

Any critical notes on the identity or on nomenclature: This American plant is a recent importation into India. Most of the recent works give its correct name as Alternanthera repens. But the correct name is A. pungens H. B. K. The synonymy is extensive. For a full discussion of the subject, please see Melville, loc. cit. A. pungens H. B. K. dates from Feb. 1818. Brown did not make the combination A. achyrantha. Sweet, Hort. Suburbanus was published after April 1819 (sic). I must thank Rev. Fr. Santapau of Bombay & Dr. Stafleu of Utrecht, for their help in my attempt to find out the correct botanical name.

Alternanthera sessilis (Linn.) DC. Cat. Hort. Monsp. 77, 1813;

R. Br. ex Sweet, Hort. Sub. Lond. 48, 1818; FBI. 4:731; Gr. 168; D. & G. 220; Wight, Icon. t. 727; Sant.

(ed. 2) 200; Phatak & Oza 11. cc. 540, and 107.

Gomphrena sessilis Linn. Sp. Pl. 225, 1753.

Alternanthera triandra Lamk. Encycl. 1:95, 1783; C. 2:499.

A prostrate, spreading herb, at length suberect or erect; branches 15 - 30 cms. long. Leaves linear - oblong, lanceolate. Flowers white; in small sessile heads.

Forms dense mats in wet places.

Local name: Jal Jambvo; Panini Bhaji.

Flowers and Fruits. - July to February.

Local uses: The plant is a good tonic and is used for dropsy.

Abundant; base of the hill, near the stream; near the upper talao.

OZA 132, 283, 1314, 1315; Santapau 19869; Joshi 120.

Throughout Bombay and the hotter parts of India; Himalaya. Ceylon, all warm countries.

#### Gomphrena Linn.

##### Key to the species of Gomphrena.

Cultivated; flowers red, - deep purple in colour .... globosa.

Wild; flowers yellow in colour ..... celosioides.

Gomphrena globosa Linn. Sp. Pl. 326, 1753; FBI. 4:732; C. 2:499;

Gr. 169; D. & G. Suppl. 72; Sant. 253.

A small herb. Flowers red, - deep purple in colour.

Cultivated.

Local name: Button.

Flowers. - September to January.

Near the top of the hill, in the temple garden.

OZA 242, 306.

Probably of American origin. Cultivated throughout Bombay and in almost all the countries.

Gomphrena celosioides Mart. in Nov. Act. Nat. Cur. 13:301, 1826;

Sant. (ed. 2) 200; Raizada in JBNHS. 48:675.

Gomphrena decumbens, G. procumbens, G. dispersa auct.

A herb with silvery, smooth hairs. Flower heads apparently whitish; flowers yellow in colour.

Said to be introduced; but it has reached the highest parts of the hill.

Flowers. - Almost throughout the year.

Common all over the hill.

OZA 802, 803, 855; Joshi 70.

Throughout Bombay. Native of S. Brazil, Paraguay, Uruguay and Argentine.

Any critical notes on the identity or on nomenclature:

On the subject of the identity of this plant, see Raizada, loc. cit.

#### CHENOPODIACEAE

##### Chenopodium Linn.

Chenopodium album Linn. Sp. Pl. 219, 1753; FBI. 5:3; C. 2:501;

Ulbrich in Pfam. (ed. 2) 16C : 487, f. 1-2; Sant. 253;

Phatak & Oza in JBNHS. 55:540.

C. viride Linn. Sp. Pl. 219, 1753; Gr. 171.



An erect herb about 30 cms. high (Cooke & Gamble, 1-10 ft.); I have not seen tall plants as mentioned by Cooke & Gamble in their floras: in Pavagadh, normally the plants are only upto 30.48 cms. (1ft.) tall. Stems striated. Leaves entire or lobed, rhomboid, deltoid or lanceolate, obtuse or acute. Flowers greenish in colour; in clusters forming panicle spikes. Seeds black, shining.

On the road sides. Not found on the hill.

Local name: Chilni Bhaji.

Flowers & Fruits. - January to April.

Local uses: Used chiefly as a vegetable. It is laxative and purifies the urine. The juice of the plant is applied on burns.

By the side of roads on the way to Shivraipur.

OZA 632.

Deccan; Gujarat; Himalaya; Punjab; Bengal. Almost everywhere.

#### POLYGONACEAE

##### Key to the Genera of the POLYGONACEAE

Prostrate herbs; leaves small, not cordate ..... Polygonum.

Climbing shrubs; leaves large, cordate ..... Antigonon.

Polygonum Linn.

Polygonum plebeium R. Br. Prodr. 420, 1810; FBI. 5:27; C. 2:512; Sant. 254.

A prostrate herb; branches reddish - brown, spreading from the centre. Leaves small, alternate, oblong, obovate or linear. Flowers pink - red in colour; in axillary clusters.

A weed of wet places.

Local name: Okhrad ?

Flowers and Fruits. - January to May.

Fairly abundant; near the upper talao.

OZA 1; also March, April 1958.

Deccan; N. Kanara; Gujarat; throughout tr. India.

Afghanistan, Tr. Asia, Java, Philippines, Australia, Madagascar, Egypt, Tr. and S. Africa.

Antigonon Endl.

Antigonon leptopus Hook. & Arn. Bot. Beech. Voy. 308, t. 69, 1841; C. 2:519; Sant. 255.

A climbing shrub. Leaves large, cordate. Flowers rosy in colour, elegant.

Cultivated.

Flowers. - June to October.

OZA, Cultivated in the gardens throughout the district !

A native of S. America and is cultivated in gardens in Bombay.

ARISTOLOCHIACEAE

Aristolochia Linn.

Aristolochia bracteata Retz. Obs. Bot. 5:29, 1789; FBI. 5:75;

C. 2:524; Gr. 178; D. & G. 224; Phatak & Oza in JBNHS. 55:541.

A prostrate herb, stem 30 cms. long, slender. Flowers dark purple, turning black after drying.

Plate No. - 36.

Local name: Kidamari.

Flowers. - June to September.

Local uses: The plant juice is applied for ulcers in animals. Cures fevers and intestinal worms. Applied on swollen parts.

Rare; a few plants noted at the foot of the hill.

OZA 139; also September 1958.

Konkan; Deccan; S. M. Country; Sind; Gujarat; W. Peninsula; Bengal. Ceylon, Arabia, Tropical Africa.

#### LORANTHACEAE

##### Key to the Genera of the LORANTHACEAE

Leafless parasite; flowers unisexual,  
yellowish green in colour ..... Viscum.  
Parasite with leaves; flowers hermaphrodite,  
orange coloured ..... Dendrophthoe.

##### Viscum Linn.

Viscum articulatum Burmannus, Fl. Ind. 211, 1768; Hook. f. in  
FBI. 5:226, 1886 (incl. var. dichotoma); C. 2:553  
(incl. var. dichotoma); G. 1258; Seshagiri Rao in JIB.  
36:126, f. 5, 1957.

V. flexuosum Gamble in Kew Bull. 1913 : 47, 1913.

V. nepalense Sprengel, Syst. Veg. 47, 1827; Sant. 268  
(excl. var. thelocarpum).

V. dichotomum D. Don. Prodr. Fl. Nep. 142, 1825 (non  
Gilibert 1792 nec. Spreng. 1825).

V. attenuatum DC. Prodr. 4:284, 1830; Gr. 85.

V. opuntioides Roxb. Fl. Ind. (ed. 2) 764, 1832 and  
(ed. 3) 715, 1874.

V. liquidambaricolum Hayata, Ic. Pl. Formos. 5:194, t. 71,  
72, 1915.

A leafless parasite; internodes flattened, narrowed  
at the nodes. Flowers very small, yellowish green in colour.

Noted on Terminalia crenulata Roth, and Randia brandisii  
Gamble.

Local name: Vando.

Flowers and Fruits. - March to May.

In the forest.

OZA December 1957; Joshi 96.

Konkan; Deccan; Kanara; S. M. Country; W. Peninsula;  
Himalaya; Assam; Khasia hills; Central Provinces. Malacca,  
Ceylon, Burma, Malay Peninsula and Archipelago, Java, Australia.

Any critical notes on the identity or on nomenclature:  
On the question of the identity of this plant see Seshagiri Rao,  
loc. cit.

Dendrophthoe Mart.

Dendrophthoe falcata (Linn. f.) Etting. in Denkschr. Akad.

Wissen. Math. - Naturw. Cl. 32:52, 53, 58, t. 13, f. 14,  
1872; Sant. 262; Chavan & Oza in JBNHS.

Loranthus falcatus Linn. f. Suppl. 211, 1781.

L. longiflorus Desr. in Lamk. Encycl. 3:598, 1789; FBI.

5:214; C. 2:548; Gr. 86; G. 1250; Wight, Icon. t. 302.

The parasite is a branch - parasite; leaves thick and variable in shape, elliptic or oblong, linear. Flowers orange coloured.

During the exploration of the flora of Pavagadh, I have on several occasions noticed this parasite on different host plants. They are : Salmalia malabarica (DC.) Sch. et Endl., Grewia tiliaefolia Vahl, Mangifera indica Linn., Cassia fistula Linn., Acacia leucophlaea Willd., Alangium salvifolium (Linn. f.) Wanger., Cordia dichotoma Forst. f., Tectona grandis Linn. f., Cadaba fruticosa (Linn.) Druce, Firmiana colorata R. Br., Ailanthus excelsa Roxb., Butea monosperma (Lamk.) Taub., Tecoma stans (Linn.) H.B.K. Of these the last 5 are new host plants recorded for the first time in India.

Local name: Vando.

Flowers. - December to May, occasionally to August.

Fruits. - January.

Foot of the hill; in the forest proper on the hill; Pavagadh village and in the plains; rare on the hill.

OZA 2; also August 1957; January 1958, 1959; March, April, May 1958.

Konkan; Deccan; Kanara; Gujarat; throughout India. Ceylon.

Any critical notes on the identity or on nomenclature: Research on the family LORANTHACEAE has led to the suppression of the genus Loranthus and the correct names have been substituted for it. On the subject there is a monograph by Danser. Santapau in his paper on 'Changes in Plant Names' in the Journal of

Scientific and Industrial Research 10B : 49 - 50 (1951), quotes  
 Danser : " The only genus bearing rightly the name Loranthus  
 is nowadays called Psittacanthus and is restricted to tropical  
 America." (New Syst. Loranth. and Nomencl. p. 65).

#### SANTALACEAE

##### Santalum Linn.

Santalum album Linn. Sp. Pl. 349, 1753; FBI. 5:231; C. 2:555;  
 Gr. 177; D. & G. 224.

A tree about 5 m. high. Bark greyish. Leaves elliptic -  
 ovate. Flowers purple coloured. Fruit is a drupe, black.

Local name: Chandan.

Flowers and Fruits. - January to March.

Local uses: Of economic value. This is the popular  
 'Sandalwood' tree.

In the forest; not common nor abundant.

OZA 517, 633; Joshi 90.

Konkan; Deccan; S. M. Country; Kanara; Gujarat; W.  
 Peninsula. Cultivated also in other parts of India.

#### EUPHORBIACEAE

##### Key to the Genera of the EUPHORBIACEAE adapted from Gamble

Cells of the ovary 2-ovuled (except in Euphorbia):

Inflorescence of many pedicelled bracteolate stamens  
 as male flowers surrounding a single pedicelled female  
 flower, the whole contained in 4-5 lobed involucre;

involucre regular or nearly so ..... Euphorbia.

Inflorescence of distinct flowers, not contained  
in an involucre:

Petals small, fruit a drupe ..... Bridelia.

Petals 0:

Disk present, usually conspicuous and  
of glands:

Fruit a dry capsule; calyx lobes

5 in all the flowers; stamens 3 ..... Phyllanthus.

Fruit a berry:

Fruit small, fleshy; calyx

lobes 5; stamens 5 ..... Kirganelia.

Fruit large, of 3-6 hard cocci

in a fleshy epicarp; calyx

lobes 5-6; stamens 3 ..... Emblica.

Disk 0; male flowers in clusters, female

flowers subsolitary; stamens 2-3 central . Putranjiva.

Cells of the ovary 1-ovuled:

Filaments erect, rarely inflexed, but the  
pistillode conspicuous:

Calyx in male flowers valvate:

Petals present in male flowers;

calyx 5 - lobed; herbs or undershrubs

stellately hairy ..... Chrozophora.

Petals 0 in male flowers:

Filaments not branched:

- Anthers not vermiculiform or linear; fruit  
 a capsule; styles plumose ..... Mallotus.  
 Anthers vermiculiform or linear; styles  
 laciniate ..... Acalypha.  
 Filaments much branched; staminal bundles  
 indefinite; leaves palmatilobed ..... Ricinus.  
 Calyx in male flowers imbricate:  
 Petals present in male flowers; flowers  
 paniculate, the panicles branching  
 dichasially; leaves palmatinerved ..... Jatropha.  
 Petals 0 in male flowers; male calyx not  
 coloured, small; leaves not lobed nor  
 punctate ..... Baliospermum.

Euphorbia Linn.

Key to the species of Euphorbia adapted from Santapau

- Stems well developed above ground; leaves not all  
 radical; perennial shrubs or small trees; stems fleshy:  
 Unarmed trees or shrubs; leaves very small,  
 inconspicuous, very deciduous ..... tirucalli.  
 Trees or shrubs armed with stipular thorns;  
 spines up to 10 mm. long, straight or curved;  
 leaves over 25 mm. long; branches distinctly  
 angular ..... neriifolia.  
 Annual herbs with slender, erect or prostrate  
 stem:



Leaves exstipulate, alternate below, opposite above,  
 or all alternate, except the uppermost floral  
 leaves; floral leaves just slightly broader than  
 lower ones, otherwise both types of leaves similar .. dracunculoides.  
 Leaves all opposite, stipulate, or if stipules  
 absent, then opposite pairs of leaves joined  
 by interpetiolar line:

Gland of involucre with a conspicuous  
 petaloid limb; floral leaves not  
 distichously imbricating, not concealing  
 the involucre; involucre in many-flowered  
 cymes: capsules hairy ..... parviflora.

Gland of involucre without a petaloid limb,  
 or the limb not conspicuous:

Erect or ascending herbs 12-35 cm.  
 long; hispid, yellowish hairs;  
 leaves upto 35 mm. long ..... hirta.  
 Prostrate herbs, leaves small, less  
 than 12 mm. long:

Stems hairy, capsules pubescent:

Capsules pubescent all over ..... thymifolia.

Capsules pubescent at the angles

of the cocci, glabrous elsewhere .... prostrata.

Stems glabrous or nearly so;

capsules glabrous all over ..... bombaiensis.

Euphorbia tirucalli Linn. Sp. Pl. 452, 1753; FBI. 5:254;

C. 2:570; Gr. 179; D. & G. Suppl. 76; Pax & Hoffm.

in Pfam. (ed. 2) 19C : 214; G. 1272 and 1276; Santapau  
in Bull. bot. Soc. Beng. 8:5.

This is a leafless shrub 1-2 m. high, unarmed. Sap of the plant is poisonous. Leaves deciduous; 0 or very small, linear - oblong, at the end of the branches. Branches spreading, green in colour.

Noted in a hedge; but often cultivated.

Local name: Kharsaniyo Thor.

Flowers. - August to September.

Local uses: Planted as a hedge plant.

Rare; foot of the hill; Machi, in the garden hedge;  
on the plains in hedges.

OZA December 1957, 1958; May 1958.

Throughout Bombay. Ceylon, Burma. A native of Africa.

Euphorbia neriifolia Linn. Sp. Pl. 451, 1753; FBI. 5:255; D. & G.

226; G. 1273 and 1277; Sant. 270; Santapau, loc. cit. 7.

E. ligularia Roxb. Hort. Beng. 36, 1814, nomen nudum; &

Fl. Ind. 2:465, 1832; C. 2:563; Talb. 2:432, t. 485.

Ligularia lactea Rumph. : Gr. 179 and 251.

A shrub up to 2 m. high; stem rounded, branches spreading, spirally arranged small pairs of spines on corky bases. Leaves oblanceolate, shortly acute.

At the time of flowering and fruiting the plant is leafless. Noted in hedges.

Local name: Thor.

Leaves. - June to September, occasionally to January.

Flowers and Fruits. - November to April.

Local uses: Commonly planted as a hedge plant near the cultivated lands and human habitations in the district.

OZA, Fairly common on the plains, possibly cultivated; also noted on the hill itself, growing wild !

Bombay. Ceylon, Beluchistan, Malay Islands.

Any critical notes on the identity or on nomenclature:

The Linnean plant is the more commoner one in our parts of India.

Euphorbia dracunculoides Lamk. Encycl. 2:428, 1786; Roxb. Fl.

Ind. 2:474; Pax & Hoffm. loc. cit. 218; C. 2:564;

G. 1273 and 1277; Santapau, loc. cit. 11.

An erect herb, at times somewhat prostrate; branched in the lower parts. Leaves - the floral and vegetative, are more or less similar, but the former are shorter and broader in proportion; leaves narrow, linear or linear - lanceolate.

In cultivated fields. Most distinct from the other Euphorbias of Pavagadh.

Flowers and Fruits. - December to February.

Rare; foot of the hill; on the plains in cultivated lands.

OZA 1283, 1284.

Deccan; S. M. Country; Sind; Punjab; Behar; throughout India in the plains and low hills. Arabia, Tropical Africa.

Euphorbia parviflora Linn. Syst. (ed. 10) 1047, 1759; Roxb. Fl.

Ind. 2:472; Gr. 179; D. & G. 227; Sant. 273; Santapau,  
loc. cit. 13.

E. hypericifolia Linn. Sp. Pl. 454, 1753, pro parte tantum;

FBI. 5:249, non 250, pro parte.

E. hypericifolia var. parviflora Prain, Beng. Pl. 2:924, 1903;

C. 2:567.

An erect herb 15 - 45 cms. high, unbranched; stem  
glabrous. Leaves elliptic - oblong or obovate, obtuse, serrulate.  
Inflorescence - involucre in cymes, many. Fruit is a hairy capsule.

In association with Crotalaria medicaginea Lamk. &  
E. hirta Linn.

Local name: Dudheli.

Flowers and Fruits. - July to February, occasionally  
to May.

Abundant; foot of the hill; slopes and higher parts of  
the hill.

OZA 169, 263, 264, 800, 882, 883, 1308.

Konkan; Deccan; Sind; Gujarat; Punjab; Himalaya;  
throughout the hotter parts of India. Malacca, Ceylon, Burma,  
Java, Tropics of both hemispheres, except Australia and the  
Pacific Islands.

Euphorbia hirta Linn. Sp. Pl. 454, 1753; Gr. 179; D. & G. 227;

G. 1271 and 1275; Pax & Hoffm. loc. cit. 210; Sant. 271;

Santapau, loc. cit. 15; Phatak & Oza in JBNHS. 55:541.

E. pilulifera Hook. f. in FBI. 5:250; C. 2:568, et al.

auct. ind. passim, sed not Linn.

E. pilulifera var. hirta Thellung in Ascher. & Graebn. Syn.

7:425, 1916.

An erect herb 15 - 30 cms. high, branches and the top of the plant clothed with yellow hairs. Leaves (and stems) reddish, unequal sided - obliquely lanceolate or elliptic, acute, rounded or cuneate at the base, serrulate.

In association with grasses. Host for Cuscuta reflexa Roxb.

Plate No. - 37.

Local name: Nagala Dudheli.

Flowers and Fruits. - Almost throughout the year.

Local uses: The plant is used in bowel troubles.

Fairly abundant; foot of the hill, in open lands; slopes of the hill; a few plants noted at Machi; occasional on the top of the hill.

OZA 38, 167, 610.

Throughout Bombay and the hotter parts of India. Ceylon, throughout the tropics and in some subtropical countries.

Euphorbia thymifolia Linn. Sp. Pl. 453, 1753; FBI. 5:252;

C. 2:569; Pax & Hoffm. loc. cit. 210; D. & G. 227; G.

1272 and 1276; Sant. 271; Santapau, loc. cit. 16.

E. prostrata Graham, Cat. 179, 1839 (non Ait.).

A prostrate herb, hairy. Leaves oblong, crenulate, slightly oblique at the base. Fruit a hairy capsule.

Flowers and Fruits. - July to October, occasionally to January.

Fairly abundant; at the foot of the hill near the bus station.

OZA December 1957.

Deccan; S. M. Country; Kanara; Sind; throughout India in the plains and lower hills. Ceylon, all hot countries except Australia.

Any critical notes on the identity or on nomenclature: The present species is very similar to E. prostrata Ait. But the capsules of E. thymifolia are completely hairy, whereas in E. prostrata the capsules are hairy only on the angles.

Euphorbia prostrata Ait. Hort. Kew. 2:139, 1789; FBI. 5:266;

G. 1272 and 1276; Pax & Hoffm. loc. cit. 210; Santapau in JBNHS. 46:380, and loc. cit. 16.

A small, prostrate herb; stems hairy. Leaves elliptic - oblong or obovate, obtuse, oblique at the base, denticulate. Fruit is a capsule, hairy on the angles, glabrous in rest of the capsule.

In dense patches, in stony or rocky grounds; noted only on the higher parts of the hill.

Flowers and Fruits. - January to July.

Rare; top of the hill near the temple; highest parts of the hill, on the flight of steps.

OZA 793, 794.

A native of tropical America. Deccan; S. M. Country. Most warm regions of the globe.

Any critical notes on the identity or on nomenclature:  
The plant is not listed in Cooke's Flora. For a full description of the plant see Santapau, ll. cc.

Euphorbia bombaiensis Santapau in Bull. bot. Soc. Bengal 8:17, 1954.

E. microphylla Heyne in Roth, Nov. Pl. Sp. 229, 1821  
(non Lamk. 1786); FBI. 5:252; C. 2:570; G. 1272 and 1276;  
Sant. 272.

E. thymifolia var. microphylla Thellung in Ascher. & Graebn.  
Syn. 7:475, 1916.

E. uniflora D. & G. 227, 1861 (non Roxb.).

Prostrate herbs, glabrous. Leaves nearly as broad as long, elliptic or obovate, rounded or emarginate, oblique. Fruit a capsule, glabrous.

Flowers and Fruits. - July to January.

Pavagadh village.

OZA 1561; also December 1957, August 1958.

Throughout Bombay; W. Peninsula; Bengal; Behar. Java.

Any critical notes on the identity or on nomenclature:

(i) The present species is glabrous; otherwise, it is similar in general appearance to E. thymifolia Linn. and E. prostrata Ait.

(ii) The subject of nomenclature has been discussed by Santapau in Bull. bot. Soc. Bengal, loc. cit.

Bridelia Willd.

#### Key to the species of Bridelia

Flowers in clusters in leaf-axils ..... squamosa.

Flowers in clusters on leafless branches ..... retusa.

Bridelia squamosa (Muell. - Arg.) Gehrm. in Engl. Bot. Jahrb.

41, Beibl. 95:30, 1908; Santapau in JBNHS. 50:308, f. 2;  
Sant. 273.

B. retusa Hook. f. in FBI. 5:268 & C. 2:573, ambo pro parte,  
non. Spreng.

B. retusa var. squamosa Muell. - Arg. in DC. Prodr. 15(2):493,  
1866.

A small tree with greyish bark. Leaves lanceolate or  
ovate - lanceolate, acute or acuminate, rounded at base. Flowers  
yellowish - green; in clusters in the leaf - axils. Fruit a drupe.

Local name: Akalkanto.

Flowers. - August to January. Fruits. - December to January.

Fairly common; forest slopes.

OZA August 1957, December 1957, 1958.

Konkan; Deccan; Salsette Island. This is the commoner  
plant of Bombay.

Any critical notes on the identity or on nomenclature:

(i) Santapau in his paper on the 'Excursion of the Indian Botanical  
Society to Pavagadh Hill near Baroda ...' in JIB. 34(2):185-186  
writes : " ..... From examination of many specimens in the field  
I do not feel confident that this is a valid species; it appears  
that flowers or fruits at first are always in axillary clusters,  
but that when the leaves fall off, the fruits seem to be in  
terminal panicles."

(ii) The subject of the identity of Bridelias has been  
discussed by Santapau in JBNHS. loc. cit., which please see.



Bridelia retusa (Linn.) Spreng. Syst. Veg. 3:48, 1826; Gehrman  
30; Jablonszki in Pfreich. 65:69; G. 1279; C. 2:572  
pro parte; Santapau, loc. cit. 308, f. 1.

Cluytia retusa Linn. Sp. Pl. 1042, 1753.

Bridelia retusa Cooke, Fl. Bomb. Pres. 2:572, pro parte,  
non Spreng.

B. spinosa Willd. Sp. Pl. 4(2) : 979, 1805; Gr. 184.

These are trees with flowers in large terminal panicles.

Local name: Akalkanto.

Flowers. - September to November. Fruits. - September to  
February.

Slopes of the forest.

OZA 210, 1178; Santapau 19834, 19835.

Konkan; S. M. Country; Salsette Island. The plant is  
rare in Bombay.

Any critical notes on the identity or on nomenclature:  
Sprengel's plant has flowers in clusters on leafless branches.

#### Phyllanthus Linn.

(Note : In recent years there has been a tendency among the  
workers to split the earlier known genus Phyllanthus, which  
covered two types of plants - 'herbs with capsular fruits and  
trees with fleshy fruits', into various genera - Kirganelia  
Baill., Emblica Gaertn., and Phyllanthus Linn., etc. ; the  
latter with its limitations, includes only the herbaceous plants.)

Key to the species of Phyllanthus

Anthers erect, cells dehiscing vertically; seeds  
muriculate in parallel lines ..... maderaspatensis.

Anthers subglobose, cells dehiscing transversely:

Stipules peltate; capsules rough ..... simplex.

Stipules not peltate; capsules smooth ..... niruri.

Phyllanthus maderaspatensis Linn. Sp. Pl. 982, 1753; FBI. 5:292;

C. 2:586; Gr. 180; G. 1289; Wight, Icon. t. 1895, f. 3;

Sant. 277.

Plants herbs; in association with grasses.

Plate No. - 38.

Flowers and Fruits. - July to September.

On the slopes of the hill.

OZA 1562.

Deccan; S. M. Country; drier part of India. Ceylon,

Tropical Africa, Arabia, Java, China, Australia.

Phyllanthus simplex Retz. Obs. 5:29, 1789; FBI. 5:295; C. 2:587;

D. & G. 234.

Erect herbs up to 1 m. high. Branches flattened. Leaves  
linear - oblong, obtuse or acute, apiculate. Fruit a capsule, rough.

Flowers. - August to November. Fruits. - October to February.

Top of the hill.

OZA 1326, 1327.

Konkan; Deccan; S. M. Country; Assam; throughout India.

Malacca, Ceylon, Malay Islands, China, Mongolia, Pacific Islands.

Phyllanthus niruri auct. non Linn.; FBI. 5:298; C. 2:587; Gr. 180;  
D. & G. 234; G. 1288; Wight, Icon. t. 1894; Sant. 276;  
Phatak & Oza in JBNHS. 55:541.

A small, erect herb, 30 - 60 cms. high. Leaves elliptic - oblong, obtuse. Flowers minute, numerous; yellow or yellowish white in colour. Fruit a glabrous, smooth capsule. Seeds brownish.

A common weed.

Local name: Bhonya Amlī.

Flowers and Fruits. - June to September.

Local uses: The entire plant is used in fever. It cures disorders of the blood and bile. The leaves are used for jaundice, anaemia, and cough.

Common; base of the hill, near the bus stand.

OZA 33, 865, 866.

Konkan; Deccan; Punjab; Assam; throughout India. Malacca, Ceylon.

Any critical notes on the identity or on nomenclature: Sant. (ed. 2) 290 remarks : " G. L. Webster in a series of papers published in the JAA (Vols. 37 and 38) and elsewhere has shown that the real Ph. niruri Linn. is a plant from the West Indies, only occasionally introduced into the tropics of the Old World. The Ph. niruri - complex listed under that name by Hooker in FBI. 5:298, consists of at least two species, Ph. asperulatus Hutch. & Ph. fraternus Webster." To me it seems that the latter occurs in our parts of India !

Kirganelia Baill.

Kirganelia reticulata (Poir.) Baill. Etud. Gen. Euph. 613, 1858;  
G. 1294; Sant. (ed. 2) 219.

Phyllanthus reticulatus Poir. in Lamk. Encycl. 5:298, 1804;  
FBI. 5:288; C. 2:585.

Ph. multiflorus Willd. Sp. Pl. 4:581, 1805; Gr. 180.

Anisonema multiflora Wight, Icon. t. 1899, 1852; D. & G. 234.

Erect or straggling shrubs. Branches smooth and slender.  
Leaves thin, elliptic, obovate or orbicular. Fruit is a berry,  
fleshy; purple in colour.

In hedges.

Local name: Kamboi.

Flowers and Fruits. - Almost throughout the year.

Local uses: Locally the plant is used as a tooth - brush.

Foot of the hill, near the stream; also on the plains  
along the main road leading to Pavagadh.

OZA 1563.

Konkan; Deccan; S. M. Country; Kanara; Sind; Gujarat;  
Behar; Assam; throughout tropical India. Malacca, Ceylon, Burma,  
Tropical Africa, China, Malay Islands.

Emblica Gaertn.

Emblica officinalis Gaertn. Fruct. 2:122, 1791; D. & G. 235;  
G. 1295; Wight, Icon. t. 1896; Sant. 277.

Phyllanthus emblica Linn. Sp. Pl. 982, 1753; FBI. 5:289;  
C. 2:585; Gr. 180.

A small tree; bark greyish. Leaves small, linear, oblong, apiculate. Flowers greenish yellow. Fruit fleshy.

Local name: Amalan.

Flowers. - February to May. Fruits. - May to March.

Local uses: Fruit is edible; often pickled.

OZA, Foot of the hill, in the forest; rare !

OZA Fruits preserved in the museum !

Konkan; Deccan; throughout tropical India, wild or planted; Himalaya. Malacca, Ceylon, China, Malay Islands.

Putranjiva Wall.

Putranjiva roxburghii Wall. Tent. Fl. Nep. 61, 1826; FBI. 5:336;

C. 2:590; D. & G. 236; G. 1311; Pax & Hoffm. loc. cit.

59 f. 13 C; Wight, Icon. t. 1876; Sant. 278.

This is an evergreen tree. Leaves coriaceous, elliptic - oblong, serrulate. Fruit a drupe.

Local name: The generic name of the plant seems to be based on the locally popular name 'Putranjiva' !

Flowers. - March to May. Fruits. - March to December.

OZA, In the forest !

Konkan; Deccan; S. M. Country; Kanara; Himalaya; throughout tropical India, wild and cultivated. Ceylon.

Chrozophora A.H.L. Jussieu 1824 corr.

Bentham et Hooker 1880.

The generic name Chrozophora Neck. is given in the List of Nomina Conservanda under No. 4355 of the International Code of Botanical Nomenclature, 1956. The Necker (1790) names may no more

be used since the Montreal Congress. They have been declared not validly published. Recently, Rickett & Stafleu in their paper 'Nomina Generica Conservanda et Rejicienda Spermatophytorum' in Taxon 8:305, 1959, have given the authority of the generic name as shown above. No change in author's names of species.

Key to the species of Chrozophora

Plants erect ..... rottleri.

Plants prostrate ..... prostrata.

Chrozophora rottleri (Geis.) Juss. ex Spr. Syst. 3:850, 1826;

Pax & Hoffm. in Pfreich. 57:19; G. 1316; Sant. 280.

Croton rottleri Geis. Crot. Monogr. 57, 1807.

C. plicatum Roxb. Hort. Beng. 69, 1814 & Fl. Ind. 3:681, 1832; Gr. 182 (non Vahl).

Chrozophora plicata Voigt, Hort. Sub. Calc. 156, 1846;

D. & G. 233; C. 2:607 (non A. Juss).

C. plicata L Hook. f. in FBI. 5:409, 1887.

An erect herb about 30 - 45 cms. high. Leaves large, wrinkled, stellately hairy, ovate - orbicular, at times 3 - lobed. Flowers yellowish; in elongate racemes. Fruit a capsule.

Noted in dry soil.

Flowers and Fruits. - April to May.

A few plants noted; near upper talao on the banks; on the hill at 769 m.

OZA 796.

Deccan; S. M. Country; Gujarat; Punjab; Bengal; throughout India in the drier parts. Spain and N. Africa.

Chrozophora prostrata Dalz. in D. & G. 233, 1861; C. 2:607

(excl. sp. afric.); G. 1316; Sant. 280; Phatak & Oza in  
JBNHS. 55:541.

C. plicata 3 Hook. f. in FBI. 5:410, 1887.

C. plicata Pax & Hoffm. loc. cit. 19, pro parte; non Juss.

A prostrate herb. Leaves wrinkled, stellately hairy, ovate or suborbicular. Flowers yellow; in racemes, short. Fruit a capsule.

Local name: Betho Okhrad.

Flowers and Fruits. - May to June, also in February.

Local uses: It is used for cold and cough. The seeds are purgative.

At the base of the hill.

OZA 1285; also June 1957, 1958.

Deccan; S. M. Country; Sind; throughout India. N. Africa.

#### Mallotus Lour.

Mallotus philippensis (Lamk.) Muell. - Arg. in Linnaea 34:196, 1865; FBI. 5:442; C. 2:615; Pax in Pfreich. 184 f. 47; (auct. non pauci per sphalm. philippinensis scribunt); Sant. 281.

Croton philippense Lamk. Encycl. 2:206, 1786.

Rottlera tinctoria Roxb. Pl. Cor. 2:36, t. 167, 1798; Gr. 184; D. & G. 230.

A large tree, much branched, 300 - 360 cms. high. Bark greyish. Leaves green, ovate or ovate - lanceolate, acuminate, entire or minutely serrate. Flowers very small. Fruit is a capsule,

3-lobed, 3-valved; bright red in colour. Seeds 3, black.

Local name: Kampilo.

Flowers. - November to January. Fruits. - January to April.

Local uses: Medicinally, the red powder covering the seeds is used for the diseases of the skin.

A few trees noted near the dharamsala at Machi, on the way to Vishvamitri Mukh. The area is surrounded by dense forest.

OZA 412; also January 1959; Santapau 19888, 19889.

Konkan; Deccan; Sind; Gujarat; throughout tropical India. Ceylon, Burma, China, Malay Islands, Australia.

Any critical notes on the identity or on nomenclature:

The only correct spelling of the specific name of this plant is philippensis, not philippinensis, as is often given in our Floras.

#### Acalypha Linn.

##### Key to the species of Acalypha

Inflorescence bracts shortly dentate, truncate, leafy; capsules hispid ..... indica.

Inflorescence bracts fimbriate, bell-shaped, longer than the capsules; capsules glabrous ..... ciliata.

Acalypha indica Linn. Sp. Pl. 1003, 1753; FBI. 5:416; C. 2:610;

Gr. 186; D. & G. 228; Wight, Icon. t. 877; Phatak & Oza in JBNHS. 55:541.

A. spicata Forsk. Fl. Aegypt. - Arab. 160, 1775.

An erect herb. Leaves long - petioled, thin, ovate or rhomboid - ovate, acute, cuneate at the base, crenate - serrate. Fruit a capsule, hispid.



In waste lands.

Local name: Dadaro; Vinchhi Kanto.

Flowers and Fruits. - July to November.

Local uses: The plant is useful in bronchitis and pneumonia.

Machi; base of the hill. Abundant.

OZA 1564; Joshi 107.

Konkan; Deccan; S. M. Country; Behar; Assam; throughout the hotter parts of India. Ceylon, Burma, Tropical Africa, Philippines.

Acalypha ciliata Forsk. Fl. Aegypt. - Arab. 162, 1775; FBI.

5:417; C. 2:611; D. & G. 228.

A herb 30 - 60 cms. high. Leaves thin, long - petioled, ovate, cuspidate - acuminate, rounded or cuneate at the base, serrate. Fruit is a glabrous capsule.

In moist soil; also noted growing in the shades of Tectona grandis Linn. f.

Flowers and Fruits. - August to February.

Rare; near the Sadan Shah gate at 461 m; foot of the hill.

OZA 78; Joshi 108.

Konkan; Deccan; Kanara; W. Peninsula; W. Himalaya; C. Bengal. Ceylon, Arabia, Tropical Africa.

Ricinus Linn.

Ricinus communis Linn. Sp. Pl. 1007, 1753; FBI. 5:457; C. 2:627;

Gr. 183; D. & G. Suppl. 78; Sant. 284.

This is the 'Castor - oil Plant'. Shrubs about 4 to 5 m. high. Leaves palmately lobed. Flowers greenish. Fruit a capsule. Seeds oblong.

Often cultivated in the district; but noted as an escape or growing wild on the hill proper.

Local name: Davelo; Erando.

Flowers and Fruits. - December to February.

Local uses: The oil from the seeds is very useful.

On the surrounding plains, in the fields, cultivated; Machi garden, cultivated; run wild on the hill and along the plains.

OZA 524.

Probably a native of Africa. Cultivated throughout India and naturalised near habitations. Tropics.

Jatropha Linn.

Jatropha curcas Linn. Sp. Pl. 1006, 1753; FBI. 5:383; C. 2:598;

Gr. 183; D. & G. Suppl. 77; Sant. 279.

Shrub. Leaves glabrous, entire or 3 - 5 - angled or - lobed, orbicular - cordate. Flowers yellowish - green.

Noted in waste places; growing wild.

Flowers. - 12 August 1958.

A few plants near Machi.

OZA 936.

An American plant. Throughout India, cultivated and naturalised. Ceylon. Throughout the tropics.

Baliospermum Blume

Baliospermum montanum Muell. - Arg. in DC. Prodr. 15(2):1125,  
1866; G. 1342.

B. axillare Blume, Bijdr. 604, 1825; FBI. 5:461; C. 2:608;  
Talbot. 2:479, t. 508.

B. polyandrum Wight, Icon. t. 1885; D. & G. 232.

A herb 60 - 100 cms. high. Leaves variable in shape and size; upper leaves small, lanceolate, the large lower ones ovate, rounded at base, long - petioled. Fruit is a capsule. Seeds small, smooth and shining.

Local name: Jamalgota.

Flowers and Fruits. - September to May.

Fairly common and abundant; at 461 m. and above; undergrowth of the forest; dominant at Machi; higher parts of the hill. Totally absent in the lower parts.

OZA 213, 214, 280, 736, 737, 738; Santapau 19860, 19861, 19862.

Konkan; Deccan; W. Peninsula; Behar; N. Bengal; Assam; Himalaya. Burma, Malaya, Java, Siam.

## ULMACEAE

Trema Lour.Key to the species of Trema

Flowers in axillary cymes, longer than the petiole .... orientalis.  
Flowers in axillary cymes, not longer than the  
petiole ..... politoria.

Trema orientalis (Linn.) Blume, Mus. Bot. Lugd. - Bat. 2:58,  
1856; FBI. 5:484; C. 2:631; Talb. 2:500, t. 515; Sant. 286.  
Celtis orientalis Linn. Sp. Pl. 1044, 1753; Gr. 189.  
Sponia wightii Planch. in Ann. Sc. Nat. (ser. 3) 10:322,  
1848; D. & G. 238; Wight, Icon. t. 1971.

A small tree. Bark greyish brown. Leaves rough, obliquely ovate, acuminate, crenate - serrulate, base unequal - sided, rounded or cordate or cuneate. Flowers minute, greenish; in axillary cymes. Fruit a drupe, black.

Flowers and Fruits. - September to March.

A few trees noted; in the forest, lower parts; also on the higher parts of the hill.

OZA 233, 234, 235, 290; Joshi 235.

Konkan; Deccan; S. M. Country; Kanara; Bengal; Behar; more or less throughout India. Singapore, Ceylon, Malay Islands.

Trema politoria Planch. in Ann. Sc. Nat. (ser. 3) 10:326; 1848; FBI. 5:484.

Celtis politoria Wall. Cat. 3693, nom. nud.

A small tree; bark brownish, branches clothed with rough hairs. Leaves 4-5 x 2.5 - 2.7 cm., stipulate, 3-4-nerved, alternate, oblique, presence of bristly hairs, ovate, minutely cordate, serrate, petiole 2-3 mm. long. Flowers in axillary cymes, compact, not longer than the petiole.

Flowers and Leaves. - 12 August 1958.

Rare; in the forest, in lower parts of the hill.

OZA 985.

Index Kewensis gives Reg. Himal. as the home of this plant. Dry places in the subtropical Himalaya; Sikkim; Oudh; Mt. Abu; C. India.

Any critical notes on the identity or on nomenclature: This plant is not listed in the Cooke's Flora of the Presidency of Bombay. It has not been recorded from Bombay. It is, therefore, a new record for Bombay ! A note on the subject has been accepted for publication in a subsequent issue of the Journal of the Bombay Natural History Society. I record my sense of gratitude to Shri. M. B. Raizada of the Forest Research Institute, Dehra Dun, for helping in the identification.

#### URTICACEAE

##### Key to the Genera of the URTICACEAE

Stinging plants:

Herbs; stipules small or 0 ..... Fleurya.

Herbs or undershrubs; stipules large,

foliaceous ..... Girardinia.

Plants not stinging; glabrous herbs with

stipulate leaves and slender petioles ..... Pouzolzia.

Fleurya Gaud.

Fleurya interrupta (Linn.) Gaud. in Bot. Freyc. Voy. 497, 1826;

FBI. 5:548; C. 2:632; D. & G. 238; Wight, Icon. t. 1975;

Sant. 286.

Urtica interrupta Linn. Sp. Pl. 985, 1753; Gr. 187.

An erect herb about 1 m. high; stinger. Leaves ovate,

acuminate, coarsely crenate - serrate, base cordate or cuneate;  
stipules small or 0.

Observed on old walls of the fort.

Flowers and Fruits. - August 1957, 1958.

In the undergrowth of the forest; also on old walls.

OZA 81; Joshi 128.

Konkan; Deccan; S. M. Country; Kanara; W. Peninsula;  
Behar; C. Bengal. Malacca, Ceylon, Malay and Pacific Islands,  
China, Abyssinia.

Girardinia Gaud.

Girardinia zeylanica Decne. in Jacq. Voy. 152, 1844; C. 2:633;

Fischer in G. 1373; Sant. 286.

Urtica heterophylla Roxb. (non Vahl) : Gr. 187; Wight, Icon.  
t. 687.

Girardinia heterophylla D. & G. 238, 1861 (non Decne.).

G. heterophylla var. zeylanica Decne. loc. cit.; FBI. 5:551.

The plant is a stinging herb or undershrub, 1 - 2 m. tall.  
Leaves pubescent, 3 - 7 - lobed, serrate, acuminate, base cordate  
or truncate; stipules large, foliaceous, cordate or truncate at  
the base.

The plant is more or less leafless, when it reaches the  
drying stage, by the end of January and onwards.

Flowers and Fruits. - December to March.

Fairly abundant and common; Machi and above; remains  
absent in the lower parts of the hill.

OZA 1565; also December 1957, 1958, March 1958.

Konkan; Deccan; W. Peninsula. Ceylon.

Pouzolzia Gaud.

Pouzolzia zeylanica (Linn.) Benn. Pl. Jav. Rar. 67, 1838;  
Sant. 288.

Parietaria zeylanica Linn. Sp. Pl. 1052, 1753.

P. indica Linn. Mant. 1:28, 1767; Gr. 187.

Pouzolzia indica Gaud. Bot. Freyc. Voy. 503, 1826; FBI.

5:581; C. 2:638; D. & G. 240; Wight, Icon. t. 1980, f. 1,  
t. 2100, f. 40.

An erect glabrous herb. Leaves stipulate, ovate or  
ovate - lanceolate, elliptic, acute, base rounded or somewhat  
acute; petioles slender. Flowers greenish.

Flowers and Fruits. - Rainy season.

Scarce; in the forest.

OZA 1566.

Deccan; S. M. Country; throughout India. Ceylon, Malay  
Islands, China.

## MORACEAE

Key to the Genera of the MORACEAE

Anthers reversed in bud; male flowers in  
pedunculate heads ..... Streblus.

Anthers erect in bud; flowers inserted on  
the inner surface of a closed fleshy  
receptacle ..... Ficus.

Streblus Lour.

Streblus asper Lour. Fl. Cochinch. 2:615, 1790; FBI. 5:489;  
C. 2:642; Fischer 1353; Talb. 2:502, t. 516.

Epicarpurus orientalis Blume, Bijdr. 488, 1825; D. & G.

240; Wight, Icon. t. 1961.

A small tree up to 240 cms. tall. Bark greyish. Leaves rough, elliptic or obovate, acute or acuminate; stipules ensiform.

Flowers. - January to April, occasionally in November.

Fairly abundant; lower talao; dharamsala.

OZA November 1957, 1958.

Deccan; S. M. Country; Kanara; Gujarat; drier parts of India. Ceylon, Malay Islands, Cochin China, China, Siam.

Ficus Linn.

Key to the species of Ficus

Leaves opposite; receptacles hispid, on short

branches ..... hispida.

Leaves alternate:

Receptacles sessile or shortly pedunculate:

Leaves caudate:

Receptacles sessile, in axillary

pairs, depressed-globose, smooth ..... religiosa.

Receptacles sessile or shortly

peduncled in pairs or clusters

on tubercles, in the axils of

fallen leaves, depressed-globose ..... arnottiana.

Leaves not caudate; glabrescent ..... bengalensis.

Receptacles peduncled; on the trunk and main

branches, in clusters or masses, from the

old wood ..... glomerata.



- Ficus hispida Linn. f. Suppl. 442, 1781; FBI. 5:522; C. 2:653;  
 King, Sp. Fic. 116, tt. 154-155, 1887-1889; Fischer 1367;  
 Talb. 2:523, t. 530; Sant. 293.
- F. oppositifolia Willd. : Gr. 191; Wight, Icon. t. 638.
- Covellia oppositifolia Gasp. : D. & G. 243.
- C. daemonum Miq. : D. & G. 244.
- Ficus daemonum Koen. : Gr. 192; Wight, Icon. t. 641.

Shrubs to small trees; hispid. Branches hollow. Leaves opposite, hispid, elliptic - ovate, oblong or obovate, acuminate, margins entire or toothed, base rounded, cuneate or emarginate. Receptacles hispid, on short branches.

Receptacles. - April to July.

Noted several clumps by the side of the path, on the hill; also in the plains along the main road leading to Pavagadh.

OZA November 1957.

Konkan; Deccan; S. M. Country; Kanara; Punjab; throughout India. Malacca, Ceylon, Malay Islands, China, Australia.

- Ficus religiosa Linn. Sp. Pl. 1059, 1753; FBI. 5:513; C. 2:649;  
 King 55, t. 67 A & t. 84, f.U; Fischer 1363; Gr. 190;  
 Talb. 2:514, t. 523; Sant. 291.

Urostigma religiosum Gasp. Ric. Caprif. 82, t. 7, ff. 1-5, 1845; D. & G. 241; Wight, Icon. t. 1967.

A large tree; bark smooth, greyish. Leaves entire, ovate - rotund, apex caudate, base rounded, truncate. Receptacles in axillary pairs, depressed - globose, smooth, sessile.

Planted in the plains surrounding the hill.

Local name: Pipalo.

Receptacles. - March to April.

In the Pavagadh village and plains of the district.

OZA July 1958.

Planted in Bombay and India. Sub - Himalayan forests; Bengal; C. India; Wild.

Ficus arnottiana Miq. in Ann. Mus. Lugd. - Bat. 3:287, 1867;

FBI. 5:513; C. 2:649; King 56, t. 68, and t. 84, f. V;

Fischer 1363; Talb. 2:516, t. 524; Sant. 291.

F. cordifolia Gr. 192, 1839 (non Roxb.).

Urostigma cordifolium D. & G. 242, 1861.

A tree, glabrous; bark smooth. Leaves broadly ovate, apex caudate, margins entire - slightly undulate, base cordate, main nerves 5 - 7 pairs. Receptacles sessile or shortly peduncled in pairs or clusters on tubercles, in the axils of fallen leaves, depressed - globose.

Noted on walls.

Receptacles. - November to January; but leaves absent.

Fairly common; dharamsala upwards to the top of the hill; on the walls, higher parts of Pavagadh.

OZA November 1957.

Konkan; Deccan; Kanara; W. Peninsula; Behar; Rajputana; C. Provinces. Ceylon.

Ficus bengalensis Linn. Sp. Pl. 1059, 1753; FBI. 5:499;

C. 2:645; King 18, t. 13, & t. 81, f. C; Fischer 1361;

Talb. 2:507, f. 518; Sant. 289.

F. indica Linn. Amoen. Acad. (3 ed.) 1:27 (excl. syn.

Kataualou Rheede); Gr. 189.

Urostigma bengalense Gaspar, Nov. Gen. Fic. 7, 1844; D. & G.

240; Wight, Icon. t. 1989.

This is the well known 'Banyan'. Trees large. Leaves entire, glabrescent, elliptic to broadly ovate, obtuse, base rounded or subcordate. Receptacles red; in axillary pairs, globose, puberulous, presence of basal bracts - 3, rounded.

A very fine tree planted for its shade.

Local name: Vad.

Receptacles. - January.

Machi; foot of the hill, in the village Pavagadh; in the plains.

OZA April, May 1958.

Planted in the plains of India. Not wild in Bombay; wild in the sub - Himalayan forests and on the lower slopes of the hills in S. India.

Ficus glomerata Roxb. Pl. Cor. 2:13, t. 123, 1798; FBI. 5:535;

C. 2:654; King 173, t. 218 A; Fischer 1364; Gr. 190;

Talb. 2:524, t. 531; Wight, Icon. t. 667; Sant. 293.

Covellia glomerata Miq. : D. & G. 243.

A large tree. Leaves entire, glabrous, ovate - oblong or elliptic - lanceolate, apex blunt or acute, base acute or obtuse. Receptacles on the trunk and main branches, in clusters or masses, green, but turning red.

Figs infected by insects.

Local name: Umardo.

Receptacles. - Almost throughout the year.

On the higher parts of the hill.

OZA January 1958.

Throughout Bombay and India. Burma, Ceylon.

#### CASUARINACEAE

##### Casuarina Linn.

Casuarina equisetifolia ("equisetifolia") Linn. Amoen. Acad. 4:143, 1759; FBI. 5:598; C. 2:660; D. & G. Suppl. 82; Talb. 2:536; Sant. 295.

C. muricata Roxb. Fl. Ind. 3:519, 1832; Gr. 196; D. & G. Suppl. 82.

A tree. Branchlets cylindric, jointed; internodes ribbed. Leaves reduced to subulate scales; scales in whorls of 6 - 8; teeth acute or setaceous.

Introduced. Planted for ornamental purpose. Not found on the hill.

Fruits. - April 1958.

Only one tree. On the surrounding plain, village Kanjari, in Thakor Saheb's compound.

OZA 703.

Planted throughout Bombay and India. Malay Islands, Australia, Pacific.

#### ORCHIDACEAE

##### Aërides Lour.

Aërides maculosum Lindl. in Bot. Reg. t. 58, 1845; FBI. 6:45; C. 2:699; D. & G. 266; Fischer 1442; Blatt. & McC. in JBNHS. 35:490; Sant. 303; Santapau & Kapadia in JBNHS. 54:220,

cum fig., 1956; and in JBNHS. 58:64-65, t. 30, 1961.

Saccolabium speciosum Wight, Icon. tt. 1674-1675, 1851.

This is an epiphytic orchid with slender stems. Leaves thick, spotted with purple dots, apex lobed, lobes rounded and unequal, linear - oblong, channelled. Flowers violet coloured; in panicled racemes.

Noted in dense masses on Manilkara hexandra (Roxb.) Dub.

Flowers. - May to July. Fruits. - June to July.

On the upper parts of the hill at about 738 m.

OZA 906, 907.

Konkan; Deccan; S. M. Country; W. Peninsula; Mt. Abu.

Any critical notes on the identity or on nomenclature:

The specimens from Pavagadh OZA 906, 907 have been identified at the Indian Botanic Garden, Calcutta.

#### ZINGIBERACEAE

#### Curcuma Linn.

#### Key to the species of Curcuma

Corolla purplish with a yellow streak on the lip,

bracts green with a purplish to rosy tinge,

tubers white inside ..... inodora.

Corolla yellow, bracts green with a purplish

to reddish tinge, tubers yellowish inside ..... pseudomontana.

Curcuma inodora Blatter in Journ. Asiatic Soc. Beng. (N.S.)

26(1) : 357-358, 1930; Santapau in JBNHS. 51:135-139,

t. 1; Phatak & Oza in JBNHS. 56:368-369.

For the description of the plant and field notes, see Phatak & Oza, loc. cit.

My entry in the field diary is as follows : " Corolla purplish with a yellow streak on the lip, bracts green with a purplish to rosy tinge, tubers white inside.

A monsoon herb about 50 cms. high. The number of leaves per plant is three and in some cases four. Usually the leaves and spikes come out at the same time or leaves come out before the flowering. The position of the spike in relation to the leaves is lateral. The underground system is composed of long fibrous roots spreading upto 18 - 20 cm. from the rhizome, tubers elliptic or globose and at the end of the root fibres, the inside of the tubers is white. A few decayed tubers have also been noted at the end of these roots." (For 15-7-1958). And for 12-8-58:

" The lateral spike decays and gives way to a central spike. In flowers and leaves. Number of leaves four."

Noted in rocky places at 461 m.

Flowers. - July to August.

Abundant; near Machi.

OZA 900, 901, 902, 953.

Blatter, loc. cit. " Locality. - Bombay Presidency : Moolgaum, Salsette (Hallberg No. 12724, type). Flowered in June 1917." Apparently endemic in Bombay. Purandhar; Dangs.

Any critical notes on the identity or on nomenclature: The identification of the plant has been checked and confirmed in Blatter Herbarium. The plant is not mentioned in Cooke's Flora.

For a full description of the plant, please see Santapau, loc. cit.

Curcuma pseudomontana Grah. in Gr. 210, 1839; C. 2:730; D. & G. 275; Lisboa in JBNHS. 2:144; Watt, Dict. Econ. Prod. 2:669; Santapau in JBNHS. 45:618-623, 1945; Sant. (ed. 2) 244.

C. ranadei Prain in JBNHS. 11:463, 1898; Woodrow in JBNHS. 12:520.

C. montana Baker in FBI. 6:214, 1890, pro parte (not of Roscoe); Roxb. Fl. Ind. 1:35; Woodrow in JBNHS. 12:520; Index Kew. 1:672.

During the last three years, I have made ample collections and recorded plenty of data on C. pseudomontana, some of which is reproduced below, mainly based on my field diary for the period. The scitamineous plants were observed and collected at the beginning, middle and end of the monsoon from about the same spot on Pavagadh Hill, 46.6 km. NE. of Baroda.

This is a stemless monsoon herb sprouting up in Pavagadh after the first few rains sometime about July and August. Leaves are green, entire, oblong lanceolate, acuminate, base acute, mid-rib prominent, venation parallel; the number of leaves per plant is four and in some cases five, the size of the leaf-blade is 16-25 x 6-10 cm. and that of the petiole from ground level to leaf base is 20 cm. We do not find any difference between the size of the leaves of plants growing in exposed grounds or in the areas protected from the Sun and at different altitudes. Leaves come out before the flowering but usually the leaves and spikes come out at the same time. The position of the spike in relation

to the leaves is at first lateral. Later on in the season this lateral spike decays and gives way to a central one. The plants observed on 15-7-58 had lateral spikes along with minute central ones covered by the leaf sheaths. On 12-8-58, the plants had central spikes surrounded by the tuft of leaves. The size of the spike is 6-9 cm. long and 4-7 cm. in diameter with a peduncle 5-9 cm. long, at times reaching 12 cm. length; colour of the flowers : Corolla yellow, bracts green with a purplish to reddish tinge. Most of the flowers are infested by some insects. The underground system is composed of long fibrous roots spreading upto 5-7 cm. from the rhizome, tubers 1.5-2 x 1 cm., elliptic or globose and at the end of the root fibres, the inside of the tubers is yellowish.

The plants are clearly localised in rocky grounds protected from the Sun, near Machi at about 461 m.; - a small plateau surrounded by dense forest. A few plants are also noted in exposed grounds at the top of the hill at about 864 m.

Flowers. - July to August.

Fairly common and very abundant; near Machi at 461 m.; a few plants at the top of the hill at about 864 m.

OZA 39, 899, 986.

Konkan; Deccan; W. Peninsula.

Apparently endemic.

Any critical notes on the identity or on nomenclature:

(i) To confirm the determination of C. pseudomontana, the specimens were sent to the Indian Botanic Garden, Calcutta.

The identification turned out to be C. ranadei Prain.



Prain's C. ranadei is synonymous with Graham's C. pseudomontanta.

(ii) For nomenclature, full description of the plant, and importance of the subject see Santapau, ll. cc.

Our note - "Field Notes on the systematics of Curcuma - Curcuma pseudomontanta Graham at Pavagadh" has been accepted for publication in the J. M. S. Univ. Baroda. I record my sense of gratitude to late Dr. D. Chatterjee, Calcutta, for helping in the identification. Thanks are also due to Rev. Fr. H. Santapau, S. J., F. N. I., Bombay, for kindly going through the MS. of our note.

#### AGAVEACEAE

##### Agave Linn.

Agave ingens Berger (?), Hort, Mort. 12 & 360, 1912; idem. in Agav. 154, 1915; Sant. (ed. 2) 291.

An introduced plant. Several plants of A. ingens Berg.? are fairly abundant on the plains in hedges, where the plant appears to have become naturalised. Flowers yellowish; the scape of the inflorescence is about 2 m. high.

Local name: Ketaki.

Flowers. - December to January.

Abundant; on the plains.

OZA December 1957, 1958.

Throughout Bombay.

Any critical notes on the identity or on nomenclature: Santapau in his paper - 'Excursion of the Indian Botanical Society to Pavagadh Hill .....' enumerated this plant as

Agave spec. (americana ?). But very recently, while going through my MS. of the Nomenclature of Pavagadh plants he pointed out to me that the common plant in our parts of India is A. ingens Berger. This has been checked and confirmed with the help of Berger's monograph - Die Agaven, loc. cit. Thus it is clear that the species is definitely not americana of Linneaus.

#### DIOSCOREACEAE

##### Dioscorea Linn.

Dioscorea bulbifera Linn. Sp. Pl. 1033, 1753; C. 2:758; Gr. 219; Fischer 1511; Prain & Burkill, ARBGC. 14:111 - 132, tt. 49-51; Wight, Icon. t. 878; Santapau in JBNHS. 49:628; Sant. (ed. 2) 250.

D. sativa Thunb. Fl. Jap. 151, 1784 (non Linn.); FBI. 6:295 (excl. D. cliffortiana).

Hemia bulbifera Kunth. : D. & G. 247.

This is a climbing herb with simple and alternate leaves. Stem unarmed. Bulbils in the leaf axils, but falling off early. Leaves broadly ovate to suborbicular, acuminate, cuspidate or caudate, base cordate. Male flowers pinkish; in slender spikes, close together or scattered on long pendulous, axillary panicles. Female flowers creamy in colour; in solitary pendulous spikes.

Growth luxuriant.

Flowers. - August to September. Fruits. - September.

Noted a few plants; lower half of the forest, above the ' Forest Nursery. '

OZA 185; also September 1958.

Konkan; Deccan; S. M. Country; N. Kanara; throughout India. Ceylon. Tropics of the Old World.

Any critical notes on the identity or on nomenclature: My specimen from Pavagadh has been identified by Mr. Isaac H. Burkill of Kew, the authority on Dioscoreaceae. In his letter of October 1st, 1960, he wrote : " The Dioscorea sent for determination along with your letter ..... of the 7th of September is Dioscorea bulbifera L.

It is almost certainly the typical plant which is called var, Vera in the Annals of the Royal Botanic Garden, Calcutta; but there is little need of the varietal adjective.

On the western side of India it is common from Surat to Cape Comorin and further north sporadic. In not too dry places as far as the Himalaya ....."

#### LILIACEAE

##### Key to the Genera of the LILIACEAE

Climbing herbs ..... Gloriosa.

Herbs not climbing but erect:

Underground stem a tunicated bulb ..... Dipcadi.

Underground stem a small rootstock with

fascicled roots ..... Chlorophytum.

##### Gloriosa Linn.

Gloriosa superba Linn. Sp. Pl. 305, 1753; FBI. 6:358; C. 2:766;

Gr. 221; Fischer 1519; Wight, Icon. t. 2047; Sant. 321.

Methonia superba Dalzell & Gibson, Bomb. Fl. 205, 1861.

A herbaceous climber. Leaves ovate - lanceolate, apex tapering, tip tendril - like, coiled, base rounded or cordate.

Found on hedges.

Local name: Vadhavadiyo.

Flowers. - July to September.

OZA, Along the plains on hedges; occasional !

Konkan; Deccan; Gujarat; throughout tropical India.

Ceylon, Tropical Africa, Malacca, Cochinchina.

Dipcadi Medic.

Dipcadi montanum Dalz. in Kew Journ. Bot. 2:142, 1850; FBI. 6:346; C. 2:769.

Erect herbs. Underground stem a tunicated bulb. Leaves linear, acute. Flowers creamy.

This and the following plant species are clearly localised on the plateau near the Temple of Bhadrakali; in open rocky grounds, exposed to the Sun. Both the plants have been identified by Rev. Fr. Santapau of Bombay.

Flowers. - July to August.

Local uses: Said to be medicinal. On many occasions I have seen the local people collecting the bulbs of this plant in the rainy season; but I have failed to find out the exact local use made of the plant.

Abundant but rare; near the temple of Bhadrakali Mataji.

OZA 37, 37(A); also July 1958.

Deccan; S. M. Country; W. Peninsula.

Chlorophytum Ker.

Chlorophytum tuberosum (Roxb.) Baker in JLS. 15:332, 1875;

FBI. 6:334; C. 2:772; Fischer 1526; Sant. 322.

C. anthericoideum Dalz. in Kew Journ. Bot. 2:141, 1850;

D. & G. 251.

Phalangium tuberosum Wight, Icon. t. 2036, 1853.

Anthericum tuberosum Roxb. Fl. Ind. 1:149, 1832; Gr. 219.

This is a rather variable plant. Underground stem a small rootstock with fascicled roots. Leaves linear, acute, somewhat sword-like. Flowers white.

In rocky grounds.

Flowers. - July to August.

Rare; near the Temple of Bhadrakali.

OZA 1567.

Konkan; Deccan; W. Peninsula; E. Himalaya; Behar; W. Bengal; C. India. Burma, Abyssinia.

## COMMELINACEAE

Key to the Genera of the COMMELINACEAE

Fertile stamens 3; staminodes 1-3; cymes  
arising from a spathaceous bract ..... Commelina.  
Fertile stamens 6; staminodes 0; cymes  
scorpioid, formed by imbricate, 2-seriate,  
foliaceous bracteoles ..... Cyanotis.

Commelina Linn.

(Note: For observations on the flowering of Commelinas,  
I beg to refer the interested reader to the paper by Edward

Barnes published in JBNHS. 46:70-89.)

Key to the species of Commelina

Capsules 5 - seeded:

Capsules pyriform; seeds closely pitted ..... benghalensis.

Capsules not pyriform; seeds tuberculate

and reticulate ..... nudiflora.

Capsules 3 - seeded; seeds smooth ..... obliqua.

Commelina benghalensis Linn. Sp. Pl. 41, 1753; FBI. 6:370;

C. 2:782; Gr. 223; D. & G. 253; Fischer 1539; Clarke  
in DC. Mon. Phan. 3:159; Wight, Icon. t. 2065;  
Sant. 323.

Herbs creeping; the lower nodes, bear underground  
flowers and fruits, often rooting; the exposed flowers sterile;  
flower colour blue. Leaves ovate, oblong or suborbicular, acute  
or obtuse. Fruit a pyriform capsule, 5 - seeded. Seeds closely  
pitted.

By the side of the stream.

Flowers and Fruits. - August to December.

Foot of the hill.

OZA 1568.

Konkan; Deccan; S. M. Country; Gujarat; Himalaya;  
throughout India. Trop. Asia and Africa.

Any critical notes on the identity or on nomenclature:

The plant has been checked at the Indian Botanic Garden, Calcutta.

Commelina nudiflora Linn. Sp. Pl. 41, 1753 (non. Linn. Mant. 2:177); FBI. 6:369; C. 2:781; Gr. 223; Fischer 1538; Clarke, loc. cit. 144; Sant. 323; Phatak & Oza in JBNHS. 55:541.

C. communis D. & G. 252, 1861 (an eadem ac Walt. Fl. Carol. 68, 1788 ?).

An erect herb, 20 - 30 cms. high. In case of suberect plant it produces roots at the lower nodes. Leaves lanceolate or ovate - lanceolate, acute or acuminate. Flowers blue. Fruit is a 5 - seeded capsule. Seeds tuberculate and reticulate.

Gregarious.

Local name: Akhalo - Bokhalo.

Flowers and Fruits. - July to October.

Local uses: Its application is good for burns.

Machi.

OZA 1569; also August 1957, 1958.

Konkan; Deccan; S. M. Country; Punjab; throughout the hotter parts of India. Singapore, Ceylon. Tropics and subtropics.

Commelina obliqua Buch. - Ham. in Don, Prodr. Fl. Nep. 45, 1825; FBI. 6:372; C. 2:784; Fischer 1539; Clarke, loc. cit. 178; Sant. 324.

C. polyspatha Wight, Icon. t. 2066, 1853.

Erect herbs; stems about 60 cms. high. Leaves glabrous, large, forming prominent sheaths, lanceolate or elliptic - lanceolate, acute or caudate - acuminate. Spathes crowded in

terminal heads. Flowers blue. Fruit a 3 - seeded capsule. Seeds smooth.

Near the moist rocks and walls of the fort.

Flowers and Fruits. - July to February.

Fairly common; higher parts of the hill; foot of the hill.

OZA 525, 526, 955.

Konkan; Deccan; Himalaya; throughout India. Ceylon, Singapore, Malay Islands.

Cyanotis D. Don. (nom. cons.)

Cyanotis cristata (Linn.) Schultes f. Syst. 7:1150, 1830;

FBI. 6:385; C. 2:794; D. & G. 256; Wight, Icon. t.

2082; Clarke, loc. cit. 247; Fischer 1549; Sant.

(ed. 2) 256.

Commelina cristata Linn. Sp. Pl. 42, 1753.

Tradescantia cristata Jacq. : Gr. 223.

Plants creeping. Leaves ovate - oblong, obtuse or subacute, cordate or rounded at the base. Cyme scorpioid, recurved; flowers blue coloured.

Flowers and Fruits. - August to October.

On the higher parts of the hill; occasionally seen.

OZA 1570.

Konkan; Deccan; S. M. Country; throughout Tropical India. Ceylon, Burma, Malacca, Malay Islands, Mauritius, Tropical Africa.

Any critical notes on the identity or on nomenclature:

The plant has been checked at the Indian Botanic Garden, Calcutta.



## PALMAE

Key to the Genera of the PALMAE

- Leaves simple, palmate, fan-like; fruit  
brownish, large ..... Borassus.  
Leaves pinnate; fruit orange yellow, small ..... Phoenix.

Borassus Linn.

Borassus flabellifer Linn. Sp. Pl. 1187, 1753; FBI. 6:482

(excl. B. aethiopum); C. 2:811; Blatter, Palms Brit.

Ind. 174 - 213, tt. 38 - 39; Sant. 328.

B. flabelliformis Murr. Syst. (ed. 13) 827, 1774 (ex Cooke);

Gr. 226; D. & G. 278.

A tall tree.

For this, and the following plant species - Phoenix sylvestris (Linn.) Roxb., please see our introductory remarks given under the heading 'Palms and the strangling figs.'

Local name: Tad.

Flowers. - February to March.

OZA, Fairly common and abundant, at many places form the dominant feature of the vegetation; on the plains, near the village Jarod, by the sides of the main road leading to Pavagadh !

Cultivated throughout the plains of India. Burma, Ceylon, Malaya. A native of Tropical Africa.

Phoenix Linn.

Phoenix sylvestris (Linn.) Roxb. Hort. Beng. 73, 1814 and Fl.

Ind. 3:787, 1832; FBI. 6:425; C. 2:801; Gr. 224; D. & G.

278; Fischer 1559; Blatter, Palms 3 and tt. 2-3; Sant. 327.

Elate sylvestris Linn. Sp. Pl. 1189, 1753, pro parte.

A small tree.

Local name: Khajuri.

Flowers. - January to March.

Distribution in Pavagadh - same as the preceding species.

OZA December 1957, April 1958.

Cultivated throughout the plains of India.

#### ARACEAE

##### Key to the Genera of the ARACEAE

- Plants monoecious or dioecious; leaflets pedately  
or radially arranged ..... Arisaema.  
Plants monoecious; leaves 3 - partite,  
segments pinnatisect ..... Amorphophallus.

##### Arisaema Mart.

Arisaema neglectum Schott. in Bonpl. 7:26, 1859; FBI. 6:504;

Engler in Pfreich. 192, f. 43; Blatt. & McC. in

JBNHS. 35:21; Sant. 329.

A. tortuosum Schott. var. neglectum Fischer in G.

1585, 1931.

The appendage of the spadix ends into a very acute point and is slightly longer than the spathe. Plants monoecious or dioecious.

Plant conspicuous; on the slopes under the shade of trees, but absent from other parts of the hill.

Flowers. - July 1958, 1959.

Very abundant; just above Machi.

OZA Specimens preserved in the museum !

Konkan; Deccan; N. Kanara. Ceylon.

Amorphophallus Blume ex Decne (nom. cons.)

Amorphophallus commutatus (Schott) Engler in DC. Mon. Phan.

2:319, 1879 and in Pfreich. 48:95; C. 2:826; Blatt.

& McC. 27; Sant. 331.

Conophallus commutatus Schott in Bonpl. 7:28, 1859.

Dracontium polyphyllum Gr. 229, 1839 (non Denst.).

Amorphophallus sylvaticus D. & G. 259, 1861 (non Kunth.).

I have been able to observe this monoecious plant only on one occasion. Noted in rocky grounds in the undergrowth.

Flowers. - 19 - 20 February 1958.

Rare; half way up the hill, in the undergrowth of the forest.

OZA Specimen preserved in the museum !

Konkan; Deccan; W. Peninsula. Apparently endemic in the Bombay Presidency.

#### CYPERACEAE

Cyperus Linn.

#### Key to the species of Cyperus

Rhachilla persistent:

Spikelets digitate or clustered, not spicate

nor racemose; glumes not or minutely mucronate .. difformis.

Spikelets spicate or racemose:

Stolons bulbiferous; leaves arising

from the stem, subbasal, usually

longer than the stem ..... bulbosus.

Stolons not bulbiferous; leaves shorter or  
 longer than the stem ..... rotundus.  
 Rhachilla not persistent ..... cyperoides.

Cyperus difformis Linn. Cent. Pl. 2:6, 1756 & Amoen. Acad.

3:302, 1760; FBI. 6:599; C. 2:862; Fischer 1640;  
 Kuekenth. in Pfreich. 101:237, f. 27 F-H; Blatter &  
 McCann in JBNHS. 37:259; Sant. 338.

A small plant with weak stems. Leaves linear.  
 In wet locality.

Flowers and Fruits. - December to January.

Abundant; on the hill near the Telia Talao.

OZA December 1957; Santapau 19868.

Konkan; Deccan; throughout India. Ceylon, throughout  
 the Old World.

Cyperus bulbosus Vahl, Enum. 2:342, 1806; FBI. 6:611;

C. 2:871; D. & G. 284.

Plants 15 - 30 cms. high. Stems slender.

Noted in cultivated lands.

Plate No. - 39.

Flowers and Fruits. - August to September.

Machi; in the plains surrounding the hill.

OZA 1572; also August 1957, 1958.

Deccan; W. Peninsula; Sind. Beluchistan, Ceylon,  
 Tropical Africa, and Australia.

Cyperus rotundus Linn. Sp. Pl. 45, 1753; FBI. 6:614; C. 2:871;  
Kuekenth. 197, f. 13; Blatt. & McC. 273; Sant. 341;  
Phatak & Oza in JBNHS. 55:541.

An erect, glabrous herb, 15 cms. high. Leaves narrow,  
linear, flat.

Local name: Moth.

Flowers and Fruits. - July to October.

Local uses: The tubers are used for disorders of the  
stomach.

Near the dharamsala.

OZA 1571; also August 1957, 1958.

Deccan; Sind; throughout India. Ceylon. All warm regions.

Cyperus cyperoides (Linn.) O. Kuntze, Rev. Gen. 3:333, 1898;  
Kuekenth. 514; Sant. 337.

Scirpus cyperoides Linn. Mant. 2:181, 1771.

Mariscus sieberianus Nees in Linnaea 9:289, 1835; FBI.

6:622; Clarke, Illustr. Cyp. t. 23, f. 5-6; Fischer 1645.

M. panicus Vahl, Enum. 2:337, 1806; Blatt. & McC. 533;  
Chavan & Sabnis in JBNHS. 56:369-70.

Plants slender.

In moist and shady place.

Flowers and Fruits. - August to September.

OZA, Machi : near the Vishvamitri Mukh; a few plants  
noted !

Konkan; Deccan; N. Kanara; S. M. Country; throughout  
India. Warm regions of the Old World.

## GRAMINEAE

My grass collection from Pavagadh has been checked against the specimens in the Blatter Herbarium, many of which have been checked by Dr. Bor of Kew. In this Flora I could not cite all my Herbarium specimens, since they are with my colleague, Mr. A. R. Mehta, who is at present in London. He has been kind enough to give me the numbers of his plant collection (ARM ..... ) from Pavagadh.

Key to the Genera of the GRAMINEAE adapted from  
Bor (except Pooideae - Eragrosteae, after  
C. E. Hubbard)

1. Spikelets 2-flowered, falling entire at maturity, usually with the upper floret hermaphrodite and the lower male or barren and if the latter, often reduced to the lemma or rarely the lemma entirely absent, all alike or more often differing in size, shape and structure, frequently dorsally compressed:
2. 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 : female spikelet not enclosed in a metamorphosed leaf-sheath which takes the form of a spherical or cylindrical, osseous or ivory bead-like

structure; male spikelets several at the tip of an inflorescence; lower glume of female spikelets without a membranous appendage, not wavy ..... Chionachne.

2. 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:

3. Spikelets often paired, with one sessile and the other pedicelled, those of each pair similar or more often dissimilar, rarely solitary and all alike; glumes as long as the spikelet and enclosing the florets, more or less rigid and firmer than the lemmas which are both hyaline or membranous; upper lemma usually awned:

4. Spikelets in pairs, rarely in threes, similar or dissimilar, a sessile and a pedicelled or one short - , the other long-pedicelled, rarely the pedicelled reduced or very rarely the sessile reduced to a scale or two and the pedicelled spikelet developed: spikelets of each pair similar, the sessile and the pedicelled hermaphrodite;

the pedicelled very rarely female, rarely the sessile spikelet male and the pedicelled spikelet hermaphrodite (Lophopogon); joints of the panicle thin, linear or somewhat expanded at the top:

5. Spikelets arranged in more or less ample panicles or compound racemes arranged along a central axis; upper lemma awnless or awned from the entire tip or from between two terminal teeth : rhachis of the racemes breaking up:
  6. Spikelets unawned, similar : culm solid; panicle ample ..... Saccharum.
  6. Spikelets awned : upper lemma cleft; lower glume rounded on the back or two-keeled, with 5-9 prominent nerves .... Spodiopogon.
5. Spikelets arranged in a single or in several racemes, the latter being digitate or arranged along a very short main axis; spikelets in pairs or in threes; rarely pedicelled spikelets reduced to pedicel: lower glume more or less flat, very shallowly depressed but not furrowed or rounded on the back; upper glume with a very short awn; lower glume of fertile spikelet with transversely placed tufts of hairs; sessile spikelet male, the pedicelled hermaphrodite ..... Lophopogon.



4. Spikelets in each pair dissimilar, the sessile hermaphrodite, the pedicelled male or sterile, or completely absent or if more or less similar then the joints of the raceme and the pedicel thick and swollen:
7. Joints of the rhachis and pedicel of the pedicelled spikelet (if not much reduced) swollen, 3-angled, rounded or flattened:
8. Sessile spikelet with a male and a hermaphrodite floret; upper lemma awned, rarely awnless:
9. Racemes many-noded, not contained in a spathe-like sheath:
10. Raceme solitary, terminal; lower glume of sessile spikelet not transversely grooved; lower and upper glumes without tufts of hair; ligule a row of hairs ..... Sehima.
10. Racemes two to many; lower glume of sessile spikelet often with nodules on the margins or transversely furrowed:

11. Pedicelled spikelets developed;  
lower glume usually coriaceous  
below, often transversely  
wrinkled, furrowed or with  
nodules on the margins ..... Ischaemum.
11. Pedicelled spikelet reduced to  
a linear curved pedicel; lower  
glume coriaceous, convex, covered  
all over with transverse ridges  
which are often broken up into  
warts or teeth, not keeled ..... Thelepogon.
9. Racemes 1-noded, reduced to three  
heteromorphous spikelets, enclosed  
in a boat-shaped spathe ..... Apluda.
8. Sessile spikelet with a hermaphrodite  
floret only or occasionally with a  
male floret below; upper lemma  
unawned : racemes solitary, terminating  
the culm and branches; sessile spikelet  
spherical; lower glume pitted all  
over; pedicelled spikelet  
reduced ..... Hackelochloa.
7. Joints of the rhachis and the pedicel narrow,  
seldom thickened upwards, occasionally with  
a translucent longitudinal groove; sessile  
spikelet usually awned:

12. Inflorescence a terminal raceme : lower glume  
of sessile spikelet without tufts of hair;  
ligule a row of hairs ..... Sehima.
12. Inflorescence a panicle:
13. Spikelets in racemes which are not  
interrupted by spathes or solitary  
at the ends of the branches; the racemes  
collected into whorled panicles; joints  
and pedicels not furrowed : spikelets  
in pairs or threes; pedicelled spikelets  
often more or less reduced:
14. Spikelets dorsally compressed,  
in panicles of many pairs or in  
threes of which one is  
hermaphrodite : racemes very  
much less than 30 cm. long,  
readily disarticulating;  
rhachis-nodes and pedicels  
ciliate; lower glume of sessile  
spikelet rounded on the sides,  
2-keeled at tip; lodicules  
hairy ..... Sorghum.
14. Spikelets compressed from the sides:
15. Spikelets in groups, each  
consisting of a sessile and  
two more or less reduced  
pedicelled spikelets or a

- raceme of several pairs; lower glume smooth,  
 not tuberculate ..... Chrysopogon.
15. Spikelets with many pairs of spikelets  
 arranged in whorled racemes; lower glume  
 tuberculate ..... Vetiveria.
13. Panicles of racemes which are interrupted by  
 spathes, or the espatheate racemes digitate or  
 in pairs or solitary and terminal, sometimes  
 the joints and/or pedicels with a translucent  
 median furrow:
16. Upper lemma of the sessile spikelet with a  
 basal awn; sessile spikelet compressed from  
 the side; pedicelled spikelet reduced ..... Arthraxon.
16. Upper lemma of the sessile spikelet awned  
 from the tip or from the cleft or upper  
 lemma reduced to the hyaline base of the  
 awn, very rarely unawned:
17. Margins of the lower glume of the sessile  
 spikelets sharply infolded, 2-keeled;  
 awn glabrous:
18. Upper lemma of the sessile  
 spikelet not cleft, often  
 stipitate and passing into  
 the awn:

19. Spikelets arranged in false racemes terminating the branches and branchlets of a true panicle; pedicels with a median translucent furrow ..... Capillipedium.
19. Spikelets arranged in false racemes which are either solitary and terminal or sessile, arranged along a central axis but not at the tips of capillary branches:
20. Racemes solitary at the ends of the branches supported by spathes, but sessile spikelets not overlapping:
21. Racemes with two fertile spikelets; lower glumes not pitted ..... Pseudanthistiria.
21. Racemes with many fertile spikelets; lower glumes pitted or not ..... Eremopogon.
20. Racemes several to many, if solitary then the sessile spikelets imbricate : joints and pedicels without a translucent furrow; lowest 1-3 pairs of spikelets homogamous; upper lemma of sessile spikelet reduced to the translucent base of an awn; all spikelets both sessile and pedicelled, in the racemes more or less alike; glumes herbaceous, greenish ..... Dichanthium.

18. Upper lemma of the sessile spikelet  
 2-lobed or 2-cleft, awned in the sinus :  
 aromatic grasses; racemes in pairs  
 supported by spathes, often collected  
 into huge panicles; one pair of  
 spikelets in each raceme homogamous,  
 male or neuter, all other pairs  
 heterogamous ..... Cymbopogon.
17. Margins of the lower glumes inturned and  
 rounded at the sides, at the most keeled  
 upwards; callus mostly sharp and long; awn  
 usually hairy : upper lemma not 2-lobed  
 or cleft, stipitate and passing into  
 the awn:
22. Racemes solitary at the ends of the  
 branches, surrounded at the base by  
 an involucre of homogamous spikelets :  
 involucre of four 1-flowered or  
 sterile spikelets:
23. Involucral spikelets pedicellate,  
 deciduous; callus of fertile  
 spikelets very short, truncate  
 or obtuse ..... Iseilema.
23. Involucral spikelets sessile,  
 not deciduous; callus of the  
 fertile spikelets pointed ..... Themeda.

22. Racemes without an involucre; straight or very slightly curved; glumes often garnished with tubercle-based bristles; lower glume of sessile spikelet terete, grooved or not on the back, usually covered with short hairs ..... Heteropogon.
3. 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:
24. Inflorescence in panicles, heads or racemes - if the latter then the rhachis of the raceme not jointed and disarticulating and the spikelets not in groups, surrounded by empty glumes, on the undersurface of each raceme. joint: spikelets all similar in shape and sex, not awned or if awned then subsessile in false secund variously arranged spikes and with awns from the entire tips of the upper glumes and lower lemmas (Echinochloa spp.) or from the tips of both glumes (Oplismenus); upper lemma mostly

crustaceous, rarely chartaceous : spikelets falling singly, not subtended by bristles, or if so, then the bristles persisting after the spikelets have fallen (Setaria):

25. Spikelets arranged in more or less open panicles, or with the panicles contracted and spike-like:

26. Spikelets not subtended by bristle-like branches and arranged in open or contracted panicles; upper glume as long as the spikelet ..... Panicum.

26. Spikelets subtended - or replaced by one to many bristle-like branchlets which remain after the spikelets have fallen; often turgid, always supported by bristles; lower lemma without a furrow; upper lemma often transversely rugose ..... Setaria.

25. Spikelets arranged in one-sided spikes or spike-like racemes; spikes or racemes digitate or scattered, rarely solitary:

27. Lemma of the upper floret more or less crustaceous or coriaceous, usually with narrow inrolled margins, exposing much of the palea:

28. Lower glume and lowest internode of the rhachilla not forming a



swollen callus at the base of the  
spikelet : glumes and lemmas not  
with laterally compressed and  
thickened apices:

29. Glumes acuminate or awned, rarely  
only acute; upper lemma not  
mucronate:

30. Leaf-blades linear; racemes  
dense; culms erect or  
suberect ..... Echinochloa.

30. Leaf-blades lanceolate to  
ovate; racemes loose to  
moderately dense; culms  
creeping and ascending ..... Oplismenus.

29. Glumes awnless, if acuminate,  
then with the upper lemma  
mucronate:

31. Upper lemma acute, not  
mucronate ..... Paspalidium.

31. Upper lemma obtuse,  
mucronate or very  
short-awned ..... Urochloa.

28. Lower glume and lowest internode  
of the rhachilla forming a swollen  
callus at the base of the spikelet;  
upper lemma mucronate or  
short-awned ..... Eriochloa.

27. Lemma of the upper floret thinly  
cartilaginous, usually with flat  
hyaline margins:
32. Spikelets awnless ..... Digitaria.
32. Spikelets awned ..... Alloteropsis.
24. Spikelets with an involucre of bristles  
or subtended by a solitary bristle and  
falling with or without the bristles at  
maturity, solitary or in clusters:
33. Upper lemma smooth; bristles caducous,  
numerous, formed of highly modified  
bristle - or spine-like branchlets:
34. Involucre of free, naked or  
plumose bristles:
35. Lemmas heteromorphous;  
lower often 3-lobed; upper  
shorter, shining; upper  
floret readily disarticulat-  
ing; rhachis with decurrent  
wings below the insertion  
of the pedicels ..... Pennisetum  
(Eriochaeta).
35. Lemmas more or less alike  
or lower much reduced; upper  
floret not deciduous; rhachis  
ribbed but not conspicuously  
so, not winged ..... Pennisetum.

34. Involucre of spines or rigid  
bristles united at the base  
into a hard cup ..... Cenchrus.
33. Upper lemma transversely rugose;  
bristles persistent ..... Setaria.
1. Spikelets 1 - to many - flowered,  
breaking up at maturity above the more  
or less persistent glumes, or if  
falling entire, then not 2-flowered  
with the lower floret male or barren  
and the upper hermaphrodite, usually  
more or less laterally compressed or  
terete 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:
36. Spikelets borne in open or  
contracted or spike-like  
panicles less often in racemes  
or spikes:
37. Spikelets usually with two  
or more fertile florets,  
or if with one fertile  
floret then with sterile  
reduced florets above it:  
lemmas 1-3-nerved; inflorescence  
of panicles or racemes:

38. Inflorescence of panicles; if racemes or spikes the spikelets not secund:
39. Lemmas usually entire at the apex, obtuse, acute or acuminate or if 2-toothed or awned from the tip (Elytrophorus) then glabrous near the margins and along the side nerves; cleistogamous spikelets not developed in the axils of the leaf-sheaths:
40. Glumes aristate or aristate - acuminate: spikelets sessile on the flattened branches of a narrow panicle, 2-3-flowered .... Dinebra.
40. Glumes obtuse, acute or acuminate, rarely the upper awned and the spikelets then in digitate spikes or a short raceme of spikes (Dactyloctenium): internodes of the rhachilla glabrous or only shortly hairy:
41. Spikelets in open, contracted or spike-like panicles, rarely in solitary secund spikes:

42. Spikelets awnless: lemmas more or less acutely keeled, 3-nerved; grain not rugose or hollowed out on the adaxial surface ..... Eragrostis.
42. Spikelets awned, in dense globose clusters ..... Elytrophorus.
41. Spikelets sessile or very short-pedicelled, loosely to densely imbricate in digitate or racemosely arranged spikes or spike-like racemes, very rarely in solitary spikes (Eleusine sp.):
43. Axis and branches of the inflorescence ending in a spikelet:
44. 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 ..... Desmostachya.
44. Spikelets breaking up at maturity; spikes few to several, digitate or subdigitate; spikelets 3-6-flowered; glumes 1-5-nerved; grain oblong to globose, grooved, with a loose conspicuous pericarp ..... Eleusine.

43. Axis of spikes terminating in a sharp point; upper glume mucronate or awned; spikes digitate, rarely racemose ..... Dactyloctenium.
39. Lemmas usually emarginate or 2-4-lobed or toothed at the apex, rarely entire and then hairy along the nerves, frequently mucronate or awned; cleistogamous spikelets sometimes developed in the sheaths : spikelets in terminal solitary secund spikes ..... Tripogon.
38. Inflorescence of racemes or panicles of racemes, the spikelets secund:
45. Fertile lemma 1-awned or awnless : inflorescence terminal, spicate, not of digitate or racemose spikes; lemmas not obovate; inflorescence of spaced clusters of awned spikelets on a simple rhachis ..... Melanocenchris.
45. Inflorescence of digitate spikes or spikes racemose, very rarely solitary, but if so the lemmas obovate : spikes not falling entire:
46. Spikelets with one or more fertile florets and one or more imperfect florets above them; lemmas usually widened upwards : imperfect florets or reduced lemma awned:

- 46 a. Spikes 1-3; fertile florets 2 or more.. Tetrapogon.
- 46 a. Spikes 4 or more; fertile florets  
one only ..... Chloris.
46. Spikelets with one fertile floret and no  
imperfect florets : spikelets awnless ..... Cynodon.
37. 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:
47. Glumes minute (usually represented by two  
semicircular inconspicuous lips) or  
suppressed; fertile lemma and palea  
very similar in shape and texture; spikelets  
firmly compressed; stamens usually six;  
florets hermaphrodite or unisexual;  
spikelets hermaphrodite; leaf-blades  
ovate-oblong or ovate-lanceolate with  
inflated sheaths; a floating grass;  
glumes absent; floret one; lemma  
awned ..... Hygroryza.
47. Glumes well developed; fertile lemma  
and palea not similar : spikelets with  
1 or 2 florets:
48. Spikelets with 2 florets; the lower,  
male or barren, the upper hermaphrodite :  
lower floret male or barren, usually  
with a palea; upper glume as long as

the spikelet; rhachilla disarticulating below the upper floret and not produced beyond it; glumes more or less persistent, unequal, the lower acute, the upper acuminate; upper lemma awned with a perfect awn or at least a bristle; lemma of the upper floret glabrous, usually scaberulous or scabrid; minutely 2-lobed at the apex with the lobes produced into short capillary bristles or not, awned between the lobes or awnless ..... Arundinella.

48. Spikelets with one fertile floret:

49. Spikelets very rarely falling entire and then with firmly membranous to coriaceous, awned or 5-nerved lemmas:

50. Lemmas hyaline or membranous at maturity, rarely indurated and then laterally compressed, awnless or awned from low down on the back, or from the middle or from the entire or bifid tip; lemmas 1-3-nerved, awnless; glumes and lemmas very similar in texture, hyaline or thinly membranous, shining; grain usually with a free pericarp; inflorescence a spreading panicle, or spike-like and elongate; no inflated sheath : fruit without a beak ..... Sporobolus.



50. Lemmas indurated or rigid at maturity, terete or dorsally compressed : spikelets ~~8-12~~ awned; awns trifid; annual or more often tufted perennial herbs; spikelets pedicelled in effuse or contracted panicles ..... Aristida.
49. 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 : spikelets fascicled or solitary; glumes not awned; spikelets in pairs, crowded on short pedicels, flat to face, lower glumes armed with hooked spines; upper glumes smooth ..... Tragus.
36. Spikelets sessile or shortly pedicelled along one side of the rhachis of solitary, digitate, or scattered spikes, spike-like racemes (with one fertile floret and 1-3-nerved lemmas) or on opposite sides of the rhachis of solitary spikes or racemes : spikelets secund on a tough rhachis; 1-2 florets hermaphrodite with sterile florets above; inflorescence of digitate or solitary spikes or panicle of spikes ..... (Chlorideae)

Chionachne R. Br.

Chionachne koenigii (Spreng.) Thw. Enum. Pl. Zeyl. 357, 1864;  
Fischer 1706; Pilger in Pfam. (ed. 2) 14 e : 181,  
f. 101, 1940; Sant. 348; Raizada in Indian For. 85:478,  
1959; Bor, Grasses Burma, Ceylon, India and Pakistan  
262, 1960.

Coix koenigii Spreng. Syst. 1:239, 1825.

C. barbata Roxb. Fl. Ind. 3:569, 1832; D. & G. 289.

Polytoca barbata Stapf in FBI. 7:102, 1896; C. 2:999;

Blatt. & McC. Bombay Grasses 6, t. 3.

A stout and tall grass, difficult to handle; stem and  
leaf covered with stinging hairs.

Noted in wet situations : in association with Themeda  
quadrivalvis (Linn.) O. Kuntze.

Flowers and Fruits. - September to October.

OZA, Above Machi by the side of the paths !

ARM 225, 231.

Deccan; throughout India, except the NW. region. Ceylon,  
Burma.

Saccharum Linn.

Saccharum spontaneum Linn. Mant. 183, 1771; Roxb. Fl. Ind.

1:235, 1832; FBI. 7:118; C. 2:948; D. & G. 304; Blatt.

& McC. in JBNHS. 32:283; Bor 214.

S. semidecumbens Roxb. loc. cit. 241.

S. canaliculatum Roxb. loc. cit. 251.

S. chinense Nees. in Hook. et Arn. Beechy's Voy. 241.

S. aegyptiacum var. sinense Anders. in Oefvers. K. Vet. Akad.

Forhand. Stockh. 157, 1855 (non S. sinense Roxb.).

S. spontaneum Linn. subsp. aegyptiacum var. nepalense Hackel,

Monogr. Androp. 116, 1889.

A very tall grass, up to 4 m. high. Inflorescence silvery white, graceful. Root-system extensive.

A soil-binder. In cultivated fields, and on the margins of dry streams.

Local name: Kans.

Flowers and Fruits. - September to November.

Foot of the hill near the stream; in the valleys and on the plains surrounding the hill.

OZA 200/B; also September 1957, 1958; ARM 210, 280.

Konkan; Deccan; S. M. Country; Sind; Gujarat; throughout India. Ceylon, warmer regions of the Old World.

Spodiopogon Trin.

Spodiopogon rhizophorus (Steud.) Pilger in Engler & Prantl,

Pfam. (ed. 2) 14 e:119, 1940; Sant. 362; Raizada 496;

Bor 246.

Andropogon rhizophorus Steud. Syn. Pl. Glum. 381, 1855.

Spodiopogon albidus Benth. in JLS. 19:66, 1881; FBI.

7:108; C. 2:947; Blatt. & McC. 51, t. 34.

A tufted, leafy grass with slender stems.

Noted in large patches, under the shade of trees. In association with Baliospermum montanum Muell. - Arg.

Flowers and Fruits. - September to February.

Fairly common and abundant; higher parts of the hill.

OZA 550/A, 550/B; also January 1958, 1959; ARM 214, 222.

Konkan; Deccan; Kanara; W. Peninsula; C. Provinces;

Rajputana.

Lophopogon Hack.

Lophopogon tridentatus (Roxb.) Hack. in Engl. & Prantl, Pfam. .

2(2):26, 1887; FBI. 7:149; C. 2:966; Blatt. & McC. in

JBNHS. 32:25; Bor 190.

Andropogon tridentatus Roxb. Fl. Ind. 1:261, 1820.

Saccharum tridentatum Spreng. Syst. 1:283, 1825.

A grass with slender, tufted, erect stems.

In wet localities near the banks of the talao.

Flowers and Fruits. - September to December.

OZA, Near the talao at about 769 m.!

ARM 248.

Konkan; Deccan; S. M. Country; W. Peninsula; Central  
Provinces.

Sehima Forsk.

Sehima nervosum (Rottl.) Stapf in Prain, Fl. Trop. Afr. 9:36,

1917; Pilger 128; Blatt. & McC. 21, t. 14; Sant. 361;

Raizada 495; Bor 218.

Andropogon nervosum Rottl. ex Willd. in Verh. Ges. Naturf.

Fr. Berlin 4:218, 1806.

Ischaemum laxum R. Br. Prodr. 205, 1810; FBI. 7:136, pro

parte; C. 2:964, pro parte.

A fodder grass.

Noted on old walls of the fort.

Flowers and Fruits. - August to October.

OZA, on the hill itself, on old walls; common !

ARM 209, 217.

Deccan; W. Peninsula; C. Provinces; Behar; Bengal. Ceylon,  
South-east Asia, East Africa, Australia.

Ischaemum Linn.

Key to the species of Ischaemum adapted from Bor

Margins of the lower glume of the sessile spikelet

expanded below the middle ..... indicum.

Margins of the lower glume of the sessile

spikelet narrowly and evenly intumed from base

to apex:

Pedicel of the pedicelled spikelet more

than one-third the length of the sessile

spikelet ..... diplopogon.

Pedicel of the pedicelled spikelet less than

one-third of the length of the sessile

spikelet:

Ridges deep; lower glume glabrous on

dorsal surface, or pilose; leaves

tapering at base; spikelets up to 6 mm.

long ..... rugosum.

Ridges very shallow; dorsal surface of the lower glume often almost smooth and frequently densely covered with white hairs; leaves shallowly cordate at the base; upper true leaf usually cordate with hairy pedicel and the lower with bases tapering or rounded ..... molle.

Ischaemum indicum (Houtt.) Merrill in JAA. 19:320, 1938;

Raizada 489; Bor 180.

Phleum indicum Houtt. Nat. Hist. II. 13:198, t. 90, f. 2, 1782.

Ischaemum aristatum auctt. non Linn. Sp. Pl. 1049, 1753;

FBI. 7:126; C. 2:958; Blatt. & McC. 11, t. 6; Pilger 126; Sant. 356.

I. ciliare Retz. Obs. 6:36, 1791.

I. aristatum Willd. Sp. Pl. 4:939, 1806; Roxb. Fl. Ind. 1:319.

Noted in very wet places.

Flowers and Fruits. - October to December.

OZA, Half way up the hill; top of the hill !

ARM 256.

Konkan; Deccan; S. M. Country; more or less throughout India. Ceylon, Malaya, China.

Ischaemum diplopogon Hook. f. in FBI. 7:129, 1896; C. 2:960;

Blatt. & McC. 14, t. 8; Sant. 356; Bor 178.

Found on old walls and rocks, in wet places. Noted in patches.

Flowers and Fruits. - Almost throughout the rainy season.

OZA, Half way up the hill; top of the hill !

ARM 247.

Endemic in Bombay. Konkan; Deccan; W. Peninsula.

Ischaemum rugosum Salisb. Icon. Strip. 1, t. 1, 1791; FBI.

7:127; C. 2:959; Pilger 126; Blatt. & McC. 12, t. 7;

Sant. 357; Bor 184.

A variable grass.

Growing in wet localities.

Flowers and Fruits. - August to October.

OZA, On the hill at about 769 m. and above; fairly common !

ARM 241, 249.

Deccan; throughout India in the plains and low hills.

Ceylon, Burma, Malaya, Siam to China.

Ischaemum molle Hook. f. in FBI. 7:128, 1896; C. 2:959; Fischer

1722; Blatt. & McC. 13; Sant. 357; Bor 183.

A fodder grass.

This grass is noted in association with the *Ischaemums* of Pavagadh.

Flowers and Fruits. - October to December.

OZA, Half way up the hill; top of the hill !

ARM 262.

Deccan; - Bombay; Madras; C. India.

Thelepogon Roth ex Roem. et Schult.

Thelepogon elegans Roth ex Roem. et Schult. Syst. 2:788, 1817;  
 FBI. 7:148; C. 2:971; Pilger 129, f. 72; Blatt. & McC.  
 27, t. 18; Bor 247.

Gregarious.

Flowers and Fruits. - September to October.

OZA, Top of the hill; rare !

ARM 240.

Konkan; Deccan; S. M. Country; W. Peninsula; Madhya  
 Pradesh; Madras. Tropical Africa.

Apluda Linn.

Apluda mutica Linn. Sp. Pl. 82, 1753; Bor 93.

A. aristata Linn. Cent. Pl. 2:71, 1756; D. & G. 303; Sant. 345.

A. mutica Linn. var. aristata (Linn.) Pilger in Pfam.

(ed. 2) 14 e : 130, 1940; Raizada 474.

A. varia Hack. var. aristata Hack. in DC. Mon. Phan. 6:196,  
 1889; FBI. 7:150; Blatt. & McC. 29, t. 20 and in JBNHS.  
 32:26.

A fodder grass; very variable.

Noted in patches; in hedges and pasture lands.

Flowers and Fruits. - June to October, occasionally to  
 April.

Base of the hill and in the plains; common.

OZA 60/C, 713/A; also June 1957, 1958; ARM 201, 296.

Konkan; Deccan; S. M. Country; Gujarat; throughout India  
 in the plains and hills. Ceylon, Malaya, South-east Asia, Australia,



## Pacific Islands.

Any critical notes on the identity or on nomenclature:  
 The species has more or less two distinct forms, awned and unawned. Since the Linnean time, there seems to be a lot of confusion with regard to the correct identity and nomenclature of this plant. And almost all the workers on the subject have put it under different names. Moreover, Blatter & McCann, loc. cit. 26 remark that the Bombay plant must be referred to the var. aristata. But the plant has many intermediate forms and unless we study it critically and come to the differences we could go on creating new varieties endlessly ! On the subject, I have followed Bor, loc. cit. 93-94. He has fully discussed the matter, which please see.

Hackelochloa O. Kuntze

Hackelochloa granularis (Linn.) O. Kuntze, Rev. Gen. Pl. 776, 1891; Fischer 1758; Pilger 134, t. 74; Sant. 355; Raizada 487; Bor 159.

Cenchrus granularis Linn. Mant. 2 (Append.): 575, 1771.

Manisuris granularis Linn. f. Nov. Gram. Gen. 40, 1779; FBI. 7:159; C. 2:955; Gr. 234; Blatt. & McC. 32, t. 22.

In rocky grounds.

Flowers and Fruits. - September to October.

OZA, Half way up the hill; near Machi at about 461 m.;

rare !

ARM 232.

Deccan; S. M. Country; throughout the hotter parts of India. Ceylon, throughout the tropics.

Sorghum Moench

Sorghum halepense (Linn.) Pers. Syn. 1:101, 1805; Pilger 144, f. 79 A; Blatt. & McC. 55, t. 37; Sant. 361; Raizada 496; Bor 222.

Holcus halepensis Linn. Sp. Pl. 1047, 1753.

Andropogon halepensis Brot. Fl. Lus. 1:89, 1804; FBI. 7:182; C. 2:983.

A tall, erect grass about 2 m. high.

Noted near the cultivated fields.

Local name: Baru.

Flowers and Fruits. - September to January, occasionally to April.

Abundant near Machi; occasional in the forest and on higher parts of the hill; also in the plains.

OZA 140, 713/B, 713/C, 1167; also December 1957, September 1958; ARM 212.

Introduced.

Konkan; Deccan; Gujarat; throughout India. Ceylon, most warm countries. According to J. D. Snowden, the authority on Sorghums, the species is not indigenous in India.

Any critical notes on the identity or on nomenclature: On the question of the spelling of the generic name see Bor, loc. cit. 220.

Chrysopogon Trin. (nom. cons.)

Chrysopogon fulvus (Spreng.) Chiov. Fl. Somalia 1:327, 1929; Raizada 479; Bor 116.

Pollinia fulva Spreng. Pugill. 2:10, 1815.

Chrysopogon montanus Trin. ex Spreng. Neue Entdeck. 2:93,  
1821; Blatt. & McC. 70, t. 42; Pilger 153; Sant. 348.

Chrysopogon monticola (Roem. et Schult.) Haines in Ind. For.  
40:495, 1914.

Andropogon monticola Roem. et Schult. Mant. 665, 1827; FBI.  
7:192 cum vars.; C. 2:985.

A fodder grass; very variable.

In wet localities; noted on the old walls of the fort.

Flowers and Fruits. - September to October.

OZA, Half way up the hill up to Makai Kothar !

ARM 224.

Deccan; more or less throughout India. Ceylon,  
Afghanistan, S. Africa, tropics of Asia and East Africa.

Any critical notes on the identity or on nomenclature:  
Cooke, loc. cit. mentions : " I have not seen any specimens from  
the Bombay Presidency and am therefore unable to fix definitely  
the variety to which the Bombay species belong. They will  
probably belong to var. trinii H. f." But in this context the  
remarks of Bor, loc. cit. 117 are worth noting. He writes :  
" This species presents some difficulty for the taxonomist  
owing to its variability not only in the vegetative parts but  
also in the size of the spikelets and anthers .....

Hackel, Hooker and Haines list a number of varieties  
which appear to run into one another and for this reason are  
not worth maintaining."

Vetiveria Lem. - Lisanc.

Vetiveria zizanioides (Linn.) Nash in Small, Fl. South-east

U. S. 67, 1903; Blatt. & McC. 65, t. 40; Sant. 363;

Raizada 498; Bor 258.

Phalaris zizanioides Linn. Mant. 2:183, 1771.

Andropogon squarrosus Hook. f. in FBI. 7:186, 1896 (non

Linn. f.); C. 2:991.

This is the popular 'Khas' grass of commercial value. This grass is included in this Flora on the authority of Chavan & Mehta, who mention the locality - 'Fringing pools and tanks' for Pavagadh; I have not seen the plant in the area under observation.

Local name: Khas.

Flowers and Fruits. - September to October.

Local uses: The mats prepared from the roots of this plant are wetted and hung over the doors and windows, in hot months, to keep the place cool.

ARM 242, 253.

Throughout Bombay and India. Ceylon, Burma, South-east Asia to Tropical Africa.

Any critical notes on the identity or on nomenclature: Hook. f. & Cooke, ll. cc. give this plant under the name of Andropogon squarrosus Linn. f. But this is nomen confusum. For a full discussion on the subject please see Bor, loc. cit. 258-259.

Arthraxon Beauv.Key to the species of Arthraxon

Lower glume of sessile spikelets 2-keeled, with  
somewhat flat back; lower glume convex, nerves  
close and indistinct ..... prionodes.

Lower glume of sessile spikelets not keeled,  
rounded on the back:

Pedicelled spikelets developed ..... lancifolius.

Pedicelled spikelets not developed;

pedicels 0; stamens 2-3 ..... guartinianus.

Arthraxon prionodes (Steud.) Dandy in Andrews, Fl. Pl.

Sudan 3:399, 1956; Bor 101.

Andropogon serrulatus A. Rich. Tent. Fl. Abyss. 2:458,  
1851 (non Link 1827).

A. prionodes Steud. Syn. Pl. Glum. 1:383, 1854.

Arthraxon serrulatus Hochst. in Flora 39:188, 1856; Blatt.  
& McC. in JBNHS. 32:417.

Bathratherum serrulatum Hochst. ex Steud. loc. cit. 383.

On old walls and rocks.

Flowers and Fruits. - October.

OZA, Area near Machi, at about 461 m. and above !

ARM 208.

Bor, loc. cit. 102 : " North and north-western India  
extending to Arabia and the Nile - land."

Any critical notes on the identity or on nomenclature:

Bor, loc. cit. 102, remarks : Most of the material in Indian Herbaria called Arthraxon lanceolatus (Roxb.) Hochst. is this species, which is characterized by the lower glume of the sessile spikelet being convex, faintly nerved and often muriculate on the dorsal surface. Although the lower glume is convex on the dorsal surface there are distinct evidences of a keel on each side."

For the identification of these plants and their separation from each other, I have followed Bor:  
 Lower glume flat; nerves spaced and well marked. In Deccan Peninsula ..... A. lanceolatus.  
 Lower glume convex; nerves close and indistinct (faint). More common; no restricted distribution ..... A. prionodes.  
Arthraxon lancifolius (Trin.) Hochst. in Flora 39:188, 1856;

Blatt. & McC. 77, t. 48; Fischer 1729; Sant. 345;

Raizada 475; Bor 100; Pilger 156.

Andropogon lancifolius Trin. in Mem. Acad. Sci. Petersb. (ser. 6) 2:271, 1832.

Found on old walls of the fort and on the flight of steps.

Flowers and Fruits. - Rainy season.

OZA, Old walls near Machi and above; also from the crevices of rocks !

ARM 203.

Bombay; Hills of India. Ceylon, Burma, China, Malaysia,  
Tropical Africa.

Arthraxon quartinianus (A. Rich.) Nash in N. Amer. Fl. 17:99,  
1912; Blatt. & McC. 78, t. 49; Pilger 156; Sant. 346;  
Raizada 475; Bor 102.

Alectoria quartiniana A. Rich. Tent. Fl. Abyss. 2:448,  
t. 99, 1851.

Arthraxon ciliaris subsp. quartinianus Hack. in DC. Mon.  
Phan. 6:356, 1889 (excl. var. hookeri & glabrescens).

Noted on old walls.

Flowers and Fruits. - October.

OZA, Machi !

ARM 205.

Peninsular India.

#### Capillipedium Stapf

Capillipedium filiculme (Hook. f.) Stapf in Hook. Icon. Pl.

sub tab. 3085, 1922; Blatt. & McC. 82; Fischer 1730;  
Sant. 348; Raizada 477; Bor 111.

Andropogon filiculmis Hook. f. in FBI. 7:181, 1896;  
C. 2:982.

A very slender, handsome grass; rooting at the nodes.

Noted in rocky grounds exposed to Sun.

Flowers and Fruits. - November to December.

OZA, Half way up the hill; higher parts of the hill at  
about 769 m.; fairly common !

ARM 230, 281.

Apparently endemic in Bombay. Deccan; Kanara; W. Peninsula.

Pseudanthistiria (Hack.) Hook. f.

Pseudanthistiria hispida Hook. f. in FBI. 7:219, 1896; C. 2:

992; Fischer 1749; Blatt. & McC. 120; Sant. 360;

Bor 203.

Found in sandy grounds and waste lands.

Flowers and Fruits. - August to October.

OZA, Foot of the hill; occasional !

ARM 254.

Konkan; Deccan; S. M. Country; W. Peninsula; Madhya Pradesh.

Eremopogon (Hack.) Stapf

Eremopogon foveolatus (Del.) Stapf in Prain, Fl. Trop. Afr.

9:183, 1917; Raizada 486; Bor 148.

Andropogon foveolatus Del. Fl. d'Egypte 16, t. 8, f. 2,

1812; FBI. 7:168; C. 2:977.

A fodder grass.

Observed in shady places.

Flowers and Fruits. - July to October.

OZA, Machi, by the side of the paths; but clearly localised near the Khapara Zaveri Mahel; not common nor abundant !

ARM 243.

Deccan; S. M. Country; throughout the drier parts of India. Tropical Africa.



Dichanthium WillemetKey to the species of Dichanthium

Nodes glabrous; lower of sessile spikelets

obovate or obovate-oblong ..... caricosum.

Nodes hairy; lower glume of sessile

spikelets oblong, obtuse ..... annulatum.

Dichanthium caricosum (Linn.) A. Camus in Bull. Mus. Hist.

Nat. Paris 27:549, 1921; Blatt. & McC. in JBNHS.

32:425; Raizada 482; Bor 134.

Andropogon caricosus Linn. Sp. Pl. (ed. 2) 1480, 1763;

FBI. 7:196; C. 2:987.

Gregarious; under the shade of Terminalia crenulata

Roth.

Flowers and Fruits. - August to October.

OZA, In the forest, after the 1st gate !

ARM 287.

Deccan; S. M. Country; W. Peninsula; Bengal;

C. Provinces. Ceylon, Burma, Malaya, China.

Dichanthium annulatum (Forsk.) Stapf in Prain, Fl. Trop.

Afr. 9:178, 1917; Pilger 161; Blatt. & McC. 94,

t. 72; Sant. 349; Raizada 482; Bor 133.

Andropogon annulatus Forsk. Fl. Aegypt. - Arab. 173,

1775; FBI. 7:196; C. 2:988.

A fodder grass.

Flowers and Fruits. - August to October.

Fairly common; base of the hill and on the plains surrounding the hill.

OZA September 1957, 1958; ARM 269.

Konkan; Deccan; throughout India. Burma, Tropical and North Africa.

Cymbopogon Spreng.

Key to the species of Cymbopogon

Sessile spikelets concealed by the hairs of the joints and pedicels ..... schoenanthus.

Sessile spikelets not concealed by the hairs of the joints and pedicels ..... martinii.

Cymbopogon schoenanthus (Linn.) Spreng. Pugill. 2:15, 1815;

Bor 131.

Andropogon schoenanthus Linn. Sp. Pl. 1046, 1753; FBI.

7:204; C. 2:991; Gr. 238; D. & G. Suppl. 99.

Noted in small clumps, in open grounds.

Flowers and Fruits. - January.

Common; everywhere on the hill, particularly on the higher parts of the hill.

OZA January 1958, 1959; Santapau 19866, 19867;

ARM 223.

Bombay; Bengal. Morocco to Sind.

Cymbopogon martinii (Roxb.) Wats. in Atkins. Gazet. N. W.

Prov. Ind. 392, 1882; Pilger 164; Blatt. & McC. 104;

Sant. 349; Raizada 480; Bor 129.

Andropogon martinii Roxb. Fl. Ind. 1:280, 1820.

A. schoenanthus var. martinii Hook. f. in FBI. 7:204,  
1896 (excl. syn. afric.).

Noted in large tufts.

Flowers and Fruits. - October to April.

Rare; on slopes of the hill.

OZA 207/A, 713/D, 713/E; ARM 229, 294.

Bombay; Madras. South-east Asia.

Any critical notes on the identity or on nomenclature:

For the forms of this species and field observations see  
Bor, loc. cit.

#### Iseilema Anderss.

Iseilema anthephoroides Hack. in DC. Monogr. Phan. 6:683,  
1889; FBI. 7:219; Blatt. & McC. in JBNHS. 32:626;  
Bor 187.

A fodder grass.

Noted on the margins of pools.

Flowers and Fruits. - July to October.

OZA, In the plains : not observed on the hill  
proper !

ARM 259.

Bombay; S. India.

#### Themeda Forsk.

##### Key to the species of Themeda

Perennial .... triandra.  
Annual ..... quadrivalvis.

Themeda triandra Forsk. Fl. Aegypt. - Arab. cxxiii & 178, 1775;  
Blatt. & McC. 115, t. 74; Sant. 362; Raizada 497; Bor  
254, f. 27.

Anthistiria imberbis Retz. Obs. 3:11, 1783; FBI. 7:211.

A. ciliata Retz. : Gr. 239; D. & G. 304.

Themeda imberbis Cooke, Fl. Pres. Bombay 2:993, 1908.

Noted in dense patches, in rocky grounds.

Flowers and Fruits. - September to October.

OZA, Machi and above 461 m. !

ARM 238, 270.

Throughout Bombay; Madras; Madhya Pradesh. Ceylon,  
warm and tropical regions of the Old World.

Themeda quadrivalvis (Linn.) O. Kuntze, Rev. Gen. Pl. 794,  
1891; Blatt. & McC. 118; Sant. 362; Bor 252.

Andropogon quadrivalvis Linn. in Murr. Syst. Veg. (ed. 13)  
758, 1774.

Themeda ciliata (Linn. f.) Hack. in DC. Monogr. Phan.  
6:664, 1889; C. 2:994.

Anthistiria ciliata Linn. f. Suppl. 113, 1781; FBI. 7:213.

In moist soil.

Flowers and Fruits. - September to November.

OZA, Above Machi; also on the highest parts of the hill;  
rare !

ARM 234.

Konkan; Deccan; S. M. Country; W. Peninsula; Bengal;  
C. Provinces.

Heteropogon Pers.Key to the species of Heteropogon

Racemes glabrous; lower glume of the sessile  
fertile spikelet dorsally grooved ..... triticeus.

Racemes hairy; lower glume of the sessile  
fertile spikelet not dorsally grooved ..... contortus.

Heteropogon triticeus (R. Br.) Stapf ex Craib in Kew

Bull. 1912 : 432, 1912; Pilger 183; Sant. 355; Bor 165.

Andropogon triticeus R. Br. Prodr. 201, 1810; FBI. 7:200;

C. 2:989.

Heteropogon insignis Thw. Enum. 437, 1864; Blatt. & McC.

108, t. 69.

A stout grass.

Flowers and Fruits. - September to October.

OZA, On the slopes, higher parts of the hill; abundant !

ARM 264.

Konkan; Deccan; W. Peninsula; C. Provinces. Ceylon,  
Burma, South-east Asia to Australia.

Heteropogon contortus (Linn.) Beauv. ex R. & S. Syst. 2:836,

1817; Pilger 183; Blatt. & McC. 109, t. 71; Sant. 355;

Raizada 488; Bor 163, f. 6.

Andropogon contortus Linn. Sp. Pl. 1045, 1753; FBI.

7:199; C. 2:990.

A very variable grass.

Noted in patches.

Flowers and Fruits. - August to February.

Fairly common; Machi; in the forest; also on the surrounding plains.

OZA October 1957, 1958; 60/B, 573/A, 1005/A, 1166;

ARM 251.

Throughout Bombay; Madras; Madhya Pradesh; Himalaya. Burma, and in the tropics.

Panicum Linn.

Key to the species of Panicum

Leaves distichous, involute, narrow, rigid,

glaucous ..... repens.

Leaves not distichous, flat, not rigid nor

glaucous ..... psilopodium.

Panicum repens (?) Linn. Sp. Pl. (ed.2) 87, 1762; FBI.

7:49; Bor 330.

In waste lands; gregarious.

Flowers and Fruits. - October.

Lower half of the hill; foot of the hill.

OZA October 1957, 1958.

Throughout India perhaps except Bombay. Tropical and subtropical areas of both hemispheres.

Any critical notes on the identity or on nomenclature:  
I give this plant with a little uncertainty. The material available at my disposal is very poor; I shall have to collect more specimens before coming to the conclusion. This species (OZA 125, Baroda specimen, deposited in the Herbarium,

Dept. of Bot., M.S.U.) was reported by me in our paper -  
 "Studies on the Weeds of Gujarat - I. Observations on the Weeds  
 of the M.S.University Campus, Baroda", published in J. M. S.  
Univ. Baroda 6(2) : 109, 1957; but I am still doubtful about  
 its correct identity !

Panicum psilopodium Trin. Gram. Panic. 217, 1826; FBI. 7:46;  
 Fischer 1782; Blatt. & McC. 158; Pilger 22; Sant. 359;  
 Bor 329.

Found in hedges.

Flowers and Fruits. - July to August.

OZA, Foot of the hill; occasional !

ARM 268.

Bombay. India, Ceylon.

#### Setaria Beauv. (nom. cons.)

##### Key to the species of Setaria

Bristles barbellate with deflexed teeth ..... verticillata.

Bristles barbellate with spreading or erect teeth:

Inflorescence a cylindric false spike ..... glauca.

Inflorescence a narrow panicle ..... tomentosa.

Setaria verticillata (Linn.) Beauv. Agrost. 51, 1812; FBI.

7:80; C. 2:921; D. & G. 294; Blatt. & McC. in JBNHS.

33:20; Bor 365.

Panicum adhaerens Forsk. Fl. Aegypt. - Arab. 20, 1775.

P. verticillatum Linn. Sp. Pl. (ed.2) 82, 1762.

Pennisetum verticillatum (Linn.) R. Br. ex Roem. et

Schult. Syst. 2:488, 1817, in syn.

P. respiciens A. Rich. Tent. Fl. Abyss. 2:379, 1851.

Found under the shade of rocks and old walls of the fort.

Flowers and Fruits. - July to August.

OZA, Half way up the hill !

ARM 216.

Konkan; Gujarat; throughout India. Ceylon, temperate and tropical regions of the Old World, introduced into America.

Setaria glauca (Linn.) Beauv. Agrost. 51, 1812; FBI. 7:78,

pro parte; Blatt. & McC. 172; Sant. 361; Raizada 495;

Bor 360.

Panicum glaucum Linn. Sp. Pl. 56, 1753.

Noted in moist soils. Parasitised by Sopubia delphinifolia (Roxb.) G. Don.

Flowers and Fruits. - August to September.

Base of the hill; on the hill, higher parts; occasional.

OZA 49, 940/B, 1005/A; ARM 211, 285.

Bor, loc. cit. 361 writes : " Native of the warm temperate zone of the Old World, introduced into America, Australia and other countries."

Any critical notes on the identity or on nomenclature: According to Bor, loc. cit. 363, the common native pasture species in Bombay is S. pallide-fusca (Schumach.) Stapf et C. E. Hubb., based on Panicum pallide-fusum Schumach. The remarks given for this species by Dr. Bor, loc. cit. 361 are worth quoting: "Blatter considers this to be the commonest species of the genus in Bombay State, but in point of fact the great



majority of the specimens received in recent years from Father H. Santapau, S. J., are not this species but S. pallide-fusca. Blatter also says it is a common pasture grass in rich and cultivated soil. It is said to be cultivated as a kharif crop in the Poona District."

Setaria tomentosa (Roxb.) Kunth, Rev. Gram. 1:47, 1829;

Bor 365.

Panicum tomentosum Roxb. Fl. Ind. 1:303, 1820.

Setaria intermedia Roem. et Schult. Syst. 2:489, 1817;

FBI. 7:79; C. 2:920; Fischer 1789; Blatt. & McC. 174;

Sant. 361.

Panicum intermedium Roth, Nov. Fl. Sp. 47, 1821

(non P. intermedium Vahl. ex Hornem., Hort. Hafn. 1:82, 1813).

Chavan & Mehta (1959) in their paper on - "Grasses of Pavagadh" published in JIB, have put the following note on page 179: "Widespread on waste land at the base of the hill, under the canopy of Wrightia tinctoria along with species of Sida. Fairly common up the hill." The note which the authors give differs somewhat from my observations. Obviously enough, W. tinctoria R. Br. occurs in the forest on the slopes of Pavagadh. Secondly this shade-loving grass is met with in association with the Abutilons of Pavagadh.

Flowers and Fruits. - July to November.

Fairly common; at the base of the hill, by the road sides near the Pavagadh village and near the stream; also noted on the hill.

OZA 98; also November 1957, 1958; ARM 219, 277.

Konkan; Deccan; S. M. Country; throughout India. Ceylon, Burma, Malaysia, Polynesia.

Echinochloa Beauv.

Echinochloa colonum (Linn.) Link, Hort. Reg. Berol. 2:209, 1833;

Pilger 31; Blatt. & McC. 148, t. 94; Sant. 351; Raizada 484; Bor 308, f. 34.

Panicum colonum Linn. Syst. (ed. 10) 870, 1759; FBI. 7:32; C. 2:931.

Noted in wet situations.

Local name: Samo.

Flowers and Fruits. - Rainy season, occasionally to April.

Local uses: The grain is eaten by the Hindu ladies on the holy day - 5th. day in the first half of the 'Bhadrapad' month (sometime about September), popularly known as the 'Sama Pancham' or 'Rushipanchami' in our parts of India.

Base of the hill; in the plains.

OZA 707, 708; ARM 272.

Konkan; Deccan; S. M. Country; Gujarat; throughout India. Burma, tropics of Asia and Africa.

Oplismenus Beauv.

Oplismenus burmannii (Retz.) Beauv. Agrost. 54, 1812; FBI.

7:68; C. 2:927; Blatt. & McC. 154, t. 97; Pilger 47;

Sant. 358; Bor 317.

Panicum burmannii Retz. Obs. 3:10, 1783.

Noted in patches; in the shade of trees.

Flowers and Fruits. - August to October.

OZA, Foot of the hill; undergrowth of the forest !

ARM 236, 295.

Konkan; Deccan; Gujarat; Bengal; throughout India. Burma, tropics of both the hemispheres.

Paspalidium Stapf.

Paspalidium flavidum (Retz.) A. Camus in Lecomte, Fl. Gen.

Indo - Ch. 7:419, 1922; Blatt. & McC. 141, t. 90; Pilger 29; Sant. 359; Raizada 492; Bor 333.

Panicum flavidum Retz. Obs. 4:15, 1786; FBI. 7:28; C. 2:929.

Found near the stream.

Flowers and Fruits. - July to September.

Noticed frequently; foot of the hill near the stream; also at an altit. of 184 m. and above.

OZA 50, 1030/B; ARM 289.

Konkan; Deccan; Gujarat; throughout India. Tropical Asia.

Urochloa Beauv.

Urochloa panicoides Beauv. Agrost. 53, t. 11, f. 1, 1812; D. & G.

290; Raizada 498; Bor 372.

U. helopus Stapf in Prain, Fl. Trop. Afr. 9:595, 1917;

Blatt. & McC. in JBNHS. 32:644.

Panicum helopus Trin. in Spreng. Neue Entdeck. 2:84, 1820.

P. javanicum Hook. f. in FBI. 7:35, 1896 (non Poir, partim);

C. 2:933 (partim).

Gregarious; in waste and dry lands.

Flowers and Fruits. - August to October.

Foot of the hill; near the Pavagadh village in open places; on the hill; common.

OZA October 1957, 1958; ARM 227.

Deccan; S. M. Country; Gujarat; throughout India.

Tropical East Africa, extending to S. Africa.

Eriochloa Kunth

Eriochloa procera (Retz.) C. E. Hubbard in Kew Bull. 1930:256, 1930; Raizada 486; Bor 312.

Agrostis procera Retz. Obs. 4:19, 1786.

Eriochloa polystachya Hook. f. FBI. 7:20, 1896 (non H.B.K. Nov. Gen. & Sp. 1:95, f. 31, 1816); C. 2:944.

Found in marshy places and cultivated lands.

Flowers and Fruits. - October.

OZA, Lower parts of the hill; on the plains surrounding the base of the hill !

ARM 278.

Konkan; Kanara; throughout India. Ceylon, Burma, South-east Asia, tropical Africa.

Digitaria Heist. ex Fabricius

Key to the species of Digitaria

Hairs on the spikelets clavate (club-shaped) ..... stricta.

Hairs on the spikelets, if present then not

clavate ..... adscendens.

Digitaria stricta Roth ex R. & S. Syst. 2:474, 1817; Sant. 350;

Bor 305.

Paspalum royleanum Nees ex Thw. Enum. 358, 1864; FBI. 7:18.

Digitaria royleana (Nees) Prain, Beng. Pl. 1182, 1903; C.

2:942; Fischer 1765; Blatt. & McC. 127, t. 82.

On the bank of the pond. Noted in association with the  
Lindernias of Pavagadh.

Flowers and Fruits. - August.

On the hill, near the lower pond; Machi.

OZA 100/D, 100/E; ARM 286.

Throughout Bombay and India. Ceylon, Burma, tropical Asia.

Digitaria adscendens (H.B.K.) Henrard in Blumea 1:92, 1934;

Sant. 350; Bor 298.

Panicum adscendens H.B.K. Nov. Gen. & Spec. 1:97, 1816.

Digitaria marginata Link, var. fimbriata Stapf in Prain, Fl.

Trop. Afric. 9:440, 1919; Fischer 1764; Blatt. & McC.

125, t. 78.

D. sanguinalis var. ciliaris Prain, Beng. Pl. 1181, 1903;

C. 2:940.

A fodder grass.

Observed on roadsides.

Flowers and Fruits. - July to October.

Fairly common; Foot of the hill and near the Pavagadh  
village; on the plains.

OZA 97; also October 1957, 1958; ARM 265.

Throughout Bombay. Tropics of the Old World.

Alloteropsis J.S. Presl ex C.B. Presl emend.

Hitchc.

Alloteropsis cimicina (Linn.) Stapf in Prain, Fl. Trop. Afr.

9:487, 1919; Blatt. & McC. in JBNHS. 32:635; Raizada 474; Bor 276.

Milium cimicinum Linn. Mant. 184, 1771.

Axonopus cimicinus (Linn.) Beauv. Agrost. 12, 1812; FBI.

7:64; C. 2:925.

Found in waste lands.

Flowers and Fruits. - July to September.

Very common; foot of the hill.

OZA 100/H, 188/B; ARM 202, 271 (?).

Konkan; S. M. Country; throughout India. Ceylon, Burma, tropical Africa and Australia.

Pennisetum Rich. in Pers.

Pennisetum typhoides (Burm.) Stapf & C.E. Hubb. in Kew Bull.

1933 : 271, 1933; Fischer 1792; Sant. 359; Raizada 493; Bor 350.

Alopecurus typhoides Burm. Fl. Ind. 27, 1768.

Pennisetum typhoideum L. C. Rich. in Pers. Syn. 1:72, 1805, pro parte; FBI. 7:82; C. 2:917; Pilger 81.

This is the popularly known 'Bajri' plant.

Cultivated in the district.

Local name: Bajri.

Flowers and Fruits. - September to October.

Local uses: Used as a staple food.

Cultivated on the plains : did not notice it on the hill.

OZA Specimen preserved in the museum !

Cultivated throughout Bombay & India; also in Tropical Africa.

Any critical notes on the identity or on nomenclature:

(i) For the remarks about the hybrid between this species and P. purpureum Schumach., I beg to refer the reader to Bor, loc. cit. 350-351.

(ii) The subject of the nomenclature of this plant has been fully discussed by Bor, loc. cit.

Cenchrus Linn.

Key to the species of Cenchrus

Perennial. Bristles connate at the base ..... ciliaris.

Annual. Bristles connate into a cup ..... setigerus.

Cenchrus ciliaris Linn. Mant. 302, 1771; Raizada 478; Bor 287, f. 33.

Pennisetum cenchroides Rich. in Pers. Syn. 1:72, 1805; FBI. 7:88; C. 2:916.

P. ciliare (Linn.) Link, Hort. Berol. 1:213, 1827; Blatt. & McC. in JBNHS. 33:23.

A fodder grass.

In pasture lands and cultivated fields. Observed in association with the following species.

Flowers and Fruits. - July to November.

By the roadsides near the Pavagadh village; also noted on the hill itself.

OZA 260, 260/A; also November 1957, 1958; ARM 245, 257.

Deccan; Gujarat; W. Peninsula; Punjab; throughout the drier parts of India. Tropical and S. Africa. Australia and America, introduced.

Cenchrus setigerus Vahl, Enum. 2:395, 1806; Raizada 478; Bor 290.

C. biflorus Hoof. f. FBI. 7:89, 1896 (non Roxb. 1820);

C. 2:917; Blatt. & McC. in JBNHS. 33:229.

Noted on exposed sandy areas.

Flowers and Fruits. - December to January.

OZA, Foot of the hill !

ARM 221.

Gujarat; W. Peninsula; Sind; Punjab; Rajputana.

North-east Tropical Africa.

Dinebra Jacq.

Dinebra retroflexa (Vahl) Panzer in Denkschr. Acad. Wiss.

Munchen, 270, t. 12, 1814; Blatt. & McC. 264, t. 177;

Raizada 484; Bor 491.

Cynosurus retroflexus Vahl, Symb. Bot. 2:20, 1791.

Dinebra arabica Jacq. Fragm. 77, t. 121, f. 1, 1807; FBI.

7:297; C. 2:1039; Blatt. & McC. 264, t. 177.

Met with Eragrostis japonica (Thunb.) Trin.

Flowers and Fruits. - August.

OZA, Foot of the hill, near the stream; occasional !

ARM 258.



Konkan; Deccan; Gujarat; W. Peninsula; westwards to East Africa.

Eragrostis Beauv.

Key to the species of Eragrostis adapted from Bor

Spikelets breaking up from above downwards;  
rhachis fragile:

Keels of the palea more or less ciliate:

Panicles spiciform, or compact and dense;

lemmas ciliate on the keels; annual ..... ciliaris.

Panicles effuse; lemmas not ciliate on the  
keels:

Culms and leaves more or less viscous ... viscosa.

Culms and leaves not viscous ..... tenella.

Keels of the palea scabrid or smooth, not

ciliate ..... japonica.

Spikelets breaking up from below upwards; rhachis  
tough:

Lemmas up to 1.5 mm. long ..... poaeoides.

Lemmas over 1.5 mm. long:

Plants with glands; pedicels with a

crateriform gland ..... poaeoides.

Plants devoid of glands ..... unioloides.

Eragrostis ciliaris (Linn.) R. Br. in Tuckey, Narr. Exp.

Congo, App. 478, 1818; FBI. 7:314; C. 2:1023;

Blatt. & McC. in JBNHS. 33:488; Bor 506.

Poa ciliaris Linn. Syst. (ed. 10) 2:875, 1759.

Megastachya ciliaris (Linn.) Beauv. Agrost. 74, 1812.

Eragrostis lobata Trin. in Mem. Acad. Sci. Petersb. (ser. 6)  
1:396, 1830.

E. pulchella Parl. in Hook. Niger Fl. 188, 1849.

E. lepidota Hochst. ex A. Rich. Tent. Fl. Abyss. 2:424, 1851.

E. ciliaris var. ciliaris (Linn.) Stapf in Hook. f. FBI.  
7:314, 1896.

In hedges, near the stream.

Flowers and Fruits. - August.

Fairly abundant but not common; foot of the hill.

OZA 60/A, 1030/A; ARM 255, 291.

Bombay. Tropics and subtropics of the Old and New Worlds.

Eragrostis viscosa (Retz.) Trin. in Mem. Acad. Sci. Petersb.

(ser. 6) 1:397, 1830; D. & G. 298; Fischer 1826; Blatt.

& McC. 233; Sant. 354; Raizada 486; Bor 515.

Poa viscosa Retz. Obs. 4:20, 1786; Gr. 236.

Eragrostis tenella var. viscosa (Retz.) Stapf in FBI.

7:315, 1896; C. 2:1024.

In moist situations.

Flowers and Fruits. - July to September.

OZA, Base of the hill; fairly common and abundant !

ARM 283.

Konkan; Madras; more or less throughout India. Tropical  
and South Africa.

Eragrostis tenella (Linn.) Beauv. ex Roem. & Schult. Syst.

2:576, 1817; Raizada 485; Bor 513.

Poa tenella Linn. Sp. Pl. 69, 1753.

Eragrostis tenella var. plumosa (Retz.) Stapf in FBI. 7:315,

1896; C. 2:1024; Blatt. & McC. 232, t. 155; Sant. 353.

Poa plumosa Retz. Obs. 4:20, 1786.

P. amabilis Linn. Sp. Pl. 68, 1753.

Eragrostis amabilis (Linn.) Wight & Arn. ex Hook. & Arn.

Bot. Beech. Voy. 251, 1838.

In the deciduous forest.

Flowers and Fruits. - July to October, occasionally to January.

Common and abundant at Machi near the 'Vishvamitrimukh' and Khapara Zaveri Mahel; on the higher parts of the hill, occasional.

OZA January 1958; ARM 261.

Konkan; Deccan; Gujarat; throughout India. Ceylon.

Any critical notes on the identity or on nomenclature:

Bor, loc. cit. 514 remarks : "Poa amabilis Linn. Sp. Pl. ed. 1, 68(1753) is the same as P. tenella Linn. Sp. Pl. ed. 1, 69 (1753). Eragrostis tenella (Linn.) P. Beauv. ex R. & S. is based on Poa tenella. International Rules, Art. 67 (ICBN. Article 57, 1956 edition), states that the name first used when two species are united takes precedence and this seems to have been first done in the Fl. Brit. Ind. 7, 315 (1896) when under the name E. tenella R. & S. we find the synonym Poa amabilis Linn.

The species therefore must be known as E. tenella (Linn.) P. Beauv. and the name E. amabilis Wight et Arn. ceases to be a legitimate name. It may also be mentioned here that the type of E. tenella (Linn.) P. Beauv. is exactly matched by the type of Poa plumosa Retz."

Eragrostis japonica (Thunb.) Trin. in Mem. Acad. Sci. Petersb.

(ser. 6) 1:405, 1831; Sant. 353; Raizada 485; Bor 509.

Poa japonica Thunb. Fl. Jap. 51, 1784.

Eragrostis interrupta Blatt. & McC. Bomb. Gr. 233, 1935,  
pro parte.

E. interrupta var. tenuissima Stapf ex Hook. f. FBI. 7:316,  
1896.

Near the stream.

Flowers and Fruits. - August.

OZA, Foot of the hill, near the stream !

ARM 288.

Deccan; Punjab; Bengal. Tropical Asia.

Eragrostis poaeoides Beauv. Agrost. 162, 1812; Raizada 485;

Bor 512.

Poa eragrostis Linn. Sp. Pl. 68, 1753.

Eragrostis minor Host. Gram. Austr. 4:15, 1809; FBI. 7:321;  
C. 2:1027.

In sandy soil.

Flowers and Fruits. - November.

OZA, Pavagadh; common ! Cooke, loc. cit. writes that the

grass is not very plentiful in the Bombay Presidency; our findings are that the plant is fairly common in Pavagadh.

ARM 266.

Konkan; Deccan; Gujarat; North-west India (common); more or less throughout India. Mediterranean Region.

Eragrostis unioloides (Retz.) Nees ex Steud. Syn. Fl. Glum. 264, 1854; Fischer 1826; Blatt. & McC. 235, t. 156; Sant. 353; Raizada 486; Bor 515.

Poa unioloides Retz. Obs. 5:19, 1789; Gr. 236.

Eragrostis amabilis Wt. & Arn. ex Nees in Hook. & Arn.

Bot. Beech. Voy. 251, 1830-1841; C. 2:1025 (non Linn.).

An annual grass with pinkish spikelets; very variable.

In sandy soil.

Flowers and Fruits. - September to November.

OZA, Half way up the hill, by the side of the paths; also above Machi area; common !

ARM 252.

Konkan; Deccan; S. M. Country; throughout India. Ceylon, Burma, South-east Asia.

Elytrophorus Beauv.

Elytrophorus spicatus (Willd.) Camus in Lecomte, Fl. Gen.

Indo-Chine 7:547, 1923; Sant. 352; Raizada 484; Bor 493.

Dactylis spicata Willd. in Ges. Naturf. Freunde Berlin, Neue Schrift 3:416, 1801.

Elytrophorus articulatus Beauv. Agrost. 67, t. 14, f. 2,

1812; FBI. 7:306; C. 2:1044; Blatt. & McC. 276, t. 188.

Found in dry and sandy soils.

Flowers and Fruits. - November to February.

OZA, Base of the hill !

ARM 267.

Konkan; Deccan; S. M. Country; Gujarat; more or less throughout India. Ceylon, Burma, tropical regions of the Old World.

Desmostachya Stapf.

Desmostachya bipinnata (Linn.) Stapf in Dyer, Fl. Cap. 7:632,

1900; Raizada 481; Bor 491.

Briza bipinnata Linn. Syst. Nat. (ed. 10) 2:875, 1759.

Uniola bipinnata Linn. Sp. Pl. (ed. 2) 104, 1762.

Eragrostis cynosuroides Beauv. Agrost. 162, 1812; FBI.

7:324; C. 2:1028; D. & G. 298.

Desmostachya cynosuroides Stapf in Haines, Bot. Bihar and Orissa 962, 1924.

Noted in sandy soil.

Local name: Dabh; Darbh.

Flowers and Fruits. - December to February.

Local uses: Used in Hindu ceremonies. Also of medicinal value.

Foot of the hill.

OZA 1335; ARM 273.

Deccan; Gujarat; throughout India in hot and dry places. Persia, Arabia, North Africa to Tropical Africa.

Eleusine Gaertn.Key to the species of Eleusine

Rhachis of spike slender, narrow, glabrous ..... indica.  
 Rhachis of spike stout, broad, scabrid ..... coracana.  
Eleusine indica (Linn.) Gaertn. Fruct. 1:8, 1789; Blatt. &

McC. 259, t. 172; Sant. 352; Bor 493.

Cynosurus indicus Linn. Sp. Pl. 72, 1753.

Near the currents of water.

Flowers and Fruits. - Rainy season.

OZA, Pavagadh; common !

ARM 292.

Tropical and subtropical regions of the world.

Eleusine coracana (Linn.) Gaertn. Fruct. 1:8, t. 1, f. 11,  
 1789; FBI. 7:294; C. 2:1039; Gr. 235; D. & G. Suppl.  
 97; Blatt. & McC. 260, t. 173; Sant. 351; Bor 492.

Cynosurus coracanus Linn. Syst. Nat. (ed. 10) 2:875, 1759.

Not cultivated in the area under observation; but  
 probably an escape. Found this grass near the rocks and walls  
 on the hill proper.

Local name: Nagli ?

Flowers and Fruits. - August to September.

OZA, Pavagadh !

ARM 274.

Cultivated in Bombay and India in the hilly districts.

Cultivated in the tropics of the Old World.

Any critical notes on the identity or on nomenclature:  
 Bor, loc. cit. writes : "Originally the specific name was spelt coracan but Linnaeus corrected this to coracanus in the second edition of Species Plantarum, 106 (1762)."

Dactyloctenium Willd.

Dactyloctenium aegyptium (Linn.) Beauv. Agrost. 15, 1812;

Fischer 1840; Blatt. & McC. 262, t. 176; Sant. 349;

Bor 489, f. 54.

Cynosurus aegyptius Linn. Sp. Pl. 72, 1753.

Dactyloctenium aegyptiacum Willd. Enum. 1029, 1809; Gr.

235; D. & G. 297.

Eleusine aegyptiaca Desf. : FBI. 7:295; C. 2:1038.

On the old walls.

Flowers and Fruits. - September.

Fairly common; along the paths of the hill; on the old walls of the fort.

OZA 200/A; also September 1957, 1958; ARM 282.

Konkan; Deccan; S. M. Country; Madras. Ceylon, Burma, Tropical regions of the Old World, introduced into America.

Tripogon Roem. et Schult.

Tripogon spec.

This grass is noted in large tufts: on the flight of steps, on old walls, etc. We could not determine the species of this typical grass. My specimens are with my colleague - Mr. Mehta and are still under study.



Flowers and Fruits. - December to January.

Fairly abundant; uppermost flight of steps leading to the temple of Bhadrakali Mata; also on the old walls of the fort; but rare on the slopes of the hill.

OZA December 1957; ARM 233, 239.

Melanocenchris Nees

Melanocenchris jacquemontii Jaub. & Spach. Ill. Pl. Or.

4:36, 1851; Sant. 358; Raizada 490; Bor 473.

M. royleana Nees ex Steud. Syn. Pl. Glum. 218, 1854.

Gracilea royleana Hook. f. in FBI. 7:284, 1896; C. 2:1031; Blatt. & McC. 248, t. 165.

Found in small tufts on old walls.

Flowers and Fruits. - September to October, occasionally to January.

Abundant locally; Machi; higher parts of the hill.

OZA December 1957; ARM 263.

Konkan; Deccan; S. M. Country; Gujarat; Sind; Bengal; north-west India.

Tetrapogon Desf.

Tetrapogon tenellus (Roxb.) Chiov. in Ann. Ist. Bot. Roma

8:352, 1908; Bor 475.

Chloris tenella Roxb. Fl. Ind. 1:330, 1820; FBI. 7:291;

C. 2:1033; D. & G. 296; Blatt. & McC. in JBNHS. 33:756.

Ch. triangulata Hochst. ex A. Rich. Tent. Fl. Abyss.

2:409, 1851.

Ctenium indicum Spreng. Syst. Veg. 1:274, 1825.

Tetrapogon triangularis (Hochst.) Hochst. Pl. Arab.

Schweinf. no. 967, vide Hook. f. FBI. 7:291, 1896.

A fodder grass.

In shaded spots.

Flowers and Fruits. - August.

OZA, In the undergrowth of deciduous forest; not common in Pavagadh !

ARM 228.

Deccan; Gujarat; W. Peninsula; Punjab; Rajputana; North-west India; Madras. Arabia, East Tropical Africa.

Chloris Sw.

Key to the species of Chloris

Culms usually erect ..... dolichostachya.

Culms usually prostrate ..... virgata.

Chloris dolichostachya Lagasca, Gen. et Spec. Pl. 5, 1816;

Raizada 478; Bor 466.

C. incompleta Roth, Nov. Pl. Sp. 60, 1821; FBI. 7:290;

C. 2:1034; Blatt. & McC. in JBNHS. 33:756.

C. digitata (Roxb.) Steud. Syn. Pl. Glum. 207, 1854.

Melica digitata Roxb. Fl. Ind. 1:328, 1820.

Flowers and Fruits. - February.

OZA, Pavagadh; occasional !

ARM 290.

Konkan; Deccan; Kanara; throughout the plains of India.

Ceylon, Burma. Bor, loc. cit. mentions: "From Afghanistan through India to South-east Asia and China."

Chloris virgata Sw. Fl. Ind. Occ. 1:203, 1797; FBI. 7:291;

Blatter & McCann in JBNHS. 33:757; Bor 468.

Rhabdochloa virgata (Sw.) Beauv. Agrost. 84, 1812.

Chloris compressa DC. Cat. Hort. Monsp. 94, 1813.

Ch. meccana Hochst. & Steud. Syn. Pl. Glum. 205, 1854.

Ch. elegans H.B.K. Nov. Gen. et Sp. 1:166, t. 49, 1816.

Ch. caudata Trin. ex Bunge, Enum. Pl. Chin. Bor. 70, 1833.

Ch. penicillata Willd. ex Steud. Nom. Bot. 353, 1840

(non Pers. 1805).

In pasture and cultivated lands.

Flowers and Fruits. - August to September.

Fairly common and abundant, at times forming the dominant feature of the vegetation; everywhere on the hill proper; foot of the hill, near the roadsides; on the plains surrounding the hill.

OZA 99, 100/C; also September 1957, 1958; ARM 226.

Bombay; Mysore; north-west India. Tropics of both hemispheres.

Cynodon L. C. Rich. (nom. cons.)

Cynodon dactylon (Linn.) Pers. Syn. 1:85, 1805; FBI. 7:288;

C. 2:1032; Fischer 1835; Blatt. & McC. 250, t. 166;

Sant. 349; Phatak & Oza in JBNHS. 55:541; Bor 469,

f. 52.

Panicum dactylon Linn. Sp. Pl. 58, 1753; Gr. 236.

This perennial grass is used for lawns and turfs; and as fodder in our parts of India.

Plate No. - 40.

Local name: Daro.

Flowers and Fruits. - July to October (almost throughout the year).

Local uses: It is used in Hindu pujas for Lord Shri. Ganesh. It is best for lawns. A good fodder grass. An infusion of the plant stops bleeding from piles. Used in haemorrhage, eczema, and brain troubles. Stops nausea and fevers. It is a very good remedy for irregular menses. It is said, and believed by the public, that the roots tied with cotton thread to the hand stop fevers.

Fairly common; all over Pavagadh; foot of the hill near the Pavagadh village.

OZA October 1957, 1958; ARM 220.

Throughout Bombay and India. Ceylon, Burma, in almost all the warm countries and in colder climates.

Hygroryza Nees

Hygroryza aristata (Retz.) Nees ex Wight & Arn. in Edinb.

New Phil. Journ. 15:380, 1833; FBI. 7:95; C. 2:1041;

Blatt. & McC. 271, t. 184; Sant. 355; Bor 597, f. 67.

Pharus aristatus Retz. Obs. 5:23, 1789.

Leersia aristata (Retz.) Roxb. Fl. Ind. 2:207, 1832;

Gr. 235.

This typical floating grass was noticed on the surface

of village talaos. It forms extensive mats.

Flowers and Fruits. - September to October.

OZA, On the plains; lower pond on the hill; abundant !

ARM 275.

Gujarat; India. Ceylon, Burma, South-east Asia.

Any critical notes on the identity or on nomenclature:

Most of our Indian Floras give the spelling of the generic name as Hygrorhiza. The correct spelling is Hygroryza.

Arundinella Raddi

Arundinella pumila (Hochst.) Steud. Syn. Pl. Glum. 114, 1854;

Fischer 1854; Sant 346; Raizada 476; Bor 423 and in

JIB. 27:61.

Acratherum pumilum Hochst. ex A. Rich. Tent. Fl. Abyss.

2:414, t. 100, 1851.

Arundinella tenella Nees & Wight ex Steud. loc. cit.

115; FBI. 7:71; C. 2:1001; D. & G. 292; Blatt. & McC.

193, t. 127.

On old walls and crevices of rocks.

Flowers and Fruits. - July to October.

OZA, Pavagadh; fairly common !

ARM 204, 293.

Deccan; W. Peninsula; north-west Himalaya. Ceylon,  
Burma, south-east Asia, Abyssinia, Nigeria.

Sporobolus R. Br.Key to the species of Sporobolus

Upper glume shorter than the lemma ..... diander.

Upper glume as long as or longer than the lemma:

Annual; spikelets about 1 mm. long ..... coromandelianus.

Perennial; spikelets about 2 mm. long ..... marginatus.

Sporobolus diander (Retz.) Beauv. Agrost. 26, 1812; FBI.

7:247; C. 2:1017; Fischer 1817; Blatt. & McC. 221,  
t. 148; Sant. 362; Bor 629.

Agrostis diandra Retz. Obs. 5:19, 1789.

Flowers and Fruits. - August.

OZA, On the slopes of the hill; rare !

Deccan; throughout India. Ceylon, Burma, Australia.

Sporobolus coromandelianus (Retz.) Kunth, Rev. Gram. 1:68,

1829; FBI. 7:252; C. 2:1021; D. & G. 296; Blatt. &  
McC. in JBNHS. 33:485; Bor 627.

Agrostis coromandeliana Retz. Obs. 4:19, 1786.

A. indica Forsk. Fl. Aegypt. - Arab. 104, 1775.

Sporobolus commutatus Kunth, Enum. Pl. 1:214, 1833.

A tufted annual.

In shady places.

Flowers and Fruits. - January.

OZA, Base of the hill; common !

ARM 213.

Konkan; W. Peninsula; Punjab. Ceylon, Burma,  
Afghanistan, South Africa.

Sporobolus marginatus Hochst. ex A. Rich. Tent. Fl. Abyss.

2:397, 1851; Raizada 496; Bor 632.

S. pallidus (Nees) Boiss. Fl. Orient. 5:512, 1884

(non Lindley in Mitch. J. Trop. Austr. 187, 1848).

Vilfa pallida Nees ex Trin. in Mem. Acad. Sci. Petersb.

(ser. 6) 5:2, 62, 1839.

Sporobolus arabicus Boiss. Diagn. (ser. 1) 13:47, 1853;

FBI. 7:252; C. 2:1020.

Perennial.

Flowers and Fruits. - August to October.

Very common; on the hill.

OZA 100, 100/A; ARM 218.

Sind; North-west India. Baluchistan, East Tropical  
Africa.

#### Aristida Linn.

##### Key to the species of Aristida

Lateral awns reduced or absent ..... redacta.

Lateral awns developed:

Annual; panicle contracted ..... depressa.

Perennial; panicle effuse ..... hystrix.

Aristida redacta Stapf in Kew Bull. 1892:85, 1892; FBI. 7:287;

C. 2:1010; Blatt. & McC. 215; Bor 412.

Noted on stony soils.

Flowers and Fruits. - October.

OZA, Pavagadh !

ARM 206, 276.

Endemic in India. Deccan; S. M. Country; Kanara;  
W. Peninsula; C. Provinces; Nagpur; Madras.

Aristida depressa Retz. Obs. 4:22, 1786; D. & G. 295; Raizada  
475; Bor 409.

Aristida adscensionis Hook. f. FBI. 7:224 (non Linn.);  
C. 2:1008.

Annual.

Noted in waste lands and on dry bare grounds.

Flowers and Fruits. - August to December.

On the plains; occasional in the upper parts of the hill.

OZA 96; also December 1957; ARM 284.

S. India. Ceylon, Burma.

Any critical notes on the identity or on nomenclature:

All my predecessors have recorded this species as the Linnean  
plant. To me it seems that the question of separation of the  
plant of Retzius and that of Linnaeus is a troublesome job.  
But the Pavagadh specimens are certainly A. depressa. I have  
also examined the herbarium sheet ARM 284 and it matches with  
my plant collection.

Aristida hystrix Linn. f. Suppl. 113, 1781; Roxb. Fl. Ind.

1:350; FBI. 7:225; C. 2:1009; Gr. 235; D. & G.  
295; Blatt. & McC. in JBNHS. 33:240; Bor 410.

Perennial.

In drier parts.

Flowers and Fruits. - August to December.



OZA, Pavagadh !

ARM 207.

S. M. Country; W. Peninsula; C. Provinces; Madras.

Tragus Haller (nom. cons.)

Tragus biflorus Schult. Syst. 2:205, 1824; Bor 682.

Lappago biflora Roxb. Fl. Ind. 1:284, 1820; Gr. 234.

Tragus racemosus of the FBI. 7:97, 1896 (non Scop. 1777);

C. 2:1014.

On dry bare ground.

Flowers and Fruits. - September.

OZA, Pavagadh; common !

ARM 235.

Konkan; Deccan; S. M. Country; Gujarat; throughout  
the plains of India. Southeast Asia, East Africa.