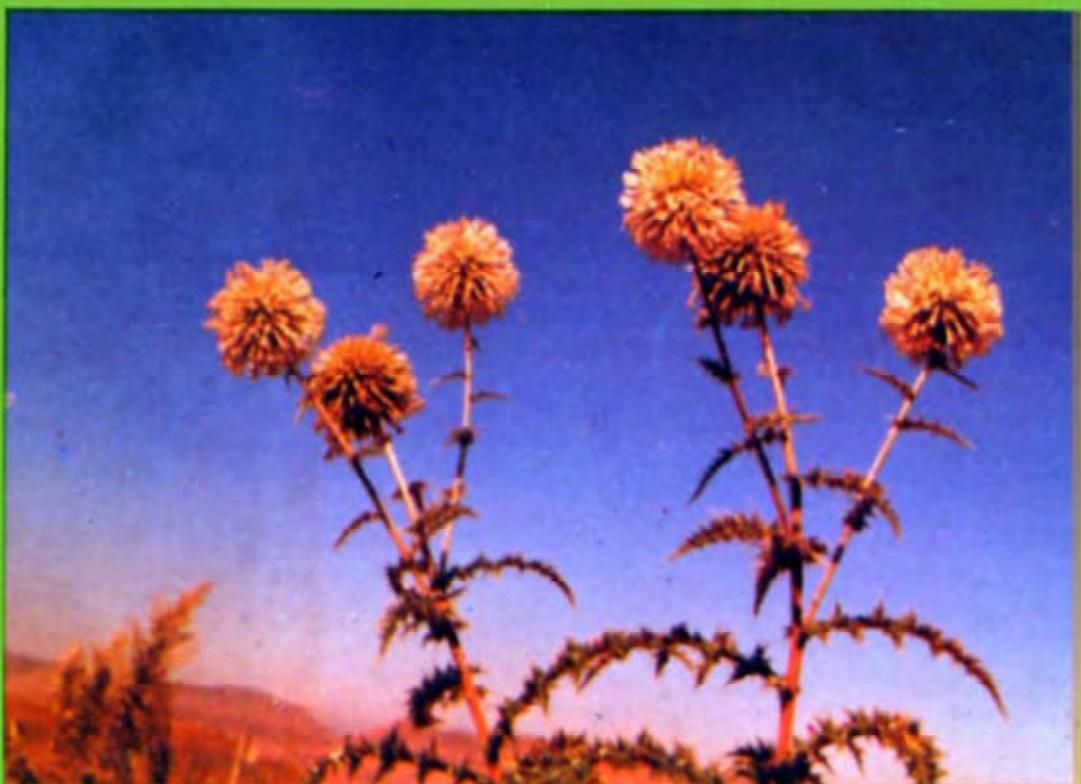


Flora of India
Series 3

FLORA OF MAHABALESHWAR
AND ADJOININGS, MAHARASHTRA

Volume 1

SANDHYA DESHPANDE
B.D. SHARMA
&
M.P. NAYAR



BOTANICAL SURVEY OF INDIA

FLORA OF MAHABALESHWAR

Vol. 1

(Ranunculaceae to Thunbergiaceae)

Flora of India
Series 3

FLORA OF MAHABALESHWAR AND ADJOININGS, MAHARASHTRA

Volume 1

**SANDHYA DESHPANDE
B. D. SHARMA
&
M. P. NAYAR**



BOTANICAL SURVEY OF INDIA

© Government of India

Date of Publication : February 18, 1993

Price : Rs. 228.00 or \$ 48.00

Cover Photo : *Echinops echinatus* Roxb. —a common composite with flower heads.

Published by the Director, Botanical Survey of India,
P-8, Brabourne Road, Calcutta-700 001 and Printed at
Deep Printers, 3/26, Ramesh Nagar, New Delhi-110 015.

CONTENTS

Preface	...	
Introduction	...	1
Key to the Families	...	31
Systematic Treatment	...	50

PREFACE

The Botanical Survey of India since its reorganisation in 1954 has been engaged in studies on vegetation and flora and inventorisation of the rich floristic diversity in the country. Since early 1980s, the department has taken up publication of Flora of India under four series : Series 1 comprise taxonomic revisions of families, tribes and genera primarily of flowering plants for the whole country (*Fascicles of Flora of India*) ; Series 2 on the Floras of States/Union Territories; Series 3 pertain to the floras of phytogeographically interesting and floristically rich districts, and Series 4 to include special and topical subjects on the plant wealth. Several districts of floristic significance in different states have been intensively and extensively botanized to eventually develop a good base for writing the State Floras and to prepare taxonomic revisions of different plant families for Flora of India volumes.

The present work on the flora of Mahabaleshwar and its adjoinings in Satara district, Maharashtra, is one such study to assess and inventorise the rich plant diversity in the area. The area encompasses varied eco-climatic zones which have given rise to interesting vegetation types and plant associations. The flora has a rich assemblage of many rare plants. Panchgani Plateau in the Sahyadri hills which is commonly called the 'Table Land' is a very interesting geomorphological location which harbours many endemics in the flora and is the Type locality of dozens of new species described since the time of Blatter and McCann. Unfortunately, the area being a tourist spot, is subjected to severe anthropogenic activities which are causing extreme stress conditions on the habitats and the plants. The plateau and other flora rich areas in the Sahyadri ranges in the vicinity need immediate attention for conservation.

The flora in two volumes deals with a description of the vegetation and its associated factors, taxonomic treatment of 1398 taxa, each with notes on distribution, frequency, phenology, collectors' names, field numbers, uses, etc. Line drawings for some interesting species have also been provided. Efforts have been made to bring the nomenclature upto-date as per the present Botanical Code.

The authors wish to express their sincere thanks to Sarvastee S. C. Pal, P. K. Dutta, Samiran Roy, S. K. Sur, S. K. Das, D. Sardar and A. K. Chatterjee of the Printing & Publication Section, Botanical Survey of India for help in bringing out this publication. One of us (S. D.) gratefully acknowledges the Director, Botanical Survey of India for the award of Research fellowship and facilities in carrying out this work.

Authors



Alysicarpus pubescens var. *vasavadae* (Hemadri) Sanjappa



Crotalaria retusa L.



Smithia agharkarii Hemadri



Echinops echinatus Roxb.



Artemisia parviflora Buch.-Ham. ex D. Don



Swertia densifolia (Griseb.) Kashyapa



Hoya wightii Hook. f.

INTRODUCTION

General note : The area dealt with is situated at the Western limit of the Deccan tableland between latitudes $10^{\circ}75'$ and $18^{\circ}15'$ N and longitudes $73^{\circ}60'$ and $76^{\circ}40'$ E and covers an area of 10492 sq. km. It is bordered by the Pune district on north, Sholapur district on east, Sangli district on the south and the Ratnagiri on west. These administrative boundaries coincide with some of the physical features like Nira river on the north, Sahyadri range on the west and Mahadeo hills on the east. The forest area is divided into eleven ranges viz., Javali, Karad, Khandala, Khatav, Koregaon, Mahabaleshwar, Man, Patan, Phaltan, Satara and Wai ; and occurs in scattered patches throughout the district. It covers an area of 1697.603 sq km. Out of this, 1521.841 sq km are reserved forests, 58.562 sq km are protected forests, 63.235 sq km are unclassed forests and 53.965 sq km are leased forests. The soil of the area falls under three categories viz., medium black to deep black, malvan or lighter soil and red or laterite soil. The main agricultural products are sugarcane, jowar, bajra, rice, wheat, pulses, cotton, groundnut, safflower, chillies and vegetables and fruits. The major forest produce are timber, firewood and charcoal.

The Koyna Electric Grid Scheme is a landmark in the industrial development of the district and in Maharashtra. It is one of the biggest hydro-electric projects in Maharashtra. There are five power houses situated at Bhatghar, Karad, Koregaon, Satara and Wai which generate electricity.

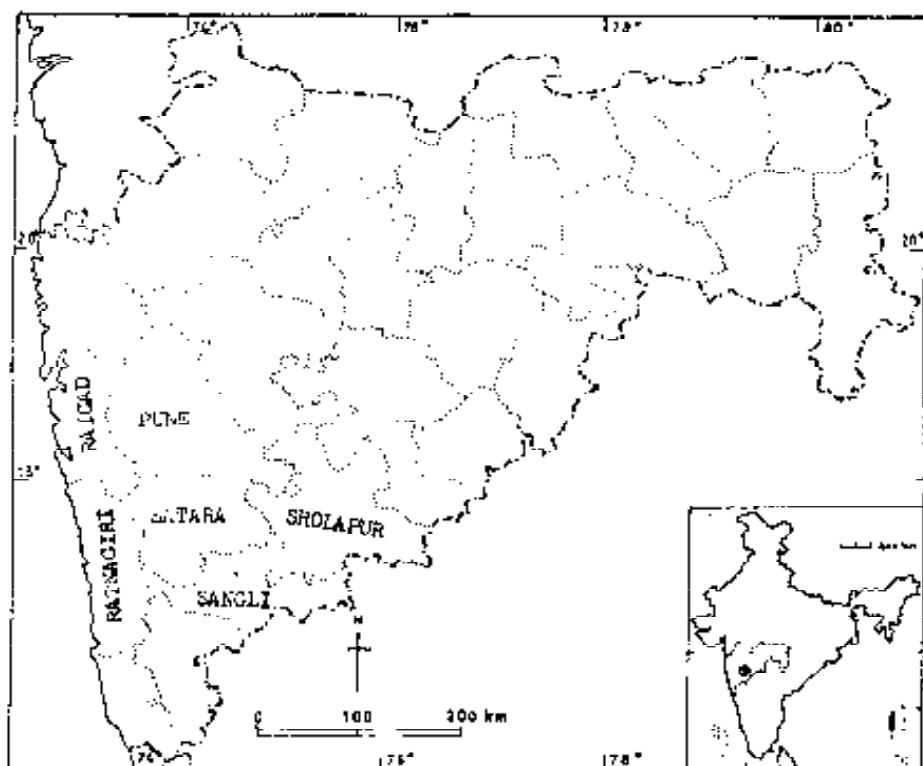
There are six sugar factories and distilleries situated in this area. One glass manufacturing factory is situated at Ogalewadi and two cement manufacturing factories are at Karad and Satara. There are some small scale and large scale engineering units which have a countrywide reputation for the manufacture of engines, spare parts, machine tools and agricultural implements. The others are jaggery making, oilseeds crushing, plastic, weaving and pharmaceutical industries. The main crafts are making gold and silver ornaments, copper and brass pots, cotton weaving, tanning and shoe-making. There are a few forest industries like bee-keeping, charcoal manufacturing, collection of *shikekai*, *hirda* and making of walking sticks.

Historical notes : The oldest known place from this area is probably Karad which is found in inscription of about 200 B.C. Wai is locally

believed to be the 'Viratanagari' where 'Pandavas' lived in the thirteenth year of their exile. Old Mahabaleshwar, which is about 10 km from Mahabaleshwar is regarded as one of the 'kshetras' or holy places. It is the place of origin of the five rivers Krishna, Koyna, Savitri, Venna and Gayatri. The temple known as 'Panchganga temple' is built on the supposed spot of the origin of these five rivers. The Mauryas and Satavahanas ruled over the entire Maharashtra from 230 B.C. to 250 A.D. Satara and Southern Maharashtra were held by Chalukyas between 550 and 1189 A.D. which was followed by Yadavas of Devgiri. The first Muslim invasion of the Deccan took place in 1296. In 14th century, the Bahamani territories were divided into eight provinces in which this area was included under Bijapur.

Before the middle of the 16th century, Shivaji, the founder of the Maratha Empire, regained control over the hilly parts of Pune district. In 1656, he built Pratapgad Fort on a high rock near the source of Krishna river. A temple of the Goddess 'Bhavani' from which Shivaji and his Maratha Sardars derived their inspiration was also constructed on this Fort. Shivaji appointed eight officers of which the first was 'Peshva' or head manager, who ruled the area upto 1878. In 1849 this area was annexed by the British Government.

Importance of the project undertaken: Mahabaleshwar and Panchgani are the two popular hill stations situated in Satara district. The variation in altitude, humidity and edaphic factors provide favourable conditions for the growth of tropical, subtropical and temperate species at these places. There is a high concentration of endemic and useful exotic plants introduced by Britishers which have become naturalized component of the local flora in due course of time. A stream of tourists visit these areas due to their grandeur beauty, climate and greenery throughout the year. The variety and richness of vegetation cover of the area always inspired various plant explorers and botanists to visit these places. The investigations carried out by these botanists led to the publication of several floristic accounts. Some of the important contributions are by Dalzell & Gibson (1861), Lisboa (1883), Birdwood (1886-1897), Cooke (1885-1908), Blatter and McCann (1926-1935), Santapau (1952-1962), Puri and Mahajan (1960). Bole & Almeida (1981 onwards) have published a series of papers on the Flora of Mahabaleshwar. Despite the number of accounts by so many botanists, the Flora of Satara district as a whole remained less explored as the adjacent areas which form inseparable part of the composite picturesque panorama of this tract were almost neglected. The present studies were undertaken to fill up this lacuna and to bring out a comprehensive floristic account of the Satara district as a whole.



Map 3 : Showing Satara district in Maharashtra.

Although fortyfour new species have been reported from this area by different workers, but many of them have not been recollected for many decades. Some of these are known only by their type collections, while in other cases, even the types do not exist in any of the Indian herbaria. It was, therefore, thought fit to make a fresh attempt to collect these species and assess the position as it exists today.

Some of the developmental schemes, which are extremely essential for socio-economic upliftment of the rural poor and backward populace, have adversely affected the natural forests. A large chunk of luxuriant semi-evergreen forests of Koyna area have been lost for ever due to the submergence of catchment area and construction of Koyna Dam and hydro-electric power station. The existence of numerous interesting species occurring in the Koyna valley are indicative and living witness to the richness of the area as a whole. The earlier botanists hardly paid any attention to Koyna area due to its remote location and non-existence of approach roads and hence remained unexplored. In the absence of any recorded floristic data, it is difficult to assess the damage caused by the construction of the dam. Recently on behalf of the Government of India, the Government of Maharashtra has undertaken a scheme "Western Ghats Eco-development" to improve and conserve this centuries-old ecosystem.

Past work : A number of botanists viz., Nairne (1897), Graham (1839), Dalzell & Gibson (1861), Birdwood (1886 1897), Woodrow (1897 1901) and Talbot (1894, 1909 1911) have contributed to the flora of the then Bombay Presidency which included Satara district also. Cooke in his *Flora of the Presidency of Bombay* (1901 1908) has reported 2337 species belonging to 944 genera and 146 families out of which 401 species comprising 273 genera and 88 families were reported from the present district.

Since the publication of Cooke's *Flora* a lot of taxonomic literature has appeared in the form of monographs and revisions of various plant groups, based on additional information available to-date and modern techniques, etc., have led to changes in taxonomic and nomenclatural concepts (Karthikeyan *et al.* 1981). With a view to revise the 'Flora of Bombay Presidency' Blatter published a series of articles alone and in collaboration with McCann too (1926 - 1935) with updated nomenclature and critical comments wherever necessary, which included ca 90 species from the area under study. He also listed 93 species of grasses in collaboration with McCann (1935). Vartak (1957, 1959a, 1959b) recorded 31 species from the district. Puri & Mahajan (1960) published 347 species of Angiosperms and 34 species of Cryptogams from Mahabaleshwar. Santapau & Kapadia

(1966) described 36 species and varieties of orchids. Chavan *et al.* (1973) have enumerated 128 species from Kas.

In recent years Bole & Almeida (1981 onwards) are publishing a series of articles exclusively on Mahabaleshwar plateau and have described *ca* 716 species so far.

The flora is further enriched by addition of 44 new species, 5 varieties and 1 forma described by different authors viz., Baker (1898), Cooke (1901), Fyson (1921), Blatter (1927 - 1930), Blatter & McCann (1927 - 1932), Gravely and Mayuranathan (1932), McCann (1934), Santapau & Patel (1958), Santapau & Merchant (1964), Bor (1961), Ansari (1968, 1972), Govindarajalu (1972), Deb & Das Gupta (1976), Raghavan *et al.* (1982), Taylor (1983) and Ved Prakash & Jain (1983). Out of these new taxa, only 28 species, 3 varieties and 1 forma are valid today as evidenced by the recent monographs and revisions.

Present work : The present work has been undertaken to bring out a comprehensive floristic account of the Satara district as a whole. It also fulfills a part of the aims and objects of the Botanical Survey of India to assess and inventorise the plant wealth of the country.

The present work is the outcome of three years (1983 - 1985) of extensive and intensive studies on the Flora of Satara district. During this period eight field trips were undertaken covering all the seasons, and 950 field numbers comprising *ca* 5700 specimens of angiosperms and a few of ferns have been collected. Out of these, 106 species have been collected for the first time. Special attention was paid to the areas which remained under - or unexplored so far.

The present data is based on the recent collections made by the senior author (1983 - 1985) as well as on the collections housed in the herbarium of the Botanical Survey of India (*BSI*) and Blatter Herbarium, St. Xavier's College, Bombay (*BLAT*). The present flora deals with 1398 species belonging to 697 genera and 141 families. Of these, 1201 occur in wild and 197 are cultivated or introduced ones. Further details are provided in Floristic analysis.

MATERIALS AND METHODS

Field study : The area, which is divided into 11 forest ranges, was covered by State Transport buses wherever available. The interior areas were covered on foot. Catchment areas of Koyna and Dhom dam were

covered by motor launches which ply for a very short period during the year and the camping stations were either P.W.D. or Forest rest houses. The plant exploration period varied from 10 - 12 days.

While collecting the specimens, the data such as habit, habitat, flower colour, fragrance if present, frequency of distribution, local names and uses, if any, were recorded in the field itself. Besides the wild species, some major cultivated plants and weeds of cultivated fields and road sides have also been collected.

These specimens were dried in the field using blotters and newspapers. The flowers of some of the species which could not be identified in the field or of interest otherwise were fixed in 4% Formalin for further studies in the laboratory.

Herbarium study: After returning to the headquarters, all the specimens were poisoned and dried using standard herbarium techniques and mounted on standard herbarium mounting sheets. The field identification was confirmed by using relevant floras viz., *The Flora of British India* by J. D. Hooker *et al.* (1872 - 1897), *The Flora of the Presidency of Bombay* by T. Cooke (1901 - 1908) and recent monographs and revisions, which are too many to be cited here ; however, they have been cited at the appropriate places in the enumeration. The tentatively identified specimens were matched with the authentically identified specimens deposited in the herbarium of Botanical Survey of India, Pune (BSI), and identification was thus confirmed. These specimens have been incorporated in the same herbarium.

Plan of the Flora: The 'flora' starts with a short introduction and a key to the families. The genera under a family and the species under a genus have been arranged in alphabetical order. The families are arranged according to the Bentham and Hooker's system of classification (1862 - 1883) with slight modification based on Hutchinson (1959). The family key is adapted from Gamble's *Flora of Presidency of Madras* (1957 Repr. ed.). Dichotomous keys for genera and species are mainly based on macroscopic characters. The generic key for the family Poaceae is adapted with slight modification from Karthikeyan's synopses of Awned and Unawned grasses of former Madras Presidency (1972 & 1980).

The correct name of the species is followed by basionym, if any, and synonyms if necessary to connect the name with the regional floras. The reference to the *Flora of British India*, *Flora of the Presidency of Bombay* and recent literature, wherever available is followed by local name in 'Marathi' or common English name if available in inverted

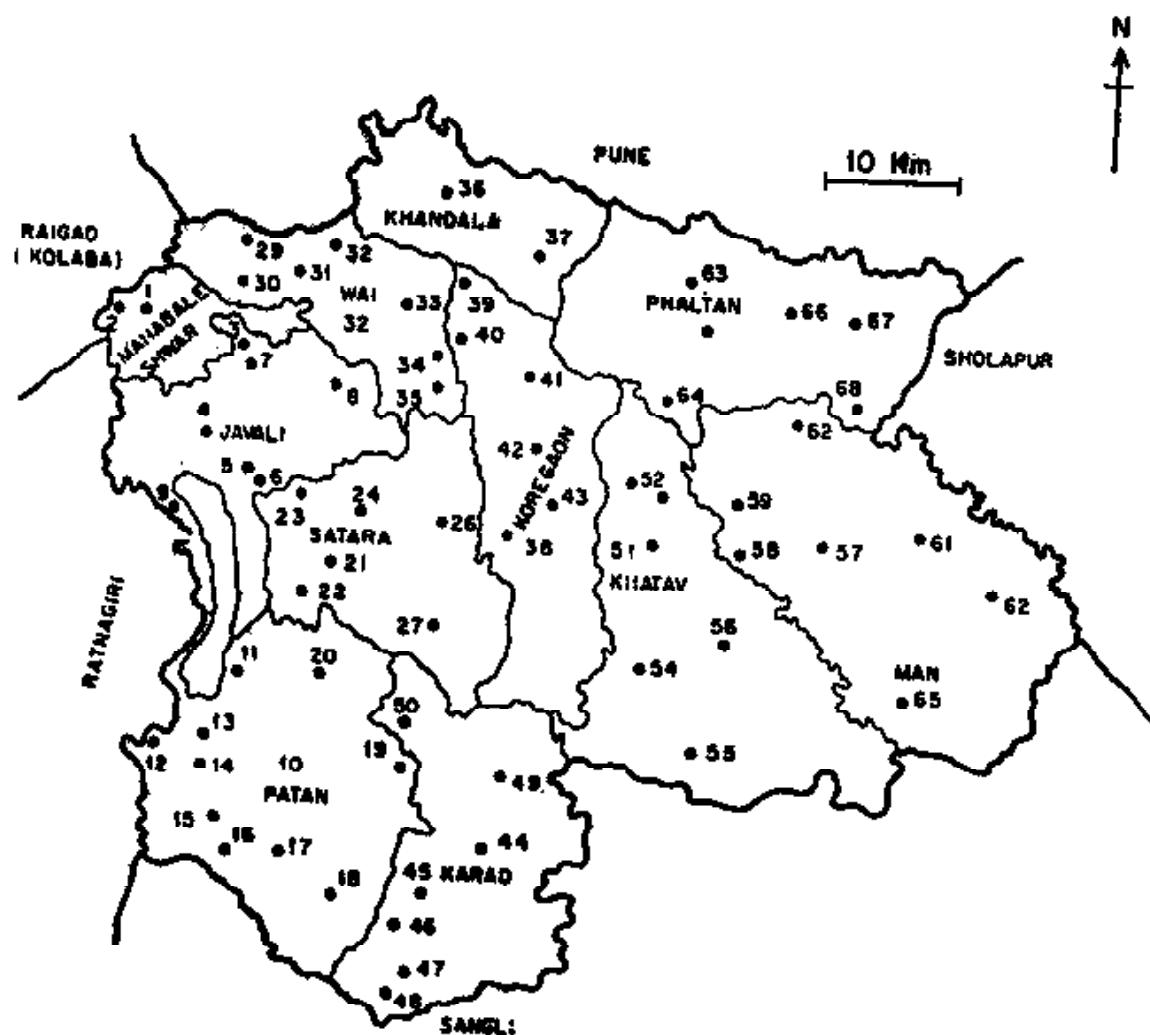
FLORA OF MAHABALESHWAR

commas at the end of citations. The species are briefly described eliminating the characters already reflected in the keys. This is followed by phenological data, reference to the illustration (Illus.) if available and distribution (Distrib.). Under distribution, after frequency, collection localities are given alphabetically. In the case of rare species, collector's name and field numbers are also provided. The specimens collected by the senior author are indicated by only field number(s) immediately after locality. The specimens available in herbaria other than BSI are indicated accordingly. The critical comments, if any, are added at the end. Cultivated species are listed at the end of the respective families or genera. After systematic enumeration of Angiosperms a list of Pteridophytes is given. Conventional abbreviations are used throughout the text.

Topography : There is a marked difference in the general topographic features of the area. The main range of the Sahyadri stretching about 100 km from north to south forms the western boundary of the tract. The Mahadeo range originates from the Sahyadrian complex about 16 km north of Mahabaleshwar and stretches east and south-east across the whole breadth of the district. These two ranges form the major hill complex of the tract. Within the limits of the tract, the crest of Sahyadris is crowned by several peaks. The main line of the Sahyadris develops into several coles and saddles of which the more accessible ones have become major ghat routes. Besides many small saddles, the Mahadeo range is crossed by three important passes, the Khambatki pass and two breaks near Tadvala about 19 km north-east of Khambatki.

The tops of the main Sahyadris and of the Mahadeo hills especially in the north-western tracts of Wai, Jaoli and Patan look like a succession of fortresses raised on a series of plateaus piled one over the other, the whole surmounted by a wall of rock. The top of Mahabaleshwar, the highest point in the tract is about 1,436 m above the mean sea level. From the high Deccan tableland on the east, the Sahyadris seem somewhat low and tame but from the western edge of their crest great forms stand out from the Konkan with bold wild outlines and cliffs which in places have a sheer drop of over 910 metres. For about 48 km after leaving the Sahyadris, the Mahadeo hills attain a height of about 1,220 m above the mean sea level and about 610 m above the plains. The north face of the Mahadeo range falls sharply into the Nira valley to the south. The hill falls much more gently into the valley of the Krishna. Some notable hills which add to the relict of Satara district are - Sonjai (1,003 m), Vardhangad (1,067 m), Pandavgad (1,273 m), Kenjalgad (1,301 m), Vasota (1,302 m) and Kamalgad (1,375).

Drainage : The area is drained by four major rivers viz., the Nira in the entire Northern belt, the Man in the East and the Yesla and the



Map 2 : Satara District : Plant collection localities

LEGEND TO PLANT COLLECTION LOCALITIES

1. Mahabaleshwar	35. Chandan-vandan fort
2. Pratapgad	36. Khandala
3. Panchgani	37. Lonand
4. Medha	38. Koregaon
5. Bamnoli	39. Solshi
6. Kas	40. Pimpoda
7. Kelghar ghat	41. Wathar
8. Kudal	42. Kinhai
9. Vasota	43. Vardhangad
10. Patan	44. Karad
11. Devgad	45. Kole
12. Kumbharli ghat	46. Kolewadi
13. Mirgaon	47. Nandgaon
14. Rasati	48. Yeigaon
15. Morgiri	49. Matur
16. Salve	50. Chorjwadi
17. Sanbur	51. Khatav
18. Dhebewadi	52. Lalgun
19. Chapbal	53. Budh
20. Tarle	54. Aundh
21. Satara	55. Nimsod
22. Asangaon	56. Vaduj
23. Kanher	57. Dahivadi
24. Yavteshwar	58. Pingli tank
25. Dhavadi	59. Malvadi
26. Mahuli	60. Mograla ghat
27. Borgaon	61. Mardi
28. Wai	62. Mhasvad
29. Kenjalgad	63. Phaltan
30. Kamalgad	64. Tathavada
31. Dhom dam	65. Wathar
32. Pandavgad	66. Vidni
33. Kumbharli ghat	67. Nimblak
34. Shirgaon ghat	68. Javali

Krishna in the South. The Krishna is one of the three sacred rivers of southern India. It rises on the eastern brow of the Mahabaleshwar plateau 6 km west of Jor in the extreme west of Wai. Like Godavari and Kaveri, it flows across almost the entire breadth of the peninsula from west to east.

Today Koyna has become the most important river in Maharashtra on account of the hydro-electric project developed at Koyna Nagar near Helwak. The river Nira has acquired economic importance on account of the Bhatgar and the Vir dams supporting an extensive network of canals for irrigation.

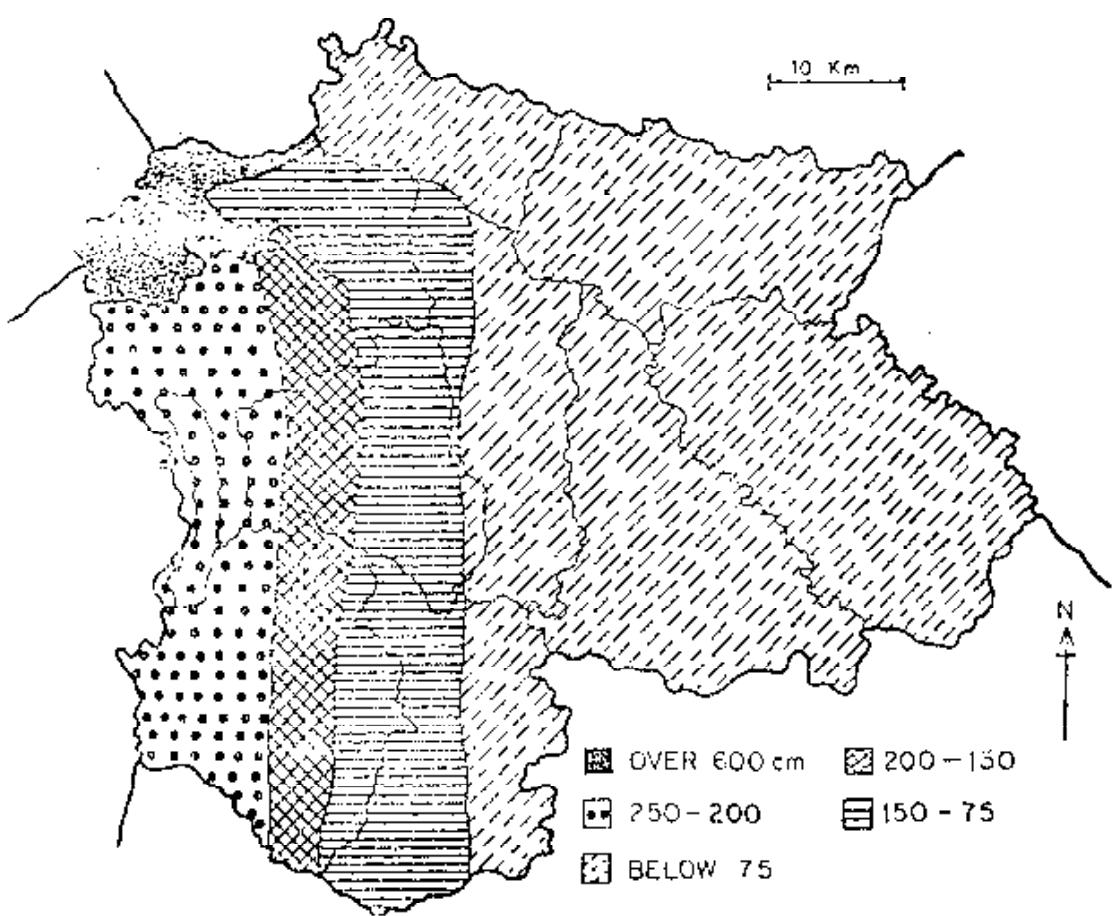
Geology : The district is covered by basaltic lava flows of upper cretaceous lower eocene age. The basalts capped by laterite are found in the plateaus above 900 m mean sea level. Along the sources of the major rivers, alluvium has been deposited in recent times.

Deccan trap : The basalt flows of the area are of two types. The aa flow, which is common, shows a basal section having chilled basalt or greyish clinkar which shows fragments of highly vesicular or dense purple trap cemented by zeolites or secondary silica or glass. The middle section of the flow comprises dark or dark grey, dense basalt. Over this is found a section of flow breccia which also consists of sub-rounded to angular blocks of vesicular trap cemented by zeolites, glass and pulverised rock. The top-most layer is pinkish or purplish glass which at places gives rise to clay-like material after weathering. The product of weathering comprises fine fragments and gives rise to smooth slopes. Owing to this difference in weathering characters, cliffs, benches and terraces are formed. In addition, wide plateaus of plains are also formed. Broad bottomed valleys are derived wherever the erosion is arrested by the dense sections of the flows. Amphitheatre - like geomorphological features are also conspicuous in these areas,

Dyke : Dykes are rare. The rock of the dyke is similar to that of porphyritic basalt

Laterite : Laterite occurs on the plateau tops as tabular masses. It is well exposed in the Panchgani - Mahabaleshwar plateaus and in the plateaus on either side of Koyna river. In Mahabaleshwar area, the laterite is seen from 1370 m to 1440 m and again around 1290 m indicating two levels. In the area south of Panchgani the level falls from 1265 m in the north to 1045 m in the south near Koyna dam.

Alluvium : Occurs in patches along banks of rivers like the Krishna, Venna, Kudali, Koyna and others. It consists of beds of pebbles and boulders of trap and chert, silt and sand.



Map 3 : Satara District : Annual average rainfall

Soil : The breccia portion of aa flows and the pahoehoe flows give rise to purplish or reddish soil mixed with grains of zeolite, chert and quartz, etc. The dense sections of the flows give rise to dark clayey soil. In the western part, where the laterite is extensively eroded the reddish brown soil is conspicuous.

Economic rocks and minerals : *Bauxite* : Bauxite occurs in the laterite plateaus near Panchgani and at a few places in the east Koyna valley. It occurs as large lenses or pockets and shows variation in thickness.

Construction material : The dense section of flows yield tough rock suitable for road making and as railway ballasts and concrete aggregate.

Kankar : Along the courses of streams and in alluvial patches, kankar and calc-tufa occur as irregular patches. These are excavated and used locally for making lime.

Groundwater : The alluvial patches are good aquifers. Wherever the trap rocks are weathered, the joints and fractures become open and help in groundwater movement. Laterite, which is full of voids, helps in seepage of rain water and such water comes out as springs along the lithomargic clay contact. Several such springs are the sources of domestic and to some extent, agricultural needs of many villages, at higher levels in the east Koyna valley.

Climate : The climate can be broadly divided into four seasons viz., the cold, the hot, the south-west monsoon and the post monsoon seasons. The cold season starts by about the end of November and continues up to middle of February. It is followed by hot season from the middle of February till the on-set of the monsoon in the first or second week of June. The south-west monsoon is from June to September. The post monsoon months are October and November.

Rainfall : The narrow strip along the western border gets heavier rainfall whereas the major part under study lies in the rain shadow area. The variation in the annual rainfall is very significant. Mahabaleshwar, in the Ghats, receives over 633 cm rainfall and it suddenly drops down to 76 cm at Wai which is only 32 km away from and at its base. The tract can be roughly divided into the following zones :

Zone	Rainfall (in cm)	Areas
I	Below 75	Eastern parts of Khandala, Karad, Koregaon and Khatav, Man and Phaltan ranges.
II	75 - 150	Western rounds of Karad, Khandala, Koregaon, Satara and Wai round.
III	200 - 250	Dhebewadi range, Eastern parts of Satara, valleys of Krishna, Koyna, Venna and Warna.
IV	Above 250	Mahabaleshwar.

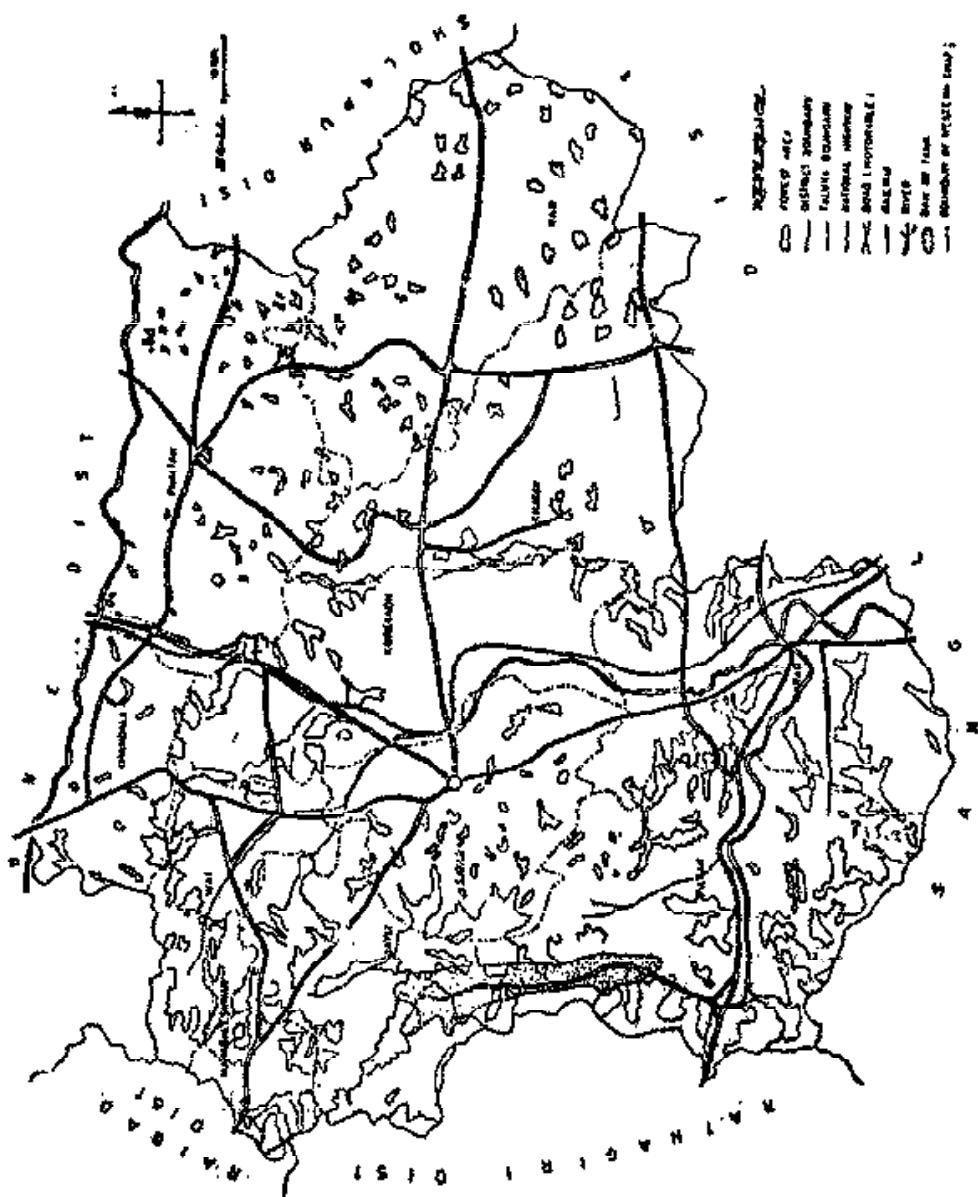
The major precipitation is from south west monsoon winds. Some rainfall in the form of pre-monsoon showers occur in May but main rainy season is from June to September. The precipitation during these months accounts for about 71% of the total annual rainfall. July is the month with heaviest rainfall. About 18% of the annual rainfall is received in the post monsoon months i.e. October and November.

Temperature : The cold season starts from about the end of November and continues up to the middle of February. December is the coldest month of the year. During the period from middle of February to May end, there is continuous increase in temperature and the rise is more marked in the plains than on the hills. The hottest month is May and mean daily maximum and minimum temperatures are 39.3°C and 23.8°C respectively in plains, while at Mahabaleshwar it is 28.8°C and 18.2°C respectively. The onset of the south-west monsoon brings down the temperature appreciably in the first or second week of June. After the withdrawal of the south-west monsoon day temperature shows an increase in October. Thereafter, both day and night temperatures begin to drop.

Humidity : In the south-west monsoon the air is highly humid but in the summer and the cold seasons the air is dry, particularly in the afternoons. In the plains, the dryness is more marked than in the hills.

Winds : Strong winds are witnessed particularly on the hills in the south west monsoon season. During rest of the year winds are light to moderate. Thunderstorms occur in hot and post monsoon months.

Forest biota : The wild life in the district is found in small number and is confined to the hilly regions of the Sahyadris and its foot hills.



Map 4: Satara District : Forest areas

The western parts, comprising Mahabaleshwar, Satara, Patan and Dhebewadi forest ranges have good forests, and provide natural protection to the animals.

Among the wild animals tigers are rarely found in Koyna valley and in some portions of Dhebewadi range. However, panthers are found in large numbers in Kas area near Satara, Koyna valley, Panchgani and Mahabaleshwar. Their main prey are only cheetals, sambars and stray cattle. The wild cat is found in large numbers in open forests and scrub jungles. The wolves, jackals and Indian fox are found in the plains of the eastern side. Of the smaller animals, mongoose is sometimes a serious threat to poultry, due to its mass slaughtering habit.

The bears are restricted to Bamnoli and Kas areas. They live on honey combs, tubers and fruits of forest trees, ants and insects. Due to indiscriminate hunting and poaching, the hares and deers have been considerably depleted. Sambars, barking deers and kalvits are some of the rare animals met within the area. The gaur or Indian bison, the largest of all the bovines is rarely found on way to Arthur point, Mahabaleshwar.

The wild bears and monkeys are found in abundance in all hilly forests. Snakes, both poisonous and non-poisonous are common in the forests.

The common game birds like sandgrouse, pigeon, grey partridge, the grey jungle fowl, the pea-fowl, the common teal and the blue winged teal are found scattered throughout the district.

GENERAL VEGETATION TYPES

The flora of the district has great diversity of its own supplemented by many exotic species. The area is rich in endemic species the details of which are given separately. The type of vegetation occurring in any area is largely governed by factors such as altitude, rainfall, soil types, humidity and temperature. The vegetation of Mahabaleshwar and Panchgani has been discussed by botanists like Puri & Mahajan (1960), Santapau (1962), Rolla Rao (1978) and Mahabale (1979). Champion (1936) had classified the forests at Mahabaleshwar as subtropical evergreen, however, since then the situation has deteriorated and such vegetation is now restricted to a few sheltered pockets because of shifting cultivation and constant lopping and other biotic interferences. There are some enclaves or sacred groves called as 'Dev - Rais' present at Kas near Satara and Mandhardevi near Wai. The forests around temples are protected in this area.

According to Champion & Seth (1969) the vegetation can be classified into the following types :

1. Western (Montane) subtropical hill forests (8A/C2)

This type is restricted around Mahabaleshwar plateau at an altitude between 1000 and 1400 m with annual rainfall above 600 cm and red soil. The typical multistoreyed vegetation is almost absent because of biotic factors, with an exception of few sheltered pockets. The height of trees ranges between 5 and 12 metres. The dominant trees forming top canopy are *Actinodaphne angustifolia*, *Artocarpus heterophyllus*, *Cinnamomum macrocarpus*, *C. zeylanica*, *Emblica officinalis*, *Ficus nervosa*, *Glochidion ellipticum*, *Ligustrum perrottetii*, *Memecylon umbellatum*, *Murraya koenigii*, *Nothapodytes nimmoniana*, *Olea dioica*, *Symplocos beddomei*, *Syzygium cumini* and *Terminalia chebula*. These trees are loaded with mosses during monsoon season.

The common shrubby elements are *Allophylus cobbe*, *Cajanus lineatus*, *Canthium dicoccum*, *Capparis rotundifolia*, *Carvia callosa*, *Clerodendrum serratum*, *Colebrookea oppositifolia*, *Crotalaria retusa*, *Gnidia glauca*, *Impatiens acaulis*, *Indigofera cassioides*, *Pavetta tomentosa*, *Pogostemon benghalensis* and *Solanum giganteum*. The climbers are represented by species like *Acacia sinuata*, *Clematis wightiana*, *Elaeagnus conferta*, *Piper hookeri*, *Rosa multiflora*, *Rubia cordifolia* and *Smilax zeylanica*.

The herbaceous flora is represented by *Achyranthes aspera*, *Anisochilus carnosus*, *A. verticillata*, *Blepharis asperrima*, *Begonia crenata*, *Canscora decurrens*, *Curculigo orchioides*, *Cynoglossum zeylanicum*, *Euphorbia laeta*, *Flemingia strobilifera*, *Hedychium coronarium*, *Hypoxis aurea*, *Leucas stelligera*, *Pinda concanensis*, *Polygonum plebeium* var. *indica*, *Rungia repens* and *Senecio edgeworthii*. The grasses like *Apluda mutica*, *Arundinella pumila*, *Sporobolus coromandelianus* and *Themeda quadrivalvis* are of common occurrence.

The orchids found in this type are *Aerides crispum*, *A. dalzelliana*, *Bulbophyllum fimbriatum*, *Dendrobium barbatum*, *D. crepidatum*, *Eria dalzellii* and *Oberonia recurva*.

2. West coast semi-evergreen Forest (2A/C2)

This type is found in the valleys of Krishna, Koyna, Venna and Warna at an altitude between 450 and 1050 m receiving 200 to 250 cm rainfall per annum. The height of trees varies from 12 to 20 m. Some of the common trees found in this type are — *Diospyros sylvatica*, *Elaeocarpus serratus*, *Garcinia indica*, *Holigarna grahamii*, *Lagerstroemia micro-*

carpa, *Maesa indica*, *Mallotus philippinensis*, *Symplocos beddomei*, *Syzygium cumini*, *Terminalia chebula* etc. Representative components of evergreen forests such as *Actinodaphne angustifolia*, *Memecylon umbellatum* and *Olea dioica* are also extended to the semievergreen forests.

The shrubs found in this area are *Allophylus cobbe*, *Buddleja asiatica*, *Cajanus lineatus*, *Carvia callosa*, *Colebrookea oppositifolia*, *Embelia ribes*, *Glycosmis mauritiana*, *Holarhena antidysenterica*, *Ixora nigricans*, *Justicia betonica*, *Lycianthus laevis*, *Microcos paniculatus*, *Pavetta tomentosa*, *Pittosporum wightii*, *Turraea villosa* and *Vigna khandalensis*. The common climbers are *Acacia sinuata*, *Argyreia boseana*, *Cayratia elongata*, *Cissus discolor*, *Clematis gouriana*, *Dioscorea pentaphylla*, *Diplocyclos palmatus*, *Embelia basaal*, *Jasminum malabaricum*, *Mucuna pruriens*, *Oxyceros rugulosus*, *Paracalyx scariosa*, *Teramnus labialis*, *Trichosanthes tricuspidata*, *Wattakaka volubilis* and *Zehneria scabra*. The rare climbers are : *Ceropegia hirsuta*, *Dumasia villosa*, *Entada pursaetha* and *Paramignya monophylla*.

The ground flora is represented by *Achyranthes aspera*, *Cassia pumila*, *Centella asiatica*, *Cynoglossum zeylanicum*, *Desmodium laxiflorum*, *Glinus lotoides*, *Indigofera dalzellii*, *Hedyotis corymbosa*, *Heracleum grandis*, *Pinda concanensis*, *Polygonum glabrum*, *Solena amplexicaulis*, *Smithia bigemina*, *Sonerila scapigera*, *Sopubia delphinifolia*, *Striga densiflora*, *S. gesneroides* and *Swertia densiflora*.

3a. Southern moist mixed deciduous forest (3B/C2)

This type is represented in the tract at Dhebewadi, Patan and western parts of Satara range. The dominant trees are *Careya arborea*, *Casearia graveolens*, *Cassia fistula*, *Catunaregam spinosa*, *Dalbergia melanoxylon*, *D. montana*, *Emblica officinalis*, *Ficus exasperata*, *F. racemosa*, *Flacourtie indica*, *Grewia tiliacefolia*, *Ixora arborea*, *Kydla calycina*, *Lagerstroemia parviflora*, *Terminalia bellirica*, *Toona ciliata*, *Xantolis tomentosa* and *Ziziphus xylopyrus*, *Chukrasia tabularis*, *Eriolaena quinquelocularis* and *Sterculia guttata* are of rare occurrence.

The common shrubs are *Callicarpa tomentosa*, *Canthium rheedii*, *Carissa congesta*, *Clerodendrum viscosum*, *Desmodium triangulare*, *D. triquetrum*, *Eranthemum roseum*, *Gnidia glauca*, *Grewia abutilifolia*, *Holarhena antidysenterica*, *Ixora brachiata*, *Leea indica*, *Rhus mysorensis*, *Vitex negundo*, *Woodfordia fruticosa*, *Wrightia tinctoria* and *Ziziphus rugosa*. The common climbers are *Argyreia cuneata*, *Cayratia auriculata*, *Cocculus hirsutus*, *Dioscorea oppositifolia*, *Elaeagnus conferta*, *Jasminum malabaricum*, *Mezoneuron cucullatum*, *Moullava spicata* and *Stephania japonica*.

The common herbaceous species are *Alysicarpus* spp., *Desmodium laxiflorum*, *Hemigraphis latebrosa*, *Hibiscus surcatus*, *Lepidagathis cuspidata*, *L. prostrata*, *Mukia maderaspatana*, *Ophiorrhiza prostrata*, *Smithia setulosa*, *Solena amplexicaulis* and *Tephrosia tinctoria*. *Rauvolfia serpentina*, *Smithia sensitiva* and *Tephrosia purpurea* are of occasional occurrence.

3b. Southern dry mixed deciduous forest (5A/C3)

This type is represented in the central belt of the tract, receiving annual rainfall between 75 and 150 cm. The common trees are *Acacia chundra*, *A. nilotica*, *Albizia amara*, *A. chinensis*, *Anogeissus latifolia*, *Bauhinia racemosa*, *Bombax ceiba*, *Butea monosperma*, *Cassia fistula*, *Dalbergia volubilis*, *Diospyros melanoxylon*, *Embelia tsjeriam-cottam*, *Erinocarpus nimmonii*, *Erythrina stricta*, *Ficus hispida*, *F. retusa*, *Lagerstroemia microcarpa*, *Maytenus emarginata*, *Pongamia pinnata*, *Semecarpus anacardium*, *Terminalia bellirica* and *Wrightia tinctoria*.

The common shrubs are *Acacia torta*, *Barleria prionitis*, *Boehmeria macrophylla*, *Breynia retusa*, *Capparis zeylanica*, *Carissa congesta*, *Carvia callosa*, *Cassia auriculata*, *Catunaregam spinosa*, *Celastrus paniculata*, *Clerodendrum serratum*, *Helicteres isora*, *Lepidagathis cuspidata*, *Pogostemon benghalensis*, *Rhus mysorensis*, *Tamilnadia uliginosa* and *Woodfordia fruticosa*. The common climbers are *Acacia sinuata*, *Argyreia cuneata*, *Calycopteris floribunda*, *Cayratia elongata*, *Combretum ovalifolium*, *Cryptolepis buchanani*, *Dioscorea oppositifolia*, *D. pentaphylla*, *Gloriosa superba*, *Jasminum malabaricum*, *Mucuna pruriens*, *Paracalyx scariosa* and *Tylophora dalzellii*.

The herbaceous species are represented by *Blepharis asperrima*, *Blumea eriantha*, *B. malcolmi*, *Celosia argentea*, *Centranthera indica*, *Commellna forsskalaei*, *Corchorus olitorius*, *Crotalaria filipes*, *Cyanotis fasciculata*, *Elephantopus scaber*, *Evolvulus alsinoides*, *Exacum bicolor*, *Geissaspis cristata*, *Hemigraphis latebrosa*, *Phyllanthus lawii*, *Polygala persicariaefolia*, *Scilla hyacinthina*, *Solanum indicum*, *Trachyspermum stictocarpum*, *Vigna radiata* and *Wedelia urticaefolia*.

4. Southern thorn forest (6A 1)

This type is found in drier parts of the district receiving annual rainfall less than 75 cm. It is found in eastern parts of Khandala, Koregaon, Karad and Khatav ranges, also Man and Phaltan ranges. The common species are *Acacia chundra*, *A. leucophloea*, *Albizia odoratissima*, *Azadir-*

achia indica, *Capparis moonii*, *C. zeylanica*, *Cassia auriculata*, *Maytenus emarginata* and *Ziziphus mauritiana*.

Because of biotic factors some areas are devoid of trees and major portion is occupied by dry grasslands. The common components are *Aristida funiculata*, *Chrysopogon fulvus*, *Cymbopogon martinii*, *Cynodon dactylon*, *Dichanthium annulatum*, *Eragrostis unioloides*, *Heteropogon contortus* and *Sehima nervosum*. These are associated with *Corchorus aestuans*, *C. trilocularis*, *Crotalaria nana*, *C. vestita*, *Euphorbia laciniata*, *E. neriifolia* and *Triumfetta rotundifolia*.

Weed Flora : A number of weeds are found in and around cultivated fields, fallow fields, wastelands, roadsides etc. Some of the common weeds in cultivated fields are *Aeschynomene indica*, *Ageratum conyzoides*, *Alysicarpus procumbens*, *Anagallis arvensis*, *Apluda mutica*, *Aristida adscensionis*, *Arundinella metzii*, *A. pumila*, *Asclepias curassavica*, *Blumea eriantha*, *B. oxyodonta*, *Caesulia axillaris*, *Capsella bursa-pastoris*, *Chromolaena odorata*, *Chrozophora rottleri*, *Cleome viscosa*, *Coix lacryma-jobi*, *Commelina forskaalaei*, *Corchorus olitorius*, *Cyanotis cristata*, *C. fasciculata*, *Cyperus digitatus*, *C. iria*, *Digitaria ciliaris*, *Desmodium triflorum*, *Echinochloa colonum*, *E. frumentacea*, *Eleusine indica*, *Eragrostis pilosa*, *E. unioloides*, *Eulalia trispicata*, *Fagonia cretica*, *Fimbristylis dichotoma*, *F. littoralis*, *Flaveria trinervia*, *Hackelochloa granularis*, *Indigofera tinifolia*, *Ipomoea hederifolia*, *I. triloba*, *Iselema antephoroides*, *Leucas aspera*, *L. lavandulaefolia*, *Linum mysorensis*, *Lobelia alsinoides*, *Pennisetum glaucum*, *P. hohenackeri*, *Physalis minima*, *Polygala arvensis*, *Rhynchosia minima*, *Setaria intermedia*, *Scoparia dulcis*, *Sida rhombifolia*, *Sonchus oleraceus*, *Themeda quadrivalvis*, *Tribulus terrestris*, *Vicia indica*, and *Withania somnifera*.

Weeds of fallow fields are *Bidens biternata*, *Blophytum sensitivum*, *Blainvillea acmella*, *Caesulia axillaris*, *Edipia erecta*, *Emilia sonchifolia*, *Eragrostis unioloides*, *Gnaphalium luteo album*, *Hackelochloa granularis*, *Heteropogon contortus*, *Leucas lavandulaefolia*, *Sphaeranthus indicus*, *Tribulus terrestris*, *Tridax procumbens*, *Vicia indica* and *Xanthium strumarium*.

Weeds commonly found in wastelands and along roadsides are—*Acanthospermum hispidum*, *Achyranthes aspera*, *Alternanthera sessilis*, *Amaranthus spinosus*, *Argemone mexicana*, *Bidens biternata*, *Blainvillea acmella*, *Boerhavia diffusa*, *Cassia occidentalis*, *C. tora*, *Comtecarpus chinensis*, *Convolvulus arvensis*, *Corchorus aestuans*, *Datura stramonium*, *Dinebra retroflexa*, *Echinops echinatus*, *Euphorbia hirta*, *E. indica*, *E. thymifolia*, *Girardinia zeylanica*, *Lagascea mollis*, *Lantana camara*, *Leucas*

aspera, *L. longifolia*, *Malvastrum coromandelianum*, *Nicandra physaloides*, *Nicotiana plumbaginifolia*, *Oxalis corniculata*, *Parthenium hysterophorus*, *Pilea microphylla*, *Plectranthus mollis*, *Solanum nigrum*, *S. surattense*, *Synedrella nodiflora*, *Trichodesma indicum*, *Tridax procumbens*, *Triumfetta rhomboidea*, *Verbascum chinense* and *Veronica javanica*.

AQUATIC VEGETATION

The district has numerous ponds, lakes and rivers in addition to catchment areas and other wetlands. During the monsoon season temporary streams and puddles are also formed. All these places provide an ideal habitat to the aquatic plants for their luxuriant growth. These aquatics can be classified as follows :

1. *Free floating herbs* : *Aponogeton satarensis*, *Lemna perpusilla*, *Nymphaea nouchali* and *Spirodela polyrrhiza*.

2. *Submerged herbs* : *Blyxa auberti*, *B. echinosperma*, *B. octandra*, *Hydrilla verticillata*, *Limnophila indica*, *L. sessiliflora* and *Vallisneria spiralis*.

3. *In marshy places* : *Alternanthera sessilis*, *Bacopa monnieri*, *Caesulia axillaris*, *Canscora decurrens*, *Centaurium centaurioides*, *Chrozophora prostrata*, *C. rotteieri*, *Coelachne minuta*, *Coix lacryma-jobi*, *Crinum defixum*, *Cyathocline purpurea*, *Cyperus compressus*, *C. digitatus*, *C. distans*, *C. globosus*, *C. iria*, *C. nutans* var. *nutans*, *C. nutans* var. *eleusinoides*, *C. teruispica*, *Drosera indica*, *Echinochloa colonum*, *E. crusgalli*, *E. frumentacea*, *Eclipta prostrata*, *Eleocharis acutangula*, *E. geniculata*, *Eragrostis gangetica*, *E. japonica*, *E. unioloides*, *Eriocaulon breviscapum*, *E. cuspidatum*, *E. eleanorae*, *E. odoratum*, *E. quinquangulare*, *E. setaceum*, *E. stellatum*, *Eriochloa procera*, *Fimbristylis aestivalis*, *F. bis-umbellata*, *F. dichotoma*, *F. ferruginea*, *F. ovata*, *F. tenera*, *Floscopia scandens*, *Geissaspis cristata*, *Glinus lotoides*, *Homonoia riparia*, *Hygrophila auriculata*, *Isachne elegans*, *I. globosa*, *I. miliacea*, *Jansenella griffithiana*, *Lindernia anagallis*, *L. hyssopoides*, *Lobelia alsinoides*, *Ludwigia octovalvis* ssp. *sessiliflora*, *Myriophyllum oliganthum*, *Oryza rufipogon*, *Paspalum scrobiculatum*, *Phyla nodiflora*, *Phyllanthus lawii*, *Pogostemon deccanensis*, *P. salicifolius*, *Polygonum glabrum*, *P. plebejum*, *Rorippa indica*, *Rotala floribunda*, *R. serpyllifolia*, *Rotula aquatica*, *Schoenoplectus articulatus*, *S. corymbosus*, *Sphaeranthus indicus*, *Typha angustata*, *Utricularia arcuata*, *U. graminifolia*, *U. reticulata* and *Wahlenbergia marginata*.

EXOTIC SPECIES

Foreigners mostly Britishers treated Mahabaleshwar and Panchgani as their summer health resorts. It is probable that they brought seeds of seedlings of interesting species, in order to quench their nostalgia and to create native surroundings when they returned to India from their mother lands. As a result, there is a high concentration of exotic species in the local flora introduced for food, ornamental or medicinal purposes. A number of weeds also came along accidentally with food grains, seeds or other economic plants and packing materials of the imported goods. Many of them are now naturalised in this area. Some of the common exotic species are listed below :

Acacia auriculiformis, Adansonia digitata, Agave angustifolia, Ageratum houstonianum, Annona reticulata, A. squamosa, Bixa orellana, Brassica oleracea var. botrytis, B. oleracea var. capitata, Capsicum annuum, Carica papaya, Cassia tora, Cestrum nocturnum, Coronopus didymus, Datura metel, Duranta erecta, Eucalyptus spp., Euphorbia gaudichaudii, E. thymifolia, Ficus carica, Fragaria vesca, Galinsoga parviflora, Gomphrena celosioides, G. globosa, Helianthus annuus, Hibiscus rosa-sinensis, Iberis amara, Jatropha curcas, Lantana camara, Linum usitatis-simum, Litchi chinensis, Lycopersicon esculentum, Manilkara zapota, Mimosa pudica, Mirabilis jalapa, Nerium oleander, Opuntia elatior, Oxalis spp., Parkinsonia aculeata, Parthenium hysterophorus, Passiflora edulis, Portulaca oleracea, Prunus amygdalus, P. persica, Psidium guajava, Punica granatum, Quisqualis indica, Ricinus communis, Scoparia dulcis, Sesbania sesban, Sonchus oleraceus, Stellaria media, Tagetes erecta, Tecoma stans, Thevetia peruviana, Thunbergia alata, Tridax procumbens and Veronica anagallis - aquatica.

FLORISTIC ANALYSIS

The present flora deals with 1,398 species belonging to 697 genera and 141 families. Of the total flora, 197 species are either cultivated or exotics. They are tabulated below. In addition to the Angiosperms, 48 species of Pteridophytes belonging to 29 genera and 23 families have also been recorded.

<i>Groups</i>	<i>Number of families</i>	<i>Number of genera</i>	<i>Number of species</i>	<i>Number of sub- species</i>	<i>Number of varieties</i>	<i>Number of forma</i>
Dicots	121	565	1046	2	11	—
Monocots	20	132	352	—	5	1
Total	141	697	1398	2	16	1

Out of 141 families, 44 families are monotypic.

Comparison between the Cooke's Flora and the present flora :

	<i>Families</i>	<i>Genera</i>	<i>Species</i>	<i>Sub- species</i>	<i>Varie- ties</i>	<i>Forma</i>
Taxa reported in Cooke's Flora (exclud- ing Sind)	146	944	2337	—	150	—
Taxa reported by Cooke from Satara District	88	273	401	—	—	—
Taxa reported in the pres flora	141	697	1398	2	6	1

Ten dominant families compared with those of Cooke's Flora are given below :

<i>Flora of the Presidency of Bombay (excluding Sind)</i>			<i>Flora of Satara district</i>		
<i>Family</i>	<i>Number of genera</i>	<i>Number of species</i>	<i>Family</i>	<i>Number of genera</i>	<i>Number of species</i>
1. Fabaceae	81	284	1. Poaceae	60	141
2. Poaceae	72	223	2. Asteraceae	46	70
3. Asteraceae	52	104	3. Fabaceae	41	111
4. Euphorbiaceae	37	101	4. Acanthaceae	25	44
5. Acanthaceae	36	109	5. Rubiaceae	22	39
6. Rubiaceae	34	80	6. Euphorbiaceae	20	39
7. Orchidaceae	31	74	7. Scrophulariaceae	19	33
8. Scrophulariaceae	26	51	8. Asclepiadaceae	17	25
9. Asclepiadaceae	25	51	9. Orchidaceae	16	46
10. Lamiaceae	21	57	10. Lamiaceae	14	36

It is interesting to find that the families which are dominant in erstwhile Bombay Presidency and those of the area under study are the same though their positions vary a bit.

PLANTS OF MEDICINAL VALUE

This district abounds in medicinal plants. The following plants are used for the medicinal value in treatment of various ailments by local vaidyas.

Abrus precatorius, Abutilon indicum, Acacia leucophloea, A. nilotica ssp. indica, A. simiata, Acalypha indica, Achyranthes asper, Actinodaphne hookeri, Adhatoda vasica, Aerva lanata, Agave americana, Ageratum conyzoides, Albizia lebbeck, Allium cepa, A. sativum, Anacardium occidentale, Argemone mexicana, Asparagus racemosus, Azadirachta indica, Bacopa monnieri, Balanites aegyptiaca, Barleria cristata, B. prionitis, Bauhinia purpurea, B. racemosa, Bixa orellana, Blumea eriantha, B. lacera, Boerhavia diffusa, Boswellia serrata, Brassica campestris, Butea monosperma, Caesalpinia bonduc, Calendula officinalis, Calotropis gigantea, Calycopteris floribunda, Capparis decidua, C. spinosa, Cardiospermum halicacabum, Carica papaya, Carissa congesta, Carthamus tinctorius, Cassia auriculata, C. fistula, C. tora, Catharanthus roseus, Celastrus paniculatus, Celosia argentea, Centella asiatica, Ceropogia bulbosa, Chenopodium album, Cinnamomum zeylanicum, Cissampelos pareira, Citrullus colocynthis, C. lanatus, C. vulgaris, Clematis triloba, Clerodendrum serratum, Clitoria ternatea, Coix lacryma-jobi, Commelina benghalensis, Crostalaria retusa, Curculigo orchioides, Curcuma aromatic, Cynodon dactylon, Datura metel, Dioscorea oppositifolia, Diospyros melanoxylon, Echinochloa crusgalli, Echinops echinatus, Eclipta prostrata, Emblica officinalis, Emilia sonchifolia, Evolvulus alsinoides, Ficus benghalensis, Garcinia indica, Gnidia glauca, Gloriosa superba, Helicteres isora, Hemidesmus indicus, Hibiscus rosa-sinensis, Hiptage benghalensis, Holarrhena antidysenterica, Homonoia riparia, Impatiens balsamina, Jatropha curcas, Lantana camara, Lawsonia alba, Leonotis nepetaefolia, Leucas aspera, Malvastrum coromandelianum, Mangifera indica, Memecylon umbellatum, Mirabilis jalapa, Momordica charantia, Moringa oleifera, Mitragyna parviflora, Ocimum spp. Pergularia daemia, Pittosporum wightii, Plantago major, Plumbago zeylanica, Rauvolfia serpentina, Ricinus communis, Rosa multiflora, Rubia cordifolia, Santalum album, Scilla hyacinthina, Semecarpus anacardium, Sesamum indicum, Solanum nigrum, S. surattense, Sphaeranthus indicus, Swertia densiflora, Tagetes erecta, Terminalia bellirica, T. chebula, Tinospora cordifolia, Tribulus terrestris, Tylophora indica, Verbascum chinense, Vitex negundo and Wattakaka volubilis.

ECONOMICALLY IMPORTANT PLANTS

The plants used for various domestic and industrial purposes viz., food, fodder, fibre, shelter can be broadly classified as follows :

1. Cereals : The main cereals grown in the district are - 'Jowar' (*Sorghum bicolor*), 'Bajra' (*Pennisetum typhoides*), 'Wheat' (*Triticum aestivum*), 'Rice' (*Oryza sativa*), 'Vari' (*Panicum sumatrense*) and 'Maize' (*Zea mays*).

2. Pulses : 'Gram' (*Cicer arletinum*), 'Tur' (*Cajanus cajan*), 'Watana' (*Pisum sativum*), 'Mug' (*Phaseolus aureus*), 'Masur' (*Lens esculenta*), 'Black gram' (*Phaseolus mungo*), 'Horse gram' (*Vigna unguiculata*) and 'Chavali' (*Vigna unguiculata* ssp. *cylindrica*).

3. Oil seeds : 'Groundnut' (*Arachis hypogaea*), 'Sesamum' (*Sesamum indicum*), 'Safflower' (*Carthamus tinctorius*), 'Castor' (*Ricinus communis*) and 'Mustard' (*Brassica nigra*).

4. Drugs and Narcotics : 'Tobacco' (*Nicotiana tabacum*) and 'Betel' leaves (*Piper betel*).

5. Condiments and spices : 'Chillies' (*Capsicum annum*), 'Coriander' (*Coriandrum sativum*), 'Turmeric' (*Curcuma longa*), 'Garlic' (*Allium sativum*) and 'Ginger' (*Zingiber officinale*).

6. Fibres : 'Cotton' (*Gossypium herbaceum*), 'Deccan hemp' or 'Ambadi' (*Hibiscus cannabinus*) and 'Bombay hemp or tag' (*Crotalaria juncea*).

7. Fruits : The most common are 'Banana' (*Musa paradisiaca*), 'Guava' (*Psidium guajava*), 'Pomegranate' (*Punica granatum*), 'Lemon' (*Citrus medica*), 'Mango' (*Mangifera indica*), 'Phanas' (*Artocarpus integrifolia*), 'Grapes' (*Vitis vinifera*), 'Papaya' (*Carica papaya*), 'Strawberry' (*Fragaria vesca*) and 'Raspberry' (*Rubus niveus*) are grown on small scale at Mahabaleshwar.

8. Vegetables : 'Potato' (*Solanum tuberosum*), 'Onion' (*Allium cepa*), 'Sweet potato' (*Ipomoea batatas*), 'Carrot' (*Daucus carota*), 'Tomato' (*Lycopersicon esculentum*), 'Brinjal' (*Solanum melongena*), 'Radish'

(*Raphanus sativus*), 'Cucumber' (*Cucumis sativus*), 'Cabbage' (*Brassica oleracea* var. *capitata*), 'Lady's finger or bhendi' (*Abelmoschus esculentus*) and 'Gavar' (*Cyamopsis psoraliooides*).

9. Sugarcane : 'Sugarcane' (*Saccharum officinarum*) is grown on large scale as an irrigated crop.

10. Timber : Among the timber species which are mostly used for furniture, construction of buildings, agricultural implements are - 'Sagwan' (*Tectona grandis*), 'Ain' (*Terminalia crenulata*), 'Khair' (*Acacia chundra*) and 'Subabul' (*Acacia leucophloea*).

FODDER SPECIES

The plants known for their fodder value are mostly grasses viz. *Andropogon pumilus*, *Arundo donax*, *Brachiaria eruciformis*, *Cenchrus ciliaris*, *Chloris virgata*, *Coix lacryma-jobi*, *Cynodon dactylon*, *Dactyloctenium aegyptium*, *Dichanthium annulatum*, *D. soveolatum*, *Dinebra retroflexa*, *Diplachne fusca*, *Echinochloa colonum*, *E. crus-galli*, *Eleusine indica*, *Eragrostis gangetica*, *E. tenella*, *E. unioloides*, *E. viscosa*, *Hackelochloa granularis*, *Heteropogon contortus*, *Isachne globosa*, *I. millacea*, *Iseilema anthephoroidea*, *Oplismenus burmannii*, *Panicum antidotale*, *Paspalum scrobiculatum*, *Pennisetum americanum*, *P. glaucum*, *Saccharum officinarum*, *Sehima nervosum*, *Sorghum halepense*, *Spodiopogon rhizophorus*, *Sporobolus coromandelianus*, *S. indicus* var. *diander*, *Thelepogon elegans*, *Themeda quadrivalvis* and *Urochloa panicoides*.

The leaves, young shoots or pods of the following plants other than grasses, are fed to cattle :

Acacia nilotica ssp. *indica*, *Achyranthes aspera*, *Adhatoda vasica*, *Albizia lebbeck*, *Amaranthus spinosus*, *Hiptage benghalensis*, *Holarrhena antidysenterica*, *Indigofera cordifolia*, *Kydia calycina*, *Lagerstroemia parviflora*, *Lannea coromandelica*, *Mallotus philippinensis*, *Mellilotus indica*, *Microcos paniculata*, *Phyllanthus emblica*, *Polygonum barbatum*, *Pongamia pinnata*, *Portulaca oleracea*, *Prosopis cineraria*, *Ziziphus mauritiana*, *Z. rugosa* and *Vigna trilobata*.

INTERESTING PLANTS OF BOTANICAL VALUE

Various botanists have described 44 new species, 5 varieties and 1 forma from the Satara district. They are : *Anelasma sienna* Blatt., *Aponogeton satarensis* Raghavan et al., *Arisaema longicaudatum* Blatt.,

Argyreia baseana Sant. & Patel, *Arthraxon satarensis* Almeida, *Balanophora elkinsii* Blatt., *Barleria gibsonioides* Blatt., *Begonia prixophylla* Blatt. & McC., *Caralluma adscendens* var. *fimbriata* Gravely & Mayur., *Ceropegia hispida* Blatt. & McC., *C. noorjahaniac* Ansari, *C. panchganiensis* Blatt. & McC., *Coelachne minuta* Bor, *Crinum eleonorae* Blatt. & McC., *C. eleonorae* var. *purpurea* McC., *C. woodrowil* Baker, *Cryptocoryne tortuosa* Blatt. & McC., *Cyperus decumbens* Govind., *Dichanthium maccannii* Blatt., *D. panchganiense* Blatt. & McC., *Dipcadi maharashtra* Deb & Dasgupta, *D. ursulae* Blatt., *Eriocaulon eleonorae* Fyson, *E. horsley-kundae* Fyson, *E. sedgwickii* Fyson, *Euphorbia panchganiensis* Blatt. & McC., *Habenaria cerea* Blatt. & McC., *H. cerea* var. *polyantha* Blatt. & McC., *H. grandifloriformis* Blatt. & McC., *H. grandiflora* Lindl. ex Dalz. & Gibbs., *H. panchganiensis* Sant. & Kap., *H. rariflora* var. *latifolia* Blatt. & McC., *H. spencei* Blatt. & McC., *H. variabilis* Blatt. & McC., *Iphigenia stellata* Blatt., *Isachne lisboae* Hook. f., *I. swaminathanii* Ved Prakash & Jain, *Kalanchoe bhidei* T. Cooke, *Mariscus blatteri* McC., *Oberonia lingmalensis* Blatt. & McC., *Oldenlandia maheshwarii* Sant. & Merch., *Oxalis corniculata* var. *hispida* Blatt., *Pancratium donaldii* Blatt., *Paspalum canarae* var. *fimbriatum* Bor, *Peristylus xanthochlorus* Blatt. & McC., *Thalictrum obovatum* Blatt., *Urginea polyantha* Blatt. & McC., *Utricularia equiseticaulis* Blatt. & McC., *U. ogmosperma* Blatt. & McC. and *U. praeterita* Taylor.

Of these species mentioned above, *Aneilema sienna*, *Arisaema longicaudatum*, *Arthraxon satarensis*, *Cryptocoryne tortuosa*, *Eriocaulon horsley-kundae*, *Habenaria cerea* var. *polyantha*, *H. rariflora* var. *latifolia*, *H. spencei*, *H. variabilis*, *Oberonia lingmalensis*, *Oldenlandia maheshwarii*, *Paspalum canarae* var. *fimbriatum*, *Peristylus xanthochlorus*, *Utricularia equiseticaulis* and *U. ogmosperma* have been merged under different taxa by various workers as they were not distinct.

Abelmoschus angulosus, *Crassocephalum crepidioides*, *Habenaria multicaudata* and *Sagina japonica* are the distributional records for Maharashtra reported from this area.

ENDEMIC AND RARE PLANTS

There is a high concentration of endemic species along Western Ghats due to significant variation in altitude, humidity, soil, temperature and various other factors. Endemic plants occur in a restricted area, isolated from its surrounding regions through geographical, ecological or natural barriers. Western Ghats along this tract form an ecological boundary between the low-lying plains, Konkan and the Deccan tableland

forming an *ideal endemic area*. There are 56 genera endemic to Peninsular India. (Nayar, 1980) out of which the following 10 monotypic genera are endemic to Western Ghats and occur in the area studied here : *Carvia*, *Dicoelospermum*, *Erinocarpus*, *Helicanthes*, *Indopoa*, *Moullava*, *Polyzygus*, *Pseudodichanthium*, *Seshagiria* and *Trilobachne*. Ahmedullah and Nayar (1987) have discussed in detail about the concepts, classification and components of endemic plants of Peninsular India.

Species endemic to the district are - *Aponogeton satarensis*, *Argyreia boseana*, *Balanophora elkinsii*, *Barleria gibsonioides*, *Begonia prixophylla*, *Caralluma adscendens* var. *fimbriata*, *Ceropegia noorjahaniae*, *C. santapauli*, *Crinum eleonorae*, *C. woodrowii*, *Cyperus decumbens*, *Dichanthium maccannii*, *D. panchganiense*, *Dipcadi maharashrensis*, *D. ursulae*, *Drimia polyantha*, *Euphorbia panchganiensis*, *Hitchenia caulinia*, *Iphigenia stellata*, *Isachne swaminathanii*, *Mariscus blatteri*, *Oxalis corniculata* var. *hispida*, *Pancratium donaldii*, *Thalictrum obovatum* and *Utricularia praeterita*.

Species endemic to the Western Ghats and represented in the district are *Adelocaryum malabaricum*, *Adenoon indicum*, *Aeschynanthus perrouetii*, *Aglaia lawii*, *Alysicarpus pubescens* var. *vasavadae*, *Alysicarpus belgaumensis* var. *racemosa*, *Anisomeles heyneana*, *Argyreia cuneata*, *Arisaema caudatum*, *A. murrayi*, *Arthraxon lanceolatus* var. *meeboldii*, *Asystasia dalzelliana*, *Artocarpus hirsuta*, *Plachia denudata*, *Blepharis asperrima*, *Blumea belangeriana*, *Cajanus lineatus*, *C. sericea*, *Campanula alphonsii*, *Canscra concanensis*, *C. pauciflora*, *C. persfoliata*, *Carex filicina* var. *glaucina*, *Carissa inermis*, *Carvia callosa*, *Ceropegia oculata*, *C. vinicaefolia*, *Chlorophytum glaucum*, *Coelachne minuta*, *Crotalaria filipes*, *Cryptocoryne spiralis*, *Cucumis setosus*, *Cyanotis concanensis*, *C. fasciculata* var. *glabrescens*, *Dalzellia zeylanica*, *Delphinium malabaricum*, *Dichanthium Jainii*, *Dimorphocalyx lawianus*, *Dioscorea belophylla*, *Eranthemum roseum*, *Eriocaulon breviscapum*, *E. dalzellii*, *E. dianae*, *E. eleonorae*, *E. humile*, *E. odoratum*, *E. ritchieanum*, *E. stellulatum*, *E. vanheurckii*, *Erytamatia heyneana*, *Euphorbia ellipticum*, *E. notoptera*, *Exacum lawii*, *Garcinia indica*, *Haplanthodes neilgherryensis*, *H. tentaculatus*, *H. verticillatus*, *Hedyotis stocksii*, *Helicanthes elastica*, *Helixanthera obtusata*, *Heracleum aequilegifolium*, *H. grandis*, *Heteropogon polystachyos*, *Holigarna grahamii*, *Impatiens dalzellii*, *I. minor*, *I. pulcherrima*, *Indigofera dalzellii*, *Isachne bicolor*, *I. lisboae*, *Ischaemum diplopogon*, *I. impressum*, *I. ritchiei*, *Ixora brachiata*, *Jasminum malabaricum*, *Justicia santapauli*, *J. trinervia*, *J. wynaudensis*, *Kalanchoe bhidei*, *K. olivacea*, *Lavandula gibsonii*, *Litsea stocksii*, *L. wightiana*, *Mallotus stenanthus*, *Meiogyne pannosa*, *Memecylon malabaricum*, *M. talbotianum*, *Moullava spicata*, *Murdannia crocea* ssp. *ochracea*, *M. lanuginosa*, *M. versicolor*, *Mussaenda laxa*, *Neanotis*

concanensis, *N. hohenackeri*, *N. montholonii*, *N. rheedii*, *Nilgirianthus lupulinus*, *N. reticulatus*, *Phyllocephalum tenue*, *Pimpinella katrajensis*, *Piper hookeri*, *Pittosporum dasycaulon*, *Plectranthus benghalensis*, *P. stocksii*, *Pleocaulis ritchiei*, *Pogostemon deccanensis*, *P. purpurascens*, *Polyzygus tuberosus*, *Porana racemosa*, *Pseudodichanthium serrafalcoides*, *Rhamphicarpa longiflora*, *Senecio dalzellii*, *Seshagiria sahyadrica*, *Smithia agharkarii*, *S. bigemina*, *S. setulosa*, *Sonerila scapigera*, *Supushpa scrobiculata*, *Thalictrum dalzellii*, *Thelepaepale ixicephala*, *Tricholepis amplexicaulis*, *T. radicans*, *Tolypanthus lagenifer*, *Trilobachne cookei*, *Utricularia arcuata*, *Ventilago bombaiensis*, *Vernonia indica*, *Vigna khandalensis*, *Wendlandia thyrsoides* and *Zingiber neesanum*.

Rare species - either in distribution or abundance are - *Arnicratea grahamii*, *Beilschmiedia dalzellii*, *Bergia ammannioides*, *Canscora khandaensis*, *Cansjera rheedii*, *Capparis grandis*, *Cayratia trifolia*, *Ceropegia bulbosa*, *Cissus pallida*, *C. repens*, *Cynanchum callitrichoides*, *Dendrophthoe trigona*, *Diospyros nigrescens*, *Holostemma ada-kodien*, *Impatiens lawii*, *Isachne gracilis*, *Kickxia incana*, *Limnophila heterophylla*, *Litsea fuscata*, *Loeseneriella obtusifolia*, *Mussaenda glabrata*, *Myristica dactyloides*, *Phaulopsis imbricata*, *Polygonum barbatum*, *Rauvolfia serpentina*, *Saurauia pedatum*, *Schefflera elliptica*, *Sterculia guttata*, *Tinospora cordifolia* and *Tylophora fasciculata*.

CONCLUDING REMARKS

The present assessment of the Flora of Mahabaleshwar & its environs is the outcome of the plant exploratory work carried out during 1983 to 1985, based on the collections made by the senior author as well as on the specimens housed at the Herbarium of Botanical Survey of India, Pune (BSI) and Blatter Herbarium, St. Xavier's College, Bombay (BLAT). This flora accounts for 1,398 species, 697 genera and 141 families of Angiosperms and 48 species of Pteridophytes.

The district Satara, as a whole, is rich in endemic flora recording 108 species distributed over 9 genera which are endemic to the Western Ghats viz., *Carvia*, *Dicoelospermum*, *Erinocarpus*, *Helicanthes*, *Indopoa*, *Moullava*, *Polyzygus*, *Pseudodichanthium*, *Seshagiria* and *Trilobachne*.

During this survey it has been evaluated that out of the total of 1,201 wild species, 348 species are reported from places other than Mahabaleshwar and Panchgani which forms ca 25% of the total flora.

The remaining 853 species are reported from Mahabaleshwar and Panchgani as well as from the other surrounding areas.

Though forty-four new species, 5 varieties and 1 forma have been reported from this area, only 28 species, 3 varieties and 1 forma are valid, rest having been merged with already described taxa. Sixteen species are known only by their type collections viz., *Argyreia boseana*, *Balanophora elkinsii*, *Barleria gibsonioides*, *Begoniaprixophylla*, *Ceropegia noorjahantiae*, *Crinum eleonorae*, *C. woodrowii*, *Cyperus decumbens*, *Dichanthium maccannii*, *Dipcadi maharashtra*, *Mariscus blatteri*, *Oxalis corniculata* var. *hispida*, *Pancratium donaldii*, *Thalictrum obovatum* and *Utricularia praeterita*. In some cases even types are not available in Indian Herbaria.

During the present work, *Ischaemum thomsonii* Stapf ex C.E.C. Fischer and *Eragrostis nigra* Nees have been collected for the first time from Maharashtra. *Kalanchoe bhidei* T. Cooke has been recollected after a lapse of 8 decades from the type locality, type of which is deposited at the Royal Botanical Gardens, Kew (K). While updating the nomenclature of the species dealt with in this flora in accordance with International Code of Botanical nomenclature (1978) one new combination has been proposed [*Wattakaka angustifolia* (Hook. f.) Sandhya Deshpande] and one variety has been sunk in the species proper, consequently making it a new synonym (*Paspalum compactum* var. *fimbriatum*).

It is clear from the data collected that the present status of flora is different in floristic composition than what it was in the beginning. Already much of the flora has been lost due to various biotic interferences such as illegal tree felling for fuel, fodder, timber, building and road construction, dams, installation of high power electric towers to power stations and encroachment of forest area for agricultural purposes etc. The havoc caused by the tourists, plant collectors and students by overzealous collections particularly of orchids and various bulbous plants is considerable.

Therefore, it is the apprehension of any nature lover that the continued exploitation of this centuries-old ecosystem will leave Mahabaleshwar and its vicinity barren unless corrective measures are initiated. It is suggested that forest areas around Mahabaleshwar and Panchgani harbouring rich flora and exhibiting significant diversity be declared as biosphere reserves as already done in Koyna catchment area. This is the only solution to ensure protection and conservation of our

natural plant wealth to conserve different types of habitats, rejuvenation of depleted forests, untapped resources for posterity.

One of the major objectives of this work was to prepare an inventory of the plants present in this area, provide a means of identifying them, which is a prerequisite for the actual implementation of conservation plan. It is hoped that the present flora would be useful to botanists, ecologists, foresters, agriculturists, university and college students, people interested in indigenous plant medicines, pharmaceutical companies, plant conservationists and various other nature lovers and professionals interested in the plant wealth of the area.

KEY TO THE FAMILIES

1. Leaves usually with reticulate venation ; flowers usually 4 - 5 - merous ; cotyledons usually 2 :

2. Perianth 2 - or - multiseriate :

3. Petals usually free ; stamens often numerous :

4. Stamens hypogynous ; calyx lobes usually free :

5. Sepals usually imbricate in bud, if valvate, then sepals free :

6. Sepals usually free, if united below, then petals dissimilar :

7. Stamens usually more than 12, if fewer, then sepals and petals 4 with a 2 - valved capsule or berry :

8. Sepals 2 - 3, deciduous :

9. Trees ; petals multiseriate ... MAGNOLIACEAE

9. Herbs ; petals uniserial :

10. Leaves entire ; sap watery ; sepals 2, petals 4 - 5 ... PORTULACACEAE

10. Leaves lobed ; sap yellow ; sepals 2 and petals 4 or sepals 3 and petals 6 ... PAPAVERACEAE

8. Sepals 4 or more, deciduous or persistent :

11. Aquatic plants ; petals many seriate ... NYMPHARACEAE

11. Terrestrial plants ; petals 4 - 8, 1 - 2 - seriate :

12. Sepals deciduous :

13. Carpels free when ripe ; ovule 1 ... RANUNCULACEAE

13. Carpels united in a 1
locular ovary ; ovules
2 - many :
14. Sepals 4 ; ovary and
fruit borne on a long
gynophore ... **CAPPARACEAE**
14. Sepals 5 ; ovary and
fruit sessile :
15. Plants usually
thorny ; petals
absent ; fruit a
glabrous berry ... **FLACOURTIACEAE**
15. Plants not
thorny ; petals
present ; fruit a
bristly capsule ... **BIXACEAE**
12. Sepals persistent :
16. Leaves opposite or
whorled ... **CLUSIACEAE**
16. Leaves alternate :
17. Stamens attached to
the bases of and
deciduous with
the petals ... **TERNSTROE-
MIACEAE**
17. Stamens free from
the petals ... **DILLENIACEAE**
7. Stamens not more than 10 :
18. Flowers 3 - merous ... **MENISPERMACAE**
18. Flowers 4 - 5 - merous :
19. Petals 4 ; stamens 6 ... **BRASSICACEAE**
19. Petals usually 5, rarely 3 - 4 ;
stamens as many as or twice as
many as the sepals and petals :
20. Ovary 1 - celled :
21. Herbs ; stamens twice
as many as sepals ... **CARYOPHYLLACEAE**
21. Trees ; stamens as
many as the sepals ... **PITTOSPORACEAE**

20. Ovary 2 - or more - celled ;
if 1 - celled then distinctly
stipitate :
22. Filaments more or less
united ; leaves simple :
23. Flowers regular ;
sepals and petals
4 - 5 ; styles 3 - 5 ... LINACEAE
23. Flowers irregular ;
sepals 5 ; petals
usually 3, if 4 - 5,
then keeled ... POLYGALACEAE
22. Filaments free, if united
at base then leaves
compound or deeply
palmately lobed ; leaves
simple or compound :
24. Leaves exstipulate ... SAPINDACEAE
24. Leaves stipulate :
25. Seeds many ... ELATINACEAE
25. Seed 1 :
26. Seeds erect... STAPHYLEACEAE
26. Seeds pen-
dulous :
27. Leaves compound, opposite ; stamens
10, free ... ZYGOHYLLACEAE
27. Leaves simple, if compound, then alter-
nate ; stamens 5 - 10, often united at
base :
28. Flowers irregular ; stamens 5 ... BALSAMINACEAE
28. Flowers regular ; stamens 8 - 10 :
29. Climbers ; leaves simple,
petiolate ; 3 petals fringed at
base ... TROPÆOLACEAE
29. Erect herbs ; leaves com-
pound ; petals not fringed ... OXALIDACEAE
6. Sepals more or less united at base :
30. Leaves pellucid gland - dotted ... RUTACEAE

BOTANICAL SURVEY OF INDIA

30. Leaves not gland - dotted :

31. Leaves opposite ; stamens 10 ; disk obscure ... MALPIGHIACEAE

31. Leaves alternate, if opposite, then disk large or stamens 5 :

32. Carpels syncarpous :

33. Trees ; leaves 2 - 3 - pinnate ; staminodes 5 - 7 ; style solitary ... MORINGACEAE

33. Climbing shrubs ; leaves simple ; staminodes absent ; styles 3 ... ANCISTROCLADACEAE

32. Carpels syncarpous and septate or apocarpous :

34. Stamens alternate with the petals :

35. Ovules and seeds pendulous, if horizontal (some Meliaceae) then filaments united into a tube :

36. Leaves simple ... ICACINACEAE

36. Leaves usually compound, if simple, then the filaments united into a tube :

37. Filaments free ; fruit drupaceous ; leaflets opposite ... SIMAROUBACEAE

37. Filaments usually united into a tube, if free, then the fruit capsular or the leaflets alternate ... MELIACEAE

35. Ovules and seeds erect or ascending :

38. Ovary 1 - celled, if
2 - 5 - celled, then
leaves compound ... **ANACARDIACEAE**
38. Ovary 3 - 5 - celled ;
leaves simple :
39. Stamens 4 - 5 ;
seeds arillate,
usually albu-
minous ... **CBLASTRACEAE**
39. Stamens 3 ;
seeds not
arillate, not
albuminous ... **HIPPOCRATEACEAE**
34. Stamens opposite the
petals :
40. Leaves exstipulate,
ovules and seeds pen-
dulous ; fruits 1
celled, 1 - seeded ... **OPILIACEAE**
40. Leaves stipulate ; ovules
and seeds erect or
ascending ; fruits
usually 2 - 6 - seeded :
41. Scandent herbs or
shrubs, rarely
erect, usually
tendrillar ; ovary
2 - celled, cells 2 -
ovuled ... **VITACEAE**
41. Erect shrubs, with-
out tendrils ; ovary
3 - 6 - celled, cells
1 - ovuled ... **LERACEAE**
5. Sepals usually valvate in bud, if imbricate, then
petals valvate or bisexual flowers 3 - merous :
42. Flowers 3 - merous ; sepals free, rarely
united ; leaves simple ... **ANNONACEAE**
42. Flowers 4 - 6 - merous, if 3 - merous, then
leaves compound or petals 5 ; sepals usually
united :
43. Filaments united into a column or cup :

44. Stamens usually 15, sometimes few, in a column or cup around the style or if stamens numerous, then petals absent ... STERCULIACEAE
44. Stamens numerous, rarely few, in a column around the style with only short free filaments or dividing into groups opposite the petals :
45. Leaves simple ; epicalyx usually present ... MALVACIEAE
45. Leaves digitately compound ; epicalyx absent ... BOMBACACEAE
43. Filaments free, rarely connate at base :
46. Leaves imparipinnate ... BURSERACEAE
46. Leaves simple, entire or lobed :
47. Stamens as many as and usually adnate to the base of the petals ... RHAMNACEAE
47. Stamens numerous or at least twice as many as and free from the petals :
48. Petals ciliate or laciniate ; stamens inserted on the disk between glands ; fruit a drupe ... ELAEOCARPACEAE
48. Petals not ciliate or laciniate ; stamens borne on a torus, glands absent ; fruit capsular or separating into cocci ... TILIACEAE
4. Stamens epigynous or perigynous calyx lobes united :
49. Stems fleshy, flat, articulated, spiny ... CACTACEAE
49. Stems herbaceous or woody, if fleshy, then not flattened or articulated :
50. Ovary syncarpous, usually free from the calyx, occasionally inferior or semi-inferior, 1 - celled :
51. Flowers unisexual ... CARICACEAE

51. Flowers bisexual :

52. Small herbs ; leaves glandular hairy ; corona absent ... DROSERACEAE

52. Climbers ; leaves not glandular - hairy, corona present ... PASSIFLORACEAE

50. Ovary of 1 - or more free carpels, or if carpels united, then more than 1 - celled or if 1 - celled, then small herbs with pendulous ovules or leaves radical and eglandular :

53. Ovules attached to the inner angles or the bases of the carpels or cells, if to the apex, then ovules many :

54. Carpels solitary ; styles terminal ; leaves usually stipulate ; ovules on the inner angle of carpels ... FABACEAE

54. Carpels many or if solitary, then styles not terminal or ovules at the base of the carpels and leaves exstipulate :

55. Flowers unisexual :

56. Erect herbs, succulent ; stamens many, united ; styles free or united at base only ; fruits winged ... BRONNIACEAE

56. Climbers or prostrate herbs, not succulent ; stamens usually 3 ; styles united or free only at apex ; fruits not winged ... CUCURBITACEAE

55. Flowers bisexual, if polygamous then petals absent :

57. Carpels free or if ultimately united, at least the styles distinct :

58. Stamens numerous ; leaves stipulate ... ROSACEAE

58. Stamens 5 - 10 ; leaves exstipulate :

59. Carpels free ;
sepals and
petals 4 - 5 ;
fruit follicular :

60. Fleshy herbs ;
leaves simple,
opposite,
rarely upper
alternate ... CRASSULACEAE
60. Scandent
shrubs or
trees ; leaves
alternate, 1 -
foliolate or
imparipin-
nate ... CONNARACAE
59. Carpels united,
or if free, then
petals absent ;
fruit capsular :

61. Ovary 1 -
celled ;
ovules pen-
dulous ... VAHLIACEAE
61. Ovary
usually 2 -
5 - celled, or
if 1 - celled,
then petals
absent ;
ovules axile
or basal :

62. Stipules
memb-
ranous,
fuga-
cious ;
stamens
3 - 5 ... MOLLUGINACEAE
62. Stipules
absent ;
petioles
dilated ;
stamens
5 - 20 ... AIZOACEAE
57. Carpels and styles
united throughout :

63. Calyx lobes imbricate, or if valvate, then trees with flowers in long pendulous racemes and fruit a berry :

64. Stamens as many as or twice as many as petals ; petals contorted in bud ... **MELASTOMATACEAE**

64. Stamens numerous ; petals imbricate in buds :

65. Leaves opposite, usually gland - dotted ... **MYRTACAE**

65. Leaves alternate, not gland - dotted ... **LECYTHIDACEAE**

63. Calyx lobes valvate :

66. Ovary completely or half adnate to the calyx tube ... **ONAGRACEAE**

66. Ovary free from the calyx tube :

67. Ovary and fruit 10 - 15 - celled ... **SONNERATIACEAE**

67. Ovary and fruit 1 - 6 - celled ;

68. Usually herbs or shrubs ; stamens 8 - 12, rarely trees with

- numerous stamens ;
petals not wrinkled :
plants wild ... LYTHRACEAE
68. Shrubs or small
trees ; stamens nume-
rous ; petals wrin-
ked ; plants always
cultivated ... PUNICACEAE
53. Ovules pendulous from the apex of
stipels or cells :
69. Ovule 1 in each cell ; flowers
unisexual :
70. Herbs ; fruits dry with oil
canals ... APIACEAE
70. Climbing shrubs ; fruits
fleshy without oil canals ... ARALIACEAE
69. Ovules 2 or more in each cell, or
if only 1, then aquatic herbs with
unisexual flowers :
71. Aquatic herbs ; styles 4 ;
ovules solitary ... HALORAGACEAE
71. Terrestrial shrubs or trees ;
styles solitary ; ovules more
than one :
72. Leaves opposite, stipu-
late ; petals fimbriate ;
fruits not winged ... RHIZOPHORACEAE
72. Leaves opposite or
alternate, exstipulate ;
petals not fimbriate ;
fruits usually winged ... COMBRETACEAE
3. Petals united ; stamens usually less than 12 :
73. Ovary inferior ; stamens as many as, rarely less
than and always alternate with the corolla lobes :
74. Stamens free from the corolla :
75. Corolla irregular, 2 - lipped ; anthers
connate at base ... LOBELIACEAE
75. Corolla regular ; anthers free ... CAMPANULACEAE

74. Stamens inserted on the corolla :

76. Leaves opposite or whorled, usually stipulate ; anthers free ; ovary 2 - 10 - celled ... RUBIACEAE

76. Leaves usually alternate, exstipulate ; anthers united into a tube ; ovary 1 - celled ... ASTERACEAE

73. Ovary superior, or if inferior, then stamens numerous or if semi-inferior, then stamens opposite the corolla lobes :

77. Ovary 1 - celled ; placentation free central :

78. Corolla 2 - lipped ; stamens 2 ... LENTIBULARIACEAE

78. Corolla regular ; stamens as many as the corolla lobes :

79. Calyx with stipulate glands ; styles 5 - lobed ; ovule solitary ... PLUMBAGINACEAE

79. Calyx eglandular ; styles not lobed ; ovules 2 - many :

80. Shrubs or trees ; leaves often gland - dotted ; fruit a berry ... MYRSINACEAE

80. Herbs ; leaves not gland - dotted ; fruit a capsule ... PRIMULACEAE

77. Ovary 2 - many - celled, placentation axile, or if 1 - celled, then placentation parietal :

81. Stamens free from the corolla ... EBENACEAE

81. Stamens inserted on the corolla :

82. Ovary 3 or more carpelled, or if 2 - carpelled, then stamens as many as and opposite the corolla - lobes or numerous :

83. Ovary superior, 2 - 8 - celled ; ovule 1 in each cell, axile ; fruit a berry ... SAPOTACEAE

83. Ovary inferior, 3 - celled ; ovules 2 - 4 in each cell, pendulous ; fruit a drupe ... SYMPLOCACEAE

82. Ovary 2 - carpelled or if 3 - 5 - carpelled, then stamens as many as and alternate with the corolla - lobes or flowers fewer :

84. Corolla regular or slightly oblique ; stamens as many as and alternate with the corolla - lobes, or if corolla oblique or irregular and stamens fewer than the lobes, then corolla - limb plicate or subcontorted or stamens 2 and alternate with carpels :

85. Leaves usually alternate, if opposite or subopposite, then ovary 4 - celled :

86. Ovules many in each cell ... SOLANACEAE

86. Ovules usually 2, rarely 1 - 4 in each cell :

87. Usually climbers ; corolla lobes plicate ... CONVOLVULACEAE

87. Erect herbs, shrubs or trees ; corolla lobes imbricate or contorted ... BORAGINACEAE

85. Leaves opposite or whorled :

88. Stamens 2 ... OLEACEAE

88. Stamens 4 or more :

89. Scapigerous herbs ; flowers dimorphic ... PLANTAGINACEAE

89. Stems well developed ; flowers monomorphic :

90. Flowers always 5 - merous ; carpels free ; styles united :

91. Pollens aggregated into pollinia attached to stigmatic glands :

92. Filaments
free ;
pollens
granu-
lar ... PERIPLACACEAE
92. Fila-
ments
united ;
pollens
waxy ... ASCLERIADACEAE
91. Pollens not
aggregated
into pol-
linia ... APOCYNACEAE
90. Flowers 4 - 5 -
merous ; carpels
and styles always
united :
93. Shrubs or
small trees ;
stipules re-
presented by
a transverse
line ; corolla
lobes valvate
or imbricate ... BUDDLEJACEAE
93. Herbs ; sti-
pules absent ;
corolla lobes
contorted :
94. Aquatic
herbs ;
stems
cylind-
rical ... MELANTHACEAE
94. Plants
terres-
trials ;
stems
quad-
rangular... GENTIANACEAE
84. Corolla irregular or distinctly
oblique, lobes overlapping ;
or if regular and cells of ovary
1 - 2 - ovuled, then embryo with
inferior radicle ;

95. Carpels usually 1 - ovuled,
if 2 - ovuled, then ovules
collateral, not super-
posed and fruit indehiscent :

96. Ovary usually lobed
with 2 - axillary ovules
in each cell ; stigma
usually entire ; fruits
usually drupaceous ... VERBENACEAE

96. Ovary usually entire, or
if lobed, then with one
basal ovule in each cell ;
stigma usually 2 - lobed ;
fruits usually nutlets ... LAMIACEAE

95. Carpels 2 - many ovuled, or
if only 2 - ovuled, then
ovules superposed or if
collateral then fruit 2 - valved :

97. Ovary 1 - celled :

98. Leafless herbs,
parasitic on roots ... OROBANCHACEAE

98. Leafy herbs or
undershrubs, not
parasitic ... Gesneriaceae

97. Ovary 2 - celled :

99. Fruits opening elasti-
cally from the apex
of 2 loculicidal
valves :

100. Erect or prostrate
herbs or
shrubs ... ACANTHACEAE

100. Climbers ... THUNBERGIACEAE

99. Fruits not opening
as above :

101. Leaves
compound ;
seeds winged ... BIGNONIACEAE

101. Leaves simple,
sometimes
lobed ; seeds
not winged :

102. Ovules

many on
placentas
attached to
the middle
of the
septum ... SCROPHULARIACEAE

102. Ovules

many, 1
seriatel
under the
leaves of
a project-
ing parie-
tal 2 -
bladed
placenta ... PEDALIACEAE

2. Perianth absent or 1 - seriate :

103. Flowers often bisexual ; or if unisexual, then embryo peripheric - annular or the ovule not distinguishable from the carpillary tissue and the seeds without testa or perianth lobes 2 - seriate and anthers opening by valves ; perianth usually single, if double, then the outer whorl small, seeds without testa and stamens opposite the inner perianth lobes :

104. Ovary inferior :

105. Stamens 6 - 12 ; ovary 4 - 6 celled ;
ovules many ... ARISTOLOCHIACEAE

105. Stamens as many as the perianth lobes ;
ovary 1 - celled ; ovules 1 - 4 :

106. Shrubs or trees, frequently root -
parasitic ; ovules 2 - 4, pendulous
from a free - central column ... SANTALACEAE

106. Shrubs, stem parasitic ; ovules
solitary, erect ... LORANTHACAE

104. Ovary superior :

107. Seeds usually with copious albumen, if
albumen absent or scanty, then embryo
curved :

108. Leaves stipulate ... POLYGONACEAE

108. Leaves exstipulate :

109. Perianth tubular ... NYCTAGINACEAE

109. Perianth lobes connate only at base :
 110. Leaves membranous ; perianth scarious ... AMARANTHACEAE
 110. Leaves fleshy ; perianth not scarious ... CHENOPODIACEAE
107. Seeds usually exalbuminous, if albuminous, then embryo straight :
 111. Aquatic herbs ; flowers regular, 3 - merous with a perianth or irregular, 2 - merous, without a perianth ... PODOSTEMACEAE
 111. Terrestrial shrubs or trees ; perianth always present :
 112. Perianth tube narrowed above the ovary ; lobes 4, valvate ; stamens 4, alternate with the lobes ... ELABAGNACEAE
 112. Perianth tube not narrowed above the ovary ; lobes 4 - 6, imbricate ; stamens 2 - 4 - seriate :
 113. Perianth lobes 2 - seriate ; filaments with 2 glands at base ... LAURACEAE
 113. Perianth lobes 1 seriate ; filaments without glands ... THYMELAEAE
 103. Flowers usually unisexual, if bisexual, then perianth absent ; perianth when present, single, or if double, then the outer whorl conspicuous with the stamens either all central or the outer whorl of stamens alternate with the inner perianth lobes ; or if the stamens of the outer whorl opposite the inner perianth lobes, then the seed with a testa and the plant not parasitic ; anthers never opening by valves :
 114. Leafless herbs or trees :
 115. Root parasitic herbs ... BALANOPHORACEAE
 115. Trees, not parasitic ... CASUARINACEAE
 114. Leafy herbs, shrubs or trees :

116. Ovary syncarpous, 1 - celled ; ovules 4 or more, 2 - seriatelv superposed on each placenta ... **SALICACEAE**
116. Ovary 1 - carpelled, 1 - celled ; or if syncarpous, then 2 - more - celled ; ovules 1 - 2, collateral in each cell ; or if ovary imperfectly 3 - 4 - celled with 6 - 8 ovules in each, then flowers bisexual :
117. Ovary usually 2 - more - celled,
rarely 1 - celled with 2 ovules in
each cell ; or if ovary 1 - celled,
1 - ovuled, then stamens numerous ... **EUPHORBIACEAE**
117. Ovary 1 - celled, 1 - ovuled :
118. Stipules present :
119. Perianth always absent ;
seeds with copious
albumen and a minute
embryo ... **PIPERACEAE**
119. Perianth usually present ;
seeds with no or little
albumen and a large
embryo :
120. Filaments inflexed
in bud with reversed
anthers :
121. Plants with
milky juice ;
flowers enclosed
within a fleshy
receptacle ... **MORACEAE**
121. Plants with
watery juice ;
flowers not
enclosed within
a receptacle ... **URTICACEAE**
120. Filaments not
inflexed in bud ;
anthers not reversed ... **ULMACEAE**
118. Stipules absent ... **MYRISTICACEAE**
1. Leaves usually with parallel venation ; flowers usually 3
merous ; cotyledon 1 :

122. Perianth 2 - seriate, usually both corolline, or if only the inner series corolline, the perianth lobes much larger than those of the outer series, or if perianth 1 - seriate, then ovary 1 - celled and scapigerous herbs :

123. Seeds minute, exaluminous :

124. Outer perianth lobes calycine, inner corolline or absent ; flowers usually unisexual ... HYDROCHARITACEAE

124. Perianth lobes of both series corolline ; flowers bisexual :

125. Flowers irregular ; styles and stamens united into a column ; ovary 1 - celled ... ORCHIDACEAE

125. Flowers regular ; styles and stamens not united ... BURMANNIACEAE

123. Seeds conspicuous, albuminous :

126. Ovary superior :

127. Outer perianth lobes calycine, inner corolline ... COMMELINACEAE

127. Both perianth series corolline :

128. Plants woody ; flowers unisexual ... SMILACACEAE

128. Plants usually herbaceous ; flowers bisexual ... LILIACEAE

126. Ovary inferior :

129. Flowers irregular ... ZINGIBERACEAE

129. Flowers almost regular :

130. Ovules many in each cell, 2 - seriate :

131. Shrubs ; flowers in panicles on stout scapes ... AGAVACEAE

131. Herbs ; flowers in spicate racemes or umbels on slender scapes :

132. Rootstock tuberous ; leaves distinctly nerved ; perianth not showy ... HYPOXIDACEAE

132. Rootstock bulbous :
 leaves not distinctly
 nerved ; perianth large,
 showy ... AMARYLLIDACEAE
130. Ovules 2 - many in each cell ; not
 2 - seriate :
133. Erect herbs ; leaves radical ;
 fruits not winged ... HAEMODORACEAE
133. Climbing shrubs ; leaves
 caudine ; fruits winged ... DIOSCOREACEAE
122. Perianth 2 - seriate, usually both calycine, or if inner
 series corolline, then its lobes not larger than those of
 the outer ones, or if the perianth 1 - seriate, then
 calycine and either terrestrial or aquatic herbs with
 1 - carpelled or apocarpous ovary, or perianth reduced
 to scales or bristles or wanting, or if perianth lobes of
 inner series corolline and larger than those of the outer
 one, then aquatic herbs with apocarpous ovary :
134. Perianth 2 - seriate ... ARBACEAE
134. Perianth absent or reduced to scales or bristles, or
 if present, then plants aquatic :
135. Inflorescence of spadices or spikes ; or if
 flowers solitary, then not in the axils of
 modified, glumaceous bracts :
136. Terrestrial plants : flowers on a spadix
 subtended and usually covered by a
 modified spathe ... ARACEAE
136. Aquatic or marshy plants, sometimes
 free-floating ; flowers not on a spadix,
 or if so, then not covered by a spathe :
137. Free floating herbs ... LEMNACEAE
137. Fixed herbs with creeping rootstock
 and floating or submerged stems :
138. Perianth of filiform bristles ;
 ovary borne on a hairy
 synophore ... TYPHACEAE
138. Perianth not filiform, 3 -
 lobed ; ovary sessile ... APOHECTONACEAE

135. Inflorescence of heads or spikelets composed of solitary flowers in the axils of glumaceous bracts :
139. Flowers in heads, always unisexual; perianth lobes 3 - 6, membranous ... ERIOCaulACEAE
139. Flowers in spikelets with imbricating glumes, uni- or bisexual, rarely dioecious; perianth absent or reduced to scales or bristles :
140. Stems solid; leaf sheaths rarely with a ligule, closed in front; fruit a nut with the seed free within ... CYPERACEAE
140. Stems usually hollow except at nodes; leaf sheaths usually with a ligule, split in front; fruit a grain with seed coat adhering to the pericarp ... POACEAE

RANUNCULACEAE

1. Climbers; leaves opposite ... CLEMATIS
1. Erect herbs; leaves alternate :
2. Leaves simple; petals present ... DELPHINIUM
2. Leaves 3 - foliolate; petals absent ... THALICTRUM

CLEMATIS L.

1. Leaves glabrous :
2. Leaves bipinnately compound; leaflets 3; connective not produced beyond anther lobes ... *C. gouriana*
2. Leaves pinnately compound; leaflets 3 - 5; connective produced beyond anther lobes ... *C. hedysarifolia*
1. Leaves densely hairy :
3. Flowers yellow; filaments hairy in the middle ... *C. wightiana*
3. Flowers white; filaments glabrous ... *C. triloba*

Clematis gouriana Roxb. ex DC. Syst. Nat. 1 : 138. 1817; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 4. 1872; Cooke, Fl. Pres. Bombay

1 : 2. 1958 (Repr. ed.) ; Rau in J. Mysore Univ. 28B : 59. 1982. *Morvel.*

Climbers. Leaflets ovate, rounded at base, acuminate at apex, 3-6 × 1.5-3.5 cm, middle lobe larger, entire or irregularly toothed. Flowers fragrant in compound panicles, 0.5-1.0 cm across. Achenes ovoid, ca 0.3 cm long.

Fls. & Frts. : November - February.

Illus. : Wight, Ic. tt. 933 & 934. 1845 ; Gupta in Bull. natn. bot. Gdns. Lucknow 54 : t. 9. 1961 & 80 : t. 27. 1963.

Distrib. : Common along ghats. Bamnoli, Dicholi, Jadholi, Kelghar ghat, Kisrude, Koyna, Kumbharli ghat, Mahabaleshwar - Pratapgad, Shirshingi.

Clematis hedysarifolia DC. Syst. Nat. 1 : 148. 1817 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 4. 1872 ; Cooke, Fl. Pres. Bombay 1 : 3. 1958 (Repr. ed.) ; Sant. in Rec. Bot. Surv. India 16(1) : 1. 1967 (3rd Rev. ed.) ; A.S. Rao in Bull. Bot. Surv. India 6 : 19, t. 1 - 2. 1965 ; Sant. *ibid.* 59 ; Rau in J. Mysore Univ. 28B : 60. 1982. *C. naravelloides* O. Ktze. in Verh. Bot. Ver. Brandenb. 26 : 119. 1885.

Climbers, wooden young branches puberulous. Leaflets ovate lanceolate, base rounded, apex acuminate, 3-8 × 2-5 cm. Flowers in compound panicles, 1.0-2.5 cm across. Achenes ovoid, 0.3-0.5 cm long, compressed, reddish, hairy.

Fls. & Frts. : November - February.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 1, t. 4. 1909 ; A.S. Rao, *op. cit.* ; Gupta in Bull. natn. bot. Gdns. Lucknow 54 : t. 12. 1961.

Distrib. : Frequent along ghats. Dhokewadi, Jadholi, Kumbharli ghat.

C. triloba Heyne ex Roth, Nov. Pl. 251. 1821 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 3. 1872 ; Lisboa in J. Roy. Asiatic Soc. (Bombay) 15 : 208. 1883 ; Cooke, Fl. Pres. Bombay 1 : 2. 1958 (Repr. ed.) ; Rau in J. Mysore Univ. 28B : 63. 1982.

Climbers, branches tomentose. Leaves simple or unipinnate, ovate-orbicular, entire or 1-7 lobed. Flowers in axillary, corymbose panicles ; bracts ovate, foliaceous. Achenes ovoid, flat, silky with long feathery tails.

Fls. & Frts. : September - November.

Illus. : Gupta in Bull. natn. bot. Gdns. Lucknow 54 : t. 18. 1961.

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

Clematis wightiana Wall. ex Wight & Arn. Prodr. 2. 1834 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 5. 1872 ; Cooke, Fl. Pres. Bombay 1 : 3. 1958 (Repr. ed.) ; Rau in J. Mysore Univ. 28B : 63. 1982.

Climbers, woody ; branches villous. Leaves 3 - 5 foliolate ; leaflets ovate, acute at apex, 4 - 6 × 2.5 - 4.0 cm. margins toothed. Flowers in axillary, dichotomous cymes ; bracts and bracteoles ovate, villous. Achenes elongate, compressed, 0.2 - 0.4 cm long with feathery tails.

Fls. & Frts. : December - February.

Illus. : Gupta in Bull. natn. bot. Gdns. Lucknow 54 : t. 19. 1961.

Distrib. : Common in evergreen forests. Mahabaleshwar, on way to Panchgani.

DELPHINIUM L.

Delphinium malabaricum (Huth) Munz in J. Arnold Arbor. 49 : 106, f. 14. 1968. *D. dasycaulon* Fresen. var. *malabaricum* Huth in Bot. Jahrb. 20 : 435. 1895. *D. dasycaulon* auct. non Fresen. 1837 ; Hook. f. Fl. Brit. India 1 : 25. 1872 ; Cooke, Fl. Pres. Bombay 1 : 5. 1958 (Repr. ed.) ; Rau in J. Mysore Univ. 28B : 65. 1982.

Herbs, ca 1 m high ; stem white hairy. Leaves reniform or suborbicular, 2 - 3 cm across. Flowers blue in racemes ; lower bracts leafy, 2 - 3 - lobed, upper linear ; bracteoles 2, subulate ; sepals dark blue ; spur subconic, obtuse. Follicles 3, oblong, apiculate.

Fls. & Frts. : September - December.

Illus. : Munz, *op. cit.*

Distrib. : Rare, growing on exposed hill slopes among grasses, endemic to Western ghats. Mahabaleshwar, 158900.

THALICTRUM L.

- | | | |
|--|-----|---------------------|
| 1. Stipules fimbriate ; sepals broadly obovate | ... | <i>T. obovatum</i> |
| 1. Stipules not fimbriate ; sepals oblong | . | <i>T. dalzellii</i> |

Thalictrum dalzellii Hook. Ic. Pl. 9, t. 868. 1852 ; Cooke, Fl. Pres. Bombay 1 : 4. 1958 (Repr. ed.) ; Rau in J. Mysore Univ. 28B : 76. 1982.

Herbs, *ca* 50 cm high. Leaves 3 foliolate ; leaflets suborbicular, 2-4 cm across, margins irregularly lobed ; stipules oblong, membranous, *ca* 1 cm long. Panicles leafy, terminal. Achenes furrowed, tips hooked.

Fls. & Frts. : July September.

Illus. : Vartak in J. Univ. Poona (Sci. & Tech.) 18 : 77, t. 1. 1959.

Distrib. : Rare, usually above 1200 m in moist places along slopes. Mahabaleshwar, Laxman s.n. (BLAT).

T. obovatum Blatt. in J. Asiat. Soc. Beng. (N.S.) 26 : 339. 1930 ; Rau in J. Mysore Univ. 28B : 77. 1982.

Herbs, *ca* 45 cm high. Leaves 1 - 2 foliolate at apex, 3 - foliolate at base ; leaflets orbicular, *ca* 3 cm across ; margins dentate ; stipules oblong, acute, *ca* 1 cm long, strongly nerved. Panicles leafy, terminal. Flowers sweet scented, *ca* 0.8 cm across ; sepals broadly obovate, clawed, white ; ovary stipitate.

Fls. & Frts. : July.

Distrib. : Rare, represented by the type collection only. Mahabaleshwar-Panchgani, E. Blatter p. 26 (BLAT).

DILLENIACEAE

DILLENIUM L.

Dillenia pentagyna Roxb. Pl. Cor. 1 : 21, t. 20. 1795 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 38. 1892 ; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 6. 1897 ; Cooke, Fl. Pres. Bombay 1 : 7. 1958 (Repr. ed.) ; Hoogl. in Blumea 7 : 117. 1952 ; N.C. Majumdar in Fasc. Fl. India 2 : 7. 1979. 'Karamvel'.

Trees, 8–10 m high. Leaves oblong-lanceolate, ca 60 cm long, at the apex of branches, downy when young. Fruits in axillary fascicles with persistent sepals, 5-seeded.

Flts. : June.

Illus. : Roxb., *op. cit.*

Distrib. : Koyna, Kochhar 153517 ; Mahabaleshwar, Birdwood *op. cit.*

Notes : Though, Cooke (*op. cit.*) has reported it as common along Western Ghats, besides Birdwood's, there is only one collection from Koyna.

MAGNOLIACEAE

CULTIVATED SPECIES

Michelia champaca L. Sp. Pl. 536. 1753 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 42. 1872 ; Cooke, Fl. Pres. Bombay 1 : 8. 1958 (Repr. ed.). '*Pivla chapha*'.

Trees, 6–8 m high. Leaves lanceolate, acute at apex, 8–16 × 5–8 cm. Flowers yellow, axillary, solitary.

Fls. : May–August.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 12, f. 8. 1909 ; Khanzada & Khan in Nasir & Ali, Fl. W. Pak. 64 : 2, f. 1. 1974.

Distrib. : Cultivated for fragrant flowers. Koyna.

ANNONACEAE

1. Large climbers	...	UVARIA
1. Shrubs or small trees :		
2. Connective produced beyond the anther lobes :		
3. Flowers straw coloured, solitary ; carpels 2 more-seeded	...	MEIOGYNE
3. Flowers green in fascicles ; carpels 1-seeded	...	POLYALTHIA
2. Connective not produced beyond the anthers	...	SAGERAEA

MEIOGYNE Miq.

Meiogyne pannosa (Dalz.) Sinclair in Sarawak Mus. J. 5 : 604. 1951 ; Raiz. in Indian Forester 84 : 495. 1958. *Unona pannosa* Dalz. in Hook. Kew J. Bot. 3 : 207. 1851 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 58. 1872 ; Cooke, Fl. Pres. Bombay 1 : 11. 1958 (Repr. ed.).

Trees, ca 8 m high ; young branches puberulous. Leaves ovate lanceolate, pubescent and pellucid dotted beneath. Flowers axillary, brown tomentose. Carpels many, ovoid.

Fls. & Frts. : March October.

Illus. : King in Ann. Roy. Bot. Gard. Calcutta 4 : 55, t. 72. 1893 ; Talbot, For. Fl. Bombay Pres. & Sind 1 : 19, f. 12. 1909.

Distrib. : Rare in semi-evergreen forests. Koyna. *Kochhar* 154379.

POLYALTHIA Bl.

Polyalthia cerasoides (Roxb.) Bedd. Fl. Sylv. t. I. 1896 ; Bth. & Hook f. in Hook. f. Fl. Brit. India 1 : 63. 1872 ; Lee, Bombay Gazett. 19 : App. - A, 1885 ; Cooke, Fl. Pres. Bombay 1 : 14. 1958 (Repr. ed.) ; Sant. & Wagh in Bull. Bot. Surv. India 5 : 107. 1964. *Uvaria cerasoides* Roxb. Pl. Cor. 1 : t. 38. 1795.

Shrubs or small trees ; young branches rufous tomentose. Leaves oblong lanceolate, glabrous above, pubescent beneath. Sepals ovate, acute ; petals oblong. Carpels ovoid.

Fls. : March.

Notes : Included on the authority of Lee (*op. cit.*) who reported it from Mahabaleshwar. Occurrence of this species seems to be rather doubtful as no subsequent collector could locate it (Bole & Almeida, 1981).

SAGERAEA Dalz.

Sageraea laurifolia (Grah.) Blatt. in J. Bombay nat. Hist. Soc. 34 : 294. 1930. *Guatteria laurifolia* Grah. Cat. Bombay Pl. 4. 1839. *Bocagea dalzellii* Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 92. 1872 ; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 6. 1897 ; Cooke, Fl. Pres. Bombay 1 : 18. 1958 (Repr. ed.).

Trees. Leaves oblong-lanceolate. Flowers white, solitary or in axillary fascicles on woody tubercles.

Fls. : November.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 33, f. 23. 1909.

Notes : Included on Birdwood's report from Mahabaleshwar.

UVARIA L.

Uvaria lurida Hook. f. & Thoms. Fl. Ind. 1 : 101. 1855 & in Hook. f. Fl. Brit. India 1 : 50. 1872; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 6. 1897.

This is a species growing in Khasia Hills (Hook. f. & Thoms. *op. cit.*) and has not been reported from elsewhere. Hence the identity is doubtful and I am not able to decide in the absence of Birdwood's collection which are not available at BLAT or any other herbaria.

U. narum (Dunal) Bl. Fl. Java, Anon. 5. 1828 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 50. 1872. **Unona narum** Dunal, Anon. 99. 1817 ; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 6. 1897 ; Cooke, Fl. Pres. Bombay 1 : 9. 1958 (Repr. ed.).

Climbers. Leaves oblong-lanceolate. Flowers reddish, terminal, solitary ; sepals 3, orbicular-ovate, tomentose ; petals 6, 2 seriate ; stamens many.

Fls. : November.

Note : Included on Birdwood's report from Mahabaleshwar.

CULTIVATED SPECIES

Annona reticulata L. Sp. Pl. 537. 1753 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 78. 1872 ; Cooke, Fl. Pres. Bombay 1 : 15. 1958 (Repr. ed.). 'Ramphal'.

Trees, *ca* 8 m high. Leaves oblong-lanceolate, acute at apex. Flowers 2 - 4 together on lateral pedicels. Fruits globose, yellowish-red when ripe.

Fls. & Frts. : July September.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 28, f. 18. 1909.

Distrib. : Cultivated for edible fruits. Vasota.

***Annona squamosa* L. Sp. Pl. 537. 1753 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 78. 1872 ; Cooke, Fl. Pres. Bombay 1 : 15. 1958 (Repr. ed.). 'Sitaphal'.**

Trees, 5–6 m high. Leaves elliptic, apex subacute. Flowers solitary or 2–4 together on extra axillary branches. Fruits globose, 5–7 cm across, yellowish-green when ripe.

Fls. & Frts. : April - July.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 27, f. 17. 1909.

Distrib. : Cultivated for edible fruits, Dhebewadi, Mahuli.

MENISPERMACEAE

1. Leaves peltate ; stamens connate :

2. Leaves glabrous beneath ... **STEPHANIA**

2. Leaves hairy beneath or on both surfaces :

3. Leaves elongate-deltoid ; female flowers bracteate ... **CYCLEA**

1. Leaves reniform ; female flowers bracteate ... **CISSAMPELOS**

1. Leaves not peltate ; stamens free :

4. Branches and leaves densely villous ; leaves ovate-oblong or sub-hastate ; flowers in cymes ... **COCCLUS**

4. Branches and leaves glabrous ; leaves cordate or reniform ; flowers in panicles :

5. Stems grooved ; leaves cordate ... **TINOSPORA**

5. Stems not grooved ; leaves reniform ... **DIPLOCLISIA**

CISSAMPELOS L.

***Cissampelos pareira* L. Sp. Pl. 1031. 1753 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 103. 1872 ; Cooke, Fl. Pres. Bombay 1 : 24. 1958 (Repr. ed.). 'Pahadnul'.**

Climbers, branches striate, pubescent. Leaves 3 - 7 cm across. Male flowers in axillary cymes ; sepals obovate, concave, hairy ; petals connate into a short cup ; female flowers in axillary racemes ; bracts reniform, villous ; sepals ovate, pubescent ; petals half the length of the sepals. Drupes subglobose, red, hairy.

Fls. & Frts. : July August.

Illus. : Maheshwari, Ill. Fl. Delhi f. 2. 1966.

Distrib. : Common along forest edges. Koyna-Karad, Maha-baleshwar, Pandavgad, Salve.

Notes : Roots used against dysentery.

COCCLUS DC.

Cocculus hirsutus (L.) Theob. in Mason, Burma ed. Theob. 2 : 657. 1883 ; Mabberley in Taxon 34 : 155. 1985. *Menispermum hirsutum* L. Sp. Pl. 341. 1753. *C. villosus* DC. Syst. Nat. 1 : 525. 1818 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 10. 1872 ; Cooke, Fl. Pres. Bombay 1 : 22. 1958 (Repr. ed.). 'Vasan-vel'.

Climbers, branches striate. Leaves 2.5 - 5.0 × 1.5 - 4.0 cm. Male flowers : sepals 2 seriate, oblong-ovate ; petals emarginate ; female flowers : sepals and petals as in the male. Drupes laterally compressed ; endocarp horse shoe shaped.

Fls. & Frts. : November January.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 42, f. 1909 ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 13. 1982.

Distrib. : Common near forest margins. Panchgani ghat, Pirachi wadi, Shamgaon.

CYCLEA Arn.

Cyclea peltata (Lam.) Hook. f. & Thoms. Fl. Ind. 201. 1855 & in Hook. f. Fl. Brit. India 1 : 104. 1872. *Menispermum peltatum* Lam. Encycl. 4 : 96. 1797. *C. burmanni* (DC.) Hook. f. & Thoms op. cit. ; Cooke, Fl. Pres. Bombay 1 : 23. 1958 (Repr. ed.).

Climbers ; leaves $6 - 10 \times 3 - 4$ cm. Flowers small, greenish. Male flowers : sepals connate, pilose ; petals connate, shorter than the sepals ; female flowers : sepals oblong ; petals orbicular. Drupes subglobose, pilose.

Fls. & Frts. : February - August.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 46, f. 29. 1909.

Distrib. : Common along ghats. Dicholi, Kelghar ghat, Kisrude, Koyna, Mahabaleshwar-Pratapgad.

DIPLOCLISIA Miers

Diplocisia glaucescens (Bl.) Diels in Engl. Pflanzenr. 46 : 225, t. 77. 1910. *Cocculus glaucescens* Bl. Bijdr. 25. 1825. *C. macrocarpus* Wight & Arn. Prodr. 12. 1834 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 101. 1872 ; Cooke, Fl. Pres. Bombay 1 : 22. 1958 (Repr. ed.). 'Ramrakh'.

Climbers ; leaves $4 - 7 \times 5.0 - 10.5$ cm ; petioles 12 cm long. Flowers yellow, fragrant ; calyx 2 seriate ; petals embracing the stamens. Drupes 1.5×1.0 cm with prominent basal style scar.

Fls. & Frts. : April - September.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 40, f. 25. 1909 ; Diels, op. cit.

Distrib. : Common along ghats in thick forests. Indoli, Koyna, Mahabaleshwar-Pratapgad, Nauja, Shirshingi.

STEPHANIA Lour.

Stephania japonica (Thunb.) Miers in Ann. Nat. Hist. 3, 18 : 14. 1866. *Menispermum japonicum* Thunb. Pl. Jap. 193. 1784. *S. hernandifolia* Walp. Rep. 1 : 96. 1842 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 103. 1872 ; Cooke, Fl. Pres. Bombay 1 : 23. 1958 (Repr. ed.).

Climbers ; leaves $4.8 - 10.0 \times 3.6 - 8.5$ cm, base rounded, apex mucronate ; petioles slender, 4.5 cm long, striate. Flowers small ; sepals ovate, acute ; petals obovate. Fruits ovoid, compressed, ridged.

Fls. & Frts. : July - October.

Illus. : Wight, Ic. t. 959. 1845 ; Talbot, For. Fl. Bombay Pres. & Sind 1 : 44, f. 28. 1909.

Distrib. : Common along ghats ; Dicholi, Kas, Kelghar ghat, Khambil chorghe ghat, Lingmala, Machutar forest, Mahabaleshwar, Tapola, Wada below Mahabaleshwar.

TINOSPORA Miers.

1. Leaves glabrous ; flowers yellow	...	<i>T. cordifolia</i>
1. Leaves tomentose beneath ; flowers green	...	<i>T. sinensis</i>

Tinospora cordifolia (Willd.) Hook. f. & Thoms. Fl. Ind. 184. 1855 & in Hook. f. Fl. Brit. India 1 : 97. 1872 ; Cooke, Fl. Pres. Bombay 1 : 19. 1958 (Repr. ed.). *Menispermum cordifolium* Willd. Sp. Pl. 4 : 826. 1805. 'Gulvel'.

Climbers ; large, woody ; bark corky. Leaves membranous, 3 - 4 × 2.5 - 4.0 cm. Flowers in long, pendulous racemes. Drupes 3 ; endocarp red, dorsally keeled.

Fls. & Frts. : April May.

Illus. : Wight, Ic. t. 485 486. 1841.

Distrib. : Rare. Medha, 165644.

Notes : Plant juice used in fever and jaundice.

T. sinensis (Lour.) Merr. in Sunyatsenia 1 : 193. 1934 & Trans. Amer. Phil. Soc. Philad. n.s. 24 : 158. 1935. *Campylus sinensis* Lour. Fl. Cochinch. 113. 1790 ; Bole & Almeida in J. Bombay nat. Hist. Soc. 77 : 453. 1981. *T. malabarica* Lam. Encycl. 4 : 96. 1797 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 96. 1872 ; Cooke, Fl. Pres. Bombay 1 : 19. 1958 (Repr. ed.).

Climbers ; leaves ovate, acuminate at apex, 10 - 15 × 7.5 - 12.5 cm ; petioles twisted at base. Flowers green in axillary racemes. Drupes ovoid, red, 1 - 3 together.

Fls. & Frts. : November January.

Illus. : Diels in Engl. Pflanzent. 46 : 133, f. 49 A - C. 1910.

Notes : Rare; included on the authority of Bole & Almeida (*op. cit.*) who reported it from Fitzgerald ghat near Mahabaleshwar.

NYMPHAEACEAE

CULTIVATED SPECIES

Nymphaea nouchali Burm. f. Fl. Ind. 120. 1768 ; Subram. Aq. Ang. 6. 1962 ; Bole & Almeida in J. Bombay nat. Hist. Soc. 77 : 454. 1981. *N. lotus* Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 114. 1872 *non* L. 1753 ; Cooke, Fl. Pres. Bombay 1 : 26. 1958 (Repr. ed.).

Herbs ; leaves peltate, orbicular or elliptic, entire or sinuate dentate. Flowers red, white or blue. Berries globular, spongy.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 178. 1841.

Notes : Ornamental plant, included on Bole & Almeida's report from Mahabaleshwar.

PAPAVERACEAE

ARGEMONE L.

Argemone mexicana L. Sp. Pl. 508. 1753 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 117. 1872 ; Cooke, Fl. Pres. Bombay 1 : 29. 1958 (Repr. ed.). 'Pivla-dhotra'.

Herbs, ca 1 m high with yellow juice. Leaves sessile, amplexicaul, 5 - 9 cm long, spiny on veins and margin. Flowers solitary, bright yellow ; calyx prickly. Capsules oblong, 2 - 3 cm long, prickly. Seeds globose, blackish-brown.

Fls. & Frts. : Throughout the year.

Illus. : Diels, in Engl. Pflanzent. 40 : 274, f. 36 B. 1909.

Distrib. : Common weed of wastelands. Koyna, Mahabaleshwar, Parli, Wai.

Note : Latex is used to cure eye ailments.

BRASSICACEAE

1. Petals usually absent, if present, white ; pods didymous ...	CORONOPUS
1. Petals always present, yellow ; pods not didymous :	
2. Leaves hairy ; pods linear, flattened ...	CARDAMINE
2. Leaves glabrous ; pods subterete ...	RORIPPA

CARDAMINE L.

Cardamine trichocarpa Hochst. ex A. Rich. Tent. Fl. Abyss. 1 : 18. 1847 ; Gamble, Fl. Pres. Madras 1 : 27. 1957 (Repr. ed.). *C. hirsuta* L. var. *subumbellata* Dalz. in Hook. J. Bot. 4 : 294. 1852. *C. subumbellata* Hook. f. & T. And. in Hook. f. Fl. Brit. India 1 : 138. 1872 ; Cooke, Fl. Pres. Bombay 1 : 32. 1958 (Repr. ed.).

Herbs, 15 - 20 cm high. Leaflets 5, terminal larger, up to 2 - 7 cm long. Flowers in lax racemes. Pods *ca* 3 cm long.

Fls. & Frts. : July - November.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 26. 1982.

Distrib. : Common in wet places, along slopes and rock crevices. Kumbharli ghat, Kusapur, Mahabaleshwar, Mahabaleshwar - Lingmala, Nauja, Panchgani, Pandavgad.

CORONOPUS L.

Coronopus didymus (L.) J.E. Sm. Fl. Brit. 2 : 691. 1800. *Lepidium didymum* L. Mant. 1 : 92. 1767. *Senebiera pinnatifida* DC. in Mem. Soc. Hist. Nat. Paris 144, t. 9. 1799 ; Cooke, Fl. Pres. Bombay 1 : 35. 1958 (Repr. ed.).

Herbs, 15 - 30 cm high. Radical leaves pinnatifid, 2 - 3 cm long, hairy ; caudine smaller. Racemes 1 - 5 cm long. Pods small, compressed, reddish brown, rugose.

Fls. & Frts. : January - March.

Illus. : Maheshwari, Ill. Fl. Delhi, f. 5. 1966.

Distrib. : Weed of roadsides and forest edges. Mahabaleshwar.

RORIPPA Scop.

Rorippa indica (L.) Hiern in Cat. Afr. Pl. Welw. 26. 1896. *Sisymbrium indicum* L. Mant. 1 : 93. 1767. *Nasturtium indicum* (L.) DC. Prodr. 1 : 139. 1824 ; Hook. f. & T. And. in Hook. f. Fl. Brit. India 1 : 134. 1872 ; Cooke, Fl. Pres. Bombay 1 : 31. 1958 (Repr. ed.).

Herbs, 10 - 15 cm high. Leaves lanceolate, 3 - 8 cm long, pinnatifid at base. Pods 1.0 - 1.5 cm long, straight. Seeds 2 seriate, numerous, red, ellipsoid.

Fls. & Frts. : November January.

Distrib. : Common in cultivated fields and wet places. Mahabaleshwar.

CULTIVATED AND INTRODUCED SPECIES

Brassica campestris L. Sp. Pl. 666. 1753 ; Hook. f. & T. And. in Hook. f. Fl. Brit. India 1 : 156. 1872 ; Cooke, Fl. Pres. Bombay 1 : 36. 1958 (Repr. ed.).

Herbs, erect. Leaves lyrate-pinnatifid. Flowers yellow in elongate racemes. Pods up to 4.5 cm, 2 - valved.

Fls. & Frts. : March - April.

Distrib. : Common under cultivation, also found as an escape. Tapola.

B. juncea (L.) Czern. & Coss. ex Coss. in Bull. Soc. Bot. France 6 : 609. 1859 ; Hook. f. & T. And. in Hook. f. Fl. Brit. India 1 : 157. 1872 ; Cooke, Fl. Pres. Bombay 1 : 37. 1958 (Repr. ed.). *Sinapis juncea* L. Sp. Pl. 668. 1753. 'Mohari'.

Herbs, erect up to 50 cm high. Leaves lanceolate, entire or dentate, lower leaves pinnatifid. Flowers yellow. Pods erect, up to 3 cm long. Seeds many, reticulate.

Fls. & Frts. : August - October.

Distrib. : Common annuals, also found as an escape along road-tides. Panchgani.

Brassica oleracea var. **botrytis** L. Sp. Pl. 667. 1753 ; Cooke, Fl. Pres. Bombay I : 37. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay nat. Hist. Soc. 77 : 455. 1981. 'Phul - kobi'.

Distrib. : Common vegetable grown in agricultural farms. Mahabaleshwar.

B. oleracea var. **capitata** L. Sp. Pl. 667. 1753 ; Cooke, Fl. Pres. Bombay I : 37. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay nat. Hist. Soc. 77 : 455. 1981. 'Kobi'.

Distrib. : Common vegetable, widely cultivated throughout the district.

Capsella bursa-pastoris (L.) Medic. Pflanzengatt. 85. 1792 ; Hook. f. & T. And. in Hook. f. Fl. Brit. India I : 159. 1872 ; Cooke, Fl. Pres. Bombay I : 34. 1958 (Repr. ed.).

Herbs, 20 - 50 cm high. Leaves radical, rosulate, oblong, 4 - 6 cm long, hairy. Flowers white in corymbs. Pods obcordate, cuneate at base, many seeded.

Fls. & Frts. : November - April.

Distrib. : Common weed near agricultural fields. Mahabaleshwar.

Iberis amara L. Sp. Pl. 649. 1753 ; Bailey, Man. Cult. Pl. ed. 2. 441. 1949 ; Bole & Almeida in J. Bombay nat. Hist. Soc. 77 : 456. 1981.

Herbs, erect or ascending, 10 - 40 cm high. Lower leaves petiolate, pinnatifid, upper sessile. Flowers in corymbose racemes. Pods broadly ellipsoid. Seeds reddish brown.

Fls. & Frts. : January - June.

Distrib. : A garden escape near moist places. Venna Lake, Mahabaleshwar.

Lepidium sativum L. Sp. Pl. 664. 1753 ; Hook. f. & T. And. in Hook. f. Fl. Brit. India I : 159. 1872 ; Cooke, Fl. Pres. Bombay I : 37. 1958 (Repr. ed.) 'Aliy'.

Herbs. Lower leaves petioled, pinnatifid, upper sessile. Flowers in lax racemes. Pods oblong, ca 0.5 × 0.4 cm, 2 valved.

Fls. & Frts. : January - April.

Distrib. : Rare. Mahabaleshwar, Soman 157190.

Nasturtium officinale R. Br. in Ait. Hort. Kew. ed. 4 : 110. 1812 ; Bole & Almeida in J. Bombay nat. Hist. Soc. 77 : 456. 1981 ; Cooke, Fl. Pres. Bombay 1 : 31. 1958 (Repr. ed.).

Herbs, annuals or biennials. Leaves pinnately compound ; leaflets 3 - 5 pairs, ovate - oblong, sessile. Flowers small, yellow in racemes. Pods shortly cylindric. Seeds minute, ovoid-rounded, 2-seriate, red.

Fls. & Frts. : December - April.

Distrib. : Growing near water. Lingmala, Mahabaleshwar.

Raphanus sativus L. Sp. Pl. 669. 1753 ; Hook. f. & T. And. in Hook. f. Fl. Brit. India I : 166. 1872 ; Cooke, Fl. Pres. Bombay 1 : 37. 1958 (Repr. ed.). 'Mula'.

Herbs. Leaves lyrate-pinnatifid. Flowers purple in racemes. Pods thick, erect, longitudinally striate.

Fls. & Frts. : November - April.

Distrib. : Common vegetable grown throughout the district.

CAPPARACEAE

- | | | |
|---|-----|----------|
| 1. Herbs ; fruits capsular | ... | CLEOME |
| 1. Shrubs or trees ; fruits baccate : | | |
| 2. Unarmed shrubs ; sepals uniserrate, united into a tube ; petals when present, smaller than sepals | ... | MAERUA |
| 2. Armed, especially at base of stem ; sepals biserrate, not united into a tube ; petals longer than sepals | ... | CAPPARIS |

CAPPARIS L.

- | | | |
|---|-----|-------------------|
| 1. Apparently leafless ; leaves when present, small, caducous | ... | <i>C. decidua</i> |
| 1. Leaves well developed, persistent : | | |
| 2. Flowers solitary, axillary : | | |

3. Outer sepals connate in bud ; inner petaloid ; fruits with warty or sculptured pericarps with knob like projections ... *C. divaricata*
3. Sepals all free, never petaloid ; fruits smooth, pericarp ribbed ... *C. spinosa*
2. Flowers in supra axillary rows or in corymbs or umbels :
4. Inflorescence supra axillary in serial rows of 2 - 6 :
5. Twigs rufous pubescent ; flowers 2.5 - 5.0 cm across ; berries many seeded ... *C. zeylanica*
5. Twigs glabrous ; flowers 0.8 - 1.2 cm across ; berries 3 - 4 seeded ... *C. tenera*
4. Inflorescence corymbose or umbellate :
6. Thorns dimorphic, long, straight and acicular or both sharply recurved ; inflorescence of umbels ; flowers under 1.2 cm across ; berries 1 - seeded ... *C. rotundifolia*
6. Thorns not dimorphic ; flowers corymbose, exceeding 1.5 cm across ; berries many seeded :
7. Leaves velvety pubescent ; flowers 2.5 - 3.0 cm across ... *C. grandis*
7. Leaves glabrous ; flowers 7 - 12 cm across ... *C. moanii*

***Capparis decidua* (Forssk.) Edgew. in J. Linn. Soc. 6 : 184. 1862 ; Jacobs in Blumea 12 : 424. 1965. *Sodada decidua* Forssk. Fl. Aegypt Arab. 81. 1775. *C. aphylla* Roth, Nov. Sp. Pl. Ind. Or. 238. 1821 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 174. 1872 ; Cooke, Fl. Pres. Bombay 1 : 49. 1958 (Repr. ed.). 'Nepti'.**

Shrubs, straggling or small trees, ca 7 m high, densely armed ; branches zig - zag. Leaves confined to young twigs. Flowers orange red in racemes ; sepals 4, bi - seriate ; petals concave. Berries globose, 1.4 - 2.0 cm across, scarlet.

Fls. & Frts. : July August.

Illus. : Maheshwari, Ill. Fl. Delhi, f. 12. 1966.

Distrib. : Occasional in dry areas. Phaltan.

Notes : A showy plant when in flowers and fruits.

Capparis divaricata Lam. Encycl. 1 : 606. 1785 ; Jacobs in Blumea 12 : 515, t. 35. 1965 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 174. 1872 ; Lisboa in J. Roy. Asiat. Soc. (Bombay) 15 : 208. 1883 ; Cooke, Fl. Pres. Bombay 1 : 48. 1958 (Repr. ed.).

Shrubs or small trees. Leaves dimorphic, young ones linear, obtuse, pubescent, mature, narrowly oblong, lateral nerves 3 - 5. Flowers large, greenish, tomentose, 3 - 5 cm across. Fruits globose or ellipsoid, ca 5 cm across, scarlet.

Fls. & Frts. : April - May.

Illus. : Wight, Ic. t. 889. 1844 ; Jacobs *op. cit.*

Notes : Included on Lisboa's report from Mahabaleshwar.

C. grandis L. f. Suppl. 263. 1781 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 176. 1872 ; Cooke, Fl. Pres. Bombay 1 : 50. 1958 (Repr. ed.) ; Jacobs in Blumea 12 : 456. 1965.

Trees : young branches tomentose. Leaves broadly ovate - obtuse, 4.0 - 5.5 \times 3.8 - 4.5 cm, velvety pubescent becoming subglabrous. Flowers white, pubescent. Fruits 2.2 - 2.8 cm across.

Fls. & Frts. : July - August.

Illus. : Wight, Ic. t. 21. 1838 ; Talbot, For. Fl. Bombay Pres. & Sind 1 : 60, f. 38. 1909.

Distrib. : Rare in grasslands. Satara road station, 165755.

C. moonii Wight, Ill. 1 : 35. 1840 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 175. 1872 ; Cooke, Fl. Pres. Bombay 1 : 49. 1958 (Repr. ed.) ; Jacobs in Blumea 12 : 472. 1965. '*Waghati*'.

Shrubs, ascending upto 3 m long. Leaves elliptic - oblong, 5 - 10 \times 3 - 5 cm. Flowers fragrant, white, puberulous. Fruits subglobose, 5 - 10 cm across, reddish - brown when ripe.

Fls. & Frts. : November - June.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 59, f. 37. 1909 ; Raghavan & Rolla Rao in J. Bombay nat. Hist. Soc. 62 : 421, t. 2. (1965) 1966.

Distrib. : Frequent in scrub forests. Kumbharli ghat, Nauja, Satara road station.

Notes : Pulverised fruits used in treatment of tuberculosis.

Capparis rotundifolia Rottl. in Neue Schr. Ges. Naturf. Fr. Berl. 4 : 185. 1803 ; Jacobs in Blumea 12 : 485. 1965. *C. pedunculosa* Wall. ex Wight & Arn. Prodr. 27. 1834 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 176. 1872 ; Cooke, Fl. Pres. Bombay 1 : 47. 1958 (Repr. ed.). *C. longispina* Hook. f. & Thoms. *op. cit.* *C. pedunculosa* var. *longispina* (Hook. f. & Thoms.) Trim. Handb. Fl. Ceylon 1 : 63. 1893 ; Cooke, *op. cit.* 48. 'Kolisma'.

Shrubs, 1-3 m high. Leaves broadly elliptic or orbicular, 2-4 × 1.0-2.7 cm, apex mucronate. Flowers white. Berries white, ovoid-globose, 0.9-1.5 × 0.8-1.1 cm across.

Fls. & Frts. : February - August.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 61, f. 39. 1909.

Distrib. : Common component of semievergreen forests. Ambeghar, Linglama, way to Pratapgad.

C. spinosa L. Sp. Pl. 503. 1753 ; Cooke, Fl. Pres. Bombay 1 : 47. 1958 (Repr. ed.) ; Jacobs in Blumea 12 : 416. 1965. *C. spinosa* var. *vulgaris* Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 173. 1872.

Shrubs ; branches diffused, pubescent when young. Leaves variable, broadly ovate to orbicular, glabrous or pubescent. Flowers white. Fruits obovoid, red when ripe. Seeds globose, embedded in scarlet pulp.

Fls. & Frts. : January - March.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 52, f. 32. 1909.

Distrib. : Occasional in dry stream beds. Mahabaleshwar.

C. tenera Dalz. in Hook. J. Bot. Kew Gard. Misc. 2 : 41. 1850 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 179. 1872 ; Lisboa in J. Roy. Asiatic Soc. (Bombay) 15 : 209. 1883 ; Cooke, Fl. Pres. Bombay 1 : 51. 1958 (Repr. ed.) ; Jacobs in Blumea 12 : 497. 1965.

Shrubs, climbing. Leaves ovate - oblong to lanceolate. Flowers white. Berries upto 1 cm across.

Fls. & Frts. : March - May.

Notes : Included on the authority of Lisboa (*op. cit.*) who reported it from Mahabaleshwar. However, this species is so far restricted to Karnataka and has not been collected from Maharashtra.

Capparis zeylanica L. Sp. Pl. ed. 2. 720. 1762 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 178. 1872 ; Cooke, Fl. Pres. Bombay 1 : 47. 1958 (Repr. ed.) ; Dunn in Kew Bull. 1916 : 62. 1916 ; Jacobs in Blumea 12 : 505. 1965. *C. horrida* non L. f. Suppl. 264. 1781 ; Cooke, *op. cit.* 51.

Climbers ; stem and young branches reddish brown. Leaves elliptic - oblong to elliptic - ovate, 3.5 - 5.0 × 1.5 - 2.8 cm. Flowers white. Berries subglobose - oblong.

Fls. & Frts. : December - April.

Illus. : Wight, Ic. t. 173. 1839 ; Talbot, For. Fl. Bombay Pres. & Sind 1 : 63, f. 41. 1909.

Distrib. : Occasional. Dhyati, Parli.

Notes : Cooke's *C. zeylanica* is *C. brevispina* DC. which is restricted to Konkan and his *C. horrida* is *C. zeylanica* L.

CLEOME L.

1. Androgynophore present ; stamens 6	...	<i>C. gynandra</i>
1. Androgynophore absent ; stamens more than 6 :		
2. Leaves simple ; flowers pink or purple	...	<i>C. simplicifolia</i>
2. Leaves compound ; flowers yellow	...	<i>C. viscosa</i>

Cleome gynandra L. Sp. Pl. 671. 1753. *Gynandropsis pentaphylla* (L.) DC. Prodr. 1 : 283. 1824 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 171. 1872 ; Cooke, Fl. Pres. Bombay 1 : 42. 1958 (Repr. ed.). 'Pandhari tilvan'.

Herbs, ca 1 m high. Leaflets sessile, middle lobe longer. Bracts leafy, trifoliate ; sepals deciduous ; petals obovate with a long narrow claw ; gynophore 1 - 2 cm long. Capsules elongate, cylindrical, 6 - 8 cm long. Seeds dark brown.

Fls. & Frts. : June August.

Illus. : Maheshwari, Ill. Fl. Delhi, f. 10. 1966.

Distrib. : Common near cultivated fields. Pingli.

Cleome simplicifolia (Camb.) Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 169. 1872 ; Cooke, Fl. Pres. Bombay 1 : 40. 1958 (Repr. ed.). *Polanista simplicifolia* Camb. in Jacq. Voy. Bot. 20, f. 20. 1844.

Herbs, 15 - 40 cm high ; stem strigose with rigid spinular hairs. Leaves : lower petiolate, upper sessile, oblong, 1.2 - 3.0 × 0.4 - 0.8 cm. Flowers solitary in the axils of leafy bracts. Capsules elongate, ca 3.5 cm long, beaked. Seeds 6 - 15, globose, yellowish.

Fls. & Frts. : July September.

Distrib. : Frequent near cultivated fields and along roadsides. Dhavadi, Dhebewadi, Ghotil.

C. viscosa L. Sp. Pl. 672. 1753 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 170. 1872 ; Cooke, Fl. Pres. Bombay 1 : 41. 1958 (Repr. ed.).

Herbs, ca 1 m high, viscid glandular. Leaflets subsessile, 1 - 2 × 0.5 - 1.3 cm. Flowers in axillary racemes ; sepals oblong lanceolate ; petals oblong - obovate. Capsules cylindrical, ca 5 cm long, glandular pubescent. Seeds 30 - 40, reniform, dark brown.

Fls. & Frts. : August - September.

Illus. : Maheshwari, Ill. Fl. Delhi, f. 9. 1966.

Distrib. : Weeds with foetid smell near cultivated fields and in waste places. Karad.

CULTIVATED SPECIES

C. speciosa Rafin. Fl. Ludovic. 86. 1817 ; Lisboa in J. Roy. Asiat. Soc. (Bombay) 15 : 209. 1883 ; Jacobs in Steenis, Fl. Males. 1, 6 : 101. 1960 ; Bole & Almeida in J. Bombay nat. Hist. Soc. 77 : 456. 1981. *Gynandropsis speciosa* DC. Prodr. 1 : 238. 1824 ; Cooke, Fl. Pres. Bombay 1 : 43. 1958 (Repr. ed.).

Herbs, ca 1 m high. Leaves 3 - 5 foliolate ; leaflets elliptic-obovate, base cuneate, apex acuminate. Flowers rosy in dense racemes. Capsules 5 - 8 cm long, pubescent. Seeds muricate.

Fls. & Frts. : April - May.

Notes : Cultivated in gardens for showy flowers. Included on Lisboa's (*op. cit.*) report from Mahabaleshwar.

MAERUA Forssk.

Maerua oblongifolia (Forssk.) A. Rich. Tent. Fl. Abyss. 1 : 32, t. 6. 1847 ; Saldanha, Fl. Karnataka 1 : 319. 1984. *Capparis oblongifolia* Forssk. Fl. Aeg. - Arab. 99. 1775. *M. arenaria* (DC.) Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 171. 1872 (incl. vars. *glabra* & *scabra*). *M. ovalifolia* Camb. in Jacquem. Voy. Bot. 4 : 23, t. 24. 1844 ; Cooke, Fl. Pres. Bombay 1 : 43. 1958 (Repr. ed.).

Shrubs, 2 - 4 m high ; branches divaricate. Leaves elliptic - oblong, 2.5 - 5.0 × 1.0 - 2.5 cm, base and apex obtuse. Flowers greenish white, ca 2.5 cm across in terminal or lateral, dense corymbs ; sepals hooded and horned at apex, pubescent along margins. Berries moniliform, 5 - 12 cm long, pale brown.

Fls. & Frts. : November - March.

Illus. : Bhandari, Fl. Indian Desert 43, f. 10. 1978.

Notes : Included on the authority of Cooke (*op. cit.*) who reported it from Kamatki ghat near Wai.

BIXACEAE

CULTIVATED SPECIES

Bixa orellana L. Sp. Pl. 512. 1753 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 190. 1872 ; Cooke, Fl. Pres. Bombay 1 : 57. 1958 (Repr. ed.). 'Shendri'.

Small trees. Leaves ovate, 7 - 11 × 4.7 - 7.5 cm, base subcordate, apex acuminate. Flowers pink or white in terminal panicles. Capsules subglobose, 2 - valved, prickly.

Fls. & Frts. : August - September.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 72, f. 46. 1909.

Distrib. : Cultivated for seeds used in dyeing industry ; introduced from America. Koyna.

FLACOURTIACEAE

- | | | |
|--|-----|------------|
| 1. Flowers unisexual, in racemes ; fruit a drupe | ... | FLACOURTIA |
| 1. Flowers bisexual, in axillary fascicles ; fruit a capsule | ... | CASEARIA |

CASEARIA Jacq.

Casearia graveolens Dalz. in Hook. J. Bot. 4 : 107. 1852 ; C.B. Cl. in Hook. f. Fl. Brit. India 1 : 192. 1872 ; Cooke, Fl. Pres. Bombay 1 : 553. 1958 (Repr. ed.). 'Bokhada'.

Trees, 6 - 8 m high. Leaves broadly elliptic, 9.0 - 14.5 × 3.5 - 6.5 cm, base obtuse, apex acute ; stipules deciduous. Flowers green ; petals absent. Capsules ellipsoid, ca 2 cm long, yellow.

Fls. & Frts. : February November.

Distrib. : Common in deciduous forests along ghats. Dicholi, Jadholi, Karanjewadi, Koyna, Shirshingi.

FLACOURTIA Commers.

Flacourtia indica (Burm. f.) Merr. Interpr. Rumph. Herb. Amb. 377. 1917 ; Sleumer in Steenis, Fl. Males. 1, 5 : 76. 1954. *Gmelina indica* Burm. f. Fl. Ind. 132. 1768. *F. ramontchi* L'Herit. Strip. Nov. 3 : 59, t. 30 & 30B. 1785 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 193. 1872 ; Cooke, Fl. Pres. Bombay 1 : 59. 1958 (Repr. ed.). *F. latifolia* (Hook. f. & Thoms.) Cooke, op. cit. 'Tambat'.

Trees, 6 - 9 m high, armed or unarmed. Leaves broadly elliptic obovate, 2 - 10 × 1 - 6 cm, coriaceous, base tapering, apex acute or obtuse. Flowers greenish white ; sepals ovate, connate at base ; petals absent. Drupes globose, ca 1 cm across, purplish red when ripe.

Fls. & Frts. : April - July.

Illus. : Wight, Ic. t. 85. 1845 (*F. ramonichi*) ; Talbot, For. Fl. Bombay Pres. & Sind 1 : 76, f. 50 - 52. 1909.

Distrib. : Common in deciduous forests. Gureghar, Kas, Koyna, Lingmala, Mahabaleshwar, Panchgani, Pimpedshi, Pirachi Wadi, Shamgaon.

PITTOSPORACEAE

PITTOSPORUM Banks

- | | | |
|---|-----|----------------------|
| 1. Young branches, inflorescence and capsules densely tomentose | ... | <i>P. dasycaulon</i> |
| 1. Young branches, inflorescence and capsules glabrous | ... | <i>P. wightii</i> |

***Pittosporum dasycaulon* Miq.** Anal. Bot. Ind. 3 : 5. 1850 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 199. 1872 ; Cooke, Fl. Pres. Bombay 1 : 62. 1958 (Repr. ed.) ; Gowda in J. Arnold Arbor. 32 : 324. 1951 ; Nayar & Giri in Fasc. Fl. India 6 : 6. 1980. 'Gapsundi'.

Trees, 5 - 7 m high. Leaves oblong-lanceolate, 7.5 × 2.7 cm, crowded at apex. Flowers yellow in terminal or pseudoterminal umbels : petals oblong. Capsules ca 1 cm across, 2-valved. Seeds red.

Fls. & Frts. : September - February.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 82, f. 54, 1909.

Distrib. : Rare, endemic to Western Ghats. Shirshingi, Kochhar 158275.

P. wightii A.K. Mukherjee in J. Econ. Tax. Bot. 5 : 49. 1984. ***P. floribundum*** Wight & Arn. Prodr. 154. 1834, *non* Wight & Arn. ex Royle 1834 ; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 199. 1872 p.p. ; Cooke, Fl. Pres. Bombay 1 : 61. 1958 p.p. (Repr. ed.) ; Gowda in J. Arnold Arbor. 32 : 330. 1951. ***P. napaulensis*** sensu Nayar & Giri, Fasc. Fl. India 6 : 8. 1980. p.p. 'Yekadi'.

Trees, 6 - 9 m high. Leaves oblong or lanceolate, 4.5 - 9.5 × 2 - 3 cm, base cuneate, apex acuminate, entire or sinuate-dentate. Flowers yellow in terminal corymbs ; sepals oblong, ciliate ; petals oblanceolate. Capsules globose, ca 1 cm across, 2-valved. Seeds red turning black.

Fls. & Frts. : February - September.

Illus. : Ramamoorthy in Saldanha & Nicolson, Fl. Hassan Dist. f. 45. 1976. (*P. floribundum* Wight & Arn.).

Distrib. : Common along ghats in semievergreen forests. Kelghar ghat, Rotunda ghat below Mahabaleshwar, Shirshingi.

Notes : According to Mukherjee (*op. cit.*) *P. floribundum* consists of two elements, one Himalayan and the other peninsular Indian. The name *P. floribundum* Wight & Arn. ex Royle (1834) is applicable to the Himalayan plants. He, therefore, proposed a new name for peninsular Indian plants.

POLYGALACEAE

POLYGALA L.

- | | |
|---|----------------------------|
| 1. Leaves oblong - lanceolate ; wing sepals suborbicular ... | <i>P. persicariaefolia</i> |
| 1. Leaves obovate or linear ; wing sepals ovate - acuminate : | |
| 2. Wing sepals with strong midrib ... | <i>P. erioptera</i> |
| 2. Wing sepals without midrib ... | <i>P. arvensis</i> |

Polygala arvensis Willd. Sp. Pl. 3(2) : 876. 1802 ; Burtt in Notes R.B.G. Edinb. 32 : 404. 1973. *P. chinensis* non L. 1753 ; Bennett in Hook. f. Fl. Brit. India 1 : 204. 1872 ; Cooke, Fl. Pres. Bombay 1 : 64. 1958 (Repr. ed.) ; Mukherjee in Bull. Bot. Soc. Beng. 12 : 38. 1960. 'Phutani'.

Herbs, 15 - 20 cm high. Leaves 1.5 - 3.0 × 0.8 - 1.4 cm, base subacute, apex obtuse. Flowers yellow in axillary, capitate racemes. Capsules didynamous, orbicular - oblong, ciliate. Seeds 2, black ; strophiole with 3 basal appendages.

Fls. & Frts. : July - September.

Illus. : Maheshwari, Ill. Fl. Delhi, f. 16. 1966 ; Tad. & Venkatan. Handb. S. Ind. Weeds 84, f. 32. 1932.

Distrib. : Frequent and ephemeral species in grasslands. Bhosgaon.

Notes : According to Burtt (*op. cit.*), Indian yellow flowered species which is misidentified as *P. chinensis* L. is actually *P. arvensis* Willd. When he studied the type specimen of *P. chinensis* L. it turned out to be

P. glomerata Lour. He, therefore, recommends to abandon the name *P. chinensis* L. and the two plants may be known as *P. arvensis* Willd. and *P. glomerata* Lour. respectively.

Polygala erioptera DC. Prodr. 1 : 326. 1824 ; Bennett in Hook. f. Fl. Brit. India 1 : 203. 1872 ; Cooke, Fl. Pres. Bombay 1 : 63. 1958 (Repr. ed.) ; Blatt. in J. Bombay nat. Hist. Soc. 34 : 302. 1930 ; Mukherjee in Bull. Bot. Soc. Bengal 12 : 47. 1960.

Herbs, annual, ascending. Leaves variable, oblong - obovate to narrow linear, base cuneate, apex obtuse, hairy. Flowers yellow in axillary or extra - axillary few flowered racemes. Capsules oblong - elliptic, pubescent, obliquely emarginate.

Fls. & Frts. : August.

Notes : Included on Blatter's report from Pasarni ghat, near Panchgani.

P. persicariaefolia DC. Prodr. 1 : 326. 1824 ; Bennett in Hook. f. Fl. Brit. India 1 : 202. 1872 ; Cooke, Fl. Pres. Bombay 1 : 63. 1958 (Repr. ed.) ; Mukherjee in Bull. Bot. Soc. Bengal 12 : 45. 1960.

Herbs, 10 - 40 cm high. Leaves subsessile, 2 - 4 × 0.5 - 1.2 cm, base attenuate, apex subacute. Flowers pinkish - violet in axillary and terminal racemes. Capsules elliptic - oblong. Seeds oblong, densely hairy, strophiole hemispheric.

Fls. & Frts. : September - November.

Illus. : Ramamoorthy in Saldanha & Nicolson, Fl. Hassan Dist. f. 81, A - Ad. 1976.

Distrib. : Common monsoon herbs on hill tops and in grasslands. Dhom dam, Wai, Lingmala, Mahabaleshwar, Panchgani, Yavteshwar.

CARYOPHYLLACEAE

1. Stipules scarious	...	POLYCARPON
1. Stipules absent :		
2. Leaves ovate - oblong	...	STELLARIA
2. Leaves linear	...	SAGINA

POLYCARPON L.

Polycarpon prostratum (Forssk.) Aschers. & Schweinf. in Oester. Bot. Zeitschr. 39 : 128. 1889 ; Turr. & Milne - Redhead, Fl. Trop. E. Africa 5, f. 2. 1956. *Alsine prostrata* Forssk. Fl. Aeg. - Arab. 207. 1775. *P. loeflingiae* (Wall. ex Wight & Arn.) Benth. & Hook. f. ex Edgew. & Hook. f. in Hook. f. Fl. Brit. India 1 : 245. 1874 : Cooke, Fl. Pres. Bombay 1 : 69. 1958 (Repr. ed.).

Herbs, prostrate. Leaves linear - oblong, upto 2 cm long, base narrow, apex obtuse, pubescent or glabrous. Flowers pinkish - purple in axillary and terminal dichotomous cymes ; calyx keeled. Capsules ovoid - globose, 3 - valved.

Fls. & Frts. : April - July.

Illus. : Turr. & Milne - Redhead, *op. cit.*

Distrib. : Common in wet places. Koyna, Mahabaleshwar, Old Mahabaleshwar, Shirshingi, Taldeo.

SAGINA L.

Sagina japonica (Swartz) Ohwi in J. Jap. Bot. 13 : 438. 1937, excl. syn. *S. maxima* A. Gray ; Mizushima in J. Jap. Bot. 35 : 257. 1960 ; T.S. Nayar in J. Econ. Tax. Bot. 5 : 1171, f. A - J. 1984. *Spergula japonica* Swartz in Ges. Naturf. Freunde Berl. Neue Schr. 3 : 164, t. 1 - 2, 1801.

Herbs, 1.25 - 4.5 cm long. Leaves linear, subulate, 0.4 - 1.0 cm long. Flowers solitary, 2.5 - 3.0 cm across, pentamerous, rarely tetramerous. Capsules elliptic or ovoid, ca 0.2 cm long. Seeds asymmetrically reniform, brown, minutely tuberculate.

Fls. & Frts. : October - December.

Illus. : T.S. Nayar, *op. cit.*

Distrib. : Panchgani, T.S. Nayar 158764, 412. (K).

Notes : Cooke has not reported this genus from erstwhile Bombay presidency. This species has been earlier reported from Assam and West Bengal only. The present collection is a distributional record for peninsular India. (Nayar, *op. cit.*).

STELLARIA L.

Stellaria media (L.) Vill. Hist. Pl. Dauph. 3 : 615. 1789 ; Edgew. & Hook. f. in Hook. f. Fl. Brit. India 1 : 230. 1874 ; Cooke, Fl. Pres. Bombay 1 : 68. 1958 (Repr. ed.).

Herbs, annuals, diffusely branched. Leaves : upper sessile, elliptic oblong, lower ovate, 1.0 - 2.5 cm long, base obtuse, apex apiculate. Flowers white, axillary, solitary. Capsules ovoid, 3 - valved. Seeds many, brown, tubercled.

Fls. & Frts. : March - April.

Hus. : Maheshwari, Ill. Fl. Delhi, f. 17. 1966.

Distrib. : Weed in waste places and near cultivated fields. Mahabaleshwar, Tapola.

Vaccaria pyramidata Medic. Phil. Bot. 1 : 96. 1789. *Saponaria vaccaria* L. Sp. Pl. 409. 1753 ; Edgew. & Hook. f. in Hook. f. Fl. Brit. India 1 : 217. 1874 ; Cooke, Fl. Pres. Bombay 1 : 66. 1958 (Repr. ed.). 'Sabni'.

Herbs, erect, annuals. Leaves oblong-lanceolate. Flowers pink in dichotomous cymes. Capsules ovoid. Seeds globose, black.

Fls. & Frts. : February - March.

Distrib. : Common weed of agricultural fields. Mahabaleshwar.

CULTIVATED SPECIES

Dianthus caryophyllus L. Sp. Pl. 410. 1753 ; Edgew. & Hook. f. in Hook. f. Fl. Brit. India 1 : 214. 1874 ; Blatt. in J. Bombay nat. Hist. Soc. 34 : 304. 1930.

Perennials. Leaves linear, channelled above. Flowers pink, fragrant, in loose panicled cymes. Capsules ovoid. Seeds pear shaped, flat.

Notes : Included on Blatter's report from Mahabaleshwar and Panchgani.

PORTULACACEAE

PORTULACA L.

- | | | |
|---|-----|----------------------|
| 1. Leaves alternate, nodes without appendages : flowers in terminal fascicles | ... | <i>P. oleracea</i> |
| 1. Leaves opposite, nodes with a ring of silvery hairs ; flowers solitary | ... | <i>P. quadrifida</i> |

Portulaca oleracea L. Sp. Pl. 445. 1753 ; Thiselton Dyer in Hook. f. Fl. Brit. India 1 : 246. 1874 ; Cooke, Fl. Pres. Bombay 1 : 72. 1958 (Repr. ed.) ; Geesink in Blumea 17 : 292. 1969. 'Ghol'.

Herbs, succulent, prostrate ; stem reddish, swollen at nodes. Leaves subsessile, obovate spatulate, ca 2.0×1.5 cm, base tapering, apex rounded. Flowers yellow ; sepals lanceolate ; petals obovate. Capsules ovoid. Seeds many, black.

Fls. & Frts. : April July.

Illus. : Tad. & Venkatan. Handb. S. Ind. Weeds 90, f. 35. 1932.

Distrib. : Common weed in waste places and cultivated fields. Girvi, Mahabaleshwar, Old Mahabaleshwar, Satara road, Taldeo.

P. quadrifida L. Mant. 73. 1767 ; Thiselton Dyer in Hook. f. Fl. Brit. India 1 : 247. 1874 ; Cooke, Fl. Pres. Bombay 1 : 72. 1958 (Repr. ed.) ; Geesink in Blumea 17 : 290. 1969.

Herbs, prostrate. Leaves small, elliptic oblong, 1.0×0.3 cm, base cuneate, apex acute, fleshy. Flowers yellow, subsessile, surrounded by silvery hairs and involucre of 4 leaves. Capsules oblong, ca 0.3 cm long. Seeds tubercled.

Fls. & Frts. : July.

Illus. : Wight, Jc. t. 109. 1839.

Distrib. : Weed near cultivated fields. Phaltan.

ELATINACEAE

BERGIA L.

Bergia ammannioides Roxb. ex Roth, Nov. Pl. Sp. 219. 1821 ; Robinson in Philipp. J. Sci. 7 : 414. 1912 ; Thiselton Dyer in Hook. f. Fl. Brit. India 1 : 251. 1874 ; Cooke, Fl. Pres. Bombay 1 : 77. 1958 (Repr. ed.).

Herbs, glandular pubescent. Leaves oblanceolate, 1.2×0.3 cm, base tapering, apex acute, margins sharply serrulate. Flowers minute in axillary fascicles; sepals 5 - keeled. Capsules subglobose. Seeds many, minute, shining.

Fls. & Frts. : November - December.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 52. 1982.

Distrib. : Tiny herbs in marshy places. Mahabaleshwar.

CLUSIACEAE

- | | |
|---|----------|
| 1. Leaves large, coriaceous : calyx splitting into 2 - valves ... | MAMMEA |
| 1. Leaves small, thin : calyx 4 - 5 lobed : | |
| 2. Flowers unisexual in axillary fascicles ... | GARCINIA |
| 2. Flowers bisexual, axillary, solitary ... | MESUA |

GARCINIA L.

- | | |
|---|--------------------|
| 1. Leaves oblong - lanceolate ; flowers tetramerous ... | <i>G. indica</i> |
| 1. Leaves broadly elliptic ; flowers pentamerous ... | <i>G. talbotii</i> |

***Garcinia indica* (Du Petit - Thouars) Choiss. in DC, Prodr. 1 : 561. 1824 ; T. And. in Hook. f. Fl. Brit. India I : 261. 1874 ; Cooke, Fl. Pres. Bombay 1 : 80. 1958 (Repr. ed.). *Brindonia indica* Du Petit - Thouars, Dict. Sci. Nat. 5 : 340. 1804. 'Kokam'.**

Trees, 6 - 10 m high. Leaves ca $4 - 8 \times 1.0 - 2.5$ cm, membranous, base and apex acute. Flowers yellowish. Fruits globose, ca 3 cm across.

Fls. & Frts. : February - April.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 90, f. 57. 1909.

Distrib. : Occasional along hill slopes, also under cultivation. Kusapur, Mahabaleshwar.

***G. talbotii* Raiz. ex Sant.** in Rec. Bot. Surv. India 16(1) : 14. 1967 (Rev. ed.) ; Raiz. in Indian Forester 93 : 754. 1967 ; Maheshwari in Bull.

Bot. Surv. India 6 : 113. 1964. *G. ovalifolia* var. *macrantha* T. And. in Hook. f. Fl. Brit. India 1 : 269. 1874. *G. spicata* var. *macrantha* (T. And.) Cooke, Fl. Pres. Bombay 1 : 79. 1958 (Repr. ed.).

Trees, 5-8 m high. Leaves ca 10-16 × 4-8 cm. Flowers creamish white. Fruits subglobose, ca 3.0 × 2.5 cm.

Fls. & Frts. : April June.

Distrib. : Frequent in semievergreen forests. Jangli jaigad, Vasota.

MAMMEA L.

Mammea suriga (Buch.-Ham. ex Roxb.) Kosterm. Comm. For. Res. Inst. Indonesia, Bogor 72 : 23, f 19. 1961 ; Sant. in Bull. Bot. Surv. India 3 : 19. 1961. *Calophyllum suriga* Buch.-Ham. ex Roxb. Fl. Ind. (Carey ed.) 2 : 608. 1832. *Ochrocarpus longifolius* (Wight) Bth. & Hook. f. ex T. And. in Hook. f. Fl. Brit. India 1 : 270. 1874 ; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 7. 1897 ; Cooke, Fl. Pres. Bombay 1 : 84. 1958 (Repr. ed.).

Trees, 8-12 m high. Leaves oblong, 15-20 × 5.0-6.5 cm, base rounded, apex obtuse. Flowers white with pink streaks in the axils of fallen leaves. Fruits ovoid, 1-seeded.

Fls. & Frts. : February March.

Illus. : Wight, Ic. t. 1999. 1853,

Notes : Included on Birdwood's report from Mahabaleshwar.

MESUA L.

Mesua ferrea L. Sp. Pl. 515. 1753 ; T. And. in Hook. f. Fl. Brit. India 1 : 277. 1874 ; Cooke, Fl. Pres. Bombay 1 : 86. 1958 (Repr. ed.) ; Blatt. in J. Bombay nat. Hist. Soc. 34 : 625. 1930 ; Maheshwari in Bull. Bot. Surv. India 5 : 336. 1964. 'Nag chapha'.

Trees, 8-15 m high. Leaves oblong-lanceolate, 7-12 × 2-4 cm, base rounded or acute, apex acute or acuminate. Flowers sessile, white, solitary or in pairs ; stamens many, golden yellow. Fruits ovoid, 1-4 seeded.

Fls. & Frts. : March.

Illus. : Wight, Ic. t. 118. 1839.

Notes : Included on Blatter's report from Mahabaleshwar.

TERNSTROEMIACEAE

Camellia sinensis (L.) O. Ktze. *Um die Erde 500.* 1881 ; Bole & Almeida in *J. Bombay nat. Hist. Soc.* 77 : 458. 1981. *Thea sinensis* L. Sp. Pl. 515. 1753. *Camellia thea* Link, *Enum. Hort. Berol.* 2 : 72. 1822 ; Blatt. in *J. Bombay nat. Hist. Soc.* 34 : 626. 1930. 'Chaha'.

Shrubs *ca* 2 m high. Leaves elliptic oblong, 10 - 20 × 3 - 6 cm, membranous. Flowers white, *ca* 3 cm across. Capsules leathery, trigonous. Seeds globose or obtusely angled, *ca* 1.8 cm across, smooth.

Notes : The 'Tea' plant, cultivated at Bilar estate near Panchgani (Bole & Almeida, *op. cit.*).

ANCISTROCLADACEAE

ANCISTROCLADUS Wall.

Ancistrocladus heyneanus Wall. ex Grah. Cat. Pl. Bombay 28. 1839 ; Thiselton Dyer in Hook. f. Fl. Brit. India 1 : 299. 1874 ; Cooke, Fl. Pres. Bombay 1 : 93. 1958 (Repr. ed.). 'Kardal'.

Shrubs. Leaves crowded at apex, oblanceolate, upto 8.0 × 6.5 cm, apex subacute. Flowers white in axillary panicles. Fruits small, 5 winged, calyx accrescent.

Fls. & Frts. : February.

Illus. : Wight, Ic. t. 1987 - 88. 1853.

Distrib. : Rare in semi-evergreen forests. Jangli jaigad. Kochhar 158337.

MALVACEAE

- | | | |
|----------------------|-----|-------|
| 1. Trees | ... | KYDIA |
| 1. Herbs or shrubs : | | |

2. Involucral bracts present ; staminal column 5 lobed at apex :
3. Carpels separating at maturity ; style branches twice as many as the carpels ... **URENA**
3. Carpels not separating at maturity ; style branches as many as the carpels :
4. Calyx spathaceous, deciduous .. **ABELMOSCHUS**
4. Calyx not spathaceous, persistent :
5. Calyx truncate, 5-toothed ; style not divided at apex **THESPESIA**
5. Calyx 5-lobed ; style divided at apex, connate at base ... **HIBISCUS**
2. Involucral bracts present or absent ; staminal column split into numerous antheriferous filaments :
6. Involucral bracts 3, linear ... **MALVASTRUM**
6. Involucral bracts absent :
7. Leaves orbicular-cordate ; seeds 2-3 per mericarp ... **ABUTILON**
7. Leaves ovate or obovate ; seed 1 per mericarp ... **SIDA**

ABELMOSCHUS Medic.

1. Stem prickly ; involucral bracts free ... *A. manihot* ssp. *tetraphylla*
1. Stem not prickly ; involucral bracts connate ... *A. angulosus*

Abelmoschus angulosus Wall. ex Wight & Arn. Prodr. 53. 1834 ; Borss. in Blumea 14 : 104. 1966 ; T.S. Nayar in J. Bombay nat. Hist. Soc. 82 : 233. 1985. *Hibiscus angulosus* (Wall. ex Wight & Arn.) Steud. Nom. ed. 2. 5 : 758. 1840 ; Mast. in Hook. f. Fl. Brit. India 1 : 341. 1874 ; Cooke, Fl. Pres. Bombay 1 : 118. 1958 (Repr. ed.).

Herbs ; branches covered with simple and stellate hairs. Leaves cordate, ca 10 cm long, apex acuminate, 5 lobed, hispid when young. Flowers large, ca 10 cm across in terminal racemes ; calyx lobes ovate lanceolate, hispid. Capsules ovoid, ca 2.5 cm long, hairy.

Fls. & Frts. : November.

Illus. : Wight, Ic. t. 951. 1845.

Distrib. : Rare. Gureghar near Panchgani, T.S. Nayar 156208; Mahabaleshwar, Talbot 4505.

Notes : Cooke (*op. cit.*) doubted about the occurrence of this species from the erstwhile Bombay Presidency as there was only one collection by Stocks from Konkan without any precise locality. Recently, it is reported from Panchgani by Nayar (*op. cit.*) besides Talbot's collection from Mahabaleshwar which was the only collection from Maharashtra. The above collection after a lapse of 73 years confirms its occurrence though it is a rare in the district and the Maharashtra State also.

Abelmoschus manihot (L.) Medic. ssp. **tetraphyllus** (Roxb. ex Horn.) Borss. in Blumea 14 : 95. 1966. *Hibiscus tetraphyllus* Roxb. ex Horn. Hort. Hafn. 661. 1815 ; Mast. in Hook. f. Fl. Brit. India 1 : 341. 1874 ; Cooke, Fl. Pres. Bombay 1 : 118. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay nat. Hist. Soc. 77 : 460. 1981. '*Ran bhendi*'.

Herbs, 1 - 2 m high. Leaves orbicular, ca 10 cm across, 3 - 5 lobed, base cordate, prickly on the nerves beneath. Flowers solitary, axillary ; calyx connate, splitting on one side, villous ; corolla yellow with a purple centre. Capsules ca 3 cm long, oblong, densely bristly, 5 valved.

Fls. & Frts. : September November.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 123, t. 74. 1909.

Distrib. : Jadholi, Mahabaleshwar, Pratapgad.

Notes : Bross. (*op. cit.*) has described two subspecies viz., *tetraphyllus* and *manihot* of which former is wild and latter cultivated. In Satara district only ssp. *tetraphyllus* is found occasionally which is easily recognised by its large yellow flowers.

ABUTILON L.

I. Mericarps 15 - 22 ; sepals ovate	...	<i>A. indicum</i>
I. Mericarps 5 ; sepals lanceolate	...	<i>A. persicum</i>

Abutilon indicum (L.) Sweet, Hort. Brit. 54. 1826 *emend.* Hochr. in Ann. Cons. Jard. Bot. Geneve 6 : 19. 1902 ; Mast. in Hook. f. Fl. Brit. India 1 : 326. 1874 ; Cooke, Fl. Pres. Bombay 1 : 102. 1958 (Repr. ed.) ; Borss. in Blumea 14 : 170, f. 19d. 1966. *Sida indica* L. in Torn. Cent. Pl. 2 : 26. 1756 & Sp. Pl. ed. 2. 964. 1763. '*Mudra*'.

Herbs, *ca* 50 cm high. Leaves cordate, upto 3.0×2.5 cm, 5-7 nerved. Flowers yellow, axillary, solitary; pedicels jointed above the middle. Carpels reniform, acute, dorsally hairy. Seeds *ca* 0.2 cm across, punctate.

Fls. & Frts. : March April.

Illus. : Wight, Ic. t. 12. 1838.

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

Abutilon persicum (Burm. f.) Merr. in Philipp. J. Sci. 19 : 364. 1921; Borss. in Blumea 14 : 163. 1966. *Sida persica* Burm. f. Fl. Ind. 148, t. 47, f. 1. 1768. *A. polyandrum* (Roxb.) Wight & Arn. ex Wight, Cat. 12. 1833; Mast. in Hook. f. Fl. Brit. India 1 : 325. 1874; Cooke, Fl. Pres. Bombay 1 : 101. 1958 (Repr. ed.). 'Madan'.

Undershrubs, erect *ca* 1 m high, rootstock woody. Leaves ovate cordate, 5-12 \times 2.5-9.0 cm, apex acuminate, tomentose. Flowers orange yellow, axillary, solitary; calyx densely hairy; corolla *ca* 3 cm across. Carpels mucronate, slightly longer than the calyx.

Fls. & Frts. : November January.

Distrib. : Occasional on grassy slopes. Found in association with *Carvia callosa* (Nees) Bremek. Mahabaleshwar.

HIBISCUS L.

1. Herbs, scandent; epicalyx with leafy appendages	...	<i>H. furcatus</i>
1. Shrubs, erect; epicalyx without leafy appendages;		
2. Flowers solitary	...	<i>H. hirtus</i>
2. Flowers in fascicles	...	<i>H. ovalifolius</i>

Hibiscus furcatus Willd. Enum. Hort. Berol. 736. 1809; Mast. in Hook. f. Fl. Brit. India 1 : 335. 1874; Cooke, Fl. Pres. Bombay 1 : 112. 1958 (Repr. ed.); Rakshit & Kundu in Bull. Bot. Surv. India 12 : 161. 1972.

Herbs, 50-100 cm high; stem covered with recurved prickles. Leaves 3-5 \times 1.5-3.5 cm, palmately 3-5 lobed, prickly on the nerves. Flowers axillary, solitary; calyx lobes lanceolate, bristly; corolla yellow

with a purple centre. Capsules ovoid, acute, enclosed in accrescent calyx.

Fls. & Frts. : September December.

Illus. : Talbot. For. Fl. Bombay Pres. & Sind 1 : 119, f. 71. 1909.

Distrib. : Rarely distributed along ghats in moist deciduous forests. Koyna, Shirshingi.

Hibiscus hirtus L. Sp. Pl. 694. 1753 ; Mast. in Hook. f. Fl. Brit. India 1 : 335. 1874 ; Cooke, Fl. Pres. Bombay 1 : 113. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay nat. Hist. Soc. 77 : 459. 1981. '*Dupari*'.

Shrubs 1-2 m high. Leaves oblong, 7-12 × 2.5-6.0 cm, apex hairy. Flowers white or pink, axillary, solitary; epicalyx 6-9 lobed. Capsules globose. Seeds white hairy.

Fls. & Frts. : October - January.

Notes : A rare species, represented by a single collection by Acland from Mahabaleshwar deposited at BLAT.

H. ovalifolius (Forssk.) Vahl, Symb. Bot. 1 : 50. 1790 ; Britto & Matthew in Matthew, Fl. Tamilnadu Carnatic 3 : 115. 1983. *Urena ovalifolia* Forssk. Fl. Aegypt. - Arab. 124. 1775. *H. micranthus* L. f. Suppl. 308. 1781 ; Mast. in Hook. f. Fl. Brit. India 1 : 335. 1874 ; Cooke, Fl. Pres. Bombay 1 : 113. 1958 (Repr. ed.).

Shrubs, up to 1.5 m high, erect, stellate hairy. Leaves oblong to oblong-ovate, ca 2 × 1 cm, base obtuse, apex acute, scabrid. Involucral bracts 6, filiform; corolla stellate hairy. Capsules ca 0.8 cm across. Seeds cottony.

Fls. & Frts. : June - August.

Illus. : Maheshwari, Ill. Fl. Delhi, f. 29. 1966 (*H. micranthus*).

Distrib. : Slender herbs along roadsides. Rare. Satara Road Station, Puri 2397.

CULTIVATED SPECIES

H. rosa-sinensis L. Sp. Pl. 694. 1753 ; Mast. in Hook. f. Fl. Brit. India 1 : 344. 1874 ; Cooke, Fl. Pres. Bombay 1 : 120. 1958 (Repr. ed.). '*Jasvand*'.

Shrubs. Leaves ovate to ovate lanceolate, coarsely serrate. Flowers creamish, axillary, solitary.

Fls. : Throughout the year.

Notes : Cultivated as an ornamental plant in gardens.

KYDIA Roxb.

Kydia calycina Roxb. Pl. Cor. 3 : 12, t. 215. 1819 ; Mast. in Hook. f. Fl. Brit. India 1 : 348. 1874 ; Cooke, Fl. Pres. Bombay 1 : 100. 1958 (Repr. ed.). 'Varas'.

Trees, 10–12 m high, young branches tomentose. Leaves orbicular, 4.5–8.5 × 3.7–10.7 cm, obtuse, shallowly lobed. Flowers white in dense axillary and terminal panicles; involucral bracts spathulate, strongly nerved. Capsules globose, bracts accrescent.

Fls. & Frts. : September November.

Illus. : Wight. Ic. t. 879 80. 1844.

Distrib. : Frequent in moist deciduous forests, occasionally cultivated along roadsides. Karanjewadi, Khandala, Satara, Yavteshwar.

MALVASTRUM A. Gray

Malvastrum coromandelianum (L.) Garcke in Bonplandia 5 : 295. 1857 ; Borss. in Blumea 14 : 152. 1966 ; Hill in Rhodora 84 : 324, f. 63. 1982. *Malva coromandeliana* L. Sp. Pl. 687. 1753. *M. tricuspidatum* (R. Br.) A. Gray, Pl. Wright. 1 : 16. 1852 ; Mast. in Hook. f. Fl. Brit. India 1 : 321. 1874.

Herbs, ca 50 cm high, stellate hairy. Leaves ovate cordate, 3.0 × 2.5 cm, stellate hairy beneath. Flowers orange-yellow, axillary, solitary. Carpels 10–14, reniform, awned.

Fls. & Frts. : July August.

Illus. : Maheshwari, Ill. Fl. Delhi, f. 26, 1966 ; Hill, op. cit.

Distrib. : Found in waste places. Common. Khatav.

SIDA L.

1. Trailing herbs ; leaves palm nervured	...	<i>S. cordata</i>
1. Erect or ascending herbs ; leaves pinn nervured :		
2. Petioles spiny at base ; cocci aristate	...	<i>S. spinosa</i>
2. Petioles not spiny ; cocci acute :		
3. Flowers in panicles	...	<i>S. mysorensis</i>
3. Flowers solitary or in fascicles :		
4. Pedicels jointed below the middle	...	<i>S. rhombifolia</i>
4. Pedicels jointed above the middle	...	<i>S. acuta</i>

Sida acuta Burm. f. *emend.* K. Schum. Fl. Bras. 12 : 326. 1891 ; Borss. in Blumea 14 : 187. 1966 ; Mast. in Hook. f. Fl. Brit. India 1 : 323. 1874 ; Cooke, Fl. Pres. Bombay 1 : 98. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay nat. Hist. Soc. 77 : 459. 1981. 'Jangli - methi'.

Herbs ; branches minutely stellate hairy. Leaves lanceolate, subacute, puberulous beneath. Flowers yellow, axillary, solitary ; pedicels jointed above the middle. Carpels 5 - 9, puberulous. Seeds black.

Fls. & Frts. : November - December.

Notes : Included on Bole & Almeida's report from Mahabaleshwar.

S. cordata (Burm. f.) Borss. in Blumea 14 : 182. 1966. *Melochia cordata* Burm. f. Fl. Ind. 143. 1768. *S. veronicifolia* Lam. Encycl. 1 : 5. 1783 ; Cooke, Fl. Pres. Bombay 1 : 97. 1958 (Repr. ed.). *S. humilis* var. *veronicifolia* (Lam.) Mast. in Hook. f. Fl. Brit. India 1 : 322. 1874.

Herbs, ca 5 m long. Leaves cordate - ovate, 1.5 - 4.2 × 1.0 - 3.6 cm, apex acuminate, hairy. Flowers yellow, axillary, solitary or in fascicles ; pedicels jointed above the middle, accrescent. Carpels 5, beak 2 - dentate, sparsely hairy.

Fls. & Frts. : February - July.

Distrib. : Common near cultivated fields and along roadsides. Bhosgaon, Khatav, Mahabaleshwar, Satara Road Station.

S. mysorensis Wight & Arn. Prodr. 59. 1834 ; Mast. in Hook. f. Fl. Brit. India 1 : 322. 1874 ; Borss. in Blumea 14 : 180. 1966. *S. glutinosa*

Roxb. Fl. Ind. (Carey ed.) 3 : 172. 1832 ; Cooke, Fl. Pres. Bombay 1 : 97. 1958 (Repr. ed.).

Herbs, *ca* 8 m high ; stem viscidly hairy. Leaves *ca* 6 × 5 cm, stellate hairy. Flowers yellow ; sepals keeled ; staminal column pubescent. Carpels 5, greyish puberulous.

Fls. & Frts. : January March.

Distrib. : Rare, found near cultivated fields. Vardhangad.

Sida rhombifolia L. Sp. Pl. 684. 1753 ; Mast. in Hook. f. Fl. Brit. India 1 : 324. 1874 ; Blatt. & McC. in J. Bombay nat. Hist Soc. 34 : 629. 1931 ; Borss. in Blumea 14 : 193. 1966.

KEY TO THE SUBSPECIES

- | | | |
|--|-----|-------------------------|
| 1. Leaves oblong - rhomboid ; pedicels much longer than the petioles | ... | ssp. <i>rhombifolia</i> |
| 1. Leaves obovate, cuneate; pedicels as long as or slightly longer than the petioles | ... | ssp. <i>retusa</i> |

ssp. *rhombifolia*

Herbs, *ca* 50 cm high. Leaves 1 8 × 0.7 4 cm, stellate hairy, entire at base, serrate at apex. Flowers yellowish orange ; calyx accrescent. Carpels 10, shortly awned.

Fls. & Frts. : October December.

Distrib. : Common weed in waste places. Khandala ghat, Koyna, Machutar forest, Mahabaleshwar.

ssp. *retusa* (L.) Borss. in Blumea 14 : 198, f. 21, e h, 1966. *S. retusa* L. Sp. Pl. 961. 1763. *S. rhombifolia* var. *retusa* (L.) Mast. in Hook. f. Fl. Brit. India 1 : 324. 1874 ; Cooke, Fl. Pres. Bombay 1 : 99. 1958 (Repr. ed.).

Undershrubs, *ca* 1 m high ; young branches stellate hairy. Leaves 1 2 × 0.5 0.8 cm, glabrous above, tomentose beneath. Flowers yellow. Carpels 10, shortly awned.

Fls. & Frts. : November December.

Illus. : Borss. *op. cit.* ; Maheshwari, Ill. Fl. Delhi. f. 24. 1966.

Distrib. : Common in waste places, along roadsides, also found as a forest undergrowth. Koyna, Padolshi, Panchgani, Shirshingi.

Sida spinosa L. Sp. Pl. 683. 1753 ; Mast. in Hook. f. Fl. Brit. India I : 323. 1874 ; Lisboa in J. Roy. Asiat. Soc. (Bombay) 15 : 209. 1883 ; Cooke, Fl. Pres. Bombay I : 98. 1958 (Repr. ed.) ; Borss. in Blumea 14 : 191. 1966.

Shrubs, suberect ; branches grey hirsute. Leaves elliptic, base obtuse or cuneate, apex rounded. Flowers yellow. Carpels 3-6, pubescent.

Fls. & Frts. : October November.

Notes : Included on Lisboa's report from Mahabaleshwar.

THESPESIA Soland. ex Corr.

Thespesia lampas (Cav.) Dalz. & Gibs. Bomb. Fl. 19. 1861 ; Mast. in Hook. f. Fl. Brit. India I : 345. 1874 ; Borss. in Blumea 14 : 116. 1966. *Hibiscus lampas* Cav. Diss. 3 : 154, t. 56, f. 2. 1787. *T. macrophylla* Bl. Bijdr. 73. 1825 ; Cooke, Fl. Pres. Bombay I : 121. 1958 (Repr. ed.). 'Ran bhendi'.

Shrubs ca 1 m high. Leaves 4-14 × 3-7 cm, cordate at base, 3-lobed. Flowers axillary, solitary or 1-3 together ; corolla ca 3 cm across, yellow, crimson at centre. Capsules ca 2.5 cm long, rusty pubescent, 4-valved.

Fls. & Frts. : September December.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 124, f. 75. 1909.

Distrib. : Common along hill slopes. Mahabaleshwar, Mhavashi, Nauja.

URENA L.

Urena lobata L. Sp. Pl. 692. 1753 ; Mast. in Hook. f. Fl. Brit. India I : 329. 1874 ; Cooke, Fl. Pres. Bombay I : 106. 1958 (Repr. ed.) ; Borss. in Blumea 14 : 138. 1966. 'Van bhendi'.

KEY TO THE SUBSPECIES

1. Leaves shallowly or not lobed ; epicalyx cupular in fruit ... *ssp. lobata*
1. Leaves deeply 5 - lobed ; epicalyx spreading in fruit ... *ssp. sinuata*

ssp. lobata

Herbs, *ca* 1 m high. Leaves 4.5 - 6.5 × 3.5 - 9.0 cm, stellate hairy, nerves with a gland at the base of midrib beneath. Flowers pink in axillary clusters. Capsules pubescent, spiny ; spines with 2 recurved bristles.

Fls. & Frts. : November December.

Hab. : Maheshwari, Ill. Fl. Delhi, f. 27. 1966.

Distrib. : Occasional as a forest undergrowth. Hirsule, Koyna.

ssp. sinuata (L.) Borss. in Blumea 14 : 142. 1966. *U. sinuata* L. Sp. Pl. 692. 1753.

Herbs, *ca* 1.5 m high, tomentose. Leaves stellate hairy with a gland at base on midrib beneath. Flowers pink in axillary, shortly pedicelled clusters. Capsules globose, pubescent, covered with hooked spines.

Fls. & Frts. : October February.

Distrib. : Common in waste places and along roadsides. Koyna valley, Morgiri, way to Patan.

CULTIVATED SPECIES

Malva sylvestris L. Sp. Pl. 689. 1753 ; Mast. in Hook. f. Fl. Brit India 1 : 320. 1874. *M. sylvestris* var. *mauritiana* Borss. Fl. Orient. 1 : 819. 1867 ; Bole & Almeida in J. Bombay nat. Hist. Soc. 77 : 460. 1981 ; Cooke, Fl. Pres. Bombay 1 : 96. 1958 (Repr. ed.).

Herbs. Leaves cordate, shortly lobed or 5 angled. Flowers purple in axillary fascicles. Carpels 10 - 12, margin keeled on back. Seeds brownish black.

Notes : Cultivated as an ornamental plant. Included on Bole & Almeida's report from Mahabaleshwar.

BOMBACACEAE

BOMBAX L.

Bombax ceiba L. Sp. Pl. 511. 1753 ; Robyns in Taxon 10 : 160. 1961.
B. malabaricum DC. Prodr. 1 : 479. 1824 ; Mast. in Hook. f. Fl. Brit. India 1 : 349. 1874 ; Cooke, Fl. Pres. Bombay 1 : 127. 1958 (Repr. ed.). *Salmalia malabarica* (DC.) Schott. & Endl. Melet. Bot. 35. 1832 ; Bole & Almeida in J. Bombay nat. Hist. Soc. 77 : 460. 1981. 'Kate savar'.

Trees, 10–12 m high. Leaves digitate ; leaflets ovate lanceolate, 7–15 cm long. Flowers solitary ; calyx cup shaped, thick, irregularly lobed ; corolla ca 8 cm long, tomentose outside. Capsules ovoid, 7–10 cm long, downy.

Fls. & Frts. : December February.

Illus. : Bedd. Fl. Sylv. t. 82. 1871.

Distrib. : Frequent in deciduous forests along ghats, sometimes planted along roadsides, leafless when flowering. Ambeghar, Kelghar ghat, Shirshingi.

CULTIVATED SPECIES

Adansonia digitata L. Sp. Pl. 1190. 1753 ; Mast. in Hook. f. Fl. Brit. India 1 : 348. 1874 ; Cooke, Fl. Pres. Bombay 1 : 126. 1958 (Repr. ed.). 'Gorakh chinch'.

Trees. Leaves digitate, deciduous ; leaflets 3–9, obovate oblong, acute or obtuse at apex. Flowers large, pendulous, tomentose. Fruits subglobose, ca 2 cm across, indehiscent, tomentose.

Notes : There is only one incomplete sheet at BSI (Pune) collected by W. Burns from Shirala, Satara.

STERCULIACEAE

1. Flowers unisexual ; petals absent	...	STERCULIA
1. Flowers bisexual ; petals present :		
2. Leaves ovate - oblong ; fruits spirally twisted follicles	...	HELICTERES
2. Leaves cordate ; fruits 5 - 10 valved capsules	...	ERIOLABNA

ERIOLAENA DC.

- | | | |
|--|-----|----------------------------|
| 1. Involucral bracts subpinnatifid | ... | <i>E. candollei</i> |
| 1. Involucral bracts entire or toothed on margin | ... | <i>E. quinquelocularis</i> |

Eriolaena candollei Wall. Pl. Asiat. Rar. I : 51, t. 64. 1830 ; Mast. in Hook. f. Fl. Brit. India I : 370. 1874 ; Lisboa in J. Roy. Asiat. Soc. (Bombay) 15 : 209. 1883 ; Cooke, Fl. Pres. Bombay I : 140. 1958 (Repr. ed.). 'Bothi'.

Trees, 12 - 15 m high, young branches pubescent. Leaves broadly ovate - cordate, apex acute or acuminate, glabrous above, grey - tomentose beneath. Flowers yellow in corymbose cymes. Capsules ovoid, woody. Seeds winged.

Fls. & Frts. : April May.

Illus. : Wall, *op. cit.*

Notes : Included on Lisboa's report from Mahabaleshwar.

E. quinquelocularis Wight, Ic. 3 : 7, t. 882. 1847 ; Mast. in Hook. f. Fl. Brit. India I : 371. 1874 ; Cooke, Fl. Pres. Bombay I : 140. 1958 (Repr. ed.).

Trees, 4 - 5 m high. Leaves 5 - 7 × 3.5 - 5.0 cm, apex acuminate, stellate hairy above, softly tomentose beneath. Flowers yellow, axillary, 1 - 3 together ; calyx and corolla pubescent without.

Fls. & Frts. : June.

Illus. : Wight, *op. cit.*

Distrib. : Rare in deciduous forests. Shirshingi, Kochhar 153448.

HELICTERES L.

Helicteres isora L. Sp. Pl. 963. 1753 ; Mast. in Hook. f. Fl. Brit. India I : 365. 1874 ; Cooke, Fl. Pres. Bombay I : 136. 1958 (Repr. ed.). 'Murudsheng'

Small trees or shrubs ; young branches stellate hairy. Leaves 7 - 13 × 4 - 7 cm, base subcordate, apex rounded or subacute, stellate hairy.

Flowers red in axillary clusters ; calyx tubular, obscurely 2 lipped ; corolla 2 - lipped with long claws. Follicles 3.0 - 3.5 cm long.

Fls. & Frts. : August - February.

Illus. : Wight, Ic. t. 180. 1839.

Distrib. : Common in deciduous forests. Karanjewadi, Khambil chorghe ghat, Koyna, Mahabaleshwar, Morgiri, Nauja.

STERCULIA L.

Sterculia guttata Roxb. Fl. Ind. (Carey ed.) 3 : 148. 1832 ; Mast. in Hook. f. Fl. Brit. India 1 : 355. 1874 ; Cooke, Fl. Pres. Bombay 1 : 124. 1958 (Repr. ed.).

Trees, 9 - 12 m high. Leaves ovate oblong, ca 12 × 8 cm, base truncate, apex acuminate, glabrous above, stellate pubescent on nerves beneath. Flowers reddish in terminal racemes. Follicles 1 - 5, ovoid, orange.

Fls. & Frts. : December - February.

Illus. : Wight, Ic. t. 487. 1841.

Distrib. : Rare along ghats in semi-evergreen forests. Shirshingi, Kochhar 15800 ft.

CULTIVATED SPECIES

S. foetida L. Sp. Pl. 1008. 1753 ; Mast. in Hook. f. Fl. Brit. India 1 : 354. 1874 ; Cooke, Fl. Pres. Bombay 1 : 130. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay nat. Hist. Soc. 77 : 460. 1981. 'Jangli badam'.

Trees, ca 20 m high. Leaves digitate ; leaflets subsessile. 5 - 9, oblong-lanceolate, pubescent when young. Flowers flesh coloured in axillary racemes. Follicles boat shaped, woody, bright red when ripe.

Fls. & Frts. : March - May.

Illus. : Wight, Ic. t. 181. 1839.

Notes : Cultivated at Bhilar estate, Panchgani (Bole & Almeida. op. cit.).

Pterospermum acerifolium Willd. Sp. Pl. 3 : 729. 1801 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 77 : 461. 1980 ; Mast. in Hook. f. Fl. Brit. India 1 : 368. 1874 ; Cooke, Fl. Pres. Bombay 1 : 137. 1958 (Repr. ed.), 'Kanak champa'.

Trees, 10–15 m high. Leaves variable in shape and size, orbicular or oblong, entire or lobed. Flowers white, axillary, solitary or in pairs. Capsules woody, oblong, 5-angled. Seeds obliquely ovoid, compressed, winged.

Fls. & Frts. : December–March.

Distrib. : Cultivated for fragrant flowers. Mahabaleshwar.

TILIACEAE

i. Herbs or undershrubs :

- | | | |
|--|-----|------------|
| 2. Leaves entire, basal serratures with filiform appendages ; petals eglandular ; fruits unarmed | ... | CORCHORUS |
| 2. Leaves lobed, without basal appendages ; petals glandular ; fruits prickly | ... | TRIUMFETTA |

ii. Shrubs or Trees :

- | | | |
|---|-----|-------------|
| 3. Fruits prickly ; triquetrous | ... | ERINOCARPUS |
| 3. Fruits not prickly, globose or ovoid : | | |
| 4. Leaves glabrous, entire or irregularly toothed ; flowers in terminal, paniculate cymes | ... | MICROCOS |
| 4. Leaves pubescent, serrulate ; flowers in axillary cymes | ... | GREWIA |

CORCHORUS L.

i. Capsules angular :

- | | | |
|--------------------------------------|-----|------------------------|
| 2. Capsules winged ; beak 3-fid | ... | <i>C. aestuans</i> |
| 2. Capsules not winged ; beak entire | ... | <i>C. trilocularis</i> |

ii. Capsules cylindrical :

- | | | |
|--|-----|---------------------|
| 3. Herbs erect ; capsules ribbed | ... | <i>C. olitorius</i> |
| 3. Herbs prostrate ; capsules not ribbed | ... | <i>C. depressus</i> |

Cocchorus aestuans L. Syst. Nat. ed. 10. 1079. 1759. *C. acutangulus* Lam. Encycl. 2 : 104. 1786 ; Mast. in Hook. f. Fl. Brit. India 1 : 398. 1874 ; Cooke, Fl. Pres. Bombay 1 : 160. 1958 (Repr. ed.).

Herbs, ca 50 cm high. Leaves ovate to oblong lanceolate, 4-7 × 3.5-4.5 cm, base and apex subobtuse. Flowers yellow, axillary, 1-3 together on short peduncles. Capsules elongate, ca 2.5 cm long.

Fls. & Frts. : September - November.

Illus. : Maheshwari, Ill. Fl. Delhi, f. 35. 1966.

Distrib. : Weed near cultivated fields. Dhebewadi.

C. depressus (L.) C. Christensen in Dansk. Bot. Arkiv. 4, 3 : 34. 1922 ; Chatterjee in Kew Bull. 1948 : 372. 1948. *Antichorus depressus* L. Mant. 64 : 1767. *C. antichorus* Raeuschel, Nom. ed. 3. 158. 1797 ; Mast. in Hook. f. Fl. Brit. India 1 : 398. 1874 ; Cooke, Fl. Pres. Bombay 1 : 159. 1958 (Repr. ed.).

Herbs, 15-20 cm high. Leaves shortly petioled, ca 2.0 × 1.5 cm, wrinkled, irregularly crenate. Flowers subsessile in leaf opposed cymes ; buds ovoid, apiculate ; sepals linear oblong ; petals oblong - obovate. Capsules 1.0 - 1.5 cm long, 4-valved. Seeds trigonous, black.

Fls. & Frts. : October - February.

Illus. : Wight, Ic. t. 1073. 1846 (*C. antichorus*) ; Maheshwari, Ill. Fl. Delhi, f. 32. 1966.

Distrib. : Rare in drier parts. Phaltan, Raghavan 105049.

C. olitorius L. Sp. Pl. 529. 1753 ; Mast. in Hook. f. Fl. Brit. India 1 : 397. 1874 ; Cooke, Fl. Pres. Bombay 1 : 158. 1958 (Repr. ed.).

Herbs, annual, 14-20 cm high. Leaves broadly elliptic, 2.2-3.4 × 1.2-2.0 cm, base obtuse, apex acuminate. Flowers yellow, solitary, axillary ; sepals oblong ; petals spatulate. Capsules elongate, 2.0-3.5 cm long, spreading.

Fls. & Frts. : April - September.

Illus. : Maheshwari, Ill. Fl. Delhi, f. 33. 1966.

Distrib. : Weed near cultivated fields. Karad.

Cerchorus trilocularis L. Mant. 77, 1767; Mast. in Hook. f. Fl. Brit. India 1 : 397. 1874; Cooke, Fl. Pres. Bombay 1 : 158. 1958 (Repr. ed.). 'Kadu chinch'.

Herbs, ca 1 m high, hairy. Leaves oblong-lanceolate, 1.5 - 4.5 × 0.8 - 1.2 cm, base cuneate, apex acute, margin serrate-crenate. Flowers yellow, ca 0.5 cm across in axillary cymes. Capsules elongate, ca 7 cm long, scabrous.

Fls. & Frts. : July September.

Illus. : Maheshwari, Ill. Fl. Delhi, f. 34. 1966.

Distrib. : Weed near cultivated fields in drier parts. Phaltan.

ERINOCARPUS Nimmo

Erinocarpus nimmonii Grah. ex Dalz. & Gibbs. Bombay Fl. 27. 1861; Cooke, Fl. Pres. Bombay 1 : 155. 1958 (Repr. ed.). *E. nimmoanus* Mast. in Hook. f. Fl. Brit. India 1 : 394. 1874. 'Cher'.

Trees, 4 - 6 m high. Leaves orbicular, ca 12 cm across, 5 - lobed, irregularly toothed, scabrid above; petioles 5 - 8 cm long. Flowers bright yellow in terminal, lax panicles; sepals fulvous pubescent outside; petals glandular at base, ciliate on margins. Capsules woody, winged on angles.

Fls. & Frts. : September April.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 169, f. 104 S. 1909.

Distrib. : Common in deciduous forests. Ambeghar, Koyna, Mahabaleshwar, Morgiri, Satara, Khambil chorghe ghat.

GREWIA L.

1. Leaves lanceolate, glabrous above, hairy beneath :

2. Drupes 2 - lobed ... *G. serrulata*

2. Drupes 4 - lobed ... *G. orientalis*

1. Leaves ovate to obovate - oblong, hairy or hoary tomentose on both surfaces :

3. Flowers polygamous ... *G. hirsuta*

3. Flowers bisexual :

4. Straggling shrubs ; drupes 4 - lobed ... *G. abutilifolia*
4. Erect shrubs or small trees ; drupes 1 - 2 - lobed :
- 5. Leaves 3 - nerved ; stipules linear - lanceolate ... *G. flavesce*
 - 5. Leaves 5 - 6 - nerved ; stipules leafy, auricled ... *G. tiliæfolia*

***Grewia abutilifolia* Vent. ex A.L. Juss. in Ann. Mus. Par. 4 : 92. 1804 ; Mast. in Hook. f. Fl. Brit. India 1 : 390. 1874 ; Cooke, Fl. Pres. Bombay 1 : 152. 1958 (Repr. ed.).**

Shrubs, 2 - 4 m high. branches stellate hairy. Leaves 8 - 12 × 4 - 8 cm, chartaceous, 3 nerved, base rounded, apex acute, scabrid; stipules lanceolate, hairy. Flowers white. Drupes ca 1 cm across, hairy.

Fls. & Frts. : August - October.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 165, f. 102. 1909.

Distrib. : Frequent along forest fringes in deciduous forests. Morgiri, Wai.

***G. flavesce* A.L. Juss. in Ann. Mus. Natl. Hist. Nat. 4 : 91. 1904 ; Gamble, Fl. Pres. Madras 1 : 85. 1957 (Repr. ed.). *G. carpinifolia* non A.L. Juss. ; Roxb. Fl. Ind. 2 : 587. 1832 ; Mast. in Hook. f. Fl. Brit. India 1 : 387. 1874.**

Trees, 5 - 6 m high. Leaves 3 - 6 × 2 - 3 cm, base subcordate, apex acute. Flowers yellow ; sepals lanceolate, mucronate, densely pubescent without ; petals linear or oblong. Drupes 1.0 - 1.5 cm across, tomentose, apiculate.

Fls. & Frts. : August - September.

Illus. : Matthew, Mat. Fl. Tamilnadu Carnatic 2 : 3. 170, pl. 15f, 16f & 17d. 1983.

Distrib. : Occasional in deciduous forests. Mahabaleshwar, Shirgaon ghat.

***G. hirsuta* Vahl. Symb. Bot. 1 : 34. 1790 ; Mast. in Hook. f. Fl. Brit. India 1 : 391. 1874 ; Cooke, Fl. Pres. Bombay 1 : 153. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay nat. Hist. Soc. 77 : 462. 1981.**

Shrubs, 2 - 5 m high, young branches pubescent. Leaves distichous, 4 - 6 × 2 - 4 cm, base unequal, apex acute. Flowers ca 1 cm across; sepals linear-lanceolate, base callose; petals oblong, obtuse, gland orbicular, half the length of the petal, fringed. Drupes globose, obscurely 4 lobed.

Fls. & Frts. : August November.

Distrib. : Common on exposed hill slopes. Karad, Koyna, Mahabaleshwar.

Grewia orientalis L. Sp. Pl. 964. 1753 ; Mast. in Hook. f. Fl. Brit. India 1 : 384. 1874 ; Bole & Almeida in J. Bombay nat. Hist. Soc. 77 : 462. 1981.

Shrubs, scandent. Leaves cordate, base unequal, apex acuminate, 3 nerved. Flowers yellow, in axillary and terminal umbellate cymes; buds ovoid oblong, ribbed, pubescent. Drupes yellow, wrinkled, hairy.

Fls. & Frts. : June.

Notes : Included on Nairene's report from Mahabaleshwar (Bole & Almeida, *op. cit.*).

G. serrulata DC. prodr. 1 : 510. 1824 ; Narayanasw. & Rolla Rao in J. Ind. Bot. Soc. 29 : 187. 1951. **G. laevigata** auct. plur. non Vahl 1790 ; Mast. in Hook. f. Fl. Brit. India 1 : 389. 1874 ; Cooke, Fl. Pres. Bombay 1 : 152. 1958 (Repr. ed.) (Fig. 1).

Shrubs, 3 - 5 m high. Leaves 10 - 13 × 3 - 5 cm, membranous, base acute, apex acuminate, 3 - nerved. Flowers in umbellate cymes; buds subglobose or ovoid, pubescent; petals glandular. Drupes globose, ca 1 cm across.

Fls. & Frts. : February November.

Distrib. : Common component of deciduous forests. Dicholi, Karanjewadi, Koyna, Morgiri, Nauja.

Notes : In most of the Indian floras, it is treated under **G. laevigata** Vahl, which is rather a distinct species with rounded, eglandular leaves at base. After critical study of the type material of **G. serrulata** DC. and **G. glabra** Bl. by Rolla Rao (Gazett. 1969) it is confirmed that **G. serrulata** DC. is the earliest valid name for the present taxon.

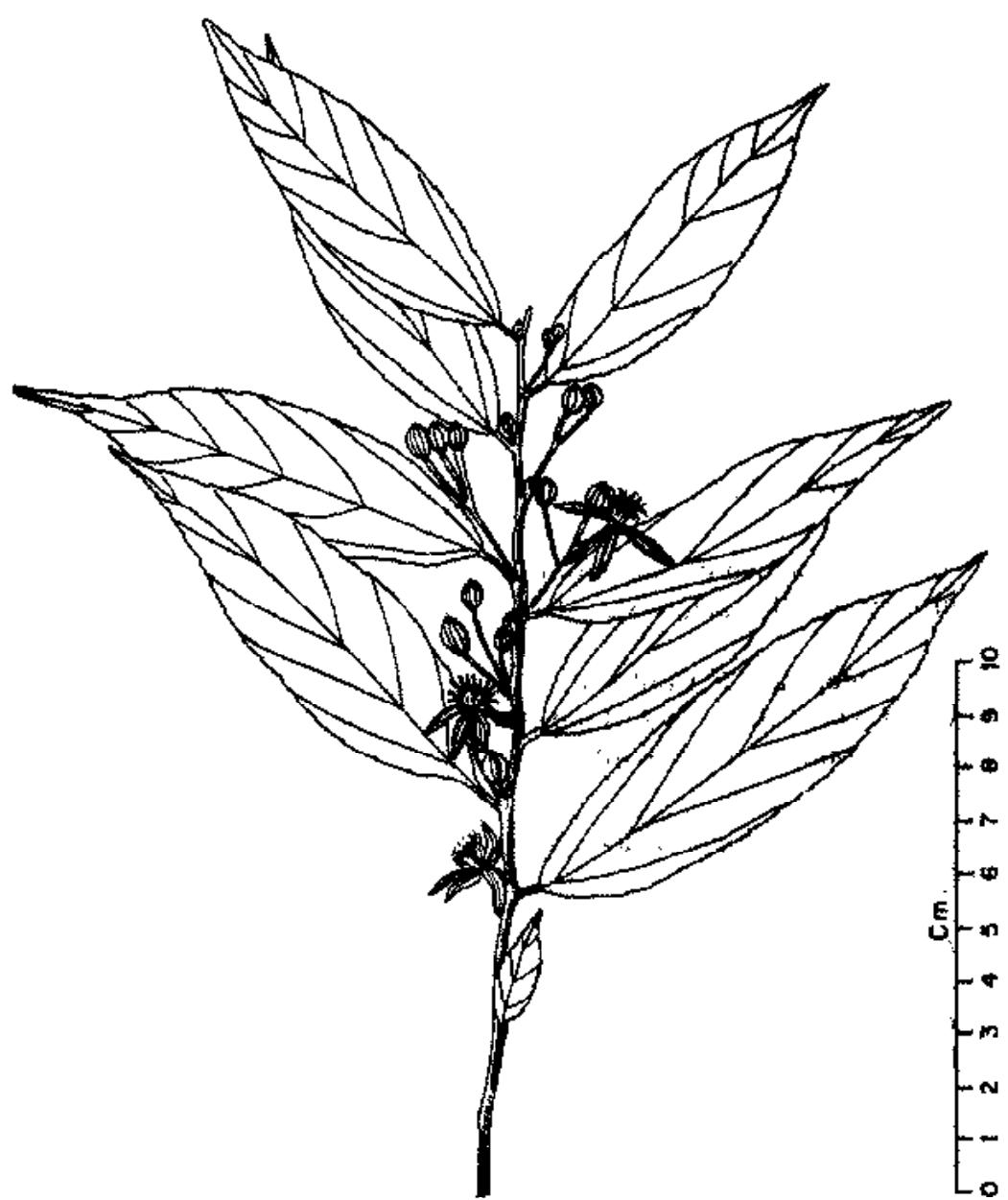


Fig. 1. *Grewia serrulata* DC.

Grewia tiliæfolia Vahl Symb Bot. I : 35. 1790 ; Mast. in Hook. f. Fl. Brit. India I : 386. 1876 ; Cooke, Fl. Pres. Bombay I : 150. 1958 (Repr. ed.).

KEY TO THE VARIETIES

- | | | |
|---|-----|--------------------------|
| 1. Leaves hoary - tomentose beneath ; gland one third the length of petal | ... | var. <i>tiliaeifolia</i> |
| 1. Leaves glabrous to softly hairy beneath ; glands absent or reduced to petal base | ... | var. <i>leptopetala</i> |

var. *tiliaeifolia*

Trees, 5-10 m high, young branches pubescent. Leaves 7-12 × 5-7 cm, base unequal, apex subacute. Buds ovoid oblong, tomentose ; petals spatulate, entire or notched. Drupes black.

Fls. & Frts. : May - August.

Notes : Included on the authority of Cooke (*op. cit.*) who reported it from Koyna valley below Mahabaleshwar.

var. *leptopetala* T. Cooke, Fl. Pres. Bombay I : 142. 1901 & I : 150. 1958 (Repr. ed.) ; Blatt. in J. Bombay Nat. Hist. Soc. 34 : 887. 1930. *G. leptopetala* Brand. Ind. Trees 100. 1906.

Trees, 4-5 m high. Leaves 4-14 × 3-8 cm. Drupes globose, ca 1 cm across.

Fls. & Frts. : June - July.

Distrib. : Common than the type variety. Karad, Nauja, Pasarni ghat, Panchgani.

MICROCOS L.

Microcos paniculata L. Sp. Pl. 514. 1753 ; Burret in Netizbl. Konigl. Bot. Gart. Berlin 9 : 661. 1926 ; Narayanasw. & Rolla Rao in J. Ind. Bot. Soc. 29 : 181. 1951. **Grewia microcos** L. Syst. ed. 2. 602. 1767 ; Mast. in Hook. f. Fl. Brit. India I : 392. 1874 ; Cooke, Fl. Pres. Bombay I : 154. 1958 (Repr. ed.). 'Shirul'.

Shrubs, 4-5 m high. Leaves elliptic oblong, up to 17 x 7 cm, base oblique, apex acuminate, 3 nerved; buds ovoid, grey tomentose; petals with glands at the base, ciliate. Fruits obovoid, purplish.

Fls. & Frts. : May September.

Illus. : Wight, Ic. t. 84. 1838.

Distrib. : Common along ghats in semi-evergreen and scrub forests. Dhokewadi, Jadholi, Karad Chiplon Road, Koyna, Mahabaleshwar, Nauja.

Notes : Linnaeus (*op. cit.*) treated this taxon under Sect. *Microcos* of the genus *Grewia*. Burret (*op. cit.*) separated it from *Grewia* on the basis of terminal panicled raceme and typical trifid bracts.

TRIUMFETTA L.

1. Herbs, glabrous	...	<i>T. annua</i>
1. Herbs, stellate hairy :		
2. Leaves ovate - lanceolate ; spines on the capsule glabrous above, hispid below	...	<i>T. pilosa</i>
2. Leaves variable ; spines glabrous :		
3. Flowers in leaf - opposed cymes	...	<i>T. rhomboidea</i>
3. Flowers in terminal racemes	...	<i>T. rotundifolia</i>

Triumfetta annua L. Mant. I : 73. 1767 ; Mast. in Hook. f. Fl. Brit. India I : 396. 1874.

Herbs, 30-50 cm high. Leaves ovate, toothed. Flowers yellow in fascicles. Capsules globose, ca 0.5 cm across, 4 lobed ; spines glabrous, hooked at apex.

Fls. & Frts. : November.

Distrib. : Infrequent along ghats, not reported by Cooke from the erstwhile Bombay Presidency. Tadoshi, Kochhar 157835.

T. pilosa Roth, Nov. Pl. Sp. 223. 1821 ; Mast. in Hook. f. Fl. Brit. India I : 394. 1874 ; Cooke, Fl. Pres. Bombay I : 156. 1958 (Repr. ed.).

Herbs, 1-2 m high. Leaves 6-10 × 2-5 cm, stellate hairy. Flowers in leaf-opposed cymes. Capsules up to 1 cm across; spines hooked.

Fls. & Frts. : November December.

Distrib. : Common. Koyna, Lingmala, Panchgani.

Triumfetta rhomboidea Jacq. Enum. Pl. Carib. 22 : 1760 ; Mast. in Hook. f. Fl. Brit. India 1 : 395. 1874 ; Cooke, Fl. Pres. Bombay 1 : 158. 1958 (Repr. ed.). (Fig. 2).

Herbs, 1.0-1.5 m high. Leaves upper sessile, lower petiolate, irregularly serrate, hairy. Flowers orange yellow. Capsules globose; bristles pubescent at base, hooked and transparent at apex.

Fls. & Frts. : October December.

Distrib. : Common weed near cultivated fields and in waste places. Khambil - Chorghe ghat, Koyna, Machutar forest, Mahabaleshwar, Mhavashi, Nauja, Panchgani.

T. rotundifolia Lam. Encycl. 3 : 421. 1789 ; Mast. in Hook. f. Fl. Brit. India 1 : 395. 1874 ; Cooke, Fl. Pres. Bombay 1 : 157. 1958 (Repr. ed.).

Herbs, ca 1 m high. Leaves orbicular, 1.5-2.5 cm across, stellate hairy above, tomentose beneath. Flowers yellow, ca 0.5 cm across; buds oblong, tomentose. Capsules ovoid, ca 0.5 cm across.

Fls. & Frts. : October.

Distrib. : Rare near forest clearings. Tari, 166438.

ELAEOCARPACEAE

ELAEOCARPUS L.

1. Drupes 5 - celled	...	<i>E. sphaericus</i>
1. Drupes 1-3 - celled :		
2. Anthers bearded ; drupes oblong, falcate	...	<i>E. serratus</i>
2. Anthers not bearded ; drupes ovoid, straight	...	<i>E. tectorius</i>

Elaeocarpus serratus L. Sp. Pl. 515. 1753 ; Mast. in Hook. f. Fl. Brit. India 1 : 401. 1874 ; Cooke, Fl. Pres. Bombay 1 : 161. 1958 (Repr. ed.). *E. oblongus* Gaertn. Fruct. 1 : 202, t. 43. 1788 ; Mast. in Hook. f. Fl. Brit. India 1 : 401. 1874. 'Kashiphal'.

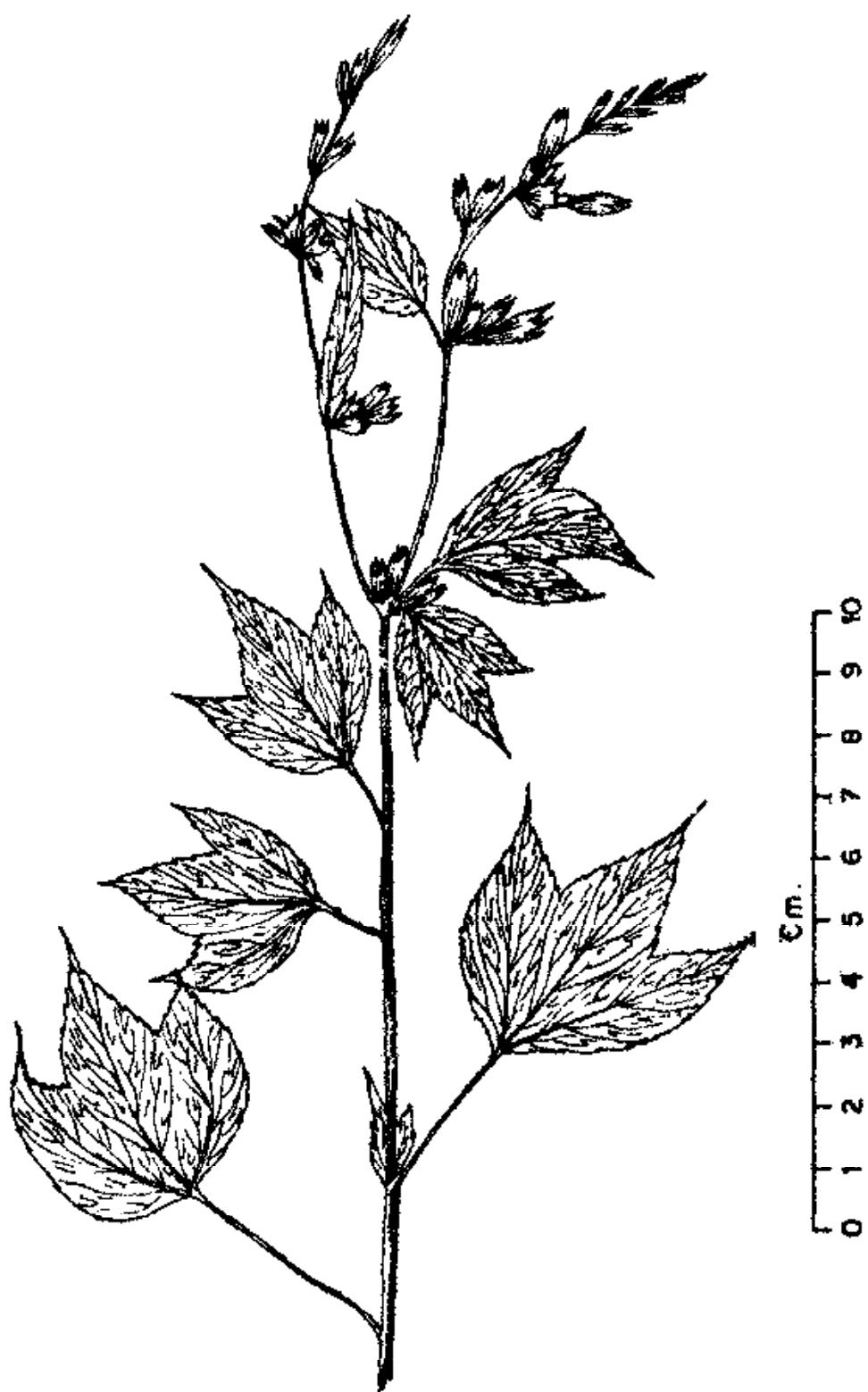


Fig. 2. *Triumfetta rhomboidea* Jacq.

Trees, ca 30 m high, young branches pubescent. Leaves oblong elliptic, 6.5–13.5 × 2.5–7.0 cm, irregularly crenate. Flowers white from the axils of fallen leaves; fringed half way down. Drupes ca 3.5 cm long.

Fls. & Frts. : April May.

Illus. : Wight, Ic. t. 46. 1838.

Distrib. : Common in semievergreen forests. Gureghar, Lingmala, Mahabaleshwar, Panchgani, Pratapgad, Satara.

Elaeocarpus sphaericus (Gaertn.) Schum. in Engl. & Prantl. Pflanzenfam. 3 : 5. 1895. *Ganitrus sphaericus* Gaertn. Fruct. 2 : 271, t. 139. 1701. *E. ganitrus* Roxb. Fl. Ind. (Carey ed.), 1 : 400. 1832; Mast. in Hook. f. Fl. Brit. India 1 : 400. 1874; Lisboa in J. Roy. Asiat. Soc. (Bombay) 15 : 209. 1883; Cooke, Fl. Pres. Bombay 1 : 160. 1958 (Repr. ed.). 'Rudraksh'.

Trees. Leaves oblong-lanceolate, obscurely crenate serrate. Flowers white in racemes from the old branches; buds ovoid conical; sepals oblong, acuminate, pubescent without; petals oblong, laciniate. Drupes purple. Stone tubercled.

Fls. & Frts. : January February.

Illus. : Wight, Ic. t. 66. 1838; Talbot, For. Fl. Bombay Pres. & Sind 1 : 170, t. 105. 1909.

Notes : Included on Lisboa's report from Mahabaleshwar.

E. tectorius (Lour.) Poir. in Lam. Encycl. Suppl. 2 : 704. 1812. *Craspedum tectorium* Lour. Fl. Cochinch. 336. 1790. *E. oblongus* non Gaertn. 1788; Graham, Cat. Bombay Pl. 21. 1839; Mast. in Hook. f. Fl. Brit. India 1 : 403. 1874; Cooke, Fl. Pres. Bombay 1 : 161. 1958 (Repr. ed.). 'Kasar'.

Trees. Leaves elliptic, 7–10 × 4–6 cm, base cuneate, apex acute or acuminate, margin crenate serrate, glandular on crenatures. Flowers white in racemes from the axils of fallen leaves; buds ovoid; sepals ovate, acute, reddish brown; petals laciniate. Drupes ca 2.5 cm long.

Fls. & Frts. : March November.

Illus. : Wight, Ic. t. 46. 1838; Talbot, For. Fl. Bombay Pres. & Sind 1 : 173, f. 107. 1909.

Distrib. : Common. Lingmala, Bole & Almeida (*BLAT*) ; Satara, Woodrow (Cooke, *op. cit.*) ; Wai ghat, Graham (Cooke, *op. cit.*).

LINACEAE

1. Herbs ; styles 5	...	LINUM
1. Undershubs ; styles 3	...	REINWARDTIA

LINUM L.

Linum mysorensis Heyne ex Bth. in Edw. Bot. Reg. 16 : t. 1326. 1830 ; Hook. f. Fl. Brit. India 1 : 411. 1874 ; Cooke, Fl. Pres. Bombay 1 : 164. 1958 (Repr. ed.). 'Undri'. (Fig. 3).

Herbs, 25-30 cm high. Leaves oblong-elliptic, up to 2 cm long, base cuneate, apex obtuse. Flowers yellow in corymbose cymes ; sepals elliptic lanceolate, 3-nerved ; petals obovate. Capsules globose, ca 0.4 cm across.

Fls. & Frts. : September January.

Distrib. : Common along hill slopes and near cultivated fields. Khambil - Chorghe ghat, Koyna, Mahabaleshwar, Mahabaleshwar Satara Road, Old Mahabaleshwar, Yavteshwar, Umarkanchan.

CULTIVATED SPECIES

L. usitatissimum L. Sp. Pl. 277. 1753 ; Hook. f. Fl. Brit. India 1 : 410. 1874 ; Cooke, Fl. Pres. Bombay 1 : 164. 1958 (Repr. ed.). 'Javas'.

Herbs, erect, annual, 30-50 cm high. Leaves linear-lanceolate, up to 3 cm long. Flowers blue in corymbose panicles. Capsules globose, ca 1 cm across.

Fls. & Frts. : January March.

Distrib. : Cultivated for oil yielding seeds. Vardhangad.

REINWARDTIA Dumort.

Reinwardtia indica Dumort. Comm. Bot. 19. 1822. *R. trigyna* (Roxb.) Planch. in Hook. Lond. J. Bot. 7 : 522. 1848 ; Hook. f. Fl. Brit.

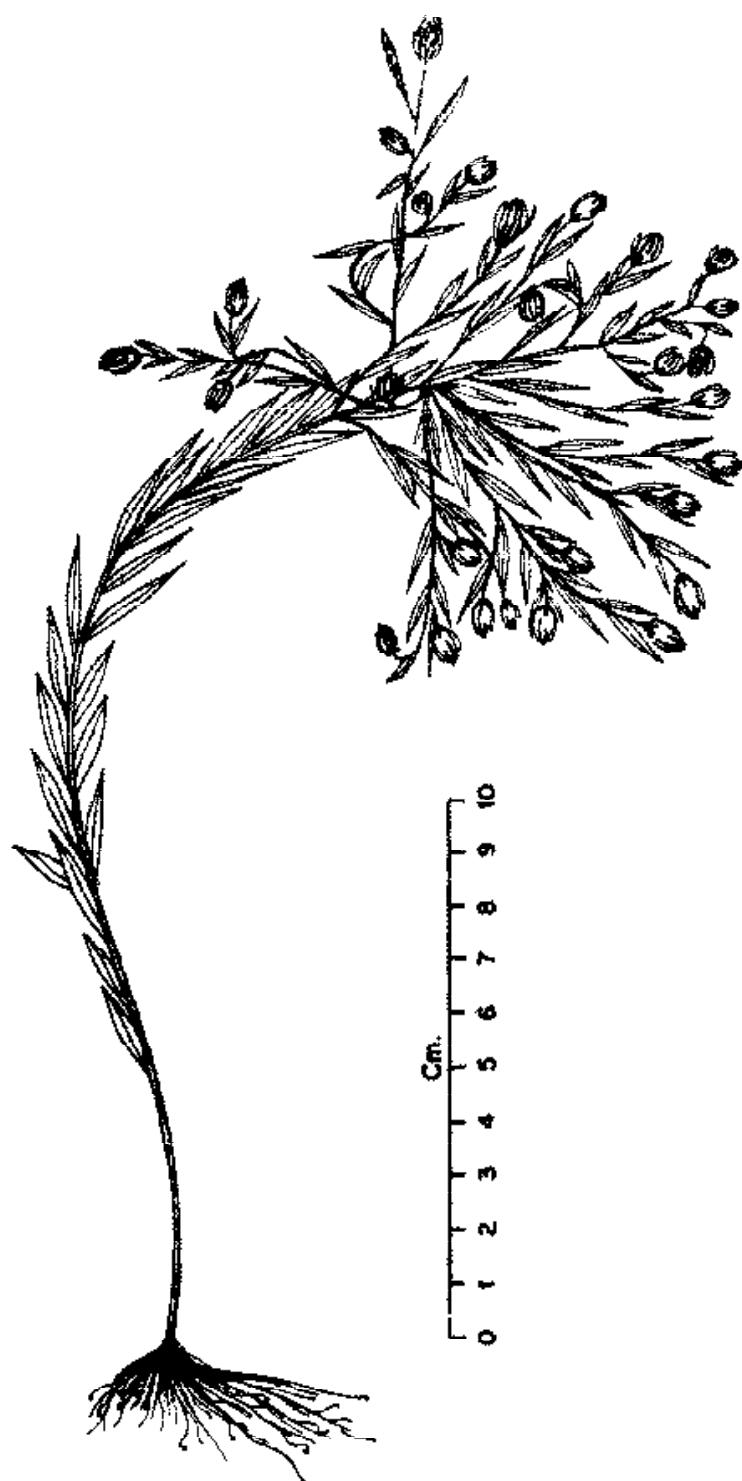


Fig. 3. *Linum mysorensis* Heyne ex Bth.

India 1 : 412. 1874 ; Cooke, Fl. Pres. Bombay 1 : 165. 1958 (Repr. ed.).
'Abai'.

Undershrubs ca 1 m high. Leaves elliptic lanceolate, 4–8 × 1.5–3.6 cm, base tapering, apex acute, distantly serrate. Flowers yellow, solitary or in few flowered corymbs. Capsules globose, 6–8 valved.

Fls. & Frts. : August November.

Distrib. : Frequent in semi-evergreen forest clearings. Koyna valley, Mahabaleshwar, Old Mahabaleshwar, Panchgani, Yavteshwar.

MALPIGHIACEAE

- | | | |
|--|-----|--------------|
| 1. Leaves alternate ; flowers greenish - white | ... | ASPIDOPTERYS |
| 1. Leaves opposite ; flowers white with pink tinge | ... | HIPATIA |

ASPIDOPTERYS A. Juss.

- | | | |
|--|-----|-------------------|
| 1. Leaves cordate, tomentose beneath | ... | <i>A. cordata</i> |
| 1. Leaves ovate - elliptic, glabrous beneath | ... | <i>A. indica</i> |

Aspidopterys cordata (Heyne ex Wall.) A. Juss. in Ann. Sci. Nat. 2, 13 : 267. 1840 ; Hook. f. Fl. Brit. India 1 : 421. 1874 ; Cooke, Fl. Pres. Bombay 1 : 168. 1958 (Repr. ed.). *Hirarea cordata* Heyne ex Wall. Pl. As. Rar. 1 : 13. 1829. 'Buryel'. (Fig. 4).

Shrubs, scandent ; young branches tomentose. Leaves 6–16 × 4–14 cm ; petioles ca 5 cm long, tomentose. Flowers in lax, axillary and terminal panicles ; sepals ovate, acute ; petals oblong elliptic. Fruits orbicular, membranous.

Fls. & Frts. : September - October.

Distrib. : Occasional in deciduous forests. Sanbur, Shirgaon ghat.

A. indica (Roxb.) Hochr. in Bull. Inst. Buitenz. 19 : 45. 1904.
Hirarea indica Roxb. Fl. Ind. (Carey ed.) 2 : 448. 1832. *A. roxburghiana* A. Juss. in Ann. Sci. Nat. 2, 13 : 267. 1840 ; Hook. f. Fl. Brit. India 1 : 520. 1874 ; Cooke, Fl. Pres. Bombay 1 : 168. 1958 (Repr. ed.).

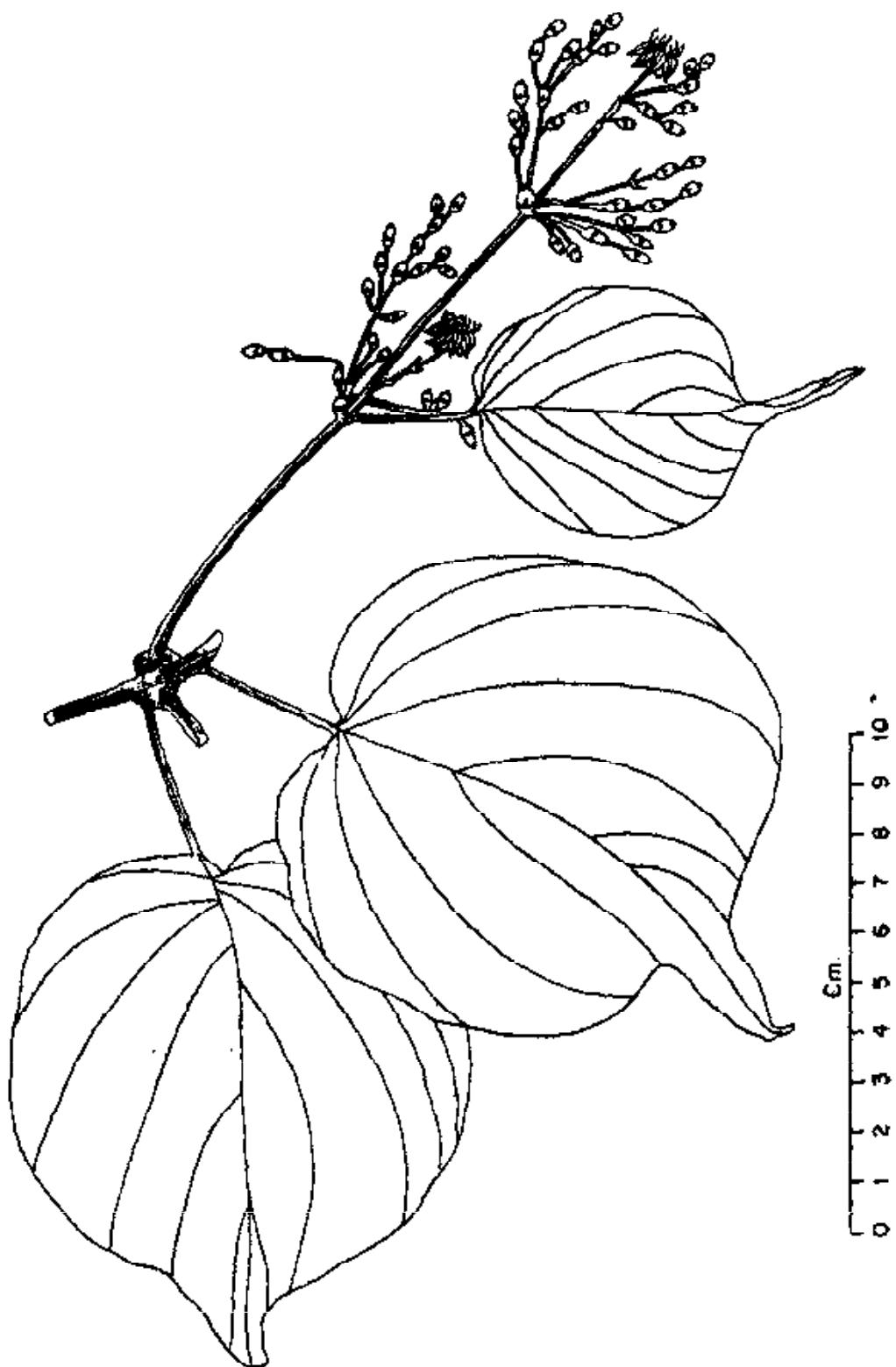


Fig. 4. *Aspidopteryx cordata* (Heyne ex Wall.) A. Juss.

Shrubs, climbing. Flowers small in dense axillary and terminal panicles. Fruits linear oblong, membranous.

Fls. & Frts. : November December.

Notes : Included on Woodrow's report from hills near Satara (Cooke, *op. cit.*).

HIPATIA Gaertn.

Hiptage benghalensis (L.) Kurz in J. Asiat. Soc. Beng. 14 : 36. 1879 ; Blatt. in J. Bombay nat. Hist. Soc. 34 : 893. 1930. *Banisteria benghalensis* L. Sp. Pl. 427. 1753. *H. madablotia* Gaertn. Fruct. 2 : 169, t. 116, f. 4. 1790 ; Hook. f. Fl. Brit. India 1 : 418. 1874.

Shrubs, scandent. Leaves elliptic oblong, 5-8 x 2-5 cm, base obtuse, apex acute or acuminate. Flowers in *ca* 10 cm long racemes ; petals clawed, fringed on margins. Fruits 3-winged, middle wing longer, up to 4 cm long.

Fls. & Frts. : February March.

Distrib. : Occasional along ghats. Fitzgerald ghat, Karanjewadi, Panchgani.

ZYGOPHYLLACEAE

- | | | |
|--|-----|----------|
| 1. Herbs, procumbent ; flowers yellow ; fruits spiny | ... | TRIBULUS |
| 1. Herbs, erect ; flowers rosy ; fruits not spiny | ... | FAGONIA |

FAGONIA L.

Fagonia cretica L. Sp. Pl. 386. 1753. *F. arabica* L. *op. cit.* ; Edgew. & Hook. f. in Hook. f. Fl. Brit. India 1 : 425. 1874 ; Cooke, Fl. Pres. Bombay 1 : 173. 1958 (Repr. ed.). 'Dhamasa'.

Herbs ; rootstock woody. Leaves 1-3-foliate ; leaflets entire, mucronate, with 2 pairs of sharp stipules. Flowers solitary ; sepals and petals deciduous. Fruits of 5 cocci. Seeds ovoid, compressed.

Fls. & Frts. : October December.

Illus. : Maheshwari, Ill. Fl. Delhi. f. 39. 1966.

Distrib. : Occasional near cultivated fields in drier parts. Girvi.

TRIBULUS L.

Tribulus terrestris L. Sp. Pl. 387. 1753 ; Edgew. & Hook. f. in Hook. f. Fl. Brit. India 1 : 423. 1874 ; Cooke, Fl. Pres. Bombay 1 : 170. 1958 (Repr. ed.). 'Sarata'.

Herbs, annuals or biennials. Leaflets 3-4 pairs, oblong, up to 0.5×0.3 cm, base obtuse, apex mucronate, silky villous. Flowers axillary, solitary ; petals fugacious ; stamens 10, 5 shorter with glandular scales. Fruits globose, cocci 5, muricate.

Fls. & Frts. : Throughout the year.

Illus. : Maheshwari, Ill. Fl. Delhi f. 38. 1966.

Distrib. : Common in cultivated fields. Girvi, Hills around Satara, Satara Road, Phaltan.

OXALIDACEAE

- | | | |
|---|-----|-----------|
| 1. Herbs, erect ; leaves pinnately compound, sensitive to touch | ... | BIOPHYTUM |
| 1. Herbs, procumbent ; leaves palmately 3-lobed, not sensitive to touch | ... | OXALIS |

BIOPHYTUM DC.

Biophytum sensitivum (L.) DC. Prodr. 1 : 690. 1824 ; Edgew. & Hook. f. in Hook. f. Fl. Brit. India 1 : 436. 1874 ; Cooke, Fl. Pres. Bombay 1 : 177. 1958 (Repr. ed.). *Oxalis sensitiva* L. Sp. Pl. 434. 1753.

Herbs, 15-25 cm high ; stem reddish, densely hairy. Leaves crowded at apex of branches ; leaflets 5-8 pairs, obovate, 1.0×0.6 cm, base obtuse, apex apiculate. Flowers yellow, in terminal umbels ; sepals glandular-pubescent. Capsules ellipsoid. Seeds ovoid, transversely striate.

Fls. & Frts. : September December.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 96. 1982.

Distrib. : Frequent near cultivated fields along with *Cassia obtusifolia* and *Cyanotis cristata*. Morgiri, Tapola.

OXALIS L.

Oxalis corniculata L. Sp. Pl. 535. 1753 ; Edgew. & Hook. f. in Hook. f. Fl. Brit. India 1 : 436. 1874 ; Cooke, Fl. Pres. Bombay 1 : 177. 1958 (Repr. ed.).

var. *corniculata*

Herbs, pubescent. Leaflets subsessile, obcordate, up to 1.5×1.7 cm, base cuneate, apex emarginate, sparsely hairy. Flowers yellow, axillary, solitary or together. Capsules 1.2–2.0 cm long, shortly beaked, tomentose.

Fls. & Frts. : April July.

Illus. : Wight, Ic. t. 18. 1838.

Distrib. : Common weed along roadsides and in moist places. Gureghar, Koyna, Koyna-Karad Road, Panchgani, Yavteshwar.

var. *hispida* Blatt. in J. Bombay nat. Hist. Soc. 34 : 898. 1930.

Differs from the type variety only in villous nature.

Distrib. : Panchgani, J. Fernandez (4370 71 BLAT).

CULTIVATED SPECIES

O. corymbosa DC Prodr. 1 : 696. 1824 ; Calder in Rec. Bot. Surv. India 6 (8) : 325-341. 1919 ; Babu, Fl. Dehra Dun 103. 1977.

Herbs, perennials ; bulbs globose with 3 nerved scales. Leaves obcordate. Flowers purple in subumbellate corymbs.

Fls. : April May.

Distrib. : Weed in gardens ; introduced from America. Lingmala.

Oxalis latifolia H.B.K. Nov. Gen. et Sp. 184, t. 467. 1821 : Blatt. in J. Bombay nat. Hist. Soc. 34 : 898. 1930.

Herbs, erect ; bulbs globose with dark brown scales. Leaves 3 - foliolate. Flowers violet in umbels ; sepals with 2 red callousities at apex.

Fls. & Frts. : May December.

Distrib. : Native of Tropical America ; cultivated in gardens. Koyna, Mahabaleshwar, Panchgani.

O. tetraphylla Cav. Jc. III, 19. t. 237. 1794 ; Blatt. in J. Bombay nat. Hist. Soc. 34 : 898. 1930.

Herbs, ca 30 cm high ; bulbs spherical, with lanceolate, nerved scales. Leaves 4 - lobed ; leaflets round obtiangular. Flowers violet in umbels.

Notes : Included on Blatter's report from Panchgani.

O. rubra St. Hil. Fl. Bras. Mer. I : 124. 1835 ; Bailey, Man. Cult. Pl. 601. 1949.

Herbs, trailing, pubescent. Leaves palmately 3 lobed ; leaflets obcordate. Flowers pinkish violet, subumbellate.

Fls. : April January.

Distrib. : Cultivated as an ornamental plant. Mahabaleshwar.

TROPAEOLACEAE

Tropaeolum majus L. Sp. Pl. 345. 1753 ; Bailey, Man. Cult. Pl. 602, f. 99. 1949 ; Bole & Almeida in J. Bombay nat. Hist. Soc. 78 : 549. 1981.

Climbers. Leaves peltate, 7 - 9 cm across, petioles 7 - 19 cm long. Flowers orange - yellow, solitary, axillary ; sepals 5, one produced into long spur ; petals clawed, 3 fringed at base, 2 small with scarlet streaks inside.

Fls. : August September.

Illus. : Bailey, op. cit.

Distrib. : Cultivated as an ornamental plant. Panchgani, Mahabaleshwar.

BALSAMINACEAE

IMPATIENS L.

- 1. Plants scapigerous ; leaves radical ... *I. acaulis*
- 1. Plants not scapigerous ; leaves cauline :
 - 2. Leaves opposite :
 - 3. Leaves oblong - lanceolate ; flowers yellow ... *I. dalzellii*
 - 3. Leaves oblong - linear or elliptic - lanceolate ; flowers purple or white :
 - 4. Leaves glandular at base ; flowers white ... *I. minor*
 - 4. Leaves not glandular at base ; flowers pink or violet :
 - 5. Pedicels glabrous ... *I. oppositifolia*
 - 5. Pedicels hairy :
 - 6. Pedicels rufous hairy ... *I. tomentosa*
 - 6. Pedicels with a line of pubescence, not rufous :
 - 7. Lip boat - shaped ... *I. lawii*
 - 7. Lip saccate ... *I. pusilla*
 - 2. Leaves alternate or subopposite :
 - 8. Leaves alternate and subopposite mixed capsules ellipsoid ... *I. latifolia*
 - 8. Leaves alternate ; capsules turgid :
 - 9. Spur long ; capsule glabrous ... *I. pulcherrima*
 - 9. Spur short ; capsule tomentose ... *I. balsamina*

Impatiens acaulis Arn. in Hook. f. Comp. Bot. Mag. 1 : 325. 1835 ;
 Hook. f. Fl. Brit. India 1 : 443. 1874 ; Cooke, Fl. Pres. Bombay 1 : 180.
 1958 (Repr. ed.) ; Blatt. in J. Bombay nat. Hist. Soc. 36 : 309. 1933.

Herbs, scapes 12–20 cm long. Leaves suborbicular *ca* 11 cm long, base subcordate, apex rounded, crenate. Flowers rosy in racemes; spur short, curved. Capsules ellipsoid, *ca* 1 cm long. Seeds minutely hooked.

Fls. & Frts. : August–October.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 99. 1982.

Distrib. : Common perennials near waterfalls on wet rocks. Jadholi, Fitzgerald ghat, Nauja, Mahabaleshwar, Mahabaleshwar Pratapgad.

Impatiens balsamina L. Sp. Pl. 938. 1753 ; Hook. f. Fl. Brit. India 1 : 453. 1874 ; Cooke, Fl. Pres. Bombay 1 : 184. 1958 (Repr. ed.).

KEY TO THE VARIETIES

I. Leaves ovate ; spur stout	...	var. <i>agrestis</i>
I. Leaves lanceolate ; spur slender	...	var. <i>rosea</i>

var. *agrestis* Hook. f. in Rec. Bot. Surv. India 4 : 50. 1906 ; Blatt. in J. Bombay nat. Hist. Soc. 36 : 314. 1933.

Herbs, erect. Leaves *ca* 5 cm long. Flowers axillary, solitary on short pedicels.

Fls. : July.

Distrib. : Infrequent in Koyna valley.

var. *rosea* (Lindl.) Hook. f. Fl. Brit. India 1 : 454. 1874 *I. rosea* Lindl. Bot. Reg. f. 27. 1841. *I. balsamina* L. var. *brevicalcarata* Cooke, Fl. Pres. Bombay 1 : 185. 1958 (Repr. ed.). (Fig. 5)

Herbs, *ca* 1 m high, pubescent. Leaves *ca* 15 cm long, tapering into a glandular petiole. Flowers pinkish-violet in axillary fascicles ; lip small, boat shaped. Capsules *ca* 1 cm long.

Fls. & Frts. : October–January.

Distrib. : Widely distributed throughout the district. Dhom dam, Wai, Fitzgerald ghat, Mahabaleshwar, Pirachi wadi, Satara, Tapola ghat, Yavteshwar.

I. dalzellii Hook. f. & Thoms. in J. Linn. Soc. 4 : 123. 1860 ; Hook. f. Fl. Brit. India 1 : 449. 1874 ; Cooke, Fl. Pres. Bombay 1 : 183. 1958 (Repr. ed.).

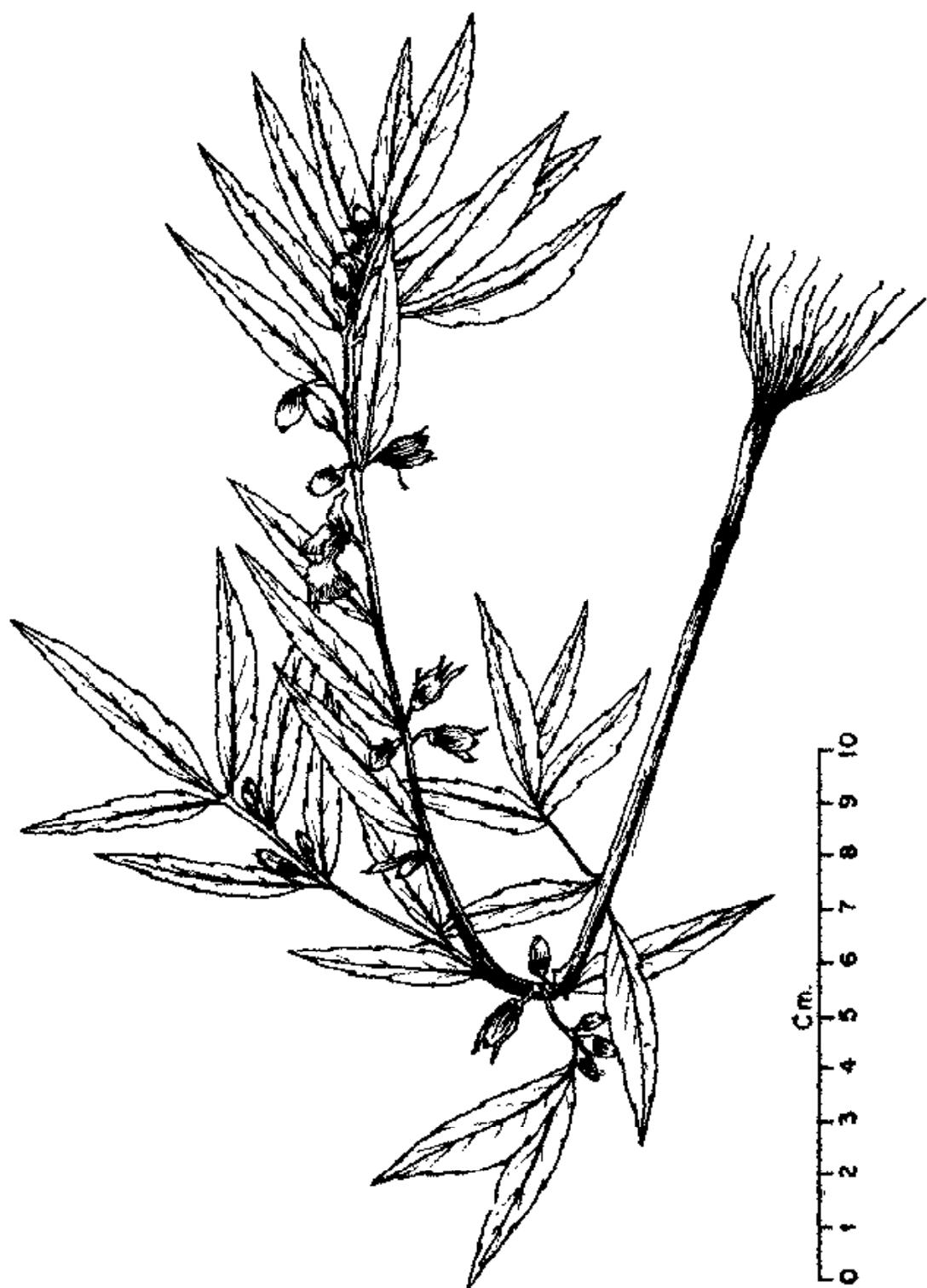


Fig. 5. *Impatiens halsamina* var. *rosea* (Lindl.) Hook. f.

Herbs, 20–50 cm high. Lower leaves shortly petioled, upper sessile, 4–9 cm long, spinous serrate, hairy above. Flowers solitary or 2–3 together; standard orbicular, hooded, winged on back; lip boat shaped with orange streaks inside. Capsules ellipsoids.

Fls. & Frts. : August October.

Distrib. : Common in semi-evergreen forests, endemic to Western ghats. Gureghar, Kas, Kelghar ghat, Mahabaleshwar, old Mahabaleshwar road, Panchgani.

Impatiens latifolia L. Sp. Pl. 937. 1753; Hook. f. Fl. Brit. India 1 : 450. 1874; Cooke, Fl. Pres. Bombay 1 : 184. 1958 (Repr. ed.).

Herbs, ca 1 m high. Leaves ovate-lanceolate, 5–14 × 2–5 cm, pubescent above. Flowers purple in axillary fascicles; pedicels recurved in fruits; spur ca 3 cm long. Capsules ca 1.5 cm long.

Fls. & Frts. : August September.

Illus. : Wight, Ic. t. 741. 1844. (*I. cuspidata* Wight & Arn.).

Distrib. : Occasional in Western ghats. Khambil chorghe ghat.

I. Jawii Hook. f. & Thoms. in J. Linn. Soc. 4 : 122. 1860; Hook. f. Fl. Brit. India 1 : 183. 1874; Cooke, Fl. Pres. Bombay 1 : 183. 1958 (Repr. ed.).

Herbs, 15–30 cm high. Leaves sessile, ca 2 cm long, distantly spinous serrate, scabrid above. Standard orbicular, cuspidate; wings with obovate terminal lobe and small lateral lobes. Capsules ca 0.7 cm long.

Fls. & Frts. : August November.

Distrib. : Rare along ghats. Kelghar ghat, Mahabaleshwar, Gammie s.n.; Nanja, Kochhar 150190.

I. minor (DC.) Bennet in Ind. J. For. 2 : 283. 1979. *Balsamina minor* DC. Prodr. 1 : 686. 1824. *I. kleinii* Wight & Arn. Prodr. 140. 1834; Hook. f. Fl. Brit. India 1 : 445. 1874; Cooke, Fl. Pres. Bombay 1 : 181. 1958 (Repr. ed.).

Herbs, 10–30 cm high. Leaves sessile, 2–6 × 1–3 cm, hairy on the nerves. Flowers in axillary pairs; sepals linear, acute; standard

orbicular oblong ; spur as long or slightly longer than the flowers, curved. Capsules fusiform, ca 1 cm long.

Fls. & Frts. : July September.

Illus. : Wight, Ic. t. 884. 1845.

Distrib. : Common monsoon herb along ghats. Kelghar ghat, Koyna, Kusapur, Kisrude, Shirshingi, Tapola.

Notes : Cooke (*op. cit.*) described leaves as usually petiolated, however, all the present specimens have sessile leaves.

Impatiens oppositifolia L. Sp. Pl. 937. 1753 ; Hook. f. Fl. Brit. India 1 : 448. 1874 ; Cooke, Fl. Pres. Bombay 1 : 182. 1958 (Repr. ed.).

Herbs, 30 - 50 cm high. Leaves 2 - 6 × 1 - 2 cm. Flowers axillary, solitary or 2 - 3 together ; lip conical ; spur short, curved. Capsules ellipsoid, upto 1 cm long.

Fls. & Frts. : August September.

Illus. : Wight, Ic. t. 883. 1845.

Distrib. : Frequent on grassy slopes. Koyna.

I. pulcherrima Dalz. in Hook. Kew J. Bot. 2 : 37. 1850 ; Hook. f. Fl. Brit. India 1 : 458. 1879 ; Cooke, Fl. Pres. Bombay 1 : 185. 1958 (Repr. ed.). (Fig. 6)

Herbs, 30 - 60 cm high. Leaves elliptic - oblong, 5 - 10 × 1 - 5 cm, distantly hairy above ; petioles with stipitate glands. Flowers purple in axillary fascicles ; sepals lanceolate ; standard keeled on back. Capsules ellipsoid.

Fls & Frts. : September October.

Distrib. : Common along ghats. Fitzgerald ghat, Koyna Morgiri, Nauja.

I. pusilla Heyne ex Hook. f. & Thoms. in J. Linn. Soc. 4 : 122. 1860 ; Blatt. in J. Bombay nat. Hist. Soc. 36 : 312. 1933. *I. inconspicua* Bth. ex Wight & Arn. Prod. 139. 1834 ; Hook. f. Fl. Brit. India 1 : 448. 1874 ; Cooke, Fl. Pres. Bombay 1 : 182. 1958 (Repr. ed.).

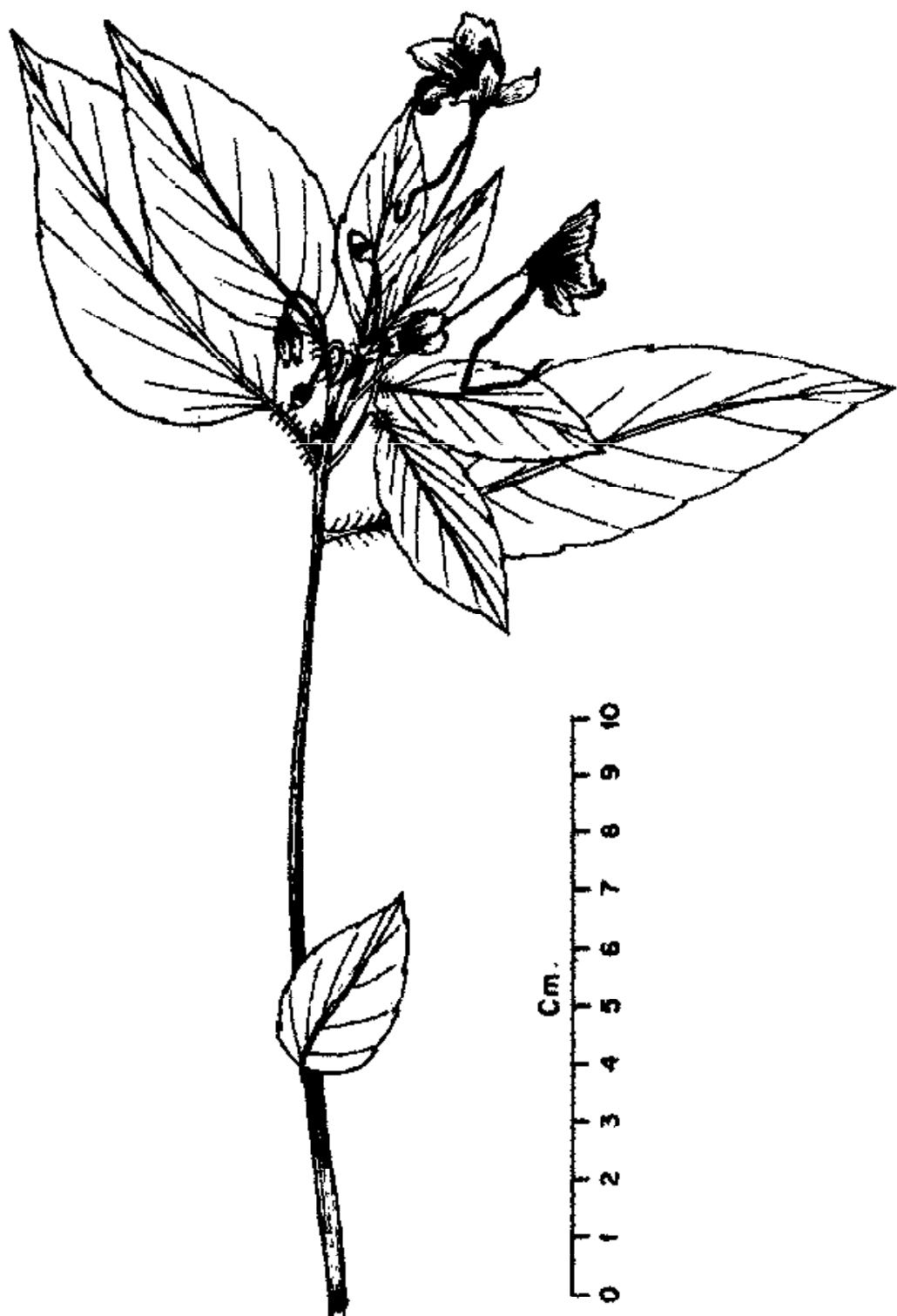


Fig. 6. *Impatiens pulcherrima* Dalz.

Herbs, 10 - 25 cm high. Lower leaves petioled, upper sessile, 3 - 6 cm long, pubescent above. Flowers solitary; sepals linear, subulate; standard ovate, mucronate. Capsules ca 1.4 cm long, beaked.

Fls. & Frts. : September - November.

Illus. : Wight, Ic. t. 970. 1845.

Distrib. : Common along ghats and among grasses on rocky plains. Karanjewadi, Kas, Lingmala, Mahabaleshwar, Shirgaon ghat.

Impatiens tomentosa Heyne ex Dalz. & Gibbs. *Bombay Flora* 43. 1861; Hook. f. *Fl. Brit. India* 1 : 449. 1874; Cooke, *Fl. Pres. Bombay* 1 : 184. 1958 (Repr.ed.); Bole & Almeida in *J. Bombay nat. Hist. Soc.* 78 : 549. 1981.

Herbs, erect; branches with rufous hairs in upper part. Flowers solitary; pedicels deflexed in fruits; spur usually absent, if present, hooked. Capsules ellipsoid.

Fls. & Frts. : August - September.

Illus. : Wight, Ic. t. 749. 1845.

Notes : Included on Nairne's report from Mahabaleshwar. (Bole & Almeida *op. cit.*)

RUTACEAE

1. Unarmed shrubs or trees :

2. Leaves opposite; flowers unisexual

EUODIA

2. Leaves alternate; flowers bisexual :

3. Leaves 1 - foliolate

ATALANTIA

3. Leaves many foliolate :

4. Leaflets oblong - lanceolate, entire or obscurely crenulate

GLYCOSMIS

4. Leaflets ovate, obtuse, irregularly crenate - dentate

MURRAYA

1. Armed shrubs or trees :

5. Leaves 3 - foliolate

TODDALIA

5. Leaves 1 - foliolate :

- | | | |
|---|-----|------------|
| 6. Shrubs, erect ; flowers in axillary cymes | ... | ATALANTIA |
| 6. Shrubs, scandent ; flowers in axillary fascicles | ... | PARAMIGNYA |

ATALANTIA Corr.

- | | | |
|--|----------------------|--------------------|
| 1. Cymes contracted ; calyx irregularly and deeply divided ... | <i>A. monophylla</i> | |
| 1. Cymes elongated ; calyx 4 - lobed | --- | <i>A. racemosa</i> |

Atalantia monophylla Corr. in DC. Prodr. I : 535. 1824 ; Hook. f. Fl. Brit. India I : 511. 1875 ; Cooke, Fl. Pres. Bombay I : 198. 1958 (Repr. ed.). *A. floribunda* Wight, Ic. t. 1611. 1850 ; Puri & Mahajan in Bull. Bot. Surv. India 2 : 121. 1960.

Shrubs or small trees, 4 - 8 m high. Leaflets ovate - oblong or elliptic, apex emarginate. Flowers white ; petals 3 - 5, obovate, subacute. Berries globular. Seeds 1 - 5, oblong.

Fls. & Frts. : September - November.

Illus. : Wight, *op. cit.*

Notes : Included on Birdwood's report from Mahabaleshwar. (Puri & Mahajan, *op. cit.*).

A. racemosa Wight & Arn. Prodr. 91. 1834 ; Hook. f. Fl. Brit. India I : 512. 1875 ; Cooke, Fl. Pres. Bombay I : 199. 1958 (Repr. ed.). '*Makad limbu*'.

Trees, armed or unarmed, 10 - 12 m high. Leaflets elliptic, 4 - 8 × 2 - 4 cm, base cuneate, apex emarginate. Flowers white ; calyx ciliate without ; petals broadly elliptic. Berries globular, ca 1.5 cm across.

Fls. & Frts. : November - May.

Illus. . Wight, Ic. t. 71. 1838. (*Sclerostylis parvifolia*).

Distrib. : Common component of semievergreen forests. Kelghar ghat, Mahabaleshwar, Panchgani, Panchgani - Mahabaleshwar, Vasota.

EUODIA Forst.

Euodia lunu ankenda (Gaertn.) Merr. in Phillip. J. Sci. 7 : 378. 1912. *Fagara lunu - ankenda* Gaertn. Fruct. 1 : 334. 1788. *E. roxburghiana* Bth. Fl. Hongk. 56. 1861 ; Hook. f. 1 : 487. 1875 ; Cooke, Fl. Pres. Bombay 1 : 188. 1958 (Repr. ed.). 'Bok'.

Trees, ca 9 m high. Leaves 3 foliolate ; leaflets oblong, 5 12 × 3 6 cm, base cuneate, apex acuminate, pubescent. Flowers in axillary paniculate cymes, glandular pubescent ; bracts broadly ovate, acute; sepals sub orbicular ; petals white, ovate, spreading. Cacci 2 valved. Seeds globose, black, shining.

Fls. & Frts. : April October.

Illus. : Wight, Ic. t. 204. 1839. (*Zanthoxylum triphyllum*).

Distrib. : Frequent along ghats in moist deciduous forests. Mahabaleshwar, Parghat.

GLYCOSMIS Corr.

- | | |
|---|-----------------------|
| I. Leaves upto 10 cm long ; leaflets with entire margin ... | <i>G. mauritiana</i> |
| I. Leaves more than 10 cm long ; leaflets with subdenteate margin ... | <i>G. pentaphylla</i> |

Glycosmis mauritiana (Lam.) Tanaka in Bull. Soc. Bot. Fr. 75 : 708. 1928 ; Brizicky in J. Arnold Arbor. 43 : 90. 1962 ; Mitra & Subram. *ibid.* 50 : 155. 1969. *Limonia mauritiana* Lam. Encycl. 3 : 517. 1792. *G. pentaphylla* auct. non DC. 1824 ; Hook. f. Fl. Brit. India 1 : 499. 1875 ; Cooke, Fl. Pres. Bombay 1 : 192. 1958 (Repr. ed.) ; Puri & Mahajan in Bull. Bot. Surv. India 2 : 120. 1960.

Shrubs or small trees. Leaves 5 foliolate ; leaflets subsessile, 6 10 × 1 4 cm. Flowers white in axillary panicles ; calyx glandular without ; sepals ovate orbicular ; petals broadly obovate. Berries globose, ca 0.8 cm across, apiculate.

Fls. & Frts. : February September.

Illus. : Wight, Ic. t. 167. 1839. (*Glycosmis triphylla* Wight).

Distrib. : Common in semievergreen forests. Koyna, Kumbharli ghat, Mahabaleshwar, Nauja, Shirshingi, Vasota.

Glycosmis pentaphylla (Retz.) DC. Prodr. 1 : 538. 1824 ; Mitra & Subram. in J. Arnold Arbor. 50 : 155. 1969. *Limonia pentaphylla* Retz. Obs. Bot. 5 : 24. 1789. *G. arborea* (Roxb.) DC. Prodr. 1 : 538. 1824 ; Narayansw. in Rec. Bot. Surv. India 14(2) : 20, f. 6. 1940 ; Hook. f. Fl. Brit. India 1 : 500. 1875 ; Bole & Almeida in J. Bombay nat. Hist. Soc. 78 : 550. 1981.

Shrubs or small trees, 4–6 m high. Leaflets oblong-lanceolate or oblanceolate, minutely serrate. Flowers white in axillary panicles ; sepals deltoid, ciliate ; petals broadly oblong or obovate. Fruits globose.

Fls. & Frts. : February – March.

Illus. : Narayansw. *op. cit.*

Notes : Rare as forest undergrowth in moist deciduous forests ; known only from Cooke's collection at BLAT.

MURRAYA L.

1. Leaflets 3–7, glabrous ; fruits oblong	...	<i>M. paniculata</i>
1. Leaflets 11–17, pubescent ; fruits ovoid	...	<i>M. koenigii</i>

Murraya koenigii (L.) Spr. Syst. Veg. 2 : 315. 1825 ; Hook. f. Fl. Brit. India 1 : 503. 1875 ; Cooke, Fl. Pres. Bombay 1 : 193. 1958 (Repr. ed.). *Bergena koenigii* L. Mant. 1 : 565. 1767. 'Kadhi nim'.

Trees, ca 5 m high. Leaflets oblong-lanceolate, ca 3 × 1 cm, base unequal. Flowers white in terminal cymes, fragrant ; peduncles and pedicels pubescent. Berries blackish, apiculate.

Fls. & Frts. : February – April.

Illus. : Wight, Ic. t. 13. 1838.

Distrib. : Common on hill slopes in deciduous forests. Also widely cultivated for scented leaves used in cooking. Fitzgerald ghat, Jangli jaigad, Koyna valley, Mahabaleshwar, Nauja, Panchgani.

M. paniculata (L.) Jack, Mal. Misc. 1 : 31. 1820. *Chalcas paniculata* L. Mant. 1 : 68. 1767. *M. exotica* L. Mant. 2 : 563. 1771 (*Murraea*) ; Hook. f. Fl. Brit. India 1 : 502. 1875 ; Cooke, Fl. Pres. Bombay 1 : 193. 1958 (Repr. ed.). 'Kunti'.

Shrubs, 1.5 - 2.0 m high. Leaflets 4-7 × 1-4 cm. Flowers white, axillary, solitary; sepals oblong, glandular; petals oblong lanceolate, spreading. Berries red when ripe.

Fls. & Frts. : June September.

Illus. : Wight, Ic. t. 96. 1838. (*M. exotica* L.).

Distrib. : Growing in large communities along hill slopes in shady areas. Way to Dicholi, Kumbharli ghat, Mahabaleshwar, Shirshingi.

PARAMIGNYA Wight

Paramignya monophylla Wight, Ill. 1 : 109, t. 42. 1840 ; Hook. f. Fl. Brit. India 1 : 510. 1875 ; Cooke, Fl. Pres. Bombay 1 : 197. 1958 (Repr. ed.).

Shrubs, climbing, armed. Leaflets ovate oblong, base unequal, apex obtuse or acute. Flowers white; calyx woolly without; petals linear oblong, recurved. Berries ellipsoid to ovoid.

Fls. & Frts. : November - January.

Illus. : Wight, *op. cit.*

Distrib. : Rare in semievergreen forests. Mahabaleshwar, Santapa u 23617 (BLAT).

TODDALIA A.L. Juss.

Toddalia asiatica (L.) Lam. Tab. Encycl. 2 : 116. 1792. *Paullinia asiatica* L. Sp. Pl. 365. 1753. *T. aculeata* Pers. Syn. Pl. 1 : 249. 1805 ; Hook. f. Fl. Brit. India 1 : 497. 1875.

KEY TO THE VARIETIES

- | | | |
|---|-----|------------------------|
| 1. Midnerve armed beneath; petioles prickly | ... | var. <i>gracilis</i> |
| 1. Midnerve unarmed; petioles not prickly | ... | var. <i>floribunda</i> |

var. *floribunda* Gamble, Fl. Pres. Madras 1 : 107. 1957 (Repr. ed.).
'Tejwal'

Shrubs, straggling. Leaflets obovate oblanceolate, 3–8 × 2–3.5 cm, coriaceous, apex with long acumen, nerves distinct. Flowers unisexual in axillary panicles. Berries globose, ca 1 cm across.

Fls. & Frts. : February.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 113. 1982.

Distrib. : Occasional in deforested areas at higher altitude. Ambeghar, Koyna.

var. *gracilis* Gamble, Fl. Pres. Madras 1 : 107. 1957 (Repr. ed.). *Toddalia aculeata* sensu Cooke, Fl. Pres. Bombay 1 : 190. 1958 (Repr. ed.). '*Jangli mirchi*'.

Shrubs, scandent. Leaflets lanceolate, 4.0–7.5 × 2–3 cm, apex broadly obtuse, nerves obscure. Flowers greenish white in axillary panicles. Berries globose, ca 0.5 cm across.

Fls. & Frts. : April.

Distrib. : Occasional near forest edges in scrub jungles. Nauja ; Shirshingi.

CULTIVATED SPECIES

Limonia acidissima L. Sp. Pl. ed. 2, 1 : 559. 1762 ; Panigr. in Taxon 26 : 576. 1977. *Feronia elephantum* Corr. in Trans. Linn. Soc. 5 : 225. 1800 ; Hook. f. Fl. Brit. India 1 : 516. 1838 ; Cooke, Fl. Pres. Bombay 1 : 203. 1958 (Repr. ed.). '*Kavath*'.

Trees, spiny. Leaves imparipinnate ; leaflets obovate, cuneate, 3–5. Flowers unisexual, reddish in lateral pubescent panicles. Berries globose, woody.

Fls. & Frts. : January March.

Illus. : Wight, Ic. t. 15. 1838.

Distrib. : Cultivated for edible fruits. Poona Satara road.

SIMAROUBACEAE

CULTIVATED SPECIES

Balanites aegyptiaca (L.) Del. Fl. Egypt. 77 & 221, t. 28, f. 1. 1813 ; Basak in Fasc. Fl. India 4 : 20. 1980. *Ximenia aegyptica* L. Sp. Pl. 1194. 1753. *B. roxburghii* Planch. in Ann. Sci. Nat. 4 : 258. 1854 ; Hook. f. Fl. Brit. India 1 : 522. 1875 ; Cooke, Fl. Pres. Bombay 1 : 207. 1958 (Repr. ed.). "Hinganbet".

Trees, small, spiny ; young branches pubescent. Leaves 2 foliolate ; spines axillary, straight, bearing flowers. Flowers greenish in axillary cymes. Drupes large, ovoid, woody, 5 grooved.

Fls. & Frts. : March April.

Illus. : Wight, Ic. t. 274. 1840.

Distrib. : Cultivated along roadsides. Phaltan.

BURSERACEAE

BOSWELLIA Roxb. ex Coleb.

Boswellia serrata Roxb. ex Coleb. in Asiat. Res. 9 : 379, t. 5. 1807 ; Bennett in Hook. f. Fl. Brit. India 1 : 528. 1875 ; Cooke, Fl. Pres. Bombay 1 : 210. 1958 (Repr. ed.). *Chloroxylon dupada* Buch. - Ham. in J. Mysore 1 : 184. 1807. *B. serrata* var. *glabra* Hook. f. *op. cit.* 'Salphali'

Trees, 6 - 10 m high, bark deciduous. Leaves crowded at apex of branches ; leaflets 17-31, ovate to ovate lanceolate, pubescent. Flowers white in axillary racemes, pubescent. Drupes trigonous.

Fls. & Frts. February - April.

Illus. : Bedd. Fl. Sylv. t. 174. 1871. (*B. glabra* Roxb.).

Notes : Included on Birdwood's report from Kamatki ghat (Cooke, *op. cit.*).

MELIACEAE

- | | | |
|--|-----|-----------|
| 1. Leaves simple | ... | TURABA |
| 1. Leaves compound : | | |
| 2. Leaflets velvety when young, entire | ... | CHUKRASIA |

2. Leaflets glabrous, entire or serrate :		
3. Filaments united throughout ...		AGLAIA
3. Filaments free or connate at base only :		
4. Leaflets 4 - 15 pairs ; capsules oblong, coriaceous ...		TOONA
4. Leaflets 2 - 6 pairs ; capsules globose, not coriaceous ...		TRICHILIA

AGLAIA Lour.

Aglaiia lawii (Wight) Saldanha in Saldanha & Nicolson, Fl. Hassan Dist. 392. 1976. *Nimmonia lawii* Wight in Calcutta J. Nat. Hist. 7 : 13. 1847. *Amoora lawii* (Wight) Bedd. Fl. Sylv. t. 133. 1871 ; Hiern in Hook. f. Fl. Brit. India 1 : 561. 1875 ; Cooke, Fl. Pres. Bombay 1 : 225. 1958 (Repr. ed.). 'Burumb'.

Trees, 10 - 15 m high. Leaflets 5, oblong lanceolate or elliptic, 6 - 11 × 3 - 5 cm, base cuneate, apex acuminate. Flowers white in axillary panicles. Fruits pyriform, ca 2 cm long with persistent calyx.

Fls. & Frts. : January - May.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 239, f. 142. 1909.

Distrib. : Rare along slopes in semi-evergreen forests. Mahabaleshwar Pratapgad, R.S. Rao 71736.

CHUKRASIA A. Juss.

Chukrasia tabularis A. Juss. var. *velutina* King in J. Asiatic Soc. Beng. 64 : 88. 1895 ; Hiern in Hook. f. Fl. Brit. India 1 : 568. 1874 ; Cooke, Fl. Pres. Bombay 1 : 229. 1958 (Repr. ed.).

Trees, up to 20 m high. Leaflets ovate or ovate oblong, up to 7 × 4 cm, base unequal, apex acuminate. Flowers in terminal panicles ; calyx pubescent without ; petals spatulate. Capsules ovoid, ca 3 cm long. Seeds ca 1.0 × 0.5 cm, winged below.

Fls. & Frts. : February.

Illus. : Wight, Ill. t. 56. 1840. (*C. nimmonii* Grah.).

Distrib. : Rare in semi-evergreen forests. Dhokewadi, Kochhar, 158380.

TOONA Roem.

Toona ciliata Roem. Syst. Hesp. 136. 1846. *Cedrela toona* Roxb. ex Rottl. & Willd. in Ges. Natur. Fr. Neue Schr. 2 : 198. 1803 ; Hiern in Hook. f. Fl. Brit. India 1 : 568. 1875 ; Cooke, Fl. Pres. Bombay 1 : 230. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay nat. Hist. Soc. 78 : 552. 1981. 'Maha nim'.

Trees, ca 18 m high. Leaflets lanceolate or ovate-lanceolate, 6 - 9 × 4 - 7 cm, base cuneate, apex acuminate. Flowers white in terminal panicles, puberulous ; calyx deeply divided ; lobes orbicular, ciliate ; petals broadly elliptic, keeled inside at base, ciliate. Capsules 2.0 - 2.5 cm long.

Fls. & Frts. : January.

Distrib. : Occasional in moist deciduous forests. Panchgani.

TRICHILIA P. Br.

Trichilia connaroides (Wight & Arn.) Bentv. in Acta Bot. Neerl. 11 : 13. 1962. *Zanthoxylon connaroides* Wight & Arn. Prodr. 148. 1834. *Heynea trijuga* Roxb. ex Sims in Bot. Mag. 41 : t. 1738. 1815 ; Hiern in Hook. f. Fl. Brit. India 1 : 565. 1875 ; Cooke, Fl. Pres. Bombay 1 : 227. 1958 (Repr. ed.). 'Limbara'.

Trees, ca 20 m high. Leaflets ovate oblong, 7 - 12 × 2.5 - 5.0 cm, base unequal, apex long acuminate. Flowers white in panicles ; calyx pubescent without ; petals oblong, ciliate. Capsules 2 - valved.

Fls. & Frts. : February - April.

Distrib. : Occasional along river banks. Mahabaleshwar.

TURRAEA L.

Turraea villosa Benn. Pl. Jav. Rar. 182. 1840 ; Hiern in Hook. f. Fl. Brit. India 1 : 542. 1875 ; Cooke, Fl. Pres. Bombay 1 : 216. 1958 (Repr. ed.).

Shrubs. Leaves elliptic, $2.5 - 11.0 \times 1 - 5$ cm, villous beneath when young. Flowers creamish in axillary clusters; calyx lobes triangular, pubescent; petals linear spathulate. Capsules subglobose, ca 2 cm across, 4 valved. Seeds black.

Fls. & Frts. : April August.

Illus. : Wight, Ic. t. 1593. 1850.

Distrib. : Common along ghats and forest edges in semi-evergreen forests. Dhokewadi ; Koyna valley ; Kumbhatli ghat ; Mahabaleshwar ; Pratapgad fort.

CULTIVATED SPECIES

Azadirachta indica A. Juss. in Mem. Mus. Hist. Par. 19 : 221, t. 2, f. 5. 1830 ; Cooke, Fl. Pres. Bombay 1 : 220. 1958 (Repr. ed.). *Melia azadirachta* L. Sp. Pl. 385. 1753 ; Hiern in Hook. f. Fl. Brit. India 1 : 544. 1875. 'Nim'.

Trees, large, 15–20 m high. Leaflets 9–17, falcate. Flowers white in axillary panicles, fragrant. Drupes oblong, fleshy.

Fls. & Frts. : March May.

Illus. : Wight, Ic. t. 17. 1838.

Distrib. : Widely cultivated as avenue tree along roadsides and also for its medicinal value. Karad.

Melia azedarach L. Sp. Pl. 384. 1753 ; Hiern in Hook. f. Fl. Brit. India 1 : 544. 1875 ; Cooke, Fl. Pres. Bombay 1 : 218. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay nat. Hist. Soc. 78 : 553. 1981. 'Bankan-nim'.

Trees. Leaflets 5–9, ovate lanceolate, $3 - 8 \times 1 - 3$ cm, toothed. Flowers purplish-white in axillary panicles. Drupes ellipsoid globose.

Fls. & Frts. : December - January.

Distrib. : Cultivated as an ornamental plant in gardens. Kiwal ; Mahabaleshwar ; Padolshi.

OPILIACEAE

CANSJERA A. Juss.

Cansjera rheedlii Gmel. in Linn. Syst. Nat. ed. 13. 2 : 280. 1791 ; Mast in Hook. f. Fl. Brit. India 1 : 582. 1875 ; Cooke, Fl. Pres. Bombay 1 : 237. 1958 (Repr. ed.).

Climbers, armed or unarmed. Leaves oblong-lanceolate or ovate, 2.5-7.0 × 1.5-2.5 cm, base obtuse, apex long acuminate. Flowers in axillary spikes, bracteate; perianth urceolate, hairy. Drupes ovoid ellipsoid, orange red.

Fls. & Frts. : November - April.

Illus. : Wight, Ic. t. 1861. 1852 ; Talbot, For. Fl. Bombay Pres. & Sind 1 : 262, f. 155. 1909.

Distrib. : Rare in scrub jungles, Koyna valley ; Nath hills, Shirala.

ICACINACEAE

NOTHAPODYTES BL.

Nothapodytes nimmoniana (J. Grah.) Mabberley in Manilal, Bot. & Hist. Hort. Malab. 88 : 1980. *Premna nimmoniana* J. Grah. Cat. Pl. Bombay 155. 1839. *Mappia foetida* (Wight) Miers, Contrib. 1 : 64. 1851 ; Mast. in Hook. f. Fl. Brit. India 1 : 589. 1875 ; Cooke, Fl. Pres. Bombay 1 : 239. 1958 (Repr. ed.).

Trees, ca 3 m high. Leaves ovate-oblong, 5-13 × 2.5-6.5 cm, base unequal, pubescent on nerves beneath. Flowers small in terminal corymbose panicles, densely pubescent. Drupes ellipsoid obovoid, purple when ripe.

Fls. & Frts. : September - November.

Illus. : Wight, Ic. t. 955. 1845. (*Stemonurus foetidus*) ; Bedd. Fl. Sylv. t. 141. 1871.

Distrib. : Common. Dhokewadi ; Fitzgerald ghat ; Jadholi ; Khambil - Chorghe ghat ; Koyna ; Mahabaleshwar ; Nauja ; Panchgani - Mahabaleshwar ; Way to Shirshingi.

HIPPOCRATEACEAE

1. Petals triangular, acute ; style longer than the stamens ...	LOESENERIELLA
1. Petals oblong ; style shorter than the stamens :	
2. Calyx lobes orbicular, puberulous ; carpels emarginate ...	ARNICRATEA
2. Calyx lobes triangular - ovate, glabrous ; carpels entire ...	REISSANTIA

ARNICRATEA N. Halle

Arnicratea grahamii (Wight) N. Halle in Bull. Mus. Hist. nat. Paris 4e, 6, B. Adansonia 1 : 14. 1984. *Hippocratea grahamii* Wight, Ill. Ind. Bot. 134. 1839 & Ic. t. 380. 1840 ; Lawson in Hook. f. Fl. Brit. India 1 : 624. 1875 ; Cooke, Fl. Pres. Bombay 1 : 249. 1958 (Repr. ed.). *Pristimera grahamii* (Wight) A.C. Smith in J. Arnold Arbor. 26 : 178. 1945. *Reissantia grahamii* (Wight) Ding Hou in Blumea 12 : 33. 1963 & Steenis, Fl. Males. 1, 6 : 402, f. 29. 1964 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 78 : 551. 1981. 'Lokhandi'.

Shrubs, climbing, 10 m long. Leaves ovate elliptic, coriaceous. Flowers white in axillary, paniculate cymes. Carpels 3, linear oblong. Seeds ovoid oblong, winged below.

Fls. & Frts. : March - May.

Illus. : Wight, *op. cit.*

Distrib. : Extensive climber, rare in the district. Mahabaleshwar, Bole 2370 72 (BLAT).

LOESENERIELLA A.C. Smith

Loeseneriella obtusifolia (Roxb.) A.C. Smith in Amer. J. Bot. 28 : 440. 1941 & J. Arnold Arbor. 26 : 169. 1945. *Hippocratea obtusifolia* Roxb. Fl. Ind. (Carey ed.) 1 : 166. 1832 ; Lawson in Hook. f. Fl. Brit. India 1 : 623. 1875 ; Cooke, Fl. Pres. Bombay 1 : 249. 1958 (Repr. ed.). 'Daushir'.

Shrubs, climbing. Leaves elliptic or lanceolate, apex acute. Flowers in axillary dichotomous cymes. Carpels 3, oblong obovoid, emarginate.

Fls. & Frts. : January.

Illus. : Wight, Jc. t. 963. 1845.

Distrib. : Rare along ghats. Koyna, Kochhar 158335 ; Mahabaleshwar, R.K.B. 1191 (BLAT).

REISSANTIA N. Halle

Reissantia indica (Willd.) N. Halle in Bull. Mus. Hist. nat. Paris 30 : 466. 1958 ; Ding Hou in Blumea 12 : 33. 1963 & Steenis, Fl. Males. 1, 6 : 401. 1964.

Hippocratea indica Willd. Sp. Pl. 1 : 93. 1797 ; Lawson in Hook. f. Fl. Brit. India 1 : 624. 1875 ; Cooke, Fl. Pres. Bombay 1 : 250. 1958 (Repr. ed.).

Shrubs, scandent. Leaves elliptic, 6-8 cm long, tapering into petioles. Flowers yellowish green in corymbose cymes. Carpels ellipsoid, up to 4 cm long, 2-valved, striate.

Fls. & Frts. : May - November.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 285, f. 169. 1969.

Distrib. : Common along ghats and river banks. Fitzgerald ghat ; Koyna ; Koyna river above Par bridge ; Pratapgad.

CELASTRACEAE

1. Armed shrubs or trees	...	MAYTENUS
1. Unarmed climbers or small trees :		
2. Small trees ; leaves opposite	...	CASSINE
2. Climbing shrubs ; leaves alternate	...	CELASTRUS

CASSINE L.

Cassine glauca (Rottb.) O. Ktze. Rev. Gen. Pl. 1 : 114. 1891 ; Ding Hou in Steenis, Fl. Males. 1, 6 : 286. 1962. *Mangifera glauca* Rottb. Nye Saml. Vid. Selsk. Skr. 2 : 534, t. 4, f. 1. 1783. *Elaeodendron glaucum*

(Rottb.) Pers. Syn. 1 : 241. 1805 ; Lawson in Hook. f. Fl. Brit. India 1 : 623. 1875 ; Cooke, Fl. Pres. Bombay 1 : 248. 1958 (Repr. ed.). 'Butkes'.

Trees, *ca* 20 m high. Leaves ovate oblong, 5-15 × 2.5-5.0 cm, base obtuse, apex acute, margin crenate-serrate. Flowers greenish in dichotomous axillary cymes; bracts ovate, acute; calyx lobes orbicular, margin membranous; petals oblong. Drupes oblong, *ca* 1 cm long.

Fls. & Frts. : November January.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 275, f. 162. 1909.

Distrib. : Occasional along ghat slopes. Khambatki ghat ; Satara ; Tapola.

CELASTRUS L.

Celastrus paniculatus Willd. Sp. Pl. 1 : 1125. 1797 ; Lawson in Hook. f. Fl. Brit. India 1 : 617. 1875 ; Cooke, Fl. Pres. Bombay 1 : 245. 1958 (Repr. ed.).

Climbers. Leaves elliptic ovate, 6-9 × 2-6 cm, base obtuse or subacute, apex caudate, serrate above, entire at base. Flowers greenish-white, in axillary and terminal panicles; sepals suborbicular, ciliate; petals 5, oblong, rudimentary ovary 3 lobed. Capsules subglobose, 3-valved, yellow.

Fls. & Frts. : April August.

Illus. : Wight, Ic. t. 158. 1839.

Distrib. : Common in deciduous forests. Adoshi ; Karanjewadi ; Koyna ; Nauja ; Parli ; Tapola ghat ; Vasota.

MAYTENUS Molina

- | | | |
|--|-----|----------------------|
| 1. Spines bearing flowers ; flowers in axillary cymes ; fruits purple when ripe | ... | <i>M. emarginata</i> |
| 1. Spines without flowers ; flowers in axillary clusters ; fruits bright red when ripe | ... | <i>M. rothiana</i> |

Maytenus emarginata (Willd.) Ding Hou in Steenis, Fl. Males. 1, 6 : 241. 1962. *Celastrus emarginatus* Willd. Sp. Pl. 1 : 1128. 1798.

Gymnosporia montana (Roth) Bth. Fl. Austr. 1 : 400. 1863 ; Lawson in Hook. f. Fl. Brit. India 1 : 621. 1875 ; Cooke, Fl. Pres. Bombay 1 : 247. 1958 (Repr. ed.).

Shrubs, 1-2 m high. Leaves obovate elliptic, 3.5-6.0 × 1.5-4.5 cm, base tapering, apex entire or emarginate. Flowers greenish yellow ; sepals broadly oblong ; petals elliptic - oblong. Capsules ovoid, ca 0.8 cm across.

Fls. & Frts. : November January.

Illus. : Wight, Ic. t. 382. 1840. (*Celastrus emarginatus* Willd.).

Distrib. : Common. Khambatki ghat ; Kole ; Shirgaon ghat.

Maytenus rothiana (Walp.) Lobreau - Callen in, Adansonia 2, 15 : 223. 1975. *Catha rothiana* Walp. Rep. I : 532. 1842. *Gymnosporia rothiana* (Wight & Arn.) Lawson in Hook. f. Fl. Brit. India 1 : 619. 1875 ; Cooke, Fl. Pres. Bombay 1 : 246. 1958 (Repr. ed.), 'Yenkli'.

Trees. Leaves obovate, 7-10 × 3-7 cm, base cuneate, apex rounded. Flowers small, yellowish. Capsules 3-valved. Seeds 6, ellipsoid, ca 0.6 cm long with basal aril.

Fls. & Frts. : May October.

Illus. : Talbot, For. Fl. Bombay Pres. 1 : 278, f. 164. 1909.

Distrib. : Abundant in deciduous forests Jangli jaigad ; Jadholi ; Karanjewadi ; Kelghar ghat ; Koyna ; Lingmala ; Mahabaleshwar ; Nauja ; Shirshingi.

RHAMNACEAE

1. Armed shrubs :

- | | | |
|--|-----|----------|
| 2. Leaves subopposite, glabrous, 1-nerved | ... | SCUTIA |
| 2. Leaves distichous or alternate, hairy, 3-nerved | ... | ZIZIPHUS |

1. Unarmed shrubs :

- | | | |
|---|-----|-----------|
| 3. Erect shrubs ; leaves ovate - oblong | ... | RHAMNUS |
| 3. Climbers ; leaves lanceolate, acute | ... | VENTILAGO |

RHAMNUS L.

Rhamnus wightii Wight & Arn. Prodr. 164. 1834 ; Lawson in Hook. f. Fl. Brit. India 1 : 639. 1875 ; Cooke, Fl. Pres. Bombay 1 : 259. 1958 (Repr. ed.).

Shrubs. Flowers in axillary fascicles ; calyx urceolate, lobes keeled on the inner face, pubescent without ; petals small, lanceolate ; styles 3-4, connate below. Berries globose, reddish purple with persistent calyx.

Fls. & Frts. : January.

Distrib. : Rare. Mahabaleshwar, Bole 1873 (*BLAT*).

SCUTIA Commers. ex Brongn.

Scutia myrtina (Burm. f.) Kurz in J. Asiatic Soc. Beng. 44 : 168. 1875. **Rhamnus myrtinus** Burm. f. Fl. Ind. 60. 1768. **S. indica** Brongn. in Ann. Sci. Nat. 1, 10 : 363. 1827 ; Lawson in Hook. f. Fl. Brit. India 1 : 640. 1875 ; Cooke, Fl. Pres. Bombay 1 : 260. 1958 (Repr. ed.).

Climbers. Leaves obovate orbicular, 1-3 x 1.0-2.5 cm, base cuneate, apex obtuse. Flowers green in axillary fascicles ; calyx tube turbinate ; lobes ovate ; petals orbicular, shortly clawed. Drupes globose, ca 1 cm across.

Fls. & Frts. : February April.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 302, f. 179. 1909.

Distrib. : Common near forest edges and along exposed slopes. Jangli jaigad ; Jadholi ; Kas ; Karanjewadi ; Lingmala ; Mahabaleshwar ; Shirshingi.

VENTILAGO Gaertn.

Ventilago bombaiensis Dalz. in Hook. Kew J. Bot. 3 : 36. 1851 ; Lawson in Hook. f. Fl. Brit. India 1 : 631. 1875 ; Cooke, Fl. Pres. Bombay 1 : 254. 1958 (Repr. ed.).

Shrubs, scandent ; branches fulvous pubescent. Leaves with rufous villous glands in the axils of nerves beneath. Flowers in axillary

fascicles, pubescent ; calyx divided half way down ; lobes keeled on the inner face ; petals obovate. Fruits subglobose, winged at apex.

Fls. & Frts. : January - March.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind I : 290, f. 172 & 173 (excl. the fruit on right hand top of f. 173). 1909.

Distrib. : Occasional in semi-evergreen forests. Mahabaleshwar.

ZIZIPHUS Miller

- | | | |
|---|-----|----------------------|
| 1. Straggling shrubs ; flowers on leafless spinous branches ; petals absent | .. | <i>Z. rugosa</i> |
| 1. Erect shrubs or trees ; flowers in axillary cymes ; petals 5 : | | |
| 2. Styles 3, free ; drupes upto 4 cm across | ... | <i>Z. xylopyrus</i> |
| 2. Styles 2, connate ; drupes not exceeding 2 cm : | | |
| 3. Leaves glabrous on both surfaces ; drupes more than 1 cm across | ... | <i>Z. glaberrima</i> |
| 3. Leaves tomentose beneath ; drupes upto 1 cm across : | | |
| 4. Leaves glabrous above ; stipular spines in pairs | ... | <i>Z. mauritiana</i> |
| 4. Leaves pubescent above ; stipular spines solitary | ... | <i>Z. oenoplia</i> |

Ziziphus glaberrima (Sedgw.) Sant. in J. Bombay Nat. Hist. Soc. 51 : 803. 1953. *Z. xylopyra* Willd. var. *glaberrima* Sedgw. in Indian Forester 45 : 71. 1919. 'Guti'.

Trees, 4-5 m high. Leaves elliptic, 3-5 x 2-3 cm, margin irregularly dentate. Flowers in dense, axillary cymes ; calyx lobes broadly ovate, keeled inside ; petals spatulate. Drupes globose.

Fls. & Frts. : April - July.

Distrib. : Rare, in drier part of the district. Nath hills, Shirala, W. Burns s. n.

Ziziphus mauritiana Lam. Encycl. 3 : 319. 1789. *Z. jujuba* Lam. op. cit. 318 ; Lawson in Hook. f. Fl. Brit. India 1 : 632. 1875 ; Cooke, Fl. Pres. Bombay 1 : 256. 1958 (Repr. ed.). 'Bor'.

Trees, 5-6 m high, young branches pubescent. Leaves ovate elliptic, 3-5 × 2.0-3.5 cm. Flowers sessile, greenish; sepals keeled on inner surface, woolly without; petals cucullate. Drupes globose.

Fls. & Frts. : April - June.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 294, f. 175. 1909.

Distrib. : Frequent in scrub forests and along roadsides. Koyna ; Parli ; Shirala.

Z. oenoplia (L.) Mill. Gard. Dict. ed. 8. 3. 1768 ; Lawson in Hook. f. Fl. Brit. India 1 : 634. 1875 ; Cooke, Fl. Pres. Bombay 1 : 257. 1958 (Repr. ed.). *Rhamnus oenoplia* L. Sp. Pl. 194. 1753.

Shrubs, 4-6 m high. Leaves ovate lanceolate, 2-4 × 1-2 cm, base unequal, apex acute, margin minutely denticulate; stipular spines hooked, pubescent below the apex. Flowers greenish. Drupes obovoid, reddish black, shining.

Fls. & Frts. : December - January.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 297, f. 176. 1909.

Distrib. : Occasional. Kole ; Morgiri.

Z. rugosa Lam. Encycl. 3 : 319. 1789 ; Lawson in Hook. f. Fl. Brit. India 1 : 636. 1875 ; Cooke, Fl. Pres. Bombay 1 : 258. 1958 (Repr. ed.). 'Toran'.

Climbers, young branches fulvous tomentose. Leaves broadly elliptic, 4-10 × 2-7 cm, acuminate, base cordate, apex rounded, mucronate. Flowers in paniculate cymes, tomentose. Drupes globose, ca 1 cm across.

Fls. & Frts. : February - May.

Illus. : Wight, Ic. t. 339. 1840.

Distrib. : Common along ghats. Gureghar ; Kumbharli ghat ; Mahabaleshwar ; Shirshingi ; Vasota.

Ziziphus xylopyrus (Retz.) Willd. Sp. Pl. I : 1104. 1798 ; Lawson in Hook. f. Fl. Brit. India I : 634. 1875 ; Cooke, Fl. Pres. Bombay I : 258. 1958 (Repr. ed.). *Rhamnus xylopyrus* Retz. Obs. Bot. 2 : 11. 1781. 'Ghat bor'. (Fig. 7)

Trees, 7–10 m high. Leaves elliptic oblong, 4–6 × 2–4 cm, base subcordate, apex rounded, margin crenate serrate. Flowers green, pubescent. Drupes globose, tomentose.

Fls. & Frts. : September–December.

Distrib. : Occasional along ghats. Kelghar ghat ; Morgiri.

VITACEAE

I. Leaves simple	...	CISSUS
I. Leaves digitately 3–5 foliolate	...	CAYRATIA

CAYRATIA A.L. Juss. (*nom. cons.*)

I. Leaves 3-foliate	...	<i>C. trifolia</i>
I. Leaves 5-foliate :		
2. Young branches pubescent ; leaflets obovate, acuminate ; stipules auriculate	...	<i>C. auriculata</i>
2. Young branches glabrous ; leaflets oblong-lanceolate ; stipules cordate	...	<i>C. elongata</i>

Cayratia auriculata (Wall. ex Wight & Arn.) Gamble, Fl. Pres. Madras 237. 1918 & I : 170. 1957 (Repr. ed.). *Vitis auriculata* Wall. ex Wight & Arn. Prodr. 129. 1834 ; Lawson in Hook. f. Fl. Brit. India I : 658. 1875 ; Cooke, Fl. Pres. Bombay I : 273. 1958 (Repr. ed.).

Climbers. Leaflets 6.5–7.5 × 4–5 cm, base cuneate, apex caudate, glabrous above, sparsely hairy beneath. Flowers in divaricate cymes ; calyx obscurely 4-lobed ; petals ovate lanceolate, puberulous without. Fruits subglobose, 1.0–1.5 cm across, red when ripe.

Fls. & Frts. : August–September.

Illus. : Wight, Ic. t. 145. 1839.

Distrib. : Common in bushes at lower elevation in drier parts of the district. Shirgaon ghat.

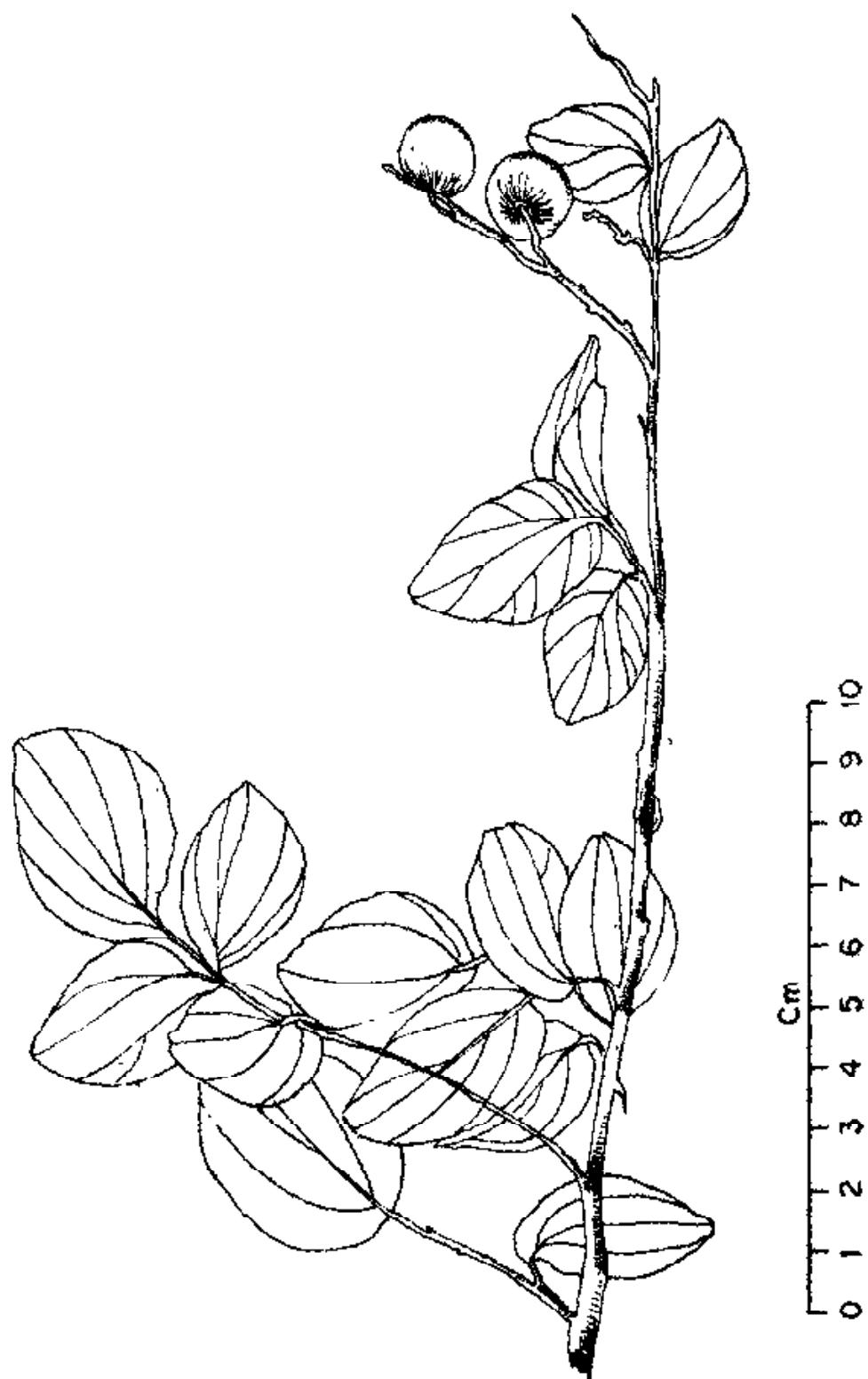


Fig. 7. *Ziziphus xylopyrus* (Retz.) Willd.

Cayratia elongata (Roxb.) Suesseng. in Engl. & Prantl. Pflanzenf. ed. 2. 20 d. 281. 1953. *Cissus elongata* Roxb. Fl. Ind. (Carey ed.) 1 : 411. 1832. *Vitis elongata* Wall. ex Wight & Arn. Prodr. 128. 1834 ; Lawson in Hook. f. Fl. Brit. India 1 : 658. 1875 , Cooke, Fl. Pres. Bombay 1 : 273. 1958 (Repr. ed.).

Climbers. Leaflets 3.5 - 15.0 × 1.5 - 4.5 cm, tapering into short petioles. Flowers in leaf opposed dichotomous cymes ; calyx small, cupular ; petals oblong. Berries black when ripe.

Fls. & Frts. : May - October.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 321, f. 190. 1909.

Distrib. : Common component of semi-evergreen hill tracts. Jadholi ; Kas ; Lingmala ; Mahabaleshwar ; Mahabaleshwar Panchgani ; Old Mahabaleshwar road ; Taldeo ; Tapola ghat.

C. trifolia (L.) Domin, Biblioth. Bot. 89 : 371. 1927. *Vitis trifolia* L. Sp. Pl. 203. 1753 ; Cooke, Fl. Pres. Bombay 1 : 271. 1958 (Repr. ed.). *V. carnosa* Wall. ex Wight & Arn. Prodr. 127. 1834 ; Lawson in Hook. f. Fl. Brit. India 1 : 654. 1875. 'Ambat - vel'.

Climbers ; branches compressed, pubescent when young. Leaflets 6 - 10 × 3.5 - 5.0 cm, base cuneate or truncate, apex rounded, margin glabrous above, pubescent beneath. Flowers in axillary, dichotomous cymes, pubescent ; calyx truncate or obscurely 4 lobed ; petals oblong, hooded at apex. Berries ca 1.5 cm across.

Fls. & Frts. : July - October.

Illus. : Wight, Ic. t. 171. 1839. (*Vitis carnosa*).

Distrib. : Rare in deciduous forests. Mahabaleshwar, Cooke, op. cit. ; Salve, 165803.

CISSUS L.

- | | | |
|---|-----|---------------------|
| 1. Erect shrubs | ... | <i>C. woodrowii</i> |
| 1. Climbers : | | |
| 2. Stem, leaves and flowers red ; leaves ovate - oblong ... | | <i>C. discolor</i> |
| 2. Stem and leaves not as above ; leaves cordate : | | |

3. Stem and leaves tomentose when young ...	<i>C. repanda</i>
3. Stem and leaves glabrous :	
4. Stem woody below ...	<i>C. pallida</i>
4. Stem herbaceous ...	<i>C. repens</i>

Cissus discolor Bl. Bijdr. 181. 1825. *Vitis discolor* (Bl.) Dalz. in Hook. Kew J. Bot. 2 : 39. 1850 ; Lawson in Hook. f. Fl. Brit. India 1 : 647. 1875 ; Cooke, Fl. Pres. Bombay 1 : 266. 1958 (Repr. ed.).

Climbers. Leaves 4.0 - 6.5 × 1.5 - 3.5 cm, base cordate or truncate, apex acuminate; petioles upto 2 cm long; stipules ovate oblong. Flowers in leaf opposed umbellate cymes; calyx truncate, glandular. Fruits subglobose to pyriform, red when ripe.

Fls. & Frts. : September - October.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 309, f. 190. 1909.

Distrib. : Occasional in semi-evergreen forests, very conspicuous because of its red colour. Way to Dicholi ; Shirshingi.

C. pallida (Wight & Arn.) Steud. Nom. Bot. ed. 2. I : 372. 1840. *Vitis pallida* Wight & Arn. Prodr. 125. 1834 ; Lawson in Hook. f. Fl. Brit. India 1 : 647. 1875 ; Cooke, Fl. Pres. Bombay 1 : 265. 1958 (Repr. ed.).

Climbers. Leaves ovate orbicular, 11 - 14 × 11 - 17 cm, base cordate, apex acuminate, margin distantly serrate; petioles 6 - 8 cm long. Flowers in axillary umbellate cymes; calyx saucer shaped, membranous; petals ovate, deciduous. Berries pyriform, mucronate.

Fls. & Frts. : July.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 310, f. 182. 1909.

Distrib. : Rare along hill slopes. Ghotil, 165787.

C. repanda Vahl, Symb. Bot. 3 : 18. 1794 ; Bole & Almeida in J. Bombay Nat Hist. Soc. 78 : 554. 1981. *Vitis repanda* Wight & Arn. Prodr. 7 : 125. 1834 ; Lawson in Hook. f. Fl. Brit. India 1 : 648. 1875 ; Cooke, Fl. Pres. Bombay 1 : 267. 1958 (Repr. ed.).

Shrubs, scandent. Leaves broadly ovate, cordate, apex acuminate, crenate-dentate; stipules oblong, obtuse. Flowers pink, solitary or in

leaf opposed cymes ; calyx truncate, hairy without ; petals triangular. Berries pyriform, mucronate.

Fls. & Frts. : April June.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind I : 312, t. 184-185. 1909.

Notes : Included on Bole & Almeida's report from Fitzgerald ghat, Mahabaleshwar.

Cissus repens Lam. Encycl. 1 : 31. 1783. *Vitis repens* (Lam.) Wight & Arn. Prodr. 125. 1834 ; Lawson in Hook. f. Fl. Brit. India 1 : 646. 1875 ; Cooke, Fl. Pres. Bombay I : 265. 1958 (Repr. ed.).

Climbers. Leaves broadly ovate, *ca* 6.0 × 3.5 cm, base cordate, apex acuminate ; stipules ovate, acute. Flowers red in axillary dichotomous cymes. Berries globose, *ca* 1 cm across.

Fls. & Frts. : February - March.

Distrib. : Rare in deciduous forests. Ambeghar, Kochhar 158281.

C. woodrowii (Stapf ex Cooke) Sant. in Kew Bull. 1948 : 176. 1948. *Vitis woodrowii* Stapf ex Cooke, Fl. Pres. Bombay I : 248. 1903 & I : 264. 1958 (Repr. ed.).

Shrubs, 1-2 m high. Leaves cordate, 9-13 × 9-12 cm, apex acute, margins crenate, crenatures recurved ; petioles 6-9 cm long. Flowers in axillary umbellate cymes ; calyx membranous, saucer shaped ; petals calyprate, deciduous. Berries subglobose, *ca* 0.5 cm across.

Fls. & Frts. : July.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind I : 309, f. 182. 1909.

Distrib. : Infrequent. Satara.

CULTIVATED SPECIES

Vitis vinifera L. Sp. Pl. 202. 1753 ; Lawson in Hook. f. Fl. Brit. India 1 : 652. 1875 ; Cooke, Fl. Pres. Bombay I : 273. 1958 (Repr. ed.).

Widely cultivated for edible fruits.

LEEACEAE

LEEA L.

- | | | |
|---|-----|------------------|
| 1. Leaves 1 - pinnate ; leaflets oblong | ... | <i>L. crispa</i> |
| 1. Leaves 2 - pinnate ; leaflets ovate - elliptic | ... | <i>L. indica</i> |

Leea crispa van Royen ex L. Syst. Nat. ed. 12. 2 : 627. 1767 & Mant. 124. 1767 ; Lawson in Hook. f. Fl. Brit. India 1 : 665. 1875 ; Cooke, Fl. Pres. Bombay 1 : 276. 1958 (Repr. ed.) ; Ridsdale in Blumea 22 : 88. 1974. *L. aspera* Edgew. Trans. Linn. Soc. 20 : 36. 1846, *non* Wall. ex G. Don 1821 ; Lawson, *op. cit.* *L. edgeworthii* Sant. in Rec. Bot. Surv. India 16(1) : 54. 1967 (Repr. ed.). *L. pumila* Kurz in J. Asiatic. Soc. Beng. 2, 41 : 302. 1872 ; Lawson, *op. cit.* (Fig. 8)

Shrubs, up to 2.5 m high ; stem jointed, winged, woolly. Leaflets 3-5 × 1.5-2.0 cm, base rounded, apex acuminate, glabrous above, pubescent on the nerves beneath. Flowers 5-merous in terminal cymes, pubescent ; bracts and bracteoles linear-lanceolate ; calyx campanulate ; petals connate below. Berries 0.7 cm across, black when ripe.

Fls. & Frts. : June.

Distrib. : Rare in deciduous forests. Koyna, Kochhar 158440.

L. indica (Burm. f.) Merr. in Philipp. J. Sci. Bot. 14 : 245. 1919 ; Ridsdale in Blumea 22 : 95. 1974. *Staphylea indica* Burm. f. Fl. Ind. 75, t. 23, f. 2. 1768. *L. sambucina* Willd. Sp. Pl. 1 : 1177. 1797, *nom. illeg.* Lawson in Hook. f. Fl. Brit. India 1 : 666. 1875 ; Cooke, Fl. Pres. Bombay 1 : 277. 1958 (Repr. ed.).

Shrubs, 2-5 m high. Leaves 10-15 cm long ; leaflets 3-12 × 2-6 cm, base cuneate, apex acuminate, margin coarsely serrate. Flowers white. Berries globular, 3-5 lobed, purple-black when ripe.

Fls. & Frts. : April December.

Illus. : Wight, Ic. t. 78. 1838. [*L. staphylea* Roxb. Fl. Ind. (Carey & Wall. ed.) 2 : 476. 1824].

Distrib. : Common undergrowth in deciduous forests. Ambeghar ; Dicholi ; Kumbharli ghat ; Mahabaleshwar ; Sanbur ; Shirshingi.

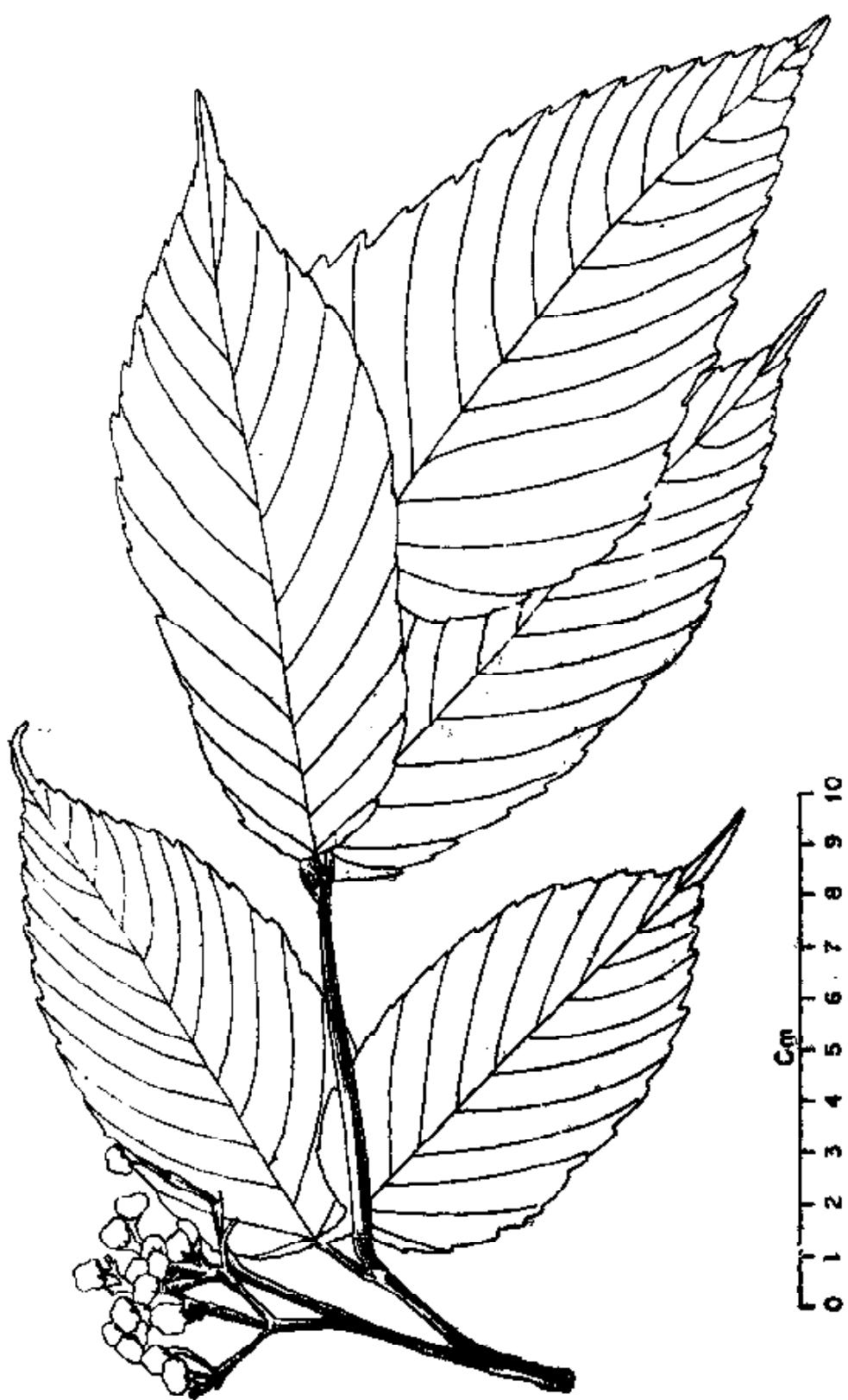


Fig. 8. *Leea crispa* van Royen ex L.

SAPINDACEAE

1. Climbers	...	CARDIOSPERMUM
1. Shrubs or trees :		
2. Trees : fruits tubercled	...	DIMOCARPUS
2. Shrubs ; fruits not tubercled :		
3. Leaves 3 - foliolate ; fruits not winged ; seeds arillate	...	ALLOPHYLUS
3. Leaves simple ; fruits 3 - winged ; seeds not arillate	...	DODONAEA

ALLOPHYLUS L.

1. Sepals glandular ciliate ; fruits red when ripe	...	<i>A. serratus</i>
1. Sepals glabrous ; fruits black when ripe	...	<i>A. cobbe</i>

Allophylus cobbe (L.) Raeusch. Nomen. Bot. ed. 3. 108. 1797. Hiern in Hook. f. Fl. Brit. India 1 : 673. 1875. (*p.p.*) ; Cooke, Fl. Pres. Bombay 1 : 282. 1958 (Repr. ed.) ; Leenh. in Blumea 15 : 322. 1967 ; S.K. Mukerjee in Indian Forester 98 : 495. 1972 & J. Econ. Tax. Bot. 1 : 79. 1980. *Rhus cobbe* L. Sp. Pl. 267. 1753.

Shrubs, 2-4 m high. Leaflets ovate or elliptic, 1.5-12.0 × 2-5 cm, base oblique, apex acuminate, margin distantly serrate, pubescent above, tomentose beneath. Flowers in spicate racemes ; sepals suborbicular ; petals cuneate with scale above the claw. Fruits globose, ca 0.6 cm across.

Fls. & Frts. : April-September.

Illus. : Wight. Ic. t. 964. 1845.

Distrib. : Abundant in moist deciduous forests towards forest edges. Ambeghar ; Kas ; Karanjewadi ; way to Lingmala ; Mahabaleshwar ; Nauja ; Panchgani ; Shirshinghi.

A. serratus (Roxb.) Kurz in J. Asiatic Soc. Beng. 44 : 185. 1876 ; Leenh. in Blumea 15 : 351. 1967 ; S.K. Mukerjee in Indian Forester 98 : 495. 1972 & J. Econ. Tax. Bot. 1 : 79. 1980. *Ornitrophe serrata* Roxb. Pl. Cor. 44, t. 61. 1796. *A. cobbe* Hiern in Hook. f. Fl. Brit. India 1 : 673. 1875 (*p.p.*) ; Cooke, Fl. Pres. Bombay 1 : 282. 1958 (Repr. ed.).

Shrubs, climbing. Leaflets ovate or elliptic ovate, 5-10 × 2.5-4.5 cm, margin serrate dentate. Flowers white in 5-10 cm long pendulous racemes. Fruits subglobose, ca 0.5 cm across.

Fls. & Frts. : August - September.

Illus. : Roxb. *op. cit.*

Distrib. : Frequent in scrub forests. Mahabaleshwar.

CARDIOSPERMUM L.

Cardiospermum halicacabum L. Sp. Pl. 366. 1753 ; Hiern in Hook. f. Fl. Brit. India 1 : 670. 1875 ; Cooke, Fl. Pres. Bombay 1 : 280. 1958 (Repr. ed.).

Herbs, climbing. Leaves 3-lobed : leaflets ovate-lanceolate, 2.5-5.0 × 1.0-3.5 cm, base tapering, apex acute, sparsely pubescent. Peduncles with 2 tendrils at the base. Flowers white, in umbellate cymes ; outer 2 sepals small, obovate, hairy on the back, inner larger, rounded ; petals with scales at the base. Capsules membranous, inflated, trigonous, winged.

Fls. & Frts. : October - December.

Illus. : Wight, Ic. t. 508. 1841.

Distrib. : Common near forest clearings. Koyna ; Mhavashi ; Tarlo.

DIMOCARPUS Lour.

Dimocarpus longan Lour. Fl. Cochinch. 233. 1790 ; Leenh. in Blumea 19 : 122. 1971. **Nephelium longana** (Lam.) Camb. in Mem. Mus. Hist. Nat. 18 : 30. 1829 ; Hiern in Hook. f. Fl. Brit. India 1 : 688. 1875 ; Cooke, Fl. Pres. Bombay 1 : 285. 1958 (Repr. ed.).

Trees, 9-12 m high. Leaves pinnate ; leaflets 2-3 pairs, oblong-lanceolate, 9-15 × 3-6 cm, coriaceous, base oblique, apex acuminate. Flowers dioecious in axillary and terminal panicles. Fruits subglobose, reddish when ripe.

Frts. : April.

Illus. : Bedd. Fl. Sylv. t. 156. 1871.

Distrib. : Rare in semi-evergreen forests. Koyna valley ; Birdwood (Cooke, *op. cit.*) ; Mahabaleshwar, Cooke, *op. cit.*, Puri 307.

DODONAEA L.

Dodonaea viscosa Jacq. Enum. Pl. Carib. 19. 1760 ; Hiern in Hook. f. Fl. Brit. India 1 : 697. 1875 ; Cooke, Fl. Pres. Bombay 1 : 287. 1958 (Repr. ed.). 'Jakhmi'.

Shrubs, 1-3 m high. Leaves sessile, oblanceolate, 4-8 x 1-2 cm, base tapering, apex subacute, shining. Flowers greenish-yellow in axillary cymes. Capsules membranous, compressed, upto 1.5 cm long, broader than long. Seeds black.

Fls. & Frts. : January July.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 342, f. 202. 1909.

Distrib. : Occasional in scrub forests, frequently cultivated as hedge plant. Gondavale ; Kolc.

CULTIVATED SPECIES

Litchi chinensis Sonner. Voy. Ind. Or. 2 : 230. t. 129. 1782 ; S.K. Mukerjee in J. Econ. Tax. Bot. 1 : 80. 1980 ; Bole & Almeida in J. Bombay nat. Hist. Soc. 78 : 555. 1981. *Nephelium litchi* (Lour.) Camb. in Mem. Mus. Hist. Nat. 18 : 30. 1829 ; Hiern in Hook. f. Fl. Brit. India 1 : 687. 1875 ; Cooke, Fl. Pres. Bombay 1 : 286. 1958 (Repr. ed.).

Trees. Leaflets 4-12, oblong-lanceolate. Flowers in terminal panicles. Fruits pink or red when ripe.

Fls. & Frts. : May.

Illus. : Wight, Ic. t. 43. 1838 [*N. litchi* (Lour.) Camb.]

Notes : Cultivated for edible fruits at Bhilar Estate near Panchgani and at Mahabaleshwar ; introduced from China.

STAPHYLEACEAE

Turpinia pomifera DC. Prodr. 2 : 3. 1825 ; Hiern in Hook. f. Fl. Brit. India 1 : 698. 1875 ; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 11. 1897 ; Cooke, Fl. Pres. Bombay 1 : 288. 1958 (Repr. ed.).

Trees. Leaves opposite, imparipinnate ; leaflets oblong - lanceolate, apex acuminate, margins serrate. Flowers white in axillary and terminal panicles, shorter than the leaves ; calyx 5 - lobed, lobes oblong, obtuse, ciliate ; petals oblong. Fruits globose, purplish - black.

Fls. & Frts. : January.

Notes : Included on Birdwood's report from Mahabaleshwar.

ANACARDIACEAE

1. Leaves simple :		
2. Petioles with 2 - 4 spur like appendages	...	HOTIGARNA
2. Petioles without appendages :		
3. Style and stamen 1 each	...	NOTHOPEGIA
3. Styles 3 - 5 ; stamens more than 1 :		
4. Flowers bisexual ; stamens 10	...	BUCHANANIA
4. Flowers unisexual ; stamens 5	...	SEMECARPUS
1. Leaves compound :		
5. Shrubs, armed, leaflets 3	...	RHUS
5. Trees, unarmed, leaflets 5	...	LANNBA

BUCHANANIA Spr.

Buchanania lanzan Spr. in Schrad. J. Bot. 2 : 234. 1800 ; Cooke, Fl. Pres. Bombay 1 : 293. 1958 (Repr. ed.). *B. latifolia* Roxb. Fl. Ind. (Carey ed.) 2 : 385. 1832 ; Hook. f. Fl. Brit. India 2 : 23. 1876. 'Char'.

Trees, 8 - 10 m high. Leaves broadly oblong, 13 - 16 × 6 - 7 cm, coriaceous, base rounded, apex obtuse, emarginate, glabrous above, villous beneath. Flowers white in axillary and terminal panicles, pubescent : sepals ovate, ciliate ; petals ovate - oblong, spreading. Carpels 5, free.

Fls. & Frts. : January.

Illus. : Bedd. Fl. Sylv. t. 165. 1871.

Distrib. : Rare in deciduous forests along hill slopes. Kiwal, 166707.

HOLIGARNA Buch. Ham. ex Roxb. (*nom. cons.*)

Holigarna grahamii (Wight) Kurz in J. Asiatic Soc. Beng. 4 : 305. 1872; Hook. f. Fl. Brit. India 2 : 37. 1876; Cooke, Fl. Pres. Bombay 1 : 298. 1958 (Repr. ed.). *Semecarpus grahamii* Wight, Jc. t. 235. 1839. *H. wightii* Balakr. in J. Bombay Nat. Hist. Soc. 63 : 327. 1967, 'Hulgeri'.

Trees, 4-6 m high, young branches tomentose. Leaves oblanceolate, 23-36 × 7-11 cm, base cuneate, apex acuminate, glabrous above, pubescent beneath. Flowers in terminal panicles, rusty-tomentose. Drupes 1.5-2.0 cm long, enclosed in cupular torus, tomentose.

Fls. & Frts. : December.

Illus. : Wight, *op. cit.*; Talbot, For. Fl. Bombay Pres. & Sind 1 : 359, f. 210. 1909.

Distrib. : Common along ghats in semi-evergreen forests. Ambeghar, Kumbharli ghat, Nauja.

Notes : Kurz (*op. cit.*) while describing his collection from Burma misidentified them with those of Wight's and based on the latter's epithet proposed a new combination. Hook. f. (1876) described Kurz's plant as a new species, *Holigarna* using Wight's name as the basionym. This becomes superfluous as Kurz too made the new combination based on the same type. Subsequently, Balakrishnan (*op. cit.*) also supplied a superfluous new name thinking that Hook. f.'s name has become a later homonym.

LANNEA A. Rich. (*nom. cons.*)

Lannea coromandelica (Houtt.) Merr. in J. Arnold Arbor. 19 : 353. 1939. *Dialium coromandelicum* Houtt. Nat. Hist. 2, 2 : 39, t. 5, f. 2. 1774. *Odina wodier* Roxb. Fl. Ind. (Carey ed.) 2 : 293. 1832; Hook. f. Fl. Brit. India 2 : 29. 1876; Cooke, Fl. Pres. Bombay 1 : 296. 1958 (Repr. ed.).

Trees, ca 9 m high. Leaves imparipinnate, deciduous; leaflets ovate oblong, 3-5 × 1.5-2.5 cm, base rounded or acute, apex acuminate, glabrous above, pubescent beneath when young. Flowers purplish in terminal racemes. Drupes oblong, ca 1 cm long, compressed.

Fls. & Frts. : April May.

Illus. : Wight, Ic. t. 60. 1838. (*Odina wodier* Roxb.).

Distrib. : Scarcely distributed in deciduous forests, also cultivated, Rasati, Kochhar 154773.

NOTHOPEGIA Bl. (*nom. cons.*)

Notopogia racemosa (Dalz.) Ramamoorthy in Saldanha & Nicolson, Fl. Hassan Dist. 377. 1976. *Glycocarpus racemosus* Dalz. in J. Asiatic Soc. Bombay 3 : 69. 1849. *N. colebrookiana* Hook. f. Fl. Brit. India 2 : 40. 1876 ; Cooke, Fl. Pres. Bombay 1 : 299. 1958 (Repr. ed.). 'Amberi'.

Trees, 5-6 m high. Leaves elliptic oblong, 7-16 × 3-5 cm, base tapering, apex acuminate. Flowers white, bracteate; petals linear-oblong, reflexed. Drupes globose, depressed, red when ripe.

Fls. & Frts. : February April.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 361, f. 211. 1909.

Distrib. : Common in semievergreen forests. Dicholi ; Jadholi ; Karanjewadi.

RHUS L.

Rhus mysorensis G. Don, Gen. Syst. 2 : 74. 1832 ; Hook. f. Fl. Brit. India 2 : 9. 1876 ; Cooke, Fl. Pres. Bombay 1 : 290. 1958 (Repr. ed.). 'Amboni'.

Shrubs, 3-4 m high; branches spiny. Leaflets obovate, terminal larger *ca* 4 cm long, finely pubescent beneath. Flowers in axillary and terminal panicles, pubescent. Drupes subglobose, brownish black when dry, shining.

Fls. & Frts. : July September.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 347, f. 203. 1909.

Distrib. : Common in dry deciduous forests. Dhavadi ; Pandavgadh ; Satara ; Shirgaon ghat.

SEMECARPUS L. f.

Semicarpus anacardium L. f. Suppl. 182. 1781 ; Hook. f. Fl. Brit. India 2 : 30. 1876 ; Cooke, Fl. Pres. Bombay 1 : 296. 1958 (Repr. ed.).

Trees, 8 - 10 m high. Leaves coriaceous, broadly oblong, 15 - 25 × 8 - 12 cm, coriaceous, base and apex rounded, glabrous above, pubescent beneath. Flowers small in terminal panicles. Drupes oblong or sub-globose, 1 - 3 cm long, orange turning black when ripe.

Fls. & Frts. : June November.

Illus. : Wight, Ic. t. 558. 1842 ; Bedd. Fl. Sylv. t. 166. 1871.

Distrib. : Frequent in dry deciduous forests. Pimpodhi ; Pirachi Wadi ; Shamgaon.

CULTIVATED SPECIES

Anacardium occidentale L. Sp. Pl. 383. 1753 ; Hook. f. Fl. Brit. India 1 : 20. 1876 ; Cooke, Fl. Pres. Bombay 1 : 292. 1958 (Repr. ed.). 'Kaju'.

Trees, 6 - 8 m high. Leaves obovate, or elliptic, coriaceous. Flowers yellow with pink stripes, polygamous in terminal panicles. Nuts reniform ca 2.5 cm long.

Fls. & Frts. : June.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 351, f. 205. 1909.

Distrib. : Native of Tropical America ; cultivated for edible nuts, sometimes found as an escape in deciduous forests. Research Nursery, Koyna.

Mangifera indica L. Sp. Pl. 200. 1753 ; Hook. f. Fl. Brit. India 2 : 13. 1876 ; Cooke, Fl. Pres. Bombay 1 : 291. 1958 (Repr. ed.). 'Amra'.

Trees, 15 - 20 m high. Leaves oblong lanceolate, apex acute, margins undulate. Flowers small, yellow in dense panicles ; sepals ovate, deciduous ; petals oblong, subacute. Drupes fleshy, large.

Fls. & Frts. : January May.

Illus. : Bedd. Fl. Sylv. t. 162. 1871.

Distrib. : Large evergreen trees, cultivated for edible fruits throughout the district. Koyna ; Mahabaleshwar.

MORINGACEAE

CULTIVATED SPECIES

Moringa oleifera Lam. Encycl. 1 : 398. 1785 ; Verdc. in Kew Bull. 40 : 7. 1985. *M. pterygosperma* Gaertn. Fruct. 2 : 314. 1791 ; Hook. f. Fl. Brit. India 2 : 45. 1876 ; Cooke, Fl. Pres. Bombay 1 : 301. 1958 (Repr. ed.). 'Shevga'.

Trees, 10 - 12 m high. Leaves 3 - pinnate; leaflets elliptic to obovate, deciduous. Flowers white in large axillary panicles. Pods elongate, ribbed.

Fls. & Frts. : January - May.

Illus. : Bedd. Fl. Sylv. t. 80. 1869.

Distrib. : Common. Koyna ; Mahabaleshwar.

Notes : Young leaves, flowers and fruits eaten as vegetable.

CONNARACEAE

1. Inflorescence glabrous ; calyx accrescent ; follicles sessile	...	ROUREA
1. Inflorescence tomentose ; calyx not accrescent ; follicles stalked	...	CONNARUS

CONNARUS L.

1. Erect shrubs	...	<i>C. monocarpus</i>
1. Climbers	...	<i>C. wightii</i>

Connarus monocarpus L. Sp. Pl. 675. 1753 ; Hook. f. Fl. Brit. India 2 : 50. 1876 ; Cook, Fl. Pres. Bombay 1 : 303. 1958 (Repr. ed.). 'Sundar'.

Shrubs, 3 - 5 m high. Leaflets 5, oblong, 4 - 8 × 2 - 4 cm, base rounded, apex acuminate. Flowers in dense terminal panicles. Follicles fusiform, 2.5 - 5.0 cm long, scarlet turning brown.

Fls. & Frts. : December.

Distrib. : Infrequent along forest edges. Kumbharli ghat ; Mahabaleshwar.

Connarus wightii Hook. f. Fl. Brit. India 2 : 51. 1876 ; Cooke, Fl. Pres. Bombay 1 : 304. 1958 (Repr. ed.).

Climbers. Leaflets 5, oblong, 3.5–8.0 × 1.5–3.0 cm, coriaceous. Flowers in axillary and terminal panicles. Follicles inflated, striate, 1.0–2.5 cm, chestnut brown.

Fls. & Frts. : April.

Illus. : Ramamoorthy in Saldanha & Nicolson, Fl. Hassan Dist. f. 71 A. 1976.

Distrib. : Rare in semi-evergreen forests along hill slopes. Kumbharli ghat, Kochhar 153010.

ROUREA Aubl.

1. Fruits dehiscing irregularly	...	<i>R. prainiana</i>
1. Fruits dehiscing longitudinally on ventral suture	...	<i>R. minor</i>

Rourea minor (Gaertn.) Alst. in Trim. Handb. Fl. Ceylon 6 : 67. 1931 ; Leenh. in Steenis, Fl. Males. 1, 5 : 514. 1958 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 78 : 549. 1981. *Aegiceras minor* Gaertn. Fruct. 1 : 216, t. 46. 1788. *R. santaloides* (Vahl) Wight & Arn. Prodr. 144. 1844 ; Hook. f. Fl. Brit. India 2 : 47. 1876 ; Cooke, Fl. Pres. Bombay 1 : 303. 1958 (Repr. ed.).

Shrubs, climbing. Leaflets 5–9, elliptic or lanceolate. Flowers white in axillary panicles ; sepals ovate suborbicular, minutely ciliate ; petals spatulate ; stamens 10, connate at base. Follicles ovoid, falcate, seated on enlarged calyx.

Fls. & Frts. : October.

Notes : Included on Birdwood's report from Mahabaleshwar.

R. prainiana Talbot, For. Fl. Bombay Pres. & Sind 1 : 368, f. 213. 1909. Leenh. in Steenis, Fl. Males. 1, 5 : 520. 1958.

Climbers. Leaflets elliptic-lanceolate, 2–4 × 0.5–1.7 cm. Flowers in axillary racemes ca 10 m long. Follicles ovoid, ca 1 cm long with persistent, orbicular calyx.

Fls. & Frts. : September–November.

Illus. : Talbot, op. cit.

Distrib. : Rare along ghat in semievergreen forests. Pratapgad, Bhide 1205.

FABACEAE

KEY TO THE SUB-FAMILIES

1. Flowers actinomorphic ; petals valvate ... **MIMOSOIDEAE**
1. Flowers zygomorphic ; petals imbricate or absent :
 2. Corolla papilionaceous ; upper petal outermost, the other four in 2 opposite pairs ; leaves usually imparipinnate ; stamens usually connate ... **FABOIDEAE**
 2. Corolla not papilionaceous ; upper petal innermost, the rest similar to each other ; leaves usually paripinnate ; stamens usually free ... **CASALPINIOIDEAE**

FABOIDEAE

1. Climbers :
2. Calyx showy, foliaceous, persistent, creamish - white ... **PARACALYX**
2. Calyx not as above :
 3. Leaves 1 - 3 - foliolate :
 4. Leaves 1 - foliolate ... **NOCRA**
 4. Leaves 3 - foliolate :
 5. Pods 2 - 4 - seeded :
 6. Flowers solitary or in fascicles ... **CAJANUS**
 6. Flowers in racemes :
 7. Leaves gland dotted beneath ; pods 2 - seeded ... **RHYNCHOSIA**
 7. Leaves not gland dotted beneath ; pods 3 - 4 - seeded ... **DUMASIA**
 5. Pods many seeded :
 8. Pods with dense, irritant bristles ... **MUCUNA**
 8. Pods not as above :
 9. Stipules produced below the insertion ... **VIGNA**

9. Stipules not produced below the insertion :
10. Pods hairy :
11. Stamens 5, sterile ; pods beaked ... **TERAMNUS**
11. Stamens all fertile ; pods not beaked ... **PUERARIA**
10. Pods glabrous :
12. Styles bearded :
13. Flowers in axillary fascicles ... **DOLICHOS**
13. Flowers in racemes ... **SPHENOSTYLIS**
12. Styles not bearded ... **CANAVALIA**
3. Leaves more than 3 - foliolate :
14. Herbaceous climbers ... **ABRUS**
14. Large, woody climbers :
15. Leaflets opposite ; pods winged ... **DERRIS**
15. Leaflets alternate ; pods not winged ... **DALBERGIA**
1. Herbs, shrubs or trees :
16. Erect or prostrate herbs or shrubs :
17. Flowers white or yellow :
18. Leaves simple :
19. Pods turgid ... **CROTALARIA**
19. Pods not turgid ... **GONIOGYNA**
18. Leaves compound :
20. Flowers white ... **FLEMINGIA**
20. Flowers yellow :
21. Stipules produced below the insertion :
22. Leaves 2 - foliolate ; pods glochidiate ... **ZORNIA**
22. Leaves 3 - foliolate ; pods not glochidiate ... **VIGNA**
21. Stipules not produced below the insertion :

23. Pods jointed :
- 24. Leaves imparipinnate ... **AESCHYNOGENE**
 - 24. Leaves paripinnate :
 - 25. Leaflets 2 pairs ; joints of the pods not more than 2 ... **GEISSASPIS**
 - 25. Leaflets 2 - 15 pairs ; joints of the pods more than 2 ... **SMITHIA**
 - 23. Pods not jointed :
 - 26. Pods compressed,
1 - seeded ... **MELILOTUS**
 - 26. Pods turgid, more than
1 - seeded ... **CROTALARIA**
16. Trees :
- 27. Leaflets 3 :
 - 28. Plants armed ; pods subturgid ... **ERYTHRINA**
 - 28. Plants unarmed ; pods flat ... **BUTEA**
 - 27. Leaflets more than 3 :
 - 29. Leaflets opposite ; flowers in axillary racemes ... **PONGAMIA**
 - 29. Leaflets alternate ; flowers in axillary and terminal panicles ... **DALBERGIA**
17. Flowers pink, violet or red :
- 30. Pods jointed :
 - 31. Leaves 1 - foliolate ; pods subterete,
4 - angled or moniliform ... **ALYSICARPUS**
 - 31. Leaves 1 - 3 - foliolate ; pods linear - oblong ... **DESMODIUM**
 - 30. Pods not jointed :
 - 32. Pods viscid pubescent :
 - 33. Leaflets rhomboid - ovate ... **PSEUDARTHRIA**
 - 33. Leaflets oblanceolate ... **INDIGOFERA**
 - 32. Pods not viscid pubescent :
 - 34. Leaves with reddish glands beneath ... **FAGINOCIA**

34. Leaves without reddish glands beneath :
 35. Anthers apiculate ; styles glabrous ; pods usually cylindric, rarely globose ... **INDIGOFERA**
 35. Anthers obtuse ; styles bearded ; pods linear, flattened ... **Tephrosia**

ABRUS L.

Abrus precatorius L. Syst. Nat. ed. 12. 472. 1767 ; Baker in Hook. f. Fl. Brit. India 2 : 175. 1876 ; Cooke, Fl. Pres. Bombay 1 : 382. 1958 (Repr. ed.) ; Breteler in Blumea 10 : 617, f. 5. 1960. 'Gunj'.

Climbers ; stem sparsely hairy. Leaves 3–5 cm long ; leaflets 8–10 pairs, oblong, ca 1.5 × 0.7 cm. base rounded, apex apiculate, deciduous. Flowers pinkish white. Pods oblong, ca 2 cm long.

Fls. & Frts. : December.

Illus. : Wight, Ic. t. 33. 1838 ; Maheshwari, Ill. Fl. Delhi f. 71. 1966.

Distrib. : Occasional in scrub forests at lower elevations. Mhavashi : Punoli.

AESCHYNOMENE L.

Aeschynomene indica L. Sp. Pl. 713. 1753 ; Baker in Hook. f. Fl. Brit. India 2 : 151. 1876 ; Cooke, Fl. Pres. Bombay 1 : 363. 1958 (Repr. ed.).

Herbs, ca 1 m high. Leaflets sessile, linear, ca 0.5 cm long, base unequal, apex apiculate. Flowers yellow, axillary, solitary. Pods slightly curved ; joints 6–7, disarticulating.

Fls. & Frts : September–October.

Illus. : Wight, Ic. t. 405. 1840.

Distrib. : Common monsoon herb near cultivated fields. Bhosgaon ; Vardhangad.

ALYSICARPUS Desv. (*nom. cons.*)

1. Calyx shorter than or slightly exceeding the first joint of the pod :
2. Flowers purple ; pods hairy ... *A. procumbens*
 2. Flowers red ; pods glabrous ... *A. vaginalis*
1. Calyx longer than the first joint of the pod :
3. Pods distinctly rugose :
 4. Pods quadrangular ... *A. tetragonolobus*
 4. Pods 2 - sided ... *A. rugosus*
 3. Pods not rugose :
 5. Calyx imbricate in fruiting, much longer than the first joint of the pod :
 6. Flowers red : joints smooth ... *A. bupleurifolius*
 6. Flowers pinkish - purple ; joints transversely ribbed ... *A. scariosus*
 5. Calyx not imbricate in fruiting, slightly longer than the first joint of the pod :
 7. Flowers pedicelled ... *A. belgaumensis*
 7. Flowers sessile ... *A. pubescens*

***Alysicarpus belgaumensis* Wight, Ic. t. 92. 1840 ; Baker in Hook. f. Fl. Brit. India 2 : 160. 1876 ; Cooke, Fl. Pres. Bombay 1 : 372. 1958 (Repr. ed.).**

KEY TO THE VARIETIES

1. Erect herbs, 30 - 70 cm high ; leaflets oblong - lanceolate ... var. *belgaumensis*
1. Ascending herbs, 10 - 30 cm high ; leaflets broadly elliptic - suborbicular ... var. *racemosa*

var. *belgaumensis*

Herbs, upto 1 m high. Leaflets 2 - 7 × 1 - 3 cm, glabrous above, hairy beneath. Flowers pink in congested racemes ; calyx deeply divided, lobes oblong - lanceolate, strongly nerved. Pods compressed, apiculate, 3 - 4 jointed.

Fls. & Frts. : April - November.

Illus. : Wight, *op. cit.*

Distrib. : Common at higher elevations in grasslands. Jadholi, Karanjewadi, Koyna, Mahabaleshwar, Nauja, Taldeo.

var. *racemosus* (Bth.) Baker in Hook. f. Fl. Brit. India 2 : 160. 1876 ; Cooke, Fl. Pres. Bombay 1 : 373. 1958 (Repr. ed.). *A. racemosus* Bth. in Linnaea 25 : 642. 1851.

Herbs, 20–30 cm high. Leaflets 1.5–5.0 × 1.0–3.5 cm, apex rounded, mucronate, glabrous above, hairy beneath. Flowers in dense axillary racemes; pedicels ca 2 cm long, hairy. Pods moniliform, reticulately veined.

Fls. & Frts. : October November.

Distrib. : Common at Mahabaleshwar.

Alysicarpus bupleurifolius (L.) DC. Prodr. 2 : 352. 1825 ; Baker in Hook. f. Fl. Brit. India 2 : 158. 1876 ; Cooke, Fl. Pres. Bombay 1 : 370. 1958 (Repr. ed.) ; van Meeuwen *et al.*, in Reinwardtia 6 : 88. 1961. *Hedysarum bupleurifolius* L. Sp. Pl. 745. 1753.

Herbs, ascending. Leaves 1 foliolate; leaflets variable, linear, linear lanceolate or oblong, 2–5 × 0.3–1.0 cm. Flowers in lax racemes. Pods cylindric, apiculate : joints 4–8.

Fls. & Frts. : June September.

Illus. : Maheshwari, Ill. Fl. Delhi f. 70. 1966.

Distrib. : Rare. Koyna, Kochhar 157924.

A. procumbens (Roxb.) Schindl. in Fedde, Rep. 21 : 11. 1925. *Hedysarum procumbens* Roxb. Fl. Ind. (Carey ed.) 3 : 345. 1832. *A. hamosus* Edgew. in J. Asiat. Soc. Beng. 21 : 171. 1853 ; Baker in Hook. f. Fl. Brit. India 2 : 157. 1876 ; Cooke, Fl. Pres. Bombay 1 : 368. 1958 (Repr. ed.).

Herbs, prostrate ; stems hairy, rooting at lower nodes. Leaves 1 foliolate ; leaflets oblong, 1.2–2.5 × 0.7–1.2 cm, base rounded, apex mucronate, hirsute when young. Flowers in lax terminal racemes. Pods oblong, compressed, 1–2 cm long ; joints 4–7, covered with straight and hooked hairs.

Fls. & Frts. : August September.

Distrib. : Infrequent near cultivated fields. Bhosgaon ; Dhom dam, Wai.

Alysicarpus pubescens Law ex Wight, Ic. t. 250. 1840 ; Baker in Hook. f. Fl. Brit. India 2 : 160. 1876 ; Cooke, Fl. Pres. Bombay 1 : 372. 1958 (Repr. ed.).

KEY TO THE VARIETIES

- | | | |
|---|-----|-----------------------|
| 1. Flowers in dense spikes ; pods with 3 - 4 joints | ... | var. <i>pubescens</i> |
| 1. Flowers in lax spikes ; pods with single joint | ... | var. <i>vasavadae</i> |

var. *pubescens*

Herbs, *ca* 1 m high. Leaves 1 - foliolate ; stipules linear - lanceolate, 2 cm long, hairy ; leaflets lanceolate, acute, 4 - 5 cm long, apex mucronate, 3 nerved, hairy on the nerves and margins. Flowerets in 3 - 9 cm long spikes ; bracts ovate, acuminate, silky hairy ; calyx deeply divided. Pods moniliform, mucronate, included ; joints globose, reticulate.

Fls. & Frts. : September December.

Illus. : Wight, *op. cit.*

Distrib. : Occasional near cultivated fields. Pasarani ghat.

var. *vasavadae* (Hemadri) Sanjappa in Taxon 32 : 668. 1983. *A. vasavadae* Hemadri in Indian Forester 97 : 65, f. 1 - 2. 1971.

Herbs, *ca* 1 m high. Leaves 1 - foliolate ; stipules ovate - lanceolate, *ca* 1 cm long ; leaflets linear - oblong or lanceolate, 1.5 - 2.0 cm long, 3 - nerved. Pods 0.5 - 0.7 cm long, shortly beaked.

Fls. & Frts. : November December.

Illus. : Hemadri, *op. cit.*

Distrib. : Growing along with *A. pubescens* Law ex Wight on grassy hill slopes and near cultivated fields. Pasarani ghat ; Panchgani.

Notes : It differs from the type variety in less plumose rhachis, distant flowers, smaller calyx and obovate pods.

A. rugosus (Willd.) DC. Prodr. 2 : 353. 1825 ; Baker in Hook. f. Fl. Brit. India 2 : 156. 1876 ; Cooke, Fl. Pres. Bombay 1 : 371. 1958 (Repr. ed.). *Hedysarum rugosum* Willd. Sp. Pl. 3 : 1172. 1802.

Herbs, ascending, 30 - 50 cm long, hairy. Leaves 1 foliolate ; leaflets oblong, *ca* 2.5 × 1.5 cm, base cordate, apex obtuse, apiculate. Flowers pink in axillary racemes. Pods 3 - 6 jointed, transversely ribbed.

Fls. & Frts. : November.

Distrib. : Rare in open areas near forest clearings in grasslands. Koyna, Kochhar 154272 ; Pasarani ghat, 158889.

Alysicarpus scariosus (Rottl. ex Spr.) Grah. ex Thw. Enum. Pl. Zeyl. 88. 1958 ; Ali in Biologia 12 : 32. 1966. *Hedysarum scariosum* Rottl. ex Spr. Syst. Veg 3 : 319. 1826. *A. rugosus* (Willd.) DC. var. *styracifolius* Baker in Oliv. Fl. Trop. Afr. 2 : 171. 1871 & Hook. f. Fl. Brit. India 2 : 159. 1876 ; Cooke, Fl. Pres. Bombay 1 : 371. 1958 (Repr. ed.). (Fig. 9).

Herbs, erect or diffuse, ca 40 cm high, pubescent. Leaves elliptic oblong, 2 - 5 × 0.5 - 1.4 cm, apex mucronate, glabrous above, velvety beneath. Flowers in 3 - 11 cm long racemes. Pods 3 - 4 jointed, upto 1 cm long, apiculate.

Fls. & Frts. : September - November.

Distrib. : Occasional near cultivated fields. Bhosgaon ; Kelghar ghat.

A. tetragonolobus Edgew. in J. Asiat. Soc. Beng. 21 : 169. 1853 ; Baker in Hook. f. Fl. Brit. India 2 : 159. 1876 ; Cooke, Fl. Pres. Bombay 1 : 372. 1958 (Repr. ed.). (Fig. 10).

Herbs, 30 - 40 cm high, hairy. Leaflets elliptic - oblong or lanceolate, upto 1.5 × 0.5 cm, base rounded, apex obtuse, hairy beneath. Flowers in 2 - 5 cm long racemes. Pods upto 1.3 cm long ; joints 2 - 5, apiculate, transversely ribbed.

Fls. & Frts. : September - January.

Distrib. : Scarcely distributed in gravelly soil or in rock crevices. Bhosgaon ; Vardhangad.

A. vaginalis (L.) DC. Prodr. 2 : 353. 1825 ; Baker in Hook. f. Fl. Brit. India 2 : 158. 1876 ; Cooke, Fl. Pres. Bombay 1 : 369. 1958 (Repr. ed.). *Hedysarum vaginalis* L. Sp. Pl. 746. 1753.

Herbs, ca 1 cm long, procumbent. Leaflets oblong or ovate oblong, upto 5.0 × 2.5 cm, base rounded, apex acute. Flowers in 3 - 7 cm long racemes. Pods subterete, apiculate, reticulately veined.

Fls. & Frts. : November.

Illus. : Maheshwari, Ill. Fl. Delhi f. 69. 1966.

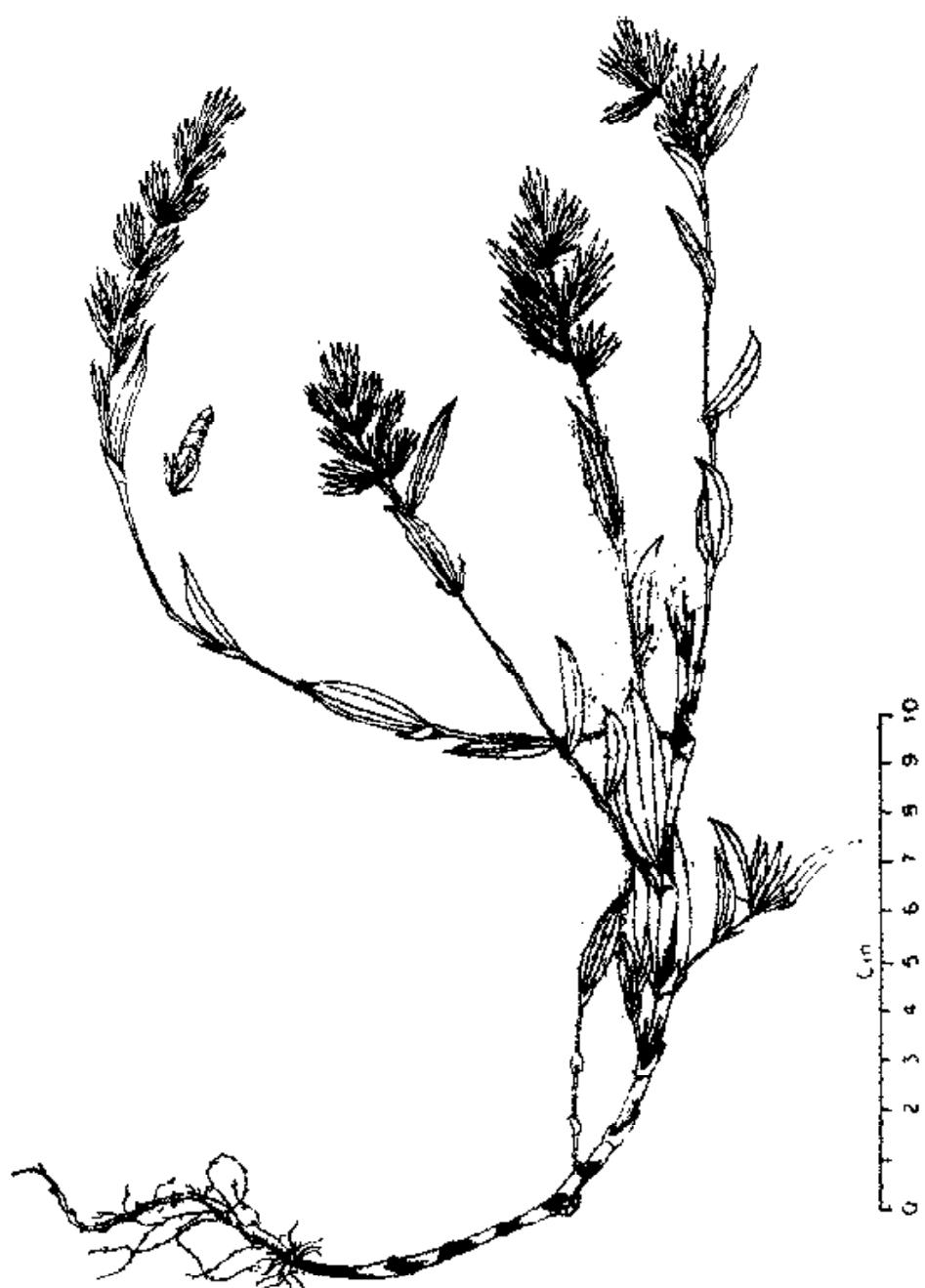


Fig. 9. *Alysicarpus scariosus* (Rottl. ex Spr.) Grah. ex Thw.

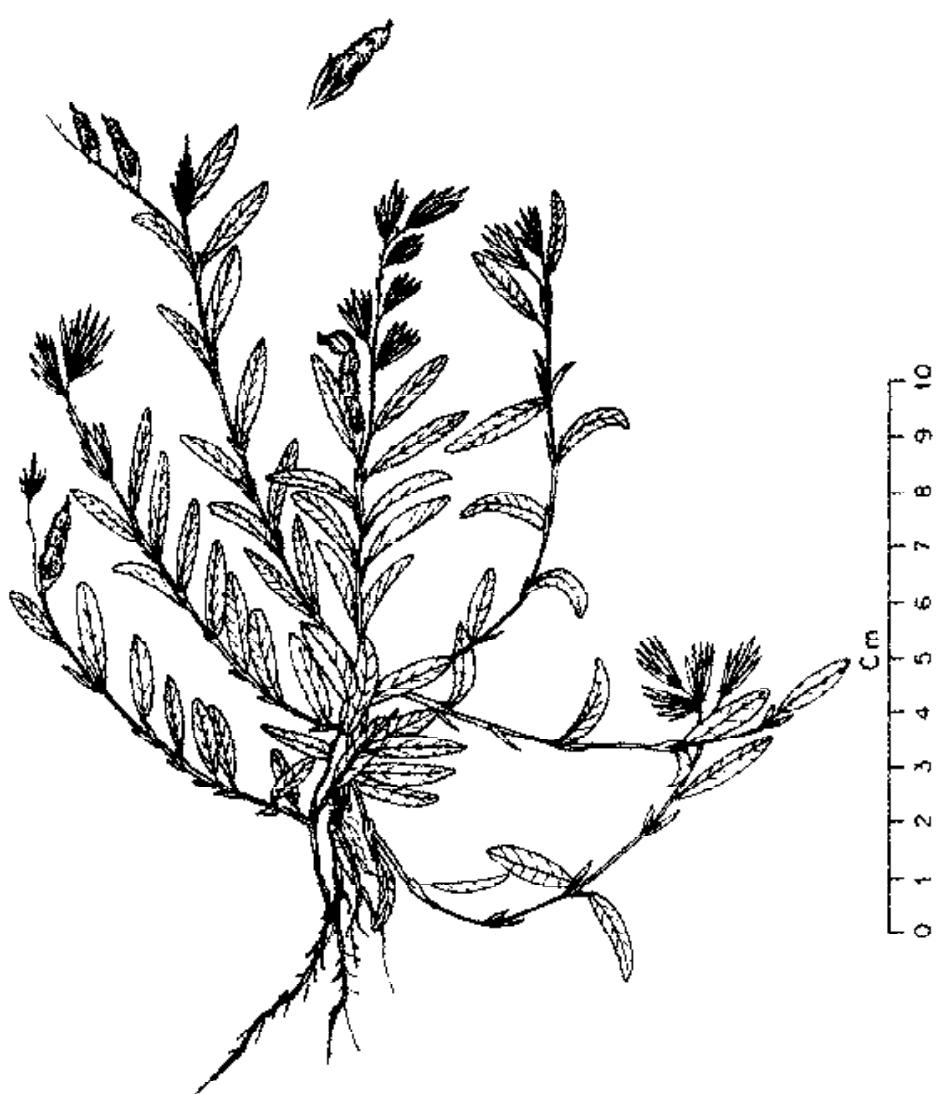


Fig. 10. *Alysicarpus tetragonolobus* Edgew.

Distrib. : Rare in grasslands. Koyna, Kochhar 157924.

BUTEA Roxb. ex Willd. (*nom. cons.*)

Butea monosperma (Lam.) Taub. in Engl. & Prantl, Pflanzenfam. 3, 3 : 366. 1894 ; Panthaki & Sant. in J. Bombay Nat. Hist. Soc. 53 : 499. 1956. *Erythrina monosperma* Lam. Encycl. 1 : 391. 1785. *B. frondosa* Koen. ex Roxb. in As. Rar. 3 : 469. 1792 & Cor. Pl. 1 : 21, t. 21. 1795 ; Baker in Hook. f. Fl. Brit. India 2 : 194. 1876 ; Cooke, Fl. Pres. Bombay 1 : 395. 1958 (Repr. ed.). 'Palas'

Trees, 12–15 m high, young branches downy tomentose. Leaflets broadly obovate, 12–16 × 10–13 cm, base cuneate, apex obtuse, glabrous above, hairy beneath. Flowers orange in dense, 10–17 cm long racemes. Pods oblong, 10–15 cm long, thickened at sutures, silvery-white.

Fls. & Frts. : March May.

Illus. : Bedd. Fl. Sylv. t. 176. 1872.

Distrib. : Common in deciduous forests, leafless when in full bloom. Devghar ; Karanjewadi ; Punoli ; Umarkanchan.

CAJANUS DC. (*nom. cons.*)

- | | | |
|---|-----|-------------------------|
| 1. Slender twiners, flowers in axillary fascicles | ... | <i>C. scarabaeoides</i> |
| 1. Erect shrubs ; flowers solitary or in pairs : | | |
| 2. Leaflets obovate, grey-pubescent when young ; stipules upto 0.3 cm long ; pods linear | ... | <i>C. lineatus</i> |
| 2. Leaflets oblanceolate, persistently white, pubescent ; stipules above 0.5 cm long ; pods linear-oblong | ... | <i>C. sericea</i> |

Cajanus lineatus (Wight & Arn.) van der Maesen in Agric. Univ. Wageningen Papers 85 (4) : 143. 1985. *Atylosia lineata* Wight & Arn. Prodr. 258. 1834 ; Baker in Hook. f. Fl. Brit. India 2 : 213. 1876 ; Cooke, Fl. Pres. Bombay 1 : 408. 1958 (Repr. ed.). 'Jangli-tur'.

Shrubs, 1.5–2.0 m high, hairy ; stipules linear-subulate, ca 0.5 cm long, hairy. Leaflets 1.0–2.5 × 0.5–1.2 cm. Pods ca 1.5 cm long. Seeds 2, strophiolate.

Fls. & Frts. : December April.

Illus. : Wight, Ic. t. 93. 1840 (*Atylosia lawii* Wight).

Distrib. : Common near cultivated fields. Jadholi ; Lingmala ; Mahabaleshwar ; Panchgani ; Shirshingi ; Vasota.

Cajanus scarabaeoides (L.) du Petit - Thouars in Dict. Sc. Nat. 6 : 617. 1817 (*Cajan scarabaeoide*) ; van der Maesen in Agric. Univ. Wageningen Papers 85 (4) : 189. 1985. *Atylosia scarabaeoides* (L.) Bth. in Miq. Pl. Jungh. 2 : 243. 1852 ; Baker in Hook. f. Fl. Brit. India 2 : 215. 1876, Cooke, Fl. Pres. Bombay 1 : 409. 1958 (Repr. ed.). *Dolichos scarabaeoides* L. Sp. Pl. 726. 1753.

Twiners, young branches pubescent. Leaflets elliptic - obovate, $0.8 - 2.0 \times 0.6 - 1.5$ cm, grey pubescent. Flowers yellow, pubescent. Pods oblong, apiculate, ca 1.5 cm long, with distinct transverse lines in between, densely hairy.

Fls. & Frts. : September October.

Distrib. : Occasional near grasslands and along roadsides. Mahabaleshwar.

C. sericea (Bth. ex Baker) van der Maesen in Agric. Univ. Wageningen Papers 85 (4) : 195. 1985. *Atylosia sericea* Bth. ex Baker in Hook. f. Fl. Brit. India 2 : 213. 1876 ; Cooke, Fl. Pres. Bombay 1 : 408. 1958 (Repr. ed.).

Undershrubs, ca 1 m high ; stem grooved, white silky hairy. Stipules filiform, ca 0.7 cm long. Leaflets 1.5 - 2.5 x 0.5 - 1.0 cm. Pods ca 1 cm long, densely hairy. Seeds sub - cylindric, black.

Fls. & Frts. : October - December.

Distrib. : Occasional along grassy hill slopes. Mahabaleshwar ; Panchgani.

CANAVALIA DC.

Canavalia stocksii Dalz. in Dalz. & Gibbs. Bombay Fl. 69 : 1861 ; Cooke, Fl. Pres. Bombay 1 : 397. 1958 (Repr. ed.).

Climbers, large. Leaflets terminal rhomboid obovate, lateral broadly ovate, membranous. Flowers large in axillary racemes.

Fls. : October.

Notes : Included on the authority of Cooke and Woodrow (Cooke, *op. cit.*) who reported it from Mahabaleshwar, as a rare species. Sauer in his revision of *Canavalia* (*Brittonia* 16 : 106. 1964) has treated it as "excluded species" as it shows some incompatible characters like large stipules, 3 - nerved leaflets and bidentate upper calyx lip.

CULTIVATED SPECIES

***Canavalia gladiata* (Jacq.) DC. Prodr. 2 : 404. 1825 ; Sauer in *Brittonia* 16 : 149. 1964. *Dolichos gladiatus* Jacq. Coll. Bot. 2 : 276. 1788. *C. ensiformis* Baker in Hook. f. Fl. Brit. India 2 : 195. 1876 ; Cooke, Fl. Pres. Bombay 1 : 397. 1958 (Repr. ed.). 'Abai'.**

Climbers, stout. Leaflets ovate, 4 - 6 × 3 - 5 cm, base rounded, apex acute. Flowers purplish - white in lax, axillary racemes. Pods oblong, upto 15 × 3 cm, curved.

Fls. & Frts. : December.

Distrib. : Cultivated as a vegetable, often found as an escape. Mhavashi, 166586.

CROTALARIA L.

1. Leaves 3 - foliolate :

2. Erect herbs ; bracts linear ; pods 2 - seeded, hairy ... *C. medicaginea* var. *luxurians*

2. Diffuse herbs ; bracts leafy ; pods 4 - 8 - seeded, glabrous ... *C. orixensis*

1. Leaves simple :

3. Prostrate herbs :

4. Leaves ovate - elliptic, exstipulate ; flowers in racemes ... *C. filipes*

4. Leaves oblong - obtuse, stipulate ; flowers in subcapitiate heads ... *C. hirta*

3. Erect herbs or shrubs :

5. Corolla much exserted ... *C. retusa*

5. Corolla not or slightly exceeding the calyx :

6. Pods hairy ... *C. triquetra*

6. Pods glabrous :

7. Leaves stipulate :
- 8. Leaves lanceolate, glabrous above,
silky beneath ... *C. calycina*
 - 8. Leaves linear - oblong, silky on both
surfaces ... *C. mysorensis*
7. Leaves exstipulate :
- 9. Shrubs ; pods 3 - 4 - seeded ... *C. albida*
 - 9. Herbs ; pods 4 - many - seeded :
 - 10. Flowers in terminal capitate
umbels ... *C. nana*
 - 10. Flowers in terminal racemes :
 - 11. Pods 4 - seeded ... *C. linifolia*
 - 11. Pods many seeded ... *C. vestita*

Crotalaria albida Heyne ex Roth, Nov. Pl. Sp. 333. 1821 ; Baker in Hook. f. Fl. Brit. India 2 : 171. 1876 ; Cooke, Fl. Pres. Bombay 1 : 315. 1958 (Repr. ed.).

Shrubs, ca 1 m high, pubescent. Leaves subsessile, oblong, 1.5 - 3.5 × 0.5 - 1.0 cm, base acute, apex obtuse, silky pubescent. Flowers in terminal, 5 - 10 cm long racemes. Pods oblong, ca 1 cm long.

Fls. & Frts. : November - February.

Distrib. : Distributed in dry plains and along ghats. Fitzgerald ghat ; Research nursery, Koyna.

C. calycina Schrank, Pl. Rar. Hort. Monac. t. 12. 1819 ; Baker in Hook. f. Fl. Brit. India 2 : 72. 1876 ; Cooke, Fl. Pres. Bombay 1 : 317. 1958 (Repr. ed.).

Herbs, 20 - 40 cm high, stem densely hairy. Leaves 4 - 9 × 1 - 2 cm, base and apex acute. Flowers axillary, solitary or in terminal racemes ; bracts ca 1 cm long with long brown hairs. Pods sessile, dark brown, ca 2 cm long.

Fls. & Frts. : September - October.

Distrib. : Monsoon herb in open situations. Dhebewadi.

C. filipes Bth. in Hook. London J. Bot. 2 : 475. 1843 ; Baker in Hook. f. Fl. Brit. India 2 : 66. 1876 ; Cooke, Fl. Pres. Bombay 1 : 312. 1958 (Repr. ed.). (Fig. 11).

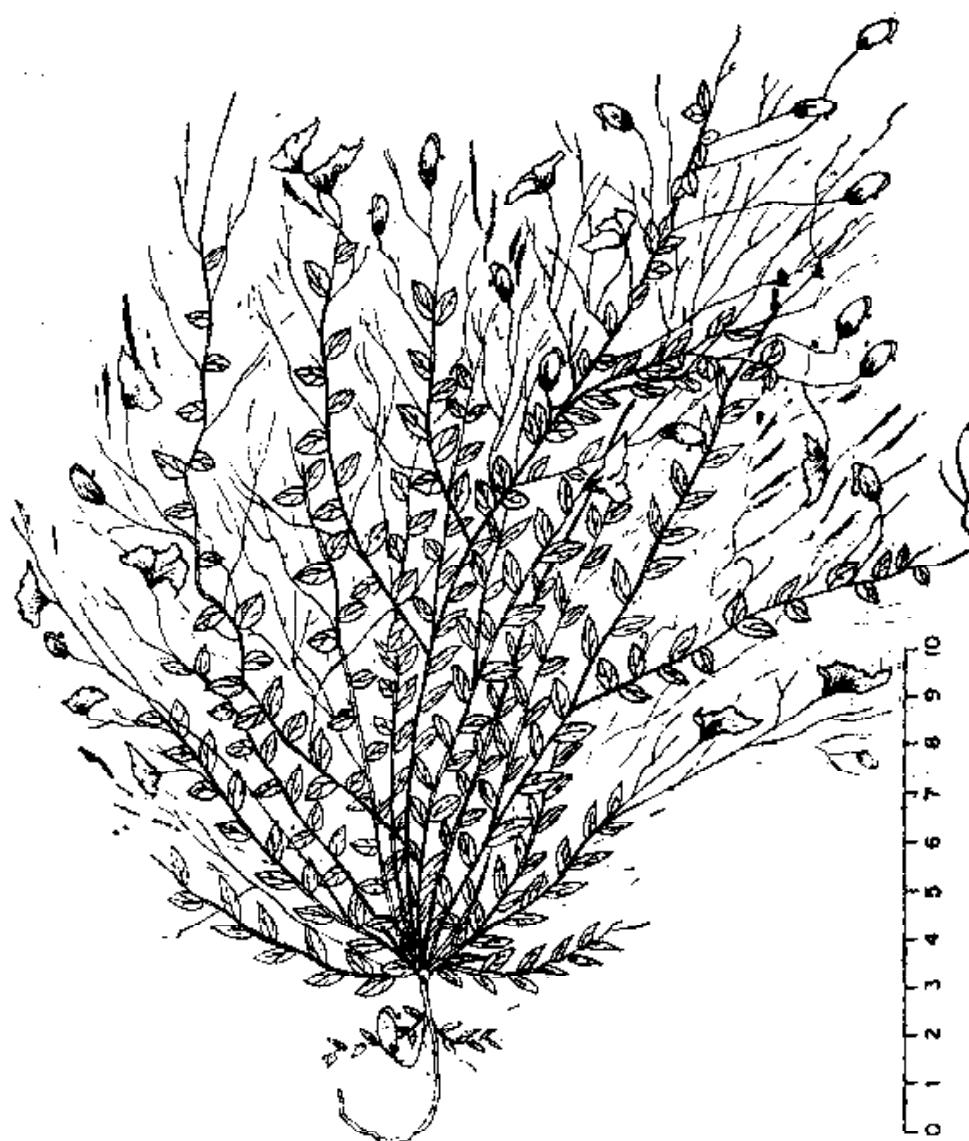


Fig. 11. *Crotalaria filipes* Bth.

Herbs, prostrate ; stems slender, clothed with spreading hairs. Leaves sessile, ca 1.5×0.7 cm, base obliquely cordate, apex acute or obtuse. Flowers in leaf-opposed or extra axillary racemes. Pods ca 0.7 cm long.

Fls. & Frts. : November February.

Distrib. : Abundant throughout the district. It shows variation in size and hairiness as it grows in all kinds of habitats. Bamnoli ; Dicholi ; Gadoli ; Karanjewadi ; Mahabaleshwar ; way to Patan ; Shirgaon ghat ; Vajegaon.

Crotalaria hirta Willd. in Gen. Naturf. Fr. New Schr. 4 : 217. 1803 ; Baker in Hook. f. Fl. Brit. India 2 : 70. 1876 ; Pataskar & S. Moorthy in M V.M. Patrika 5 : 25, f. 1 - 3. 1970.

Herbs, ca 1 cm high with densely hairy stem. Leaves sessile, $1.5 \times 0.5 - 1.0$ cm, sparsely hairy above, pubescent beneath. Calyx densely hairy with yellow hairs. Pods oblong, ca 1.7 cm long.

Fls. & Frts. : October - November.

Distrib. : Rare, found along rocky hill slopes. Mahabaleshwar, Soman 156278.

C. laevis L. f. Suppl. 322. 1781 ; Baker in Hook. f. Fl. Brit. India 2 : 72. 1876 ; Cooke, Fl. Pres. Bombay 1 : 317. 1958 (Repr. ed.).

Herbs, ca 0.5 m high. Leaves oblong or oblanceolate, $2 - 4 \times 0.2 - 0.5$ cm, base cuneate, apex rounded, apiculate, densely silky. Flowers in lax, $3 - 12$ cm long racemes, bracts and bracteoles subulate, hairy. Pods ovoid, black.

Fls. & Frts. : September.

Distrib. : Rare in grasslands. Satara Poona road, Cherian 106742.

C. medicaginea Lam. var. ***luxurians*** (Bth.) Baker in Hook. f. Fl. Brit. India 2 : 81. 1876 ; Cooke, Fl. Pres. Bombay 1 : 322. 1958 (Repr. ed.). ***C. luxurians*** Bth. in Hook. f. London J. Bot. 2 : 578. 1843.

Herbs, ca 30 cm high, young branches pubescent. Leaflets oblanceolate, terminal longer, $1.5 - 2.5$ cm long, silky beneath ; stipules minute, filiform. Flowers in terminal, few flowered racemes. Pods subglobose, oblique, ca 0.4 cm long.

Fls. & Frts. : October.

Illus. : Maheshwari, Ill. Fl. Delhi f. 49. 1966.

Distrib. : Rare along ghat slopes, on gravelly soil. Wai, Talbot 4453.

Crotalaria mysorensis Roth, Nov. Pl. Sp. 338. 1821 ; Baker in Hook. f. Fl. Brit. India 2 : 70. 1876 ; Cooke, Fl. Pres. Bombay 1 : 314. 1958 (Repr. ed.).

Herbs, 25 - 50 cm high. Leaves subsessile, 2.5 - 5.0 × 0.5 - 1.0 cm, base and apex rounded, silky hairy. Flowers in terminal racemes ; bracts foliaceous, lanceolate ; calyx with spreading hairs. Pods ca 2 cm long, inflated, brown.

Fls. & Frts. : October.

Distrib. : Occasional in grasslands. Mahabaleshwar ; Wada below Mahabaleshwar.

C. nana Burm. f. Fl. Ind. 156, t. 48, f. 2. 1768 ; Baker in Hook. f. Fl. Brit. India 2 : 71. 1876 ; Cooke, Fl. Pres. Bombay 1 : 315. 1958 (Repr. ed.).

Herbs, ca 1 m high, yellowish brown hairy. Leaves oblong to oblanceolate, 1.0 - 4.5 × 0.5 - 1.0 cm, base cuneate, apex subacute, silky hairy. Flowers densely hairy. Pods oblong, ca 0.5 cm long, black.

Fls. & Frts. : September November.

Illus. : Burm. f. op. cit.

Distrib. : Slender annuals, common in pasturelands. Mahabaleshwar ; Panchgani ; Pandavgadh.

C. orixensis Willd. in Ges. Naturf. Fr. Neue Schr. 4 : 247. 1803 ; Baker in Hook. f. Fl. Brit. India 2 : 83. 1876 ; Cooke, Fl. Pres. Bombay 1 : 323. 1958 (Repr. ed.).

Herbs, 30 - 40 cm high, branches sparsely hairy. Leaflets obovate oblong, 1.0 - 2.5 × 0.5 - 1.5 cm, glabrous above, hairy beneath. Flowers in lateral or terminal racemes ; bracts ovate, acute. Pods oblong, ca 1.5 cm long.

Fls. & Frts. : September October.

Illus. : Kaur in Bull. Nat. Bot. Gdn. Lucknow 87 : Pl. 6 - 7. 1964.

Distrib. : Infrequent in grasslands or along bunds of cultivated fields. Wai ; Ghat between Wai and Wathar.

Crotalaria retusa L. Sp. Pl. 715. 1753 ; Baker in Hook. f. Fl. Brit. India 2 : 75. 1876 ; Cooke, Fl. Pres. Bombay 1 : 318. 1958 (Repr. ed.). 'Dingala'.

Undershrubs, ca 1 m high, young branches pubescent. Leaves oblanceolate, 4 - 8 × 1.2 - 2.0 cm, base cuneate, apex obtuse, mucronate, glabrous above, silky beneath. Flowers in 8 - 17 cm long terminal racemes. Pods linear oblong, apiculate, ca 3.5 cm long.

Fls. & Frts. : November - April.

Illus. : Kaur in Bull. Nat. Bot. Gdn. Lucknow 87 : Pl. 8 - 9. 1964.

Distrib. : Widely distributed as forest undergrowth in moist deciduous forests and along ghats in semi-evergreen forests. Bamnoli ; Bhikauli forest ; Junkti ; Koyna ; Lingmala ; Mahabaleshwar ; Panchgani ; Parut ; Pratapgad ; Shirshingi.

C. triquetra Dalz. in Hook. Kew J. Bot. 2 : 34. 1850 ; Baker in Hook. f. Fl. Brit. India 2 : 71. 1876 ; Cooke, Fl. Pres. Bombay 1 : 314. 1958 (Repr. ed.).

Herbs, 30 - 40 cm high ; branches 3 - 4 angled, hairs few, scattered. Leaves 3 - 4 × 0.5 - 1.0 cm, sparsely hairy ; stipules ovate, acute. Flowers hairy. Pods oblong, 2.0 - 2.5 cm long.

Fls. & Frts. : October - November.

Distrib. : Occasional in moist situations. Mahabaleshwar ; Research nursery, Koyna.

C. vestita Baker in Hook. f. Fl. Brit. India 2 : 62. 1876 ; Cooke, Fl. Pres. Bombay 1 : 313. 1958 (Repr. ed.).

Herbs, ca 50 cm high. Leaves oblong, ca 3 × 1 cm, base rounded, apex subacute, hairy. Flowers in 4 - 5 flowered silky racemes ; bracts leafy, lanceolate ; bracteoles 2, linear, hairy. Pods oblong, 1.0 - 1.7 cm long. Seeds 15 - 20, subcordate, black.

Fls. & Frts. : October - November.

Distrib. : Frequent on hill tops in grasslands. Koyna ; Mahabaleshwar ; Shirgaon ghat.

CULTIVATED SPECIES

C. juncea L. Sp. Pl. 714. 1753 ; Baker in Hook. f. Fl. Brit. India 2 : 79. 1876 ; Cooke, Fl. Pres. Bombay 1 : 320. 1958. (Repr. ed.).

Herbs, 2 - 3 m high ; branches striate, silky pubescent. Leaves 2.0 - 5.5 × 0.4 - 1.0 cm, hairy. Flowers bright yellow. Pods ca 2 cm long, pubescent with brownish hairs.

Fls. & Frts. : November.

Illus. : Kaur in Bull. Nat. Bot. Gdn. Lucknow 87 : Pl. 2. 1964.

Distrib. : Cultivated for fibre, occasionally found as an escape. Panchgani ; Mahabaleshwar.

DALBERGIA L.f. (*nom. cons.*)

1. Large climbers :

- | | | |
|--|-----|------------------------|
| 2. Branches spiny ; leaflets 11 - 15 ; stamens 10 in one bundle | ... | <i>D. sympathetica</i> |
| 2. Branches not spiny ; leaflets 7 - 9 ; stamens 10 in two bundles | ... | <i>D. volubilis</i> |

1. Trees :

- | | | |
|------------------------------|-----|-----------------------|
| 3. Stamens 9 in one bundle | ... | <i>D. latifolia</i> |
| 3. Stamens 10 in two bundles | ... | <i>D. lanceolaria</i> |

Dalbergia lanceolaria L. f. Suppl. 316. 1781 ; Baker in Hook. f. Fl. Brit. India 2 : 235. 1876 ; Cooke, Fl. Pres. Bombay 1 : 425. 1958 (Repr. ed.) ; Thoth. in Bull. Bot. Surv. India 25 : 171. 1985.

Trees, 12 - 15 m high, young branches pubescent. Leaves 8 - 12 cm long ; leaflets 9 - 15, oblong, 1 - 3 × 1.5 - 2.0 cm, base rounded, apex obtuse, mucronate. Flowers small, purple. Pods oblong, narrowed at both ends, 4 - 8 × 2 - 3 cm.

Fls. & Frts. : December - March.

Illus. : Roxb. op. cit.

Distrib. : Common in deciduous forests. Kisrude ; Rasati.

D. latifolia Roxb. Pl. Cor. 2 : 7, t. 113. 1798 ; Baker in Hook. f. Fl. Brit. India 2 : 231. 1876 ; Cooke, Fl. Pres. Bombay 1 : 422. 1958 (Repr. ed.). 'Bitti'.

Trees, ca 20 m high. Leaflets 5 - 7, broadly ovate to suborbicular, 2.5 - 5.0 cm across, base cuneate, apex entire or emarginate at base.

Flowers yellowish in axillary or extra axillary panicles; bracts and bracteoles minute, deciduous. Pods strap-shaped, 1-3 seeded.

Fls. & Frts. : February.

Illus. : Roxb. *op. cit.*

Distrib. : Occasionally distributed in deciduous forests. Koyna ; Mahabaleshwar.

Dalbergia sympathetica Nimmo ex Grah. Cat. Pl. Bombay 55. 1839 ; Baker in Hook. f. Fl. Brit. India 2 : 234. 1876 ; Cooke, Fl. Pres. Bombay 1 : 424. 1958 (Repr. ed.).

Shrubs, large, scandent. Leaves 6-8 cm long ; leaflets oblong, ca 2.0 × 1.4 cm, base cuneate, apex emarginate, pubescent. Flowers rusty pubescent. Pods oblong, compressed, upto 5 × 2 cm, pubescent.

Fls. & Frts. : November - February.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 427, f. 240. 1909.

Distrib. : Scarcely distributed along ghats. Fitzgerald ghat ; Karanjewadi.

D. volubilis Roxb. Pl. Cor. 2 : 48, t. 191. 1805 ; Baker in Hook. f. Fl. Brit. India 2 : 235. 1876 ; Cooke, Fl. Pres. Bombay 1 : 426. 1958 (Repr. ed.).

Shrubs, scandent. Leaves 10-14 cm long ; leaflets obovate-oblong, 1.5-4.0 × 1.5-2.3 cm, base truncate, apex obtuse. Flowers white in 4-16 cm long panicles ; bracts ovate, ciliolate. Pods oblong, obtuse, 5-7 × 2-3 cm.

Fls. & Frts. : February - June.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 430, f. 241. 1909.

Distrib. : Common component of deciduous forests along ghats and also in plains. Dicholi ; Kumbharli ghat ; Nauja ; Vasota.

CULTIVATED SPECIES

D. sissoo Roxb. Fl. Ind. (Carey ed.). 3 : 223. 1832 ; Baker in Hook. f. Fl. Brit. India 2 : 231. 1876 ; Cooke, Fl. Pres. Bombay 1 : 421. 1958 (Repr. ed.). 'Sisvi'.

Trees, 12 - 15 m high. Leaflets 3, broadly ovate, upto 4.0 × 2.7 cm, apex acuminate. Flowers in axillary panicles. Pods stalked, ca 3.5 × 0.5 cm.

Fls. & Frts. : April.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 423, f. 238. 1909.

Distrib. : Cultivated for wood used in furniture making and boat building. Dhebewadi.

DERRIS Lour. (*nom. cons.*)

- | | | |
|--|-----|----------------------|
| 1. Flowers in axillary racemes ; pods winged on both surfaces, glabrescent | ... | <i>D. canarensis</i> |
| 1. Flowers in axillary and terminal racemes ; pods winged on dorsal surface, hairy | ... | <i>D. scandens</i> |

Derris canarensis (Dalz.) Baker in Hook. f. Fl. Brit. India 2 : 246. 1876 ; Cooke, Fl. Pres. Bombay 1 : 433. 1958 (Repr. ed.) ; Thoth. in Fasc. Fl. India 8 : 12. 1982. *Pongamia canarensis* Dalz. in Hook. Kew J. Bot. 2 : 37. 1850.

Shrubs, scandent. Leaves upto 15 cm long ; stipules ovate, ferruginous ; leaflets 15 - 17, oblong-lanceolate, 2.5 - 4.0 × 1.2 - 1.7 cm, glabrous above, strigose beneath when young. Flowers pink in axillary racemes. Pods oblong, flat, upto 8 cm long.

Fls. & Frts. : June September.

Illus. : Wight, Ic. t. 244. 1840 (*Dalbergia robusta* Roxb.).

Distrib. : Rare, along forest margins. Dhokewadi, Kochhar 153581.

D. scandens (Roxb.) Bth. in J. Linn. Soc. 4 (Suppl.) 103. 1860 ; Baker in Hook. f. Fl. Brit. India 2 : 240. 1876 ; Cooke, Fl. Pres. Bombay 1 : 430. 1958 (Repr. ed.) ; Thoth. in Fasc. Fl. India 8 : 27, pl. I. 1982. *Dalbergia scandens* Roxb. Pl. Cor. 2 : 49, t. 192. 1805.

Climbers, woody, young branches pubescent. Leaflets 9 - 19, elliptic or obovate oblong, subcoriaceous, glabrous above, puberulous beneath. Pods narrowly oblong, 2.5 - 6.5 cm long.

Fls. & Frts. : June December.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 193. 1982.

Distrib. : Rare in scrub forests. Mahabaleshwar, Asrana 2741 (BLAT).

DESMODIUM Desv.

1. Leaves 1 - foliolate :

 2. Shrubs ; petioles winged ... *D. triquetrum*
 2. Herbs ; petioles not winged :
 3. Leaflets elliptic - oblong, 1 - and 3 - foliolate intermixed ... *D. alysicarpoides*
 3. Leaflets orbicular, 1 - foliolate ... *D. ritchiei*
 1. Leaves 3 - foliolate :
 4. Flowers in axillary pairs or fascicles :
 5. Erect herbs : leaves 1 - and 3 - foliolate intermixed... *D. alysicarpoides*
 5. Prostrate herbs : leaves 3 - foliolate ... *D. triflorum*
 4. Flowers in racemes or umbellate heads :
 6. Diffuse herbs ; stipules auricled at base ... *D. dichotomum*
 6. Erect shrubs ; stipules not auricled at base :
 7. Stipules deciduous ; pods with hooked hairs ... *D. laxiflorum*
 7. Stipules persistent ; pods without hooked hairs ... *D. triangulare* var. *congestum*

Desmodium alysicarpoides van Meeuwen in Reinwardtia 6 : 246. 1962. *Alysicarpus parviflorus* Dalz. in Hook. Kew J. Bot. 3 : 211. 1851. *D. parviflorum* (Dalz.) Baker in Hook. f. Fl. Brit. India 2 : 172. 1876 non Mart. & Galeotti 1843 ; Cooke, Fl. Pres. Bombay 1 : 381. 1958 (Repr. ed.).

Herbs, 30 - 50 cm high ; stem fulvous hairy above, glabrous at base ; stipules ovate, acicular ; leaflets 2.5 - 5.0 cm long, glabrous above, hairy beneath. Flowers violet in terminal racemes. Pods falcate, dentate on both sutures ; joints 4 - 6, glabrescent, reticulately veined.

Fls. & Frts. : October November.

Distrib. : Mahabaleshwar, Soman 157181 A.

Notes : Dalzell (*op. cit.*) reported this taxon under *Alysicarpus* Desv. because of slightly swollen joints of the pods, the only differentiating

character from *Desmodium* Desv. which has flat pods. According to Cooke (*op. cit.*) and van Meeuwen (*op. cit.*) it represents a transition between the two genera.

Desmodium dichotomum (Willd.) DC. Prodr. 2 : 336. 1825 ; van Meeuwen in Reinwardtia 6 : 248. 1962. *Hedysarum dichotomum* Willd. Sp. Pl. 3 : 1180. 1802. *D. diffusum* (Willd.) DC. *op. cit.* ; Baker in Hook. f. Fl. Brit. India 2 : 169. 1876 ; Cooke, Fl. Pres. Bombay 1 : 377. 1958 (Repr. ed.).

Herbs, 25–40 cm high ; branches angular, reddish, hairy when young. Leaflets oblong elliptic, terminal larger, ca 4.0×2.4 cm, hairy. Flowers in axillary and terminal, 8–27 cm long racemes. Pods ca 1 cm long ; joints 2–4, hairy, reticulately veined.

Fls. & Frts. : August - September.

Distrib. : Rare in grasslands. Mahabaleshwar, Soman 157181 B.

D. laxiflorum DC. in Ann. Sci. Nat. Paris 4 : 100. 1825 ; Baker in Hook. f. Fl. Brit. India 2 : 164. 1876 ; Cooke, Fl. Pres. Bombay 1 : 376. 1958 (Repr. ed.), 'Jangli - ganja'.

Shrubs ca 2 m high, hairy. Leaflets elliptic, 6–12 × 2–6 cm, base rounded or acute, apex acute, glabrous above, silky beneath. Flowers in axillary and terminal, 10–17 cm long racemes ; calyx strigose. Pods linear, ca 2.5 cm long.

Fls. & Frts. : August - October.

Illus. : Wight, Ic. t. 374. 1840. [*D. recurvatum* (Roxb.) Grah. ex Wight & Arn.].

Distrib. : Common as undergrowth in semi-evergreen and deciduous forests. Gadoli ; Jadholi ; Khambilchorghe ghat ; Kumbharli ghat ; Koyna ; Nauja.

D. ritchiei Sanjappa in Bull. Bot. Surv. India 22 : 229. 1980. *D. rotundifolium* Baker in Hook. f. Fl. Brit. India 2 : 172. 1876 non DC. 1825 ; Cooke, Fl. Pres. Bombay 1 : 381. 1958 (Repr. ed.). (Fig. 12).

Herbs, 20–40 cm high. Leaflets 1–2 cm long, as broad as long, glabrous above, hairy beneath. Flowers in lax, axillary and terminal racemes. Pods 3–6 jointed, apiculate.

Fls. & Frts. : September - October.

Distrib. : Common along ghats. Mahabaleshwar ; Wai ; Pasarani ghat ; Yavteshwar.

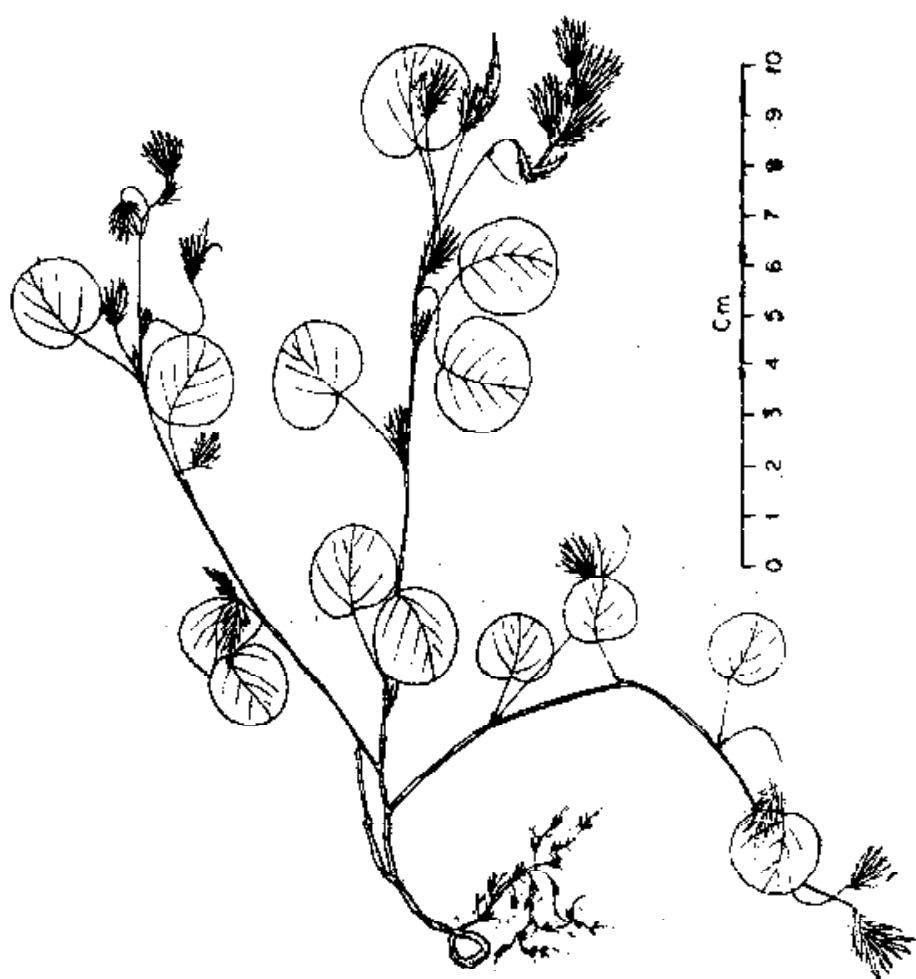


Fig. 12. *Desmodium ritchiei* Sanjappa

Desmodium triangulare (Retz.) Merr. var. *congestum* (Wall. ex Wight & Arn.) Sant. in Kew Bull. 1948 : 276. 1948. *D. congestum* Wall. ex Wight & Arn. Prodr. 224. 1834. *D. cephalotes* Wall. ex Baker in Hook. f. Fl. Brit. India 2 : 161. 1876. *D. cephalotes* Wall. ex Baker var. *congestum* (Wight & Arn.) Prain in J. Asiat. Soc. Beng. 66 : 389. 1898 ; Cooke, Fl. Pres. Bombay 1 : 375. 1958 (Repr. ed.). 'Lapot'i'.

Shrubs, 1.5 - 2.0 m high, pubescent. Stipules upto 1 cm long, bristle pointed, striate. Leaflets elliptic oblong, acuminate at apex, 3 - 7 × 1.4 - 3.2 cm. Flowers white in dense, axillary, umbellate heads. Pods oblong, 1.5 - 3.0 cm long.

Fls. & Frts. : September - November.

Illus. : Wight, Ic. t. 209. 1839 (*D. congestum*).

Distrib. : Common in deciduous forests along ghats. Koyna ; Shirshingi.

D. triflorum (L.) DC. Prodr. 2 : 334. 1825 ; Baker in Hook. f. Fl. Brit. India 2 : 173. 1876 ; Cooke, Fl. Pres. Bombay 1 : 378. 1958 (Repr. ed.). *Hedysarum triflorum* L. Sp. Pl. 749. 1753. 'Ran-methi'.

Herbs, 10 - 30 cm high. Leaflets obovate, ca 1 cm long, membranous, base cuneate, apex rounded or emarginate, glabrous above, hairy beneath. Flowers in axillary fascicles ; bracts ovate, acute, ciliate. Pods ca 1.5 cm long, 4 - 5 joints, disarticulating.

Fls. & Frts. : May - November.

Illus. : Wight, Ic. t. 292. 1840. (*D. triflorum* var. *minus* Wight & Arn.).

Distrib. : Annuals of marshy places among grasses in open fields and on rocky plateau. Gureghar ; Koyna ; Mahabaleshwar.

D. triquetrum (L.) DC. Prodr. 2 : 326. 1825 ; Baker in Hook. f. Fl. Brit. India 2 : 163. 1876 ; Cooke, Fl. Pres. Bombay 1 : 378. 1958 (Repr. ed.). *Hedysarum triquetrum* L. Sp. Pl. 746. 1753.

Shrubs, ca 1 m high ; stem triangular, glabrescent. Leaflets ovate oblong to ovate lanceolate, 10 - 17 × 4 - 8 cm. Pods oblong, apiculate, 3.0 - 3.5 cm long ; joints 7 - 8, hairy.

Fls. & Frts. : September - November.

Distrib. : Frequent in moist deciduous forest edges. Dicholi ; Gadoli ; Nauja ; Panchgani.

DOLICHOS L.

Dolichos falcatus Klein ex Willd. Sp. Pl. ed. 3. 1047. 1802; Baker in Hook. f. Fl. Brit. India 2 : 211. 1876; Sant. in Rec. Bot. Surv. India 16(1) : 72. 1967 (3rd Rev. ed.); Verdc. in Taxon 17 : 171. 1968.

Twiners, slender. Leaflets ovate rhomboid, acute at apex, 2.5 - 5.0 × 2.0 - 4.5 cm, hairy, entire or obtusely 3 lobed. Pods 6.0 - 7.5 cm long, apiculate.

Frts. : November.

Distrib. : Tapola ghat, 166527.

Notes : This species has not been reported by Cooke from the erstwhile Bombay Presidency. Baker (*op. cit.*) has described flower colour as yellow, however my collection is with purple flowers, as also given by Santapau (*op. cit.*).

DUMASIA DC.

Dumasia villosa DC. in Ann. Sci. Nat. (Paris) 1, 4 : 96. 1825; Baker in Hook. f. Fl. Brit. India 2 : 183. 1876; Cooke, Fl. Pres. Bombay 1 : 385. 1958 (Repr. ed.).

Twiners, hairy. Leaflets ovate, 3 - 5 × 2.0 - 3.5 cm, base cuneate, apex obtuse, margin ciliate, glabrous above, hairy beneath. Flowers yellow. Pods linear, ca 2.5 cm long, velvety.

Fls. & Frts. : October - November.

Illus. : Wight, Ic. t. 445. 1841. (*D. congesta* Grah. ex Wight & Arn.).

Distrib. : Rare species, collected from Mahabaleshwar only on exposed rocks. Mahabaleshwar, Cooke *op. cit.*, Mahajan 24797, Talbot 4525.

ERYTHRINA L.

- | | | |
|--|-----|---------------------|
| 1. Calyx 5 lobed at apex ; seeds 3 - 4 | ... | <i>E. variegata</i> |
| 1. Calyx entire ; seeds 1 - 3 | ... | <i>E. stricta</i> |

Erythrina stricta Roxb. Fl. Ind. (Carey ed.) 3 : 251. 1832; Baker in Hook. f. Fl. Brit. India 2 : 189. 1876; Cooke, Fl. Pres. Bombay 1 : 391. 1958 (Repr. ed.).

Trees, 15–20 m high; petioles 9–13 cm long, sometimes prickly at base; stipules falcate. Leaflets: lateral ovate-cordate, unequal sided, terminal, reniform, 5.5–10.0 × 3.5–10.0 cm; stipels gland like. Flowers scarlet in terminal racemes; calyx spathaceous. Pods 7–10 cm long.

Fls. & Frts. : April–May.

Illus. : Bedd. Fl. Sylv. t. 175. 1872.

Distrib. : Conspicuous in deciduous forests because of its scarlet flowers. Ambeghar; Mahabaleshwar.

Erythrina variegata L. Herb. Amb. 10. 1754 & Amoen. Acad. 4 : 122. 1759; Bullock in Kew Bull. 20 : 294. 1966. *E. indica* Lam. Encycl. 2 : 391. 1786; Baker in Hook. f. Fl. Brit. India 2 : 188. 1876; Cooke, Fl. Pres. Bombay 1 : 390. 1958 (Repr. ed.). 'Pangara'.

Trees, 15–18 m high. Leaflets rhomboid-ovate, 10–15 × 3.5–8.5 cm, base rhomboid or truncate, apex acute, pubescent when young. Flowers bright red in axillary and terminal racemes. Pods subcylindric, 10–20 cm long. Seeds subreniform, brown.

Fls. & Frts. : April–May.

Illus. : Wight, Ic. t. 58. 1838. (*E. indica*).

Distrib. : Occasional in deciduous forests, also cultivated along roadsides as avenue tree. Koyna; Medha.

FLEMINGIA Roxb.

1. Erect shrubs; leaves 1-foliate	...	<i>F. strobilifera</i>
1. Trailing herbs; leaves 3-foliate	...	<i>F. nilghiriensis</i>

Flemingia nilghiriensis (Baker) T. Cooke, Fl. Pres. Bombay 393. 1902 & 1 : 419. 1958 (Repr. ed.); Bole & Almeida in J. Bombay Nat. Hist. Soc. 78 : 562. 1981. *F. vestita* var. *nilghiriensis* Baker in Hook. f. Fl. Brit. India 2 : 230. 1876.

Herbs; branches 30–50 cm long, hairy. Leaflets ovate-oblong to obovate, 1.0–2.5 × 0.7–1.0 cm, hairy. Flowers dull purple in terminal heads; calyx densely fulvous pubescent with bulbous based hairs. Pods sub-globose, 0.5 cm across.

Fls. & Frts. : August–September.

Illus. : Wight, Ic. t. 987. 1845 (*F. procumbens*).

Distrib. : Rare on rocky grounds. Mahabaleshwar, Santapau 22718 (BLAT).

Flemingia strobilifera R. Br. ex Ait. Hort. Kew. ed. 2. 4 : 350. 1812 ; Baker in Hook. f. Fl. Brit. India 2 : 227. 1876. Cooke, Fl. Pres. Bombay 1 : 416. 1958 (Repr. ed.). **Moghania strobilifera** (L.) St. Hill ex Jacks in Index Kew. 252. 1895 ; Mukerjee in Bull. Bot. Soc. Beng. 6 : 10. 1953.

Shrubs, ca 1 m high, pubescent when young. Leaflets oblong, lanceolate, 2.5 - 14.0 × 1.4 - 5.0 cm, glabrous above, silky on the nerves beneath. Flowers in axillary and terminal 7 - 10 cm long racemes. Pods oblong, ca 1 cm long, pubescent.

Fls. : February - April.

Illus. : Wight, Ic. t. 267. 1840.

Distrib. : Common as a forest undergrowth in dense forests and occurs in open situations. Dicholi ; Kumbharli ghat ; Mahabaleshwar ; on way to Pratapgad ; Shirshingi.

GEISSASPIS Wight & Arn.

Geissaspis cristata Wight & Arn. Prodr. 218. 1834 ; Baker in Hook. f. Fl. Brit. India 2 : 141. 1876 ; Cooke, Fl. Pres. Bombay 1 : 353. 1958 (Repr. ed.).

Herbs, trailing ca 50 cm long. Leaflets obovate, ca 1.0 × 0.4 cm, base tapering, apex obtuse. Flowers in ca 2.5 cm long racemes ; bracts suborbicular, enclosing flowers, strigose. Pods 0.5 cm long, brown.

Fls. & Frts. : June - August.

Illus. : Tad. & Venkatan. Handb. S. Ind. Weeds 150, f. 60. 1932.

Distrib. : Common in marshy places on hill slopes, in grasslands near cultivated fields. Punoli.

GONIOGYNA DC.

Goniogyna hirta (Willd.) Ali in Taxon 16 : 463. 1967. **Hallia hirta** Willd. Sp. Pl. 3 : 1169. 1802. **Heylandia latebrosa** DC. Mem. Leg. 201.

1825 ; Baker in Hook. f. Fl. Brit. India 2 : 65. 1876 ; Cooke, Fl. Pres. Bombay 1 : 310. 1958 (Repr. ed.).

Herbs, prostrate, much branched, hairy. Leaves subsessile, ovate, $0.5 - 1.5 \times 0.5 - 0.7$ cm, base unequal, apex subacute, hairy. Flowers axillary, solitary. Pods oblong, $\text{ca } 0.5$ cm long, hairy. Seeds 2, shining.

Fls. & Frts. : March - October.

Distrib. : Common in grasslands. Dhom dam, Wai, Satara - Poona road ; Wai.

INDIGOFRÆ L.

1. Leaves simple :

2. Stem triquetrous, narrowly winged ; pods 4 - 6 - seeded ... *I. dalzellii*

2. Stem not as above ; pods 1 - 2 - seeded :

3. Leaves ovate, mucronate ; corolla as long as the calyx ; pods 2 - seeded ... *I. cordifolia*

3. Leaves linear, acute ; corolla twice as long as the calyx ; pods 1 - seeded ... *I. linifolia*

1. Leaves compound :

4. Leaves 3 - foliolate :

5. Erect undershrubs ; leaflets not punctate beneath ... *I. trita*

5. Prostrate or diffuse herbs ; leaflets punctate beneath :

6. Pods globose with toothed wings, 1 - 2 - seeded ... *I. glandulosa*

6. Pods linear - oblong, narrowly winged, 6 - 8 - seeded ... *I. trifoliata*

4. Leaves more than 3 - foliolate :

7. Diffuse herbs ; leaflets 7 - 9, alternate ... *I. spicata*

7. Erect shrubs ; leaflets 13 - 21, opposite ... *I. cassiodoides*

Indigofera cassiodoides Rottl. ex DC. Prodr. 2 : 225. 1825 ; I. de Kort & G. Thijssse in Blumea 30 : 113. 1984. *I. pulchella* Roxb. Fl. Ind. (Carey ed.) 3 : 382. 1832 ; Baker in Hook. f. Fl. Brit. India 2 : 101. 1876 ; Cooke, Fl. Pres. Bombay 1 : 341. 1958 (Repr. ed.).

Shrubs, 1 - 2 m high. Leaves 13 - 16 cm long; leaflets elliptic oblong, 2 - 3 × 1 - 2 cm, base acute, apex rounded, apiculate, hairy. Flowers purple in axillary racemes; calyx teeth triangular, hairy; standard orbicular, persistent; wings and keels caducous. Pods cylindric, ca 2.5 cm long.

Fls. : November April.

Illus. : Wight, Ic. t. 367, 1840. (*I. pulchella*).

Distrib. : Common. Bamnoli ; Dicholi ; Gureghar ; Jadholi ; Lingmala road ; Mahabaleshwar ; Panchgani ; Pirachi wadi ; Vasota ; Umarkanchan.

Notes : After the study of types of *I. cassioides* and *I. pulchella* Roxb. Ali (Bot. Notis. 3 : 569, 1958 & Fl. W. Pak. 100 (1977, 1978) maintained them as separate groups with sterile bracts at the base of racemes and without sterile bracts at the base of racemes respectively. However, de Kort and G. Thijssse (*op. cit.*) do not agree as this is a doubtful character.

Indigofera cordifolia Heyne ex Roth Nov. Pl. Sp. 357, 1821 ; Baker in Hook. f. Fl. Brit. India 2 : 93, 1876 ; Cooke, Fl. Pres. Bombay 1 : 331, 1958 (Repr. ed.) ; I. de Kort & G. Thijssse in Blumea 30 : 113, 1984.

Herbs, diffuse, much branched; stem 10 - 20 cm long, white hairy. Leaves subsessile ca 1.2 × 1.0 cm, apex mucronate, densely hairy. Flowers bright red in 4 - 5 flowered, axillary heads. Pods oblong, ca 0.7 cm long, pubescent.

Fls. & Frts. : September December.

Distrib. : Rare along ghats. Pasarani ghat, 158885 ; Wai, Mahajan 6816.

I. dalzellii T. Cooke, Fl. Pres. Bombay 311, 1902 & 1 : 331, 1958 (Repr. ed.). *I. triquetra* Dalz. in Hook. Kew J. Bot. 2 : 36, 1850 non E. Meyer 1836 ; Baker in Hook. f. Fl. Brit. India 2 : 93, 1876.

Herbs, prostrate. Leaves elliptic oblong, 1 - 2 × 0.5 cm, base acute, apex mucronate, glabrous above, hairy beneath. Flowers pink in axillary racemes. Pods linear, 2 - 3 cm long, beaked.

Fls. & Frts. : July December.

Distrib. : Frequent on rocky hills. It is common on Panchgani plateau. Endemic to Goa, Karnataka and Maharashtra. Nauja ; Panchgani ; Pasarani ghat.

Indigofera glandulosa Wendl. Bot. Beob. 55. 1798; I. de Kort & Thijssse in Blumea 30: 119. 1984; Baker in Hook. f. Fl. Brit. India 2: 94. 1876; Cooke, Fl. Pres. Bombay 1: 332. 1958 (Repr. ed.).

Herbs, 20 - 40 cm high, pubescent when young. Leaflets 1.0 - 1.5 cm long, glabrous above, hairy beneath. Flowers red in axillary, short peduncled fascicles; calyx setaceous, hairy without. Pods ca 0.5 cm long, angular, pubescent.

Fls. & Frts. : October - December.

Illus. : Wight, Ic. t. 330. 1840.

Distrib. : Occasional among grasses near agricultural farms. Panchgani - Wai ; Satara - Pune road.

I. linifolia (L.f.) Retz. Obs. Bot. 4: 29. 1786; Baker in Hook. f. Fl. Brit. India 2: 92. 1876; Cooke, Fl. Pres. Bombay 1: 330. 1958 (Repr. ed.); I. de Kort & G. Thijssse in Blumea 30: 123. 1984. *Hedysarum linifolium* L.f. Suppl. 331. 1781. 'Pandar - phalli'.

Herbs, prostrate; branches silvery hairy. Leaves sessile, 1.0 - 2.5 × 0.2 - 0.4 cm, base and apex acute, silvery white; stipules minute, setaceous. Flowers scarlet in dense, axillary racemes. Pods globose, ca 0.2 cm across, silvery white.

Fls. & Frts. : June - September.

Illus. : Wight, Ic. t. 313. 1840; I. de Kort & G. Thijssse, *op. cit.*

Distrib. : Common monsoon herbs, growing in small communities on rocky substratum and in grasslands. Dhom dam, Wai ; Panchgani ghat ; Pandavgad ; Shirgaon ghat ; Wai.

I. spicata Forsk. Fl. Aeg. - Arab. 138. 1775. *I. hendecaphylla* Jacq. Coll. Bot. 2: 358. 1789 & Ic. Pl. Rar. t. 570. 1789; Baker in Hook. f. Fl. Brit. India 2: 96. 1876; Cooke, Fl. Pres. Bombay 1: 334. 1958 (Repr. ed.).

Herbs, 30 - 50 cm high, sparsely hairy. Leaves 2.5 - 4.0 cm long; stipules lanceolate, cuspidate; leaflets oblanceolate, ca 1.5 × 0.7 cm, base acute, apex apiculate, hairy. Flowers in axillary racemes, hairy. Pods ca 2 cm long, quadrangular.

Fls. & Frts. : September - November.

Illus. : Jacq. *op. cit.*

Distrib. : Rarely distributed along ghats in semi-evergreen forests. Panchgani ghat, Cooke op. cit. ; Yavteshwar, 165851 B.

Indigofera trita L. f. Suppl. 335. 1781 ; Baker in Hook. f. Fl. Brit. India 2 : 96. 1876 ; Cooke, Fl. Pres. Bombay 1 : 335. 1958 (Repr. ed.) ; I. de Kort & G. Thijssen in Blumea 30 : 139. 1984.

Undershrubs *ca* 1.5 m high, branches hoary pubescent. Leaflets lateral sessile, terminal petioled, obovate oblong, *ca* 4 × 2 cm, base acute, apex emarginate, hairy. Flowers red in spicate racemes. Pods divaricate, 4-gonous, hairy.

Fls. & Frts. : September November.

Distrib. : Rare along ghats on rocky substratum. Satara-Pune road, Cherian 106741.

I. trifoliata L. in Turner, Cent. Pl. 2 : 99. 1756 ; Baker in Hook. f. Fl. Brit. India 2 : 96. 1876 ; Cooke, Fl. Pres. Bombay 1 : 335. 1958 (Repr. ed.).

Herbs, 25 - 40 cm high, young branches hairy. Leaflets 1.5 - 2.5 × 0.5 - 0.8 cm, sparsely hairy. Flowers pink in axillary racemes. Pods 1.0 - 1.5 cm long, sparsely hairy.

Fls. & Frts. : September.

Illus. : Wight, Ic. t. 314. 1840.

Distrib. : Rare along ghats in semi-evergreen forests. Yavteshwar, 165851 A.

MELILOTUS A. Juss.

Meliilotus indica (L.) All. Fl. Pedem. 1 : 308. 1785 ; Cooke, Fl. Pres. Bombay 1 : 325. 1958 (Repr. ed.). *Trifolium indicum* L. Sp. Pl. 765. 1753. *M. parviflora* Desf. Fl. Atl. 2 : 192. 1800 ; Baker in Hook. f. Fl. Brit. India 2 : 89. 1876. 'Ran-methi'. (Fig. 13).

Herbs, 20 - 30 cm high. Leaflets oblanceolate, 1.5 - 2.0 × 0.5 - 1.0 cm, margins toothed ; stipules lanceolate, acute. Flowers yellowish in dense racemes. Pods sub-globose, reticulate.

Fls. & Frts. : January.

Illus. : Maheshwari, Ill. Fl. Delhi f. 53. 1966.

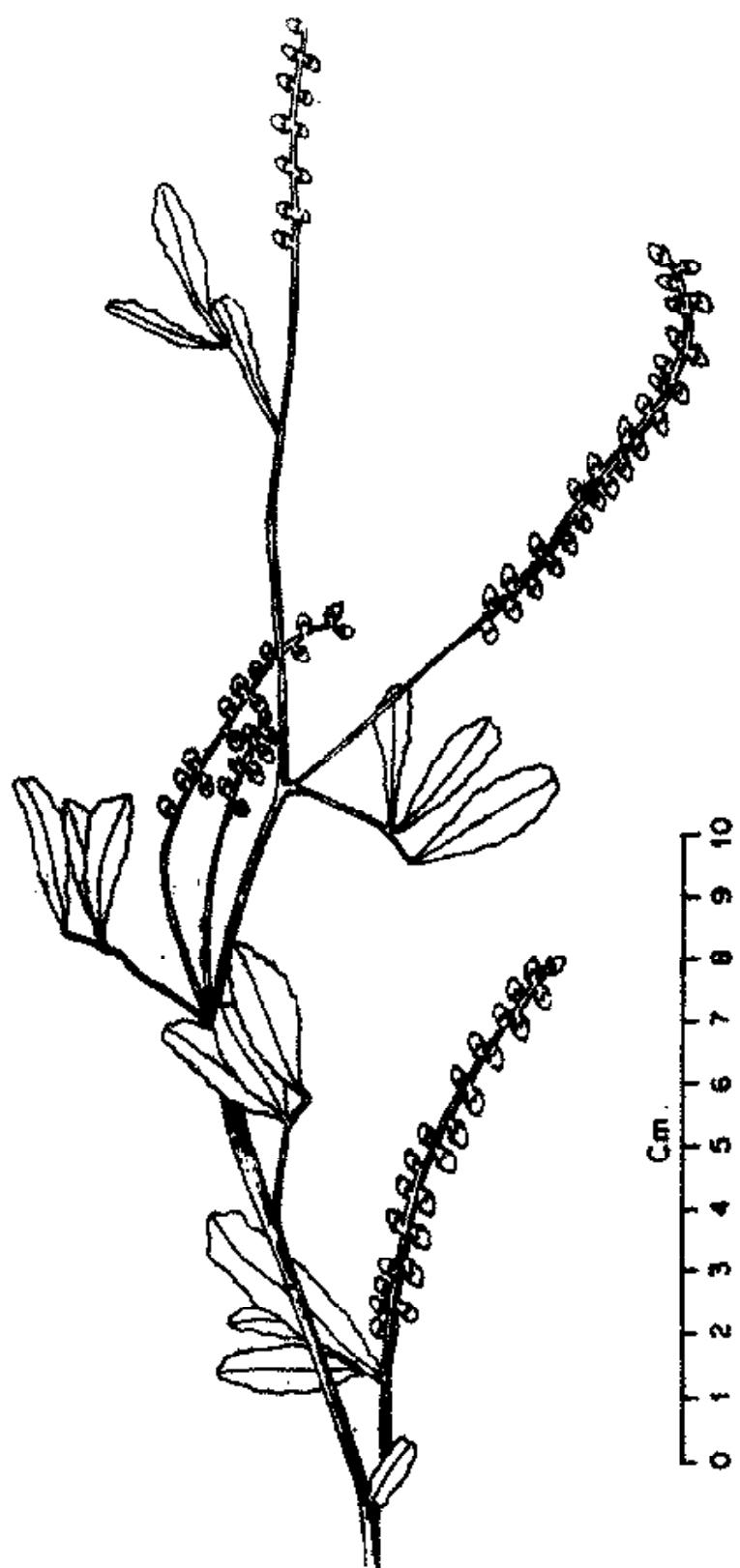


Fig. 13. *Melilotus indica* (L.) All.

Distrib. : Occasional near cultivated fields. Vardhangad.

MUCUNA Adans. (*nom. cons.*)

- | | |
|---|----------------------|
| 1. Perennials ; pods oblong, winged on sutures, 1 - seeded ... | <i>M. monosperma</i> |
| 1. Annuals ; pods falcately curved, not winged ;
seeds 5 - 6 ... | <i>M. pruriens</i> |

***Mucuna monosperma* DC. Prodr. 2 : 406. 1825 ; Baker in Hook. f. Fl. Brit. India 2 : 185. 1876 ; Cooke, Fl. Pres. Bombay 1 : 388. 1958 (Repr. ed.).**

Climbers, large, woody ; young branches rusty tomentose. Leaflets ovate oblong to elliptic, 5-10 × 3.5-7.5 cm, base rounded, apex acuminate, glabrous above, pubescent beneath. Flowers purple in axillary racemes ; bracts triangular, deciduous ; calyx with irritant bristles. Pods 6.0 × 5.5 cm, covered with brown bristles.

Fls. & Frts. : November January.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 398, f. 224. 1909.

Distrib. : Infrequent in forest outskirts. Mahabaleshwar.

***M. pruriens* (L.) DC. Prodr. 2 : 405. 1825 ; Baker in Hook. f. Fl. Brit. India 2 : 187. 1876 ; Cooke, Fl. Pres. Bombay 1 : 389. 1958 (Repr. ed.). *Dolichos pruriens* L. in Stickman, Diss. Herb. Amn. 23. 1754. 'Khaj - kuri'.**

Climbers, stem pubescent when young. Petioles 4-10 cm long. Leaflets ovate oblong, 6-9 × 3.5-5.5 cm, base unequal, pubescent. Flowers purple, hairy. Pods 6-7 cm long with longitudinal ribs.

Fls. & Frts. : November December.

Illus. : Maheshwari, Ill. Fl. Delhi f. 73. 1966.

Distrib. : Frequent in semi-evergreen forests. Gadoli ; Koyna ; Mahabaleshwar - Pratapgad.

NOGRA Metr.

Nogra simplicifolia* (Dalz.) Raiz. in Indian Forester 93 : 755. 1967 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 78 : 563. 1981. *Galactia

simplicifolia Dalz. in Hook. Kew J. Bot. 3 : 209. 1851. *N. dalzellii* (Baker) Merr. in Trans. Amer. Phil. Soc. n.s. 24 : 201. 1935 ; Panigr. in Bull. Bot. Surv. India 15 : 142. 1976. *Grona dalzellii* Baker in Hook. f. Fl. Brit. India 2 : 191. 1876 ; Cooke, Fl. Pres. Bombay 1 : 392. 1958 (Repr. ed.).

Herbs, twining ; stem brown hairy. Stipules ovate, acute, hairy. Leaflets ovate, acute, $4 - 10 \times 3 - 10$ cm, base cordate, apex acute, mucronate, glabrous above, hairy beneath. Flowers in dense 10 - 18 cm long racemes. Pods linear, ca 3.5 cm long, densely hairy.

Fls. & Frts. : September - October.

Distrib. : Rare, restricted to higher ghats. Mahabaleshwar, Cooke s. n. ; Panchgani, Cooke s. n.

PARACALYX Ali

Paracalyx scariosa (Roxb.) Ali in Univ. Studies, Karachi 5 : 95. 1968. *Cylista scariosa* Roxb. Cor. Pl. 1 : 64, t. 92. 1795 ; Baker in Hook. f. Fl. Brit. India 2 : 219. 1876 ; Cooke, Fl. Pres. Bombay 1 : 412. 1958 (Repr. ed.).

Twiners, woody ; branches striate, finely pubescent. Leaflets terminal rhomboid ovate, lateral ovate, smaller $5.0 - 7.5 \times 2.5 - 5.0$ cm, tomentose. Flowers yellow in axillary racemes. Pods oblong, pubescent, enclosed in calyx.

Fls. & Frts. : November February.

Illus. : Wight, Ic. t. 1597. 1850. (*Cylista scariosa*).

Distrib. : Common and conspicuous in semi evergreen forests because of its white calyces. Dicholi ; Jadholi ; Kumbharli ghat : Mahabaleshwar ; Panchgani ; Pirachi wadi ; Umarkanchan.

PONGAMIA Vent.

Pongamia pinnata (L.) Pierre, Fl. For. Cochinch. Sub. t. 385. 1899 ; Thoth. in Bull. Bot. Surv. India 3 : 418, t. 1. 1962. *Cytisus pinnatus* L. Sp. Pl. 741. 1753 ; *P. glabra* Vent. Jard. Malm. 28. 1803 ; Baker in Hook. f. Fl. Brit. India 2 : 240. 1876 ; Cooke, Fl. Pres. Bombay 1 : 429. 1958 (Repr. ed.). 'Karanj'.

Trees, 10–15 m high. Leaflets ovate oblong or elliptic, 5–9 × 2–5 cm, base rounded or acute, apex shortly acuminate, gland dotted. Flowers greenish-white. Pods ca 6 × 2 cm.

Fls. & Frts. : February July.

Illus. : Wight, Ic. t. 59. 1838. (*P. glabra*).

Distrib. : Common along river beds, also planted as an avenue tree. Chaphal ; Koyna ; Mahabaleshwar ; Medha ; Satara road station.

PSEUDARTHRIA Wight & Arn.

Pseudarthria viscosa (L.) Wight & Arn. Prodr. 209. 1834; Baker in Hook. f. Fl. Brit. India 2 : 154. 1876; Cooke, Fl. Pres. Bombay 1 : 366. 1958. (Repr. ed.). *Hedysarum viscidum* L. Sp. Pl. 747. 1753.

Herbs, ca 1 m high, softly hairy. Leaves 3 foliolate; stipules lanceolate, cuspidate, hairy. Leaflets terminal rhomboid ovate, lateral ovate, 2.0–5.5 × 1.3–2.5 cm, hairy above, silky beneath. Flowers in axillary and terminal 10–17 cm long racemes. Pods linear-oblong, 1.5–2.0 cm long, margin indented between the seeds.

Fls. & Frts. : September.

Illus. : Wight, Ic. t. 286. 1840.

Distrib. : Rare in deciduous forests. Bhosgaon, 166412.

PUERARIA DC.

Pueraria montana (Lour.) Merr. in Trans. Am. Phil. Soc. 24 : 10, 210. 1935; Verdc. in Taxon 15 : 36. 1966. *Dolichos montanus* Lour. Fl. Cochinch. 2 : 440. 1790. *Glycine javanica* L. Sp. Pl. 754. 1753; Baker in Hook. f. Fl. Brit. India 2 : 183. 1876; Cooke, Fl. Pres. Bombay 1 : 386. 1958 (Repr. ed.).

Herbs, twining; branches densely hairy. Leaflets broadly ovate, 5–10 × 2.5–4.5 cm, base oblique, apex mucronate, glabrous above, hairy beneath. Flowers reddish in dense axillary racemes; bracts linear, subulate. Pods ca 2.5 cm long, compressed.

Fls. & Frts. : November.

Distrib. : Rare. Patan, Vartak 6718–6720 (MACS).

Notes : Verdc. (*op. cit.*) had examined the type specimen of *G. javanica* and commented that it was not a *Glycine* in the conventional sense but a *Pueraria*. It agrees with *Dolichos montanus* in inflorescence structure, stipule shape and leaf indumentum.

RHYNCHOSIA Lour.

Rhynchosia minima (L.) DC. Prodr. 2 : 385. 1825 ; Baker in Hook. f. Fl. Brit. India 2 : 223. 1825 ; Cooke, Fl. Pres. Bombay 1 : 414. 1958 (Repr. ed.). *Dolichos minimus* L. Sp. Pl. 1029. 1753. (Fig. 14).

Twiners, pubescent when young. Leaflets rhomboid - ovate, 2.5 × 2.0 cm, base cuneate, apex obtuse, glabrous above, pubescent beneath ; stipules linear - lanceolate. Corolla yellow with red streaks. Pods oblong, compressed, upto 0.8 cm long.

Fls. & Frts. : July - February.

Distrib. : Rare in drier parts of the district. Phaltan, 165821, Raghavan 105056.

SMITHIA Ait.

1. Leaflets usually more than 4 pairs ; calyx rigid with parallel veins :
 2. Flowers purple ... *S. purpurea*
 2. Flowers yellow :
 3. Stem bristly ... *S. serulosa*
 3. Stem glabrous :
 4. Leaflets linear - oblong ; flowers in axillary 2 - 6 - flowered racemes ... *S. sensitiva*
 4. Leaflets oblong - obovate ; flowers solitary or in pairs ... *S. conferta*
 1. Leaflets not more than 4 pairs ; calyx membranous with anastomosing veins :
 5. Flowers in globose heads ... *S. pycnantha*
 5. Flowers in racemes :
 6. Stem glabrous ; bracteoles unequal ; leaflets obovate ... *S. agharkarii*

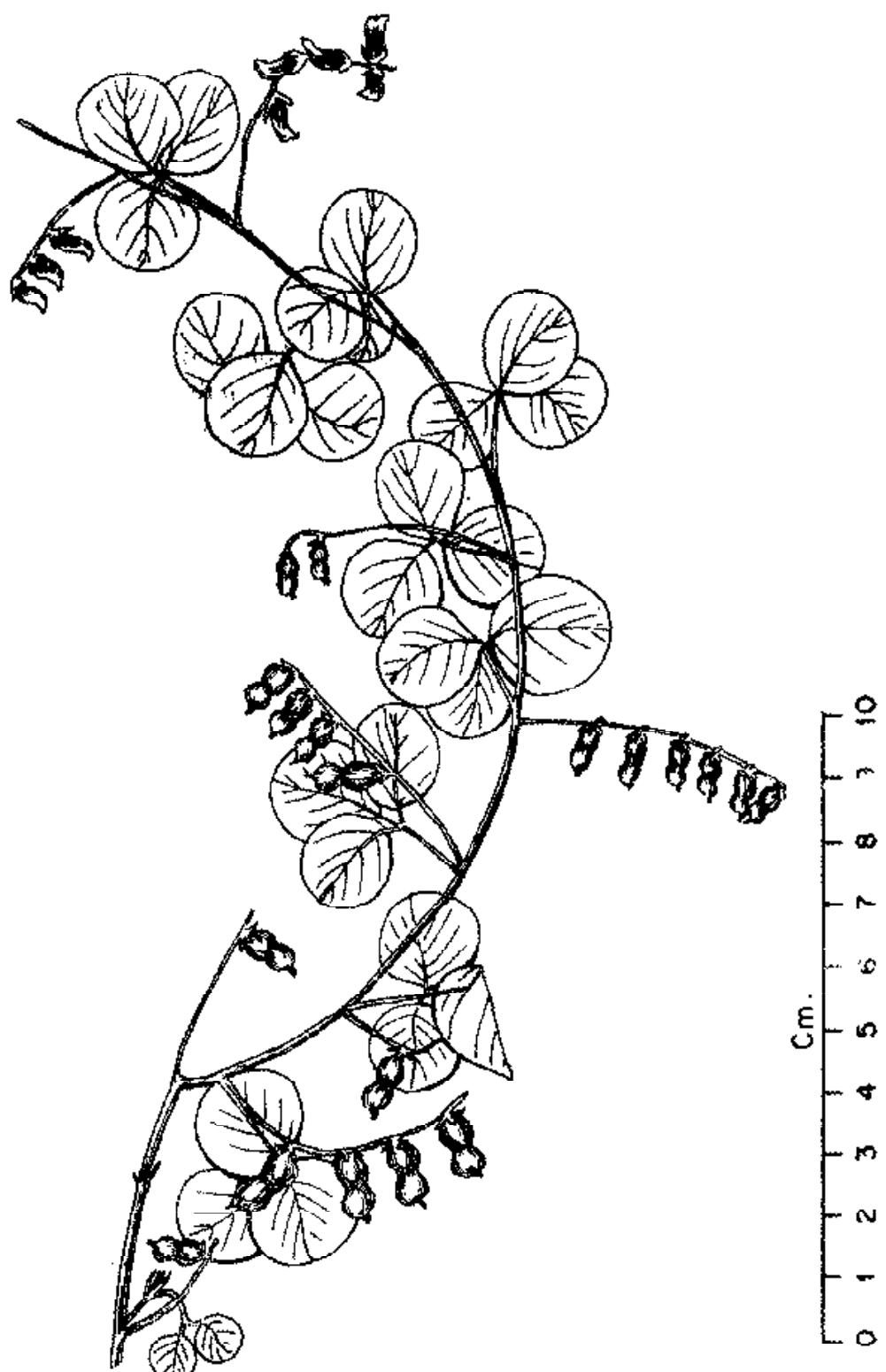


Fig. 14. *Rhynchosia minima* (L.) DC.

6. Stem with deflexed hairs ; bracteoles equal ; leaflets lanceolate to oblanceolate :
- 7. Stem with yellow hairs ; leaflets 2 pairs ... *S. bigemina*
 - 7. Stem with fulvous hairs ; 3 - 4 pairs ... *S. blanda* var. *racemosa*

Smithia agharkarii Hemadri in Indian Forester 97 : 67, f. & 1971.

Herbs, 9 - 20 cm high ; stem bristly in upper part. Leaflets subsessile, 2 - 3 pairs, upto 1.2×0.4 cm, bristle tipped, sparsely strigose beneath ; stipules lanceolate, cuspidate, scarious. Pods 3 - 5 jointed ; joints orbicular, ribbed.

Fls. & Frts. : September December.

Illus. : Hemadri, *op. cit.*

Distrib. : On open grassy plateau found along with *Canscora diffusa* and *Swertia densiflora*. Mahabaleshwar, Bole 402, 558, Panthaki 1479 (BLAT), Mahajan 24749. Recently T.S. Nayar in Indian Forester 112 : 353. 1986 has merged it under *S. bigemina*. However, I prefer to maintain it as a separate species till monographic work is done on this genus.

S. bigemina Dalz. in Hook. Kew J. Bot. 3 : 208. 1951 ; Baker in Hook. f. Fl. Brit. India 2 : 149. 1876 ; Cooke, Fl. Pres. Bombay 1 : 360. 1958 (Repr. ed.).

Herbs, 20 - 30 cm high. Leaflets subsessile, $0.7 - 1.2 \times 0.3 - 0.8$ cm, base cuneate, apex bristle pointed, glabrous above, strigose beneath. Flowers yellow. Pods 6 - 8 jointed, tubercled.

Fls. & Frts. : August February.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 222. 1982.

Distrib. : Common in large patches on open rocky grounds and near cultivated fields. Koyna ; Machutar forest, Mahabaleshwar ; Nauja.

S. blanda Wall. ex Wight & Arn. var. *racemosa* Baker in Hook. f. Fl. Brit. India 2 : 151. 1876. ***S. hirsuta*** Dalz. in Hook. Kew J. Bot. 3 : 185. 1851 ; Cooke, Fl. Pres. Bombay 1 : 361. 1958 (Repr. ed.).

Herbs, 30 - 50 cm high, diffuse, bristly. Leaflets 1.8×0.5 cm, sparsely hairy. Racemes longer than the leaves, bristly ; calyx densely ciliate with yellowish hairs. Pods 4 - 7 jointed. Seeds dorsally flat, rugose, brownish black.

Fls. & Frts. : September November.

Distrib. : Frequent but restricted to higher ghat slopes. Mahabaleshwar ; Panchgani ; Yavteshwar.

Smithia conferta J.E. Sm. in Rees, Cyclop. 33. no. 2. 1819 ; Baker in Hook. f. Fl. Brit. India 2 : 149. 1876 ; Cooke, Fl. Pres. Bombay 1 : 358. 1958 (Repr. ed.).

Herbs upto 1.5 m high, branches straggling. Leaflets subsessile, 4–16, bristly on the midrib beneath and on the margin. Flowers axillary, on short, hairy pedicels ; bracteoles elliptic - oblong, bristle tipped. Pods turgid, 3–6 jointed, papillose.

Fls. & Frts. : November December.

Distrib. : Annuals in marshy localities and near cultivated fields. Lingmala.

S. purpurea Hook. Bot. Mag. 73, t. 4283. 1847 ; Baker in Hook. f. Fl. Brit. India 2 : 149. 1876 ; Cooke, Fl. Pres. Bombay 1 : 359. 1958 (Repr. ed.).

Herbs, ca 60 cm high. Leaflets sessile, 5–15 pairs, elliptic - oblong, bristle tipped, ca 1 cm long ; stipules ovate - oblong, scarious, auricled at base, ca 1.2 cm long. Flowers in axillary racemes. Pods 10–12 jointed ; joints orbicular oblong.

Fls. & Frts. : October - December.

Illus. : Hook. op. cit.

Distrib. : Rare. Mahabaleshwar, Cooke, s. n.

S. pycnantha Benth. ex Baker in Hook. f. Fl. Brit. India 2 : 150. 1876 ; Cooke, Fl. Pres. Bombay 1 : 360. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 78 : 557. 1981.

Herbs, ca 50 cm high, stem bristly. Leaflets subsessile, 6–8, linear - oblong, glabrous above, bristly on the nerves beneath ; stipules lanceolate, acute, hairy. Calyx ciliate on the margin with bristles from black bases. Pods 5–9 jointed.

Fls. & Frts. : September October.

Distrib. : Included on Bole & Almeida's report from Mahabaleshwar.

Smithia sensitiva Ait. Hort. Kew. ed. 1. 3 : 496. 1789 ; Baker in Hook. f. Fl. Brit. India 2 : 148. 1876 ; Cooke, Fl. Pres. Bombay 1 : 357. 1958 (Repr. ed.) ; van Steenis in Reinwardtia 5 : 444. 1961.

Herbs, *ca* 1 m high. Leaflets *ca* 1 cm long, base rounded unequal, apex obtuse, bristle tipped. Pod joints orbicular, 4 - 6.

Fls. : February.

Distrib. : Occasional in moist grasslands. Koyna ; Mahabaleshwar.

S. setulosa Dalz. in Hook. Kew J. Bot. 3 : 208. 1851 ; Baker in Hook. f. Fl. Brit. India 2 : 149. 1876 ; Cooke, Fl. Pres. Bombay 1 : 359. 1958 (Repr. ed.).

Herbs, *ca* 1 m high. Leaves 4 - 9 cm long ; leaflets 8 - 14, oblong, base oblique, apex obtuse. Flowers in dichotomous racemes. Pods many pointed.

Fls. & Frts. : October - November.

Illus. : Bedd. Ic. t. 243. 1874.

Distrib. : Frequent on grassy hill slopes. Koyna ; Mahabaleshwar ; Mahabaleshwar - Pratapgarh.

SPHENOSTYLIS E. Meyer

Sphenostylis bracteata (Baker) Gillet in Kew Bull. 20 : 103. 1966. *Dolichos bracteatus* Baker in Hook. f. Fl. Brit. India 2 : 210. 1876 ; Cooke, Fl. Pres. Bombay 1 : 406. 1958 (Repr. ed.).

Climbers. Leaflets broadly obovate, *ca* 15 cm long, base cuneate, apex obtuse or acute ; stipules oblong, acute. Flowers reddish in axillary racemes. Pods linear, 12 - 15 cm long.

Fls. & Frts. : August - October.

Distrib. : Occasional along ghats, climbing on bushes in forest edges. Mahabaleshwar.

TEPHROSIA Pers. (*nom. cons.*)

- | | | |
|---|-----|---------------------|
| 1. Stems sparsely hairy ; style glabrescent | ... | <i>T. purpurea</i> |
| 1. Stems densely hairy ; style bearded : | | |
| 2. Leaflets 3 - 5, obovate, cuneate | ... | <i>T. coccinea</i> |
| 2. Leaflets 7 - 13, oblong - lanceolate | ... | <i>T. tinctoria</i> |

Tephrosia coccinea Wall. Pl. Asiat. Rar. 1 : t. 60. 1830 ; Cooke, Fl. Pres. Bombay 1 : 346. 1958 (Repr. ed.). *T. tinctoria* var. *coccinea* (Wall.) Baker in Hook. f. Fl. Brit. India 2 : 112. 1976.

Shrubs upto 1 m high. Leaflets 4-7 × 2-4 cm, base acute, apex rounded, glabrous above, silvery beneath. Flowers in axillary racemes; bracts lanceolate, acute, scarious. Pods 5-7 cm long, glabrescent.

Fls. & Frts. : October December.

Illus. : Wall. *op. cit.*

Distrib. : Perennials near cultivated fields or in waste lands. Morgiri ; Vajegaon.

T. purpurea (L.) Pers. Syn. Pl. 2 : 329. 1807 ; Baker in Hook. f. Fl. Brit. India 2 : 112. 1876 ; Cooke, Fl. Pres. Bombay 1 : 346. 1958 (Repr. ed.) ; Bosman & de Haas in Blumea 28 : 464. 1983. *Cracca purpurea* L. Sp. Pl. 752. 1753. 'Unhali'.

Herbs, 30-50 cm high. Leaflets 13-19, oblanceolate, 1.5-2.5 × 1.0-1.5 cm, base acute, apex rounded mucronate, glabrous above, puberulous beneath. Flowers violet in 3-5 cm long, leaf opposed racemes. Pods 3-5 cm long, sparsely hairy.

Fls. & Frts. : April July.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 225. 1982.

Distrib. : Occasional in wastelands. Girvi ; Gondavale.

T. tinctoria (L.) Pers. Syn. Pl. 2 : 329. 1807 ; Baker in Hook. f. Fl. Brit. India 2 : 111. 1876 ; Cooke, Fl. Pres. Bombay 1 : 345. 1958 (Repr. ed.). *Galega tinctoria* L. Syst. Nat. ed. 10. 1172. 1759.

Shrubs, 1-2 m high. Leaflets 4-8 × 1-2 cm, apex mucronate, glabrous above, silvery beneath. Flowers in dense, silky hairy racemes; peduncles longer than the leaves ; bracts lanceolate, hairy. Pods 5-7 cm long, apiculate pubescent.

Fls. & Frts. : April December.

Illus. : Wight, Ic. t. 388. 1840.

Distrib. : Common along hill slopes and forest edges. Koyna ; Mahabaleshwar ; Panchgani ; Rasati.

TERAMNUS P. Br.

Teramnus labialis (L.f.) Spr. Syst. 3 : 235. 1826 ; Baker in Hook. f. Fl. Brit. India 2 : 184. 1876 ; Cooke, Fl. Pres. Bombay 1 : 387. 1958 (Repr. ed.). *Glycine labialis* L.f. Suppl. 325. 1781.

Twiners, pubescent. Leaflets ovate - lanceolate, 1.5 - 6.0 × 1.0 - 3.5 cm, base and apex subacute. Flowers purple in axillary 3 - 6 cm long racemes ; bracts linear - lanceolate. Pods linear, 3.0 - 5.5 cm long, incurved.

Fls. & Frts. : November - April.

Illus. : Wight, Ic. t. 168. 1839 (*Glycine labialis* L.f.).

Distrib. : Common along forest margins in semi-evergreen forests. Dicholi ; Kistrude ; Nauja ; Shirshingi ; Vasota.

VIGNA Savi

1. Trailing or erect herbs :

- | | | |
|--|-----|------------------------|
| 2. Erect herbs ; stipules upto 3 cm broad | ... | <i>V. khandalensis</i> |
| 2. Trailing herbs ; stipules upto 1 cm broad | ... | <i>V. trilobata</i> |

1. Climbers :

- | | | |
|---|-----|--|
| 3. Flowers rose - purple, 2 - 4 together | ... | <i>V. vexillata</i> |
| 3. Flowers yellow in axillary racemes : | | |
| 4. Flowers in elongated racemes ; pods glabrous | ... | <i>V. dalzelliana</i> |
| 4. Flowers in condensed racemes ; pods hairy | ... | <i>V. radiata</i> var. <i>sublobatus</i> |

Vigna dalzelliana (O. Ktze.) Verdc. in Kew Bull. 24 : 558. 1970. *Phaseolus dalzellianus* O. Ktze. Rev. Gen. Pl. 202. 1891. *P. pauciflorus* Dalz. in Hook. J. Bot. 3 : 209. 1851 ; Baker in Hook. f. Fl. Brit. India 2 : 202. 1876. *P. dalzellii* T. Cooke, Fl. Pres. Bombay 1 : 376. 1903 & 1 : 401. 1958 (Repr. ed.).

Herbs, branches striate. Leaflets ovate to rhomboid - ovate, ca 2.0 - 3.5 × 1.2 - 2.0 cm, base of middle leaflet equal - sided, of lateral unequal, apex acuminate, hairy. Style bearded below. Pods subcylindric, 2.5 - 5.0 cm long.

Fls. & Frts. : September - October.

Distrib. : Rare in glasslands. Taldeo, Kochhar 154735.

Vigna khandalensis (Sant.) Raghavan & Wadhwa in Curr. Sci. 41 : 429. 1972. *Phaseolus khandalensis* Sant. in Kew Bull. 1948 : 276. 1948. *P. grandis* Dalz. in Dalz. & Gibbs. Bombay Fl. 72. 1861 *non* Bth. 1852 ; Baker in Hook. f. Fl. Brit. India 2 : 202. 1876 ; Cooke, Fl. Pres. Bombay 1 : 400. 1958 (Repr. ed.).

Herbs or undershrubs, upto 2 m high ; stem 5 - angled, strigose when young. Leaflets half-way divided, 7-13 cm long, strigosely hairy ; stipules foliaceous, obovate-oblong, ciliate. Flowers yellow in racemes ; peduncles 10-15 cm long, bristly. Pods 4.5 cm long with appressed black hairs. Seeds cylindrical, dark brown.

Fls. & Frts. : October November.

Distrib. : Common along ghats in semi-evergreen forests. At present distribution is limited to Maharashtra State only (Raghavan & Wadhwa, *op. cit.*). Kelghar ghat ; Khambil chorghe ghat ; Mahabaleshwar ; Panchgani.

V. radiata var. **sublobatus** (Roxb.) Verdc. in Kew Bull. 24 : 559. 1970. *Phaseolus sublobatus* Roxb. Fl. Ind. (Carey ed.) 3 : 288. 1832 ; Cooke, Fl. Pres. Bombay 1 : 402. 1958 (Repr. ed.) *P. trinervis* Wight & Arn. Prodr. 245. 1834 ; Baker in Hook. f. Fl. Brit. India 2 : 203. 1876.

Climbers ; stem clothed with spreading reddish brown hairs. Leaflets ovate rhomboid, terminal larger, 6-10 x 4-6 cm, densely hairy. Flowers in 4-6 flowered racemes. Pods cylindric, upto 5 cm long.

Fls. & Frts. : September October.

Distrib. : Found along margins of semi-evergreen forests. Mahabaleshwar ; Yavteshwar.

V. trilobata (L.) Verdc. in Taxon 17 : 172. 1968. *Dolichos trilobatus* L. Mant. 101. 1767. *Phaseolus trilobus* auct. non L. 1753 : Roxb. Fl. Ind. (Carey ed.) 3 : 298. 1832 ; Baker in Hook. f. Fl. Brit. India 2 : 201. 1876 ; Cooke, Fl. Pres. Bombay 1 : 401. 1958 (Repr. ed.).

Herbs, upto 1 m long, pubescent. Leaflets 1.0-2.5 cm long, as broad as long, sparsely hairy ; stipules oblong, acute, hairy. Flowers yellow in axillary racemes, longer than the leaves. Pods 3.0-4.5 cm long.

Fls. & Frts. : July.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 227. 1982.

Distrib. : Rare near cultivated fields. Phaltan, 165822.

Vigna vexillata (L.) A. Rich. in Hist. Fis. Polit. nat. 1, 11 : 191. 1845 ; Baker in Hook. f. Fl. Brit. India 2 : 206. 1876 ; Verdc. in Kew Bull. 24 : 553. 1970. *Phaseolus vexillatus* L. Sp. Pl. 724. 1753. *V. capensis* (L.) Walp. in Linnaca 13 : 533. 1839 ; Cooke, Fl. Pres. Bombay 1 : 404. 1958 (Repr. ed.). 'Halunda'. (Fig. 15).

Climbers. Leaflets ovate lanceolate, 3.5–9.5 × 1.5–3.5 cm, apex acute or acuminate, sparsely hairy ; stipules oblong-lanceolate, acute. Pods 5–11 cm long, clothed with brown hairs. Seeds subreniform, compressed, brownish-black.

Fls. & Frts. : September–November.

Distrib. : Common in forest undergrowth. Gureghar ; Karanjewadi ; Mahabaleshwar ; Old Mahabaleshwar ; Panchgani ; Yavteshwar.

CULTIVATED SPECIES

V. radiata (L.) Wilczek in Fl. Congo Belge 6 : 386. 1954 ; Verdc. in Kew Bull. 24 : 558. 1970. *Phaseolus radiatus* L. Sp. Pl. 725. 1753 ; Baker in Hook. f. Fl. Brit. India 2 : 203. 1876 ; Cooke, Fl. Pres. Bombay 1 : 403. 1958 (Repr. ed.). 'Mug'.

Climbers, hirsute. Leaflets ovate rhomboid, apex acute 1.5–5.0 × 1–3 cm, membranous, hairy. Flowers yellow in racemes. Pods subcylindrical, many seeded.

Fls. & Frts. : October.

Distrib. : Common, cultivated as a source of pulses. Satara.

V. unguiculata (L.) Walp. subsp. *cylindrica* (L.) van Eseltine in Hedrick, Vegetables of New York 1 : 11. 1913 ; Verdc. in Kew Bull. 24 : 544. 1970. *Phaseolus cylindrica* L. Herb. Amb. 23 : 1754. *V. catjang* (Burm. f.) Walp. in Linnaea 13 : 533. 1839 ; Baker in Hook. f. Fl. Brit. India 2 : 205. 1876 ; Cooke, Fl. Pres. Bombay 1 : 405. 1958 (Repr. ed.). 'Chavli'.

Herbs, branches ascending. Flowers in axillary racemes. Pods linear, straight or curved, subterete. Seeds subreniform, compressed.

Fls. & Frts. : April.

Distrib. : Cultivated as a vegetable. Taldeo.

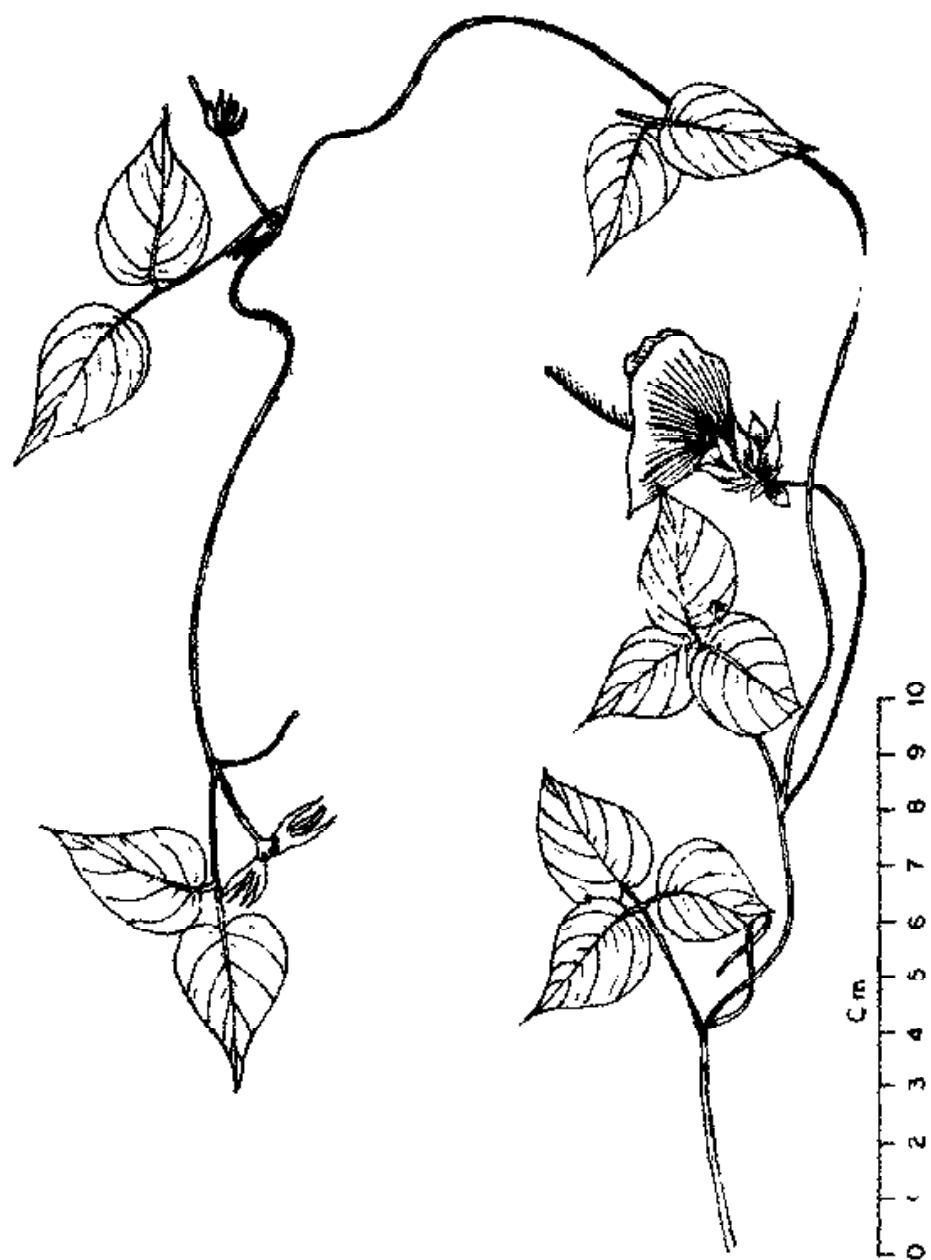


Fig. 15. *Vigna vexillata* (L.) A. Rich.

ZORNIA Gmel.

Zornia gibbosa Span. in Linnaea 15 : 192. 1841 ; Dandy & Milne Redhead, in Kew Bull. 17 : 74. 1963 ; Anjali Chakrabarti & Jain in Curr. Sci. 42 : 744. 1973. *Z. diphylla* auct. pl. non Pers. 1807. Barker in Hook. f. Fl. Brit. India 2 : 147. 1876 ; Cooke, Fl. Pres. Bombay 1 : 355. 1958. (Repr. ed.).

Herbs, diffuse, much branched. Leaflets lanceolate, up to 1.7 × 0.5 cm, gland dotted. Flowers small, yellow with red streaks in axillary spicate racemes. Pods compressed, up to 1 cm long.

Fls. & Frts. : November May.

Illus. : Maheshwari, Ill. Fl. Delhi f. 64. 1966.

Distrib. : Occasional in waste lands. Koyna ; Mahabaleshwar.

CULTIVATED SPECIES

Cicer arietinum L. Sp. Pl. 738. 1753 ; Baker in Hook. f. Fl. Brit. India 2 : 176. 1876 ; Cooke, Fl. Pres. Bombay 1 : 435. 1958 (Repr. ed.). 'Harbara'.

Herbs, spreading ; branches glandular pubescent. Leaflets ovate, elliptic, pubescent, margins dentate. Flowers yellow, solitary, axillary. Pods ovoid oblong.

Fls. & Frts. : February March.

Notes : One of the major pulses grown in the district, rarely found as an escape.

Clitoria ternatea L. Sp. Pl. 753. 1753 ; Baker in Hook. f. Fl. Brit. India 2 : 208. 1876 ; Cooke, Fl. Pres. Bombay 1 : 405. 1958 (Repr. ed.). 'Gokarn'.

Twiners, slender. Leaves imparipinnate ; leaflets 7, elliptic - oblong. 3-6 × 2-4 cm. Flowers blue or white, solitary, axillary. Pods linear oblong, 10-12 cm long, pubescent.

Fls. & Frts. : August December.

Distrib. : Cultivated as an ornamental plant in gardens, also found as an escape. Chaphal ; Research nursery, Koyna.

Gliricidia sepium (Jacq.) Kunth ex Steud. Nom. Bot. ed. 2. 1 : 688. 1840 ; Sant. in Rec. Bot. Surv. India 16 (1) : 77. 1967. (3rd Rev. ed.). *Robinia sepium* Jacq. Enum. Syst. Pl. 28. 1760.

Trees, 6–9 m high. Leaflets 7–17, oblong ovate. Flowers white with a pinkish tinge in axillary racemes. Pods linear, compressed, thickened at margins.

Fls. & Frts. : February.

Distrib. : Deciduous tree introduced from Central America, grown along roadsides and in gardens. Koyna.

Phaseolus lunulatus L. Sp. Pl. 724. 1753 ; Baker in Hook. f. Fl. Brit. India 2 : 200. 1876 ; Cooke, Fl. Pres. Bombay 1 : 402. 1958 (Repr. ed.).

Climbers, hairy. Leaflets rhomboid ovate, terminal larger, 5.0–9.5 × 4.0–7.5 cm, hairy. Flowers yellow in axillary racemes. Pods ca 5 cm long.

Fls. & Frts. : September–March.

Distrib. : Cultivated as a vegetable. Mahabaleshwar ; Sanbur.

Pisum sativum L. Sp. Pl. 727. 1753 ; Baker in Hook. f. Fl. Brit. India 2 : 181. 1876 ; Cooke, Fl. Pres. Bombay 1 : 436. 1958 (Repr. ed.). 'Matar'.

Climbers. Leaflets ovate to elliptic oblong. Flowers white in axillary fascicles. Pods many seeded.

Fls. & Frts. : September–December.

Distrib. : Cultivated as vegetable, also found as an escape. Mahabaleshwar.

Psophocarpus tetragonolobus DC. Prodr. 2 : 403. 1825 ; Baker in Hook. f. Fl. Brit. India 2 : 211. 1876 ; Cooke, Fl. Pres. Bombay 1 : 435. 1958 (Repr. ed.).

Climbers. Leaflets 3, rhomboid ovate, 5–9 × 4–7 cm. Flowers purple in terminal racemes. Pods with crisped serrate margins, 5–7 cm long.

Fls. & Frts. : June.

Distrib. : Cultivated for edible protein rich fruits. Ambeghar.

Sesbania seshan (L.) Merr. var. *picta* (Prain) Sant. Pl. Saurashtra 14. 1953. *S. aegyptiaca* Poir. var. *picta* Prain in J. Asiat. Soc. Beng. 66 : 367. 1898 ; Cooke, Fl. Pres. Bombay 1 : 349. 1958. (Repr. ed.).

Trees. Leaflets 18 - 26, linear - oblong. Flowers in few flowered, axillary racemes ; standard golden yellow within, purple without. Pods 17 - 24 cm long, torulose, beaked.

Fls. & Frts. : November - March.

Illus. : Wight, Ic. t. 32. 1836.

Distrib. : Cultivated as a hedge plant and also for fodder purpose. Karad ; Vajegaon.

Stylosanthes fruticosa (Retz.) Aitst. in Trim. Handb. Fl. Ceylon 6 : 77. 1931 ; Mohlenbroek in Ann. Mo. Bot. Gdn. 44 : 318. 1957. *Arachis fruticosa* Retz. Obs. Bot. 5 : 26. 1791. *S. mucronata* Willd. Sp. Pl. 3 : 1166. 1800 ; Baker in Hook. f. Fl. Brit. India 2 : 149. 1876.

Herbs, erect or prostrate, pubescent. Leaflets lanceolate, up to 2.5×0.5 cm, apex mucronate ; stipules adnate half length to the petioles, scarious, with two long spines. Flowers yellow, solitary, axillary. Pods oblong, 0.5 cm long.

Fls. & Frts. : September.

Distrib. : Cultivated along hill slopes as a fodder plant. Dhamani,

CAESALPINIOIDEAE

1. Herbs, shrubs or trees :

2. Trees ; leaves simple ... **BAUHINIA**

2. Herbs or shrubs (small trees in *Cassia fistula*) ; leaves pinnate ... **CASSIA**

1. Climbers :

3. Flowers orange in spicate racemes ... **MOULLAVA**

3. Flowers yellow in racemes or panicles :

4. Plants glabrous ; pods broadly winged along the upper suture ... **MIZZONEVRON**

4. Plants grey - pubescent ; pods not or narrowly winged ... **CAESALPINIA**

BAUHINIA L.

Bauhinia racemosa Lam. Encycl. 1 : 390. 1785 ; Baker in Hook. f. Fl. Brit. India 2 : 276. 1878 ; Cooke, Fl. Pres. Bombay 1 : 459. 1958 (Repr. ed.) ; de Wit in Reinwardtia 3 : 537. 1956. 'Apta'.

Trees, 10-12 m high. Leaves ovate - orbicular, 1.5-4.0 × 2-9 cm, base cordate, apex obtuse, mucronate, glabrous above, puberulous beneath. Flowers white to yellowish in leaf opposed and terminal 5-10 cm long racemes. Pods oblong, 9-17 cm long.

Fls. & Frts. : April December.

Illus. : Bedd. Fl. Sylv. t. 182. 1872.

Distrib. : Common in deciduous forests. Bhilar estate near Mahabaleshwar ; Dhokewadi ; Koyna ; Morgiri ; Shangaon ; Shirgaon ghat ; Shirshingi.

CULTIVATED SPECIES

B. galpinii N.E. Br. in Gard. Chron. 9 : 748. 1891 ; Bailey, Man. Cult. Pl. 584. 1949 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 78 : 564. 1981.

Shrubs, climbing. Leaves divided half way. Flowers brick red in lax racemes ; calyx tube longer than the lobes ; petals 5, orbicular, cuspidate, fertile stamens 3. Pods flat.

Fls. & Frts. : March June.

Notes : Included on Bole & Almeida's report from Bhilar estate, Mahabaleshwar.

B. purpurea L. Sp. Pl. 375. 1753 ; Baker in Hook. f. Fl. Brit. India 2 : 284. 1878 ; Cooke, Fl. Pres. Bombay 1 : 461. 1958 (Repr. ed.) ; de Wit in Reinwardtia 3 : 406. 1956.

Trees upto 10 m high. Leaves up to 4-11 cm long, divided 1/3 of their length. Flowers pink in axillary and terminal racemes. Pods oblong, up to 20 cm long, narrowed at both ends.

Frts. : October November.

Distrib. : Cultivated as an ornamental plant. Bhosgaon ; Panchgani ghat.

CAESALPINIA L.

- | | | |
|--|-----|----------------------|
| 1. Leaflets 6 - 7 pairs ; pods prickly | ... | <i>C. bonduc</i> |
| 1. Leaflets 8 - 20 pairs ; pods smooth | ... | <i>C. decapetala</i> |

Caesalpinia bonduc (L.) Roxb. Fl. Ind. (Carey ed.) 2 : 362. 1832
emend. Dandy & Exell in J. Bot. 76 : 179. 1938. *Guilandina bonduc*, L. Sp. Pl. 381. 1753. *C. bonducella* (L.) Flem. in As. Res. 11 : 159. 1810 ; Baker in Hook. f. Fl. Brit. India 2 : 254. 1878 ; Cooke, Fl. Pres. Bombay 1 : 437. 1958 (Repr. ed.). 'Sagargota'.

Climbers ; branches prickly and downy - pubescent. Leaves abruptly pinnate ; leaflets elliptic oblong, 1.5 - 3.0 × 1 - 2 cm, base truncate, apex obtuse, mucronate, puberulous beneath. Racemes 8 - 12 cm long ; calyx fulvous tomentose ; sepals oblong - obovate ; petals oblanceolate ; stamens 10, subequal. Pods oblong, 5 - 8 cm long.

Fls. & Frts. : June September.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 230. 1982.

Distrib. : Occasional in deciduous forests and in waste places. Koyna.

C. decapetala (Roth) Alst. in Trim. Handb. Fl. Ceylon 6 (Suppl.) : 89. 1931 ; Sant. & Wagh in Bull. Bot. Surv. India 5 : 108. 1963. *Reichardia decapetala* Roth, Nov. Pl. Sp. 212. 1821. *C. sepiaria* Roxb. Fl. Ind. (Carey ed.) 2 : 360. 1832 ; Baker in Hook. f. Fl. Brit. India 2 : 256. 1878 ; Cooke, Fl. Pres. Bombay 1 : 439. 1958 (Repr. ed.). 'Chilhar'.

Shrubs, straggling, with sharp, hooked prickles. Leaves 5 - 12 cm long ; leaflets subsessile, oblong, 1 - 2 × 0.3 - 0.7 cm, base cuneate, apex obtuse, glabrous above, puberulous beneath. Flowers in 15 - 20 cm long racemes. Pods linear oblong, slightly recurved, 6 - 8 cm long, beaked.

Fls. & Frts. : July November.

Illus. : Wight, Ic. t. 37. 1938.

Distrib. : Occasional clumps near forest margins. Satara Pune ; Wai.

CASSIA L.

- | | | |
|---|-----|-------------------|
| 1. Trees ; pods 30 - 60 cm long | ... | <i>C. fistula</i> |
| 1. Herbs or shrubs ; pods upto 20 cm long : | | |

2. Flowers in axillary and terminal racemes :		
3. Leaflets 8 - 12 pairs ; stipules foliaceous	...	<i>C. auriculata</i>
3. Leaflets 4 - 6 pairs ; stipules absent	...	<i>C. occidentalis</i>
2. Flowers solitary or in pairs :		
4. Herbs with a strong foetid odour ; glands between each of the two lowest pairs	...	<i>C. tora</i>
4. Herbs without foetid odour ; glands between the lowermost pair only :		
5. Leaflets 3 pairs, obovate - oblong	...	<i>C. obtusifolia</i>
5. Leaflets 10 - 40 pairs, linear - oblong :		
6. Petioles with a sessile gland	...	<i>C. mimosoides</i>
6. Petioles with a stipitate gland	...	<i>C. pumila</i>

Cassia auriculata L. Sp. Pl. 379. 1753 ; Baker in Hook. f. Fl. Brit. India 2 : 263. 1878 ; Cooke, Fl. Pres. Bombay 1 : 448. 1958 (Repr. ed.) ; Pandey in J. Bombay Nat. Hist. Soc. 68 : 316. 1971. 'Tarwad'.

Shrubs, 2 - 3 m high, much branched. Leaflets oblong, 1 - 2 × 0.3 - 1.3 cm, apex obtuse, mucronate ; rhachis within erect gland between each pair of leaflets. Flowers yellow with orange streaks ; perfect stamens 7. Pods oblong, 10 × 2 cm, shortly stalked.

Fls. & Frts. : December.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 . 450, f. 254. 1909.

Distrib. : Found in drier parts of the district along road sides and in waste places. Khambatki ghat.

C. fistula L. Sp. Pl. 377. 1753 ; Baker in Hook. f. Fl. Brit. India 2 : 261. 1878 ; Cooke, Fl. Pres. Bombay 1 : 444. 1958 (Repr. ed.) ; Pandey in J. Bombay Nat. Hist. Soc. 68 : 313. 1971. 'Bahava'.

Trees, 6 - 9 m high. Leaflets 4 - 8 pairs, ovate or ovate oblong, 5 - 10 × 2.5 - 4.5 cm, base acute, apex emarginate. Flowers yellow in lax racemes ; calyx deeply divided ; lobes oblong, obtuse ; petals 5, obovate, shortly clawed ; stamens 10. Pods pendulous, brownish black, shining.

Fls. & Frts. : April - September.

Illus. : Wight, Ic. t. 269. 1840.

Distrib. : An elegant tree in deciduous forests because of its bright yellow flowers in drooping racemes and long pods. It is also cultivated as an ornamental plant in gardens. Dhamani ; Koyna ; Mahabaleshwar ; Medha.

Cassia mimosoides L. Sp. Pl. 379. 1753 ; Baker in Hook. f. Fl. Brit. India 2 : 266. 1878 ; Cooke, Fl. Pres. Bombay 1 : 453. 1958 (Repr. ed.) ; Pandey in J. Bombay Nat. Hist. Soc. 68 : 317. 1971.

Herbs, erect or ascending. Leaflets overlapping, up to 0.5×0.1 cm, base and apex obtuse. Flowers yellow, solitary, axillary ; calyx lobes spreading, pubescent. Petals elliptic, obtuse, with long claw. Pods linear, 2.5 - 5.0 cm long, sparsely hairy.

Fls. & Frts. : September - October.

Distrib. : Occasional near moist places. Panchgani ; Pandavgad.

C. obtusifolia L. Sp. Pl. 377. 1753 ; Cooke, Fl. Pres. Bombay 1 : 447. 1958 (Repr. ed.). *C. tora* sensu Baker in Hook. f. Fl. Brit. India 2 : 263. 1878 (*non* L. 1753).

Herbs, 1 - 2 m high. Leaves 5 - 6 cm long ; leaflets 2 - 3 \times 1 - 3 cm. Flowers subsessile, bright yellow in leaf axils ; calyx lobes ovate, acute ; petals oblong, obtuse. Pods subterete, 16 - 18 cm long, transversely ribbed.

Fls. & Frts. : December.

Distrib. : Rare annuals growing among grasses. Morgiri 166616.

This species was considered to be conspecific to *C. tora* L. by Bth. (Trans. Linn. Soc. London 27 : 535. 1871) which view was followed by Baker (*op. cit.*). It differs from *C. tora* in presence of single gland between the lowest pair of leaflets, seeds with broader areoles and ciliate sepals.

C. occidentalis L. Sp. Pl. 377. 1753 ; Baker in Hook. f. Fl. Brit. India 2 : 262. 1878 ; Cooke, Fl. Pres. Bombay 1 : 445. 1958 (Repr. ed.) ; Pandey in J. Bombay Nat. Hist. Soc. 68 : 316, t. 2, f. 26 - 31. 1971. 'Ran takla'.

Shrubs, ca 1 m high. Leaflets ovate-lanceolate, 2 - 8 \times 1.5 - 2.5 cm ; base rounded, apex acute ; rachis with a solitary gland at the base. Flowers yellow with orange streaks ; calyx lobes oblong, obtuse ; petalovate-oblong ; perfect stamens 7, staminodes 3. Pods flat, recurved, ca 10 cm long.

Fls. & Frts. : May - July.

Illus. : Pandey, *op. cit.*

Distrib. : Weed in fallow fields and along road sides. Koyna ; Pingli.

Cassia pumila Lam. Encycl. I : 651. 1785; Baker in Hook. f. Fl. Brit. India 2 : 266. 1878 ; Cooke, Fl. Pres. Bombay I : 452. 1958 (Repr. ed.) ; Pandey in J. Bombay Nat. Hist. Soc. 68 : 318, t. 2, f. 18-25. 1971.

Herbs. diffuse, ca 25 cm long with white, spreading hairs. Leaflets subsessile, ca 1.0 × 0.3 cm, base unequal, apex obtuse ; petioles with a peltate gland at the base. Flowers yellow ; petals obovate, veined. Pods linear, ca 1.5 cm long, glabrescent.

Fls. & Frts. : August.

Illus. : Pandey, *op. cit.*

Distrib. : Monsoon herbs in open grasslands. Koyna.

C. tora L. Sp. Pl. 376. 1753 ; Baker in Hook. f. Fl. Brit. India 2 : 263. 1878 ; Cooke, Fl. Pres. Bombay I : 447. 1958 (Repr. ed.) ; Pandey in J. Bombay Nat. Hist. Soc. 68 : 316, t. 2, f. 32-38. 1971. 'Takla'.

Herbs, ca 1 m high. Leaflets obovate oblong, 1.5-2.5 × 1.2-1.7 cm, base oblique, apex obtuse ; rhachis grooved, pubescent. Flowers yellow in axillary pairs ; petals oblong, obtuse, upper petal 2 lobed ; stamens 7, staminodes 3. Pods subtetragonal, curved, 10-14 cm long.

Fls. & Frts. : April November.

Illus. : Pandey, *op. cit.*

Distrib. : Common in waste places. Karad ; Punoli ; Sanbur.

CULTIVATED SPECIES

C. siamea Lam. Encycl. I : 648. 1785 ; Baker in Hook. f. Fl. Brit. India 2 : 264. 1878 ; Cooke, Fl. Pres. Bombay I : 454. 1958 (Repr. ed.) ; Pandey in J. Bombay Nat. Hist. Soc. 68 : 312, t. 1, f. 1-9. 1971.

Trees, 10-15 m high. Leaflets 7-10 pairs, ovate oblong, ca 6 × 2 cm, pilose beneath, base and apex obtuse. Flowers yellow in terminal panicles. Pods linear, ca 22 cm long.

Fls. & Frts. : April.

Illus. : Pandey, *op. cit.*

Distrib. : Occasional. Koyna.

C. surattensis Burm. f. Fl. Ind. 97. 1768 ; Backer & Bakhu. f. Fl. Java 1 : 538. 1963. **C. glauca** Lam. Encycl. I : 647. 1785 ; Baker in Hook. f.

Fl. Brit. India 2 : 265. 1878 ; Cooke, Fl. Pres. Bombay 1 : 453. 1958 (Repr. ed.) ; Pandey in J. Bombay Nat. Hist. Soc. 68 : 314, t. 1, f. 10-17. 1971.

Trees, 8-10 m high. Leaflets oblong elliptic, 2-4 × 1-2 cm. Flowers yellow in axillary racemes. Pods flat, 10-16 cm long.

Fls. & Frts. : October.

Illus. : Pandey, *op. cit.*

Distrib. : Occasional in waste places, also cultivated in gardens. Satara station road, Satara.

MEZONEVRON Desf.

Mezonevron cucullatum (Roxb.) Wight & Arn. Prodr. 283. 1834 ; Baker in Hook. f. Fl. Brit. India 2 : 258. 1878 ; Cooke, Fl. Pres. Bombay 1 : 441. 1958 (Repr. ed.). *Caesalpinia cucullata* Roxb. Fl. Ind. (Carey ed.) 2 : 358. 1832. 'Ragi'.

Climbers ; branches with recurved prickles. Pinnae 2-5 pairs ; leaflets ovate, 2-8 × 2-4 cm, base rounded, apex acute ; rhachis with small, recurved prickles. Flowers greenish-yellow ; pedicels jointed above the middle ; calyx yellow, leathery ; upper petal 2-lobed ; stamens 10, exerted. Pods oblong, ca 7.5 cm long, winged on dorsal surface.

Fls. & Frts. : December February.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 234. 1982.

Distrib. : An extensive climber at forest edges along ghats. Kumbharli ghat, Vasota.

MOULLAVA (Rheede) Adans.

Moullava spicata (Dalz.) Nicolson in Manilal, Bot. Hist. Hort. Malab. 184. 1980. *Wagatea spicata* Dalz. in Kew J. Bot. 3 : 89. 1851 ; Baker in Hook. f. Fl. Brit. India 2 : 273. 1878 ; Cooke, Fl. Pres. Bombay 1 : 443. 1958 (Repr. ed.). 'Waghati'.

Shrubs, scandant ; main rhachis with recurved prickles. Leaflets 5-6 pairs, oblong, 2-4 × 1-2 cm, base, rounded, apex obtuse, shining above, pale beneath. Flowers in 8-12 cm long spicate racemes ; rhachis

brown pubescent, armed with prickles ; calyx scarlet, densely pubescent ; petals spathulate. Pods 5–7 cm long, tomentose when young.

Fls. & Frts. : November - April.

Illus. : Talbot, For. Fl. Bombay Pres. and Sind 1 : 447, f. 252. 1909 ; Wight, Ic. t. 1995. 1853. (*Wagatea spicata*).

Distrib. : Common component of moist deciduous forests. Kisrude ; Keyna ; Kumbharli ghat ; Mahabaleshwar ; Mahabaleshwar Pratapgad ; Morgiri ; Shirshingi ; Umarkanchan.

CULTIVATED SPECIES

Parkinsonia aculeata L. Sp. Pl. 375. 1753 ; Baker in Hook. f. Fl. Brit. India 2 : 260. 1878 ; Cooke, Fl. Pres. Bombay 1 : 442. 1958 (Repr. ed.). ‘*Vedi - babhal*’.

Trees, 2–4 m high with sharp, woody spines. Leaflets numerous, minute, oblanceolate, up to 0.5 × 0.2 cm, base cuneate, apex obtuse. Flowers yellow in axillary racemes. Pods moniliform, 6–12 cm long.

Fls. & Frts. : April.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 445, f. 251. 1909.

Distrib. : Native of Tropical America, planted as a hedge plant. Girvi.

Saraca asoka (Roxb.) de Wilde in Blumea 15 : 393. 1967 ; Bole and Almeida in J. Bombay Nat. Hist. Soc. 78 : 564. 1981. *Jonesia asoca* Roxb. in Asiat. Res. 4 : 355. 1799. *S. indica* auct. non L. 1767 ; Baker in Hook. f. Fl. Brit. India 2 : 271. 1878 ; Cooke, Fl. Pres. Bombay 1 : 456. 1958 (Repr. ed.). ‘*Ashok*’.

Trees, 8–10 m high. Flowers orange yellow in dense axillary corymbs. Pods linear oblong. Seeds 4–6.

Fls. & Frts. : March – September.

Illus. : Wight, Ic. t. 206. 1839 (*Jonesia asoca* Roxb.) ; Bedd. op. cit.

Distrib. : Included on Bole and Almeida’s report from Bhilar estate near Mahabaleshwar.

Tamarindus indica L. Sp. Pl. 34. 1753 ; Baker in Hook. f. Fl. Brit. India 2 : 273. 1878 ; Cooke, Fl. Pres. Bombay 1 : 457. 1958 (Repr. ed.). ‘*Chinch*’.

Trees, 12 - 15 m high. Leaves pinnate : leaflets oblong, ca 1.5 × 0.5 cm, base and apex obtuse. Flowers yellow with pink streaks in axillary racemes. Pods oblong, thick, 5 - 9 m long.

Fls. & Frts. : July - December.

Illus. : Bedd. Fl. Sylv. t. 184. 1872.

Distrib. : Widely cultivated throughout the district. Morgiri ; Satara road.

MIMOSOIDEAE

1. Armed trees, climbers or undershrubs :

2. Stamens indefinite ... **ACACIA**

2. Stamens 8 - 10 :

3. Inflorescence bicoloured ; pods linear ... **DICROSTACHYS**

3. Inflorescence concolorous ; pods falcate ... **MIMOSA**

1. Unarmed trees or climbers :

4. Woody climbers ; pods more than 40 cm long, jointed ... **ENTADA**

4. Trees : pods not as above :

5. Stamens numerous ... **ALBIZIA**

5. Stamens 10 ... **ZYLLIA**

ACACIA Willd.

1. Erect shrubs or trees :

2. Flowers in heads :

3. Pods moniliform ... *A. nilotica* ssp. *indica*

3. Pods not moniliform ... *A. leucophloea*

2. Flowers in spikes :

4. Plants with white bark, pubescent ... *A. polyacantha*

4. Plants with reddish - brown bark, glabrous :

5. Stipular spines solitary, hooked ; gland at the base of lowest pair of leaflets ... *A. chundra*

5. Stipular spines in unequal pairs, straight, gland at the middle of petiole ... *A. horrida*

1. Scandent shrubs :

6. Pods thick, wrinkled when dry	...	<i>A. sinuata</i>
6. Pods not as above :		
7. Gland below the lowermost and uppermost pairs ; pods with a wavy margin	...	<i>A. torta</i>
7. Gland on the petiole above the middle and below the uppermost pair ; pods without a wavy margin	...	<i>A. pennata</i>

Acacia chundra (Roxb. ex Rottl.) Willd. Sp. Pl. 4 : 1078. 1806.
Mimosa chundra Roxb. ex Rottl. Ges. Naturf. Freunde Berlin Neue Schr. 4 : 207. 1803. *A. sundra* (Roxb.) DC. Prodr. 2 : 458. 1825 ; Baker in Hook. f. Fl. Brit. India 2 : 295. 1878. *A. catechu* Willd. var. *sundra* (DC.) Prain in J. Asiat. Soc. Beng. 66 : 508. 1898 ; Cooke, Fl. Pres. Bombay 1 : 477. 1958. (Repr. ed.). 'Lal - khair'.

Trees, 9-12 m high. Leaves 2 pinnate ; stipular spines from a broad triangular base ; pinnae 10 pairs ; leaflets sessile, 18-22 pairs, elliptic, ca 0.5 × 0.2 cm, base unequal, apex subacute. Flowers yellow. Pods 5-7 cm long, brown, shining.

Fls. & Frts. : March November.

Illus. : Bedd. Fl. Sylv. t. 50. 1870.

Distrib. : Common in deciduous forests. Bamnoli ; Kiwal ; Satara ; Wagheri.

This species is often confused with *A. catechu* Willd. from which it differs in having pubescent rhachis, calyx and corolla.

A. horrida (L.) Willd. Sp. Pl. 4 : 1082. 1806 ; Hillcoat & Brenan in Kew Bull. 1958 : 40. 1958. *Mimosa horrida* L. Sp. Pl. 521. 1753. *A. latronum* (L. f.) Willd. Sp. Pl. 4 : 1077. 1806 ; Baker in Hook. f. Fl. Brit. India 2 : 296. 1878 ; Cooke, Fl. Pres. Bombay 1 : 478. 1958 (Repr. ed.). 'Dev babhal'.

Shrubs or small trees ca 6 m high ; smaller stipular spines 2.5 cm long, larger 5-6 cm long, hollow, shining. Pinnae 2-5 pairs ; leaflets 6-13 pairs, elliptic, base truncate, apex subobtuse. Flowers creamish in lax spikes. Pods falcate, dark brown.

Fls. & Frts. : October March.

Distrib. : Rare in scrub jungles. Mahabaleshwar, Chibber s. n.

Acacia leucophloea Willd. Sp. Pl. 4 : 1083. 1806 ; Baker in Hook. f. Fl. Brit. India 2 : 294. 1878 ; Cooke, Fl. Pres. Bombay 1 : 475. 1958 (Repr. ed.). 'Hiwar'.

Trees, 10-15 m high with a yellowish bark. Pinnae 5-10 pairs; leaflets subsessile, 12-18 pairs, linear-oblong, up to 0.3×0.1 cm; spines 1.0-2.5 cm long, pubescent. Flowers creamish, sessile. Pods 6-9 \times 1 cm clothed with brown tomentum.

Fls. & Frts. : September April.

Illus. : Maheshwari, Ill. Fl. Delhi f. 80. 1966.

Distrib. : Common in scrub forests. Medba ; Shirgaon ghat.

A. nilotica (L.) Willd. ex Del. ssp. *indica* (Bth.) Brenan in Kew Bull. 1957 : 84. 1957. *Mimosa nilotica* L. Sp. Pl. 521. 1753. *A. arabica* (Lam.) Willd. Sp. Pl. 4 : 1085. 1806 ; Baker in Hook. f. Fl. Brit. India 2 : 293. 1878 ; Cooke, Fl. Pres. Bombay 1 : 472. 1958 (Repr. ed.).

Trees, 8-10 m high with dark brown bark. Pinnae 4-6 pairs; leaflets sessile, 10-20 pairs, linear-oblong, ca 0.5×0.1 cm, base oblique, apex rounded; stipular spines straight, sharp, 3-7 cm long. Flowers yellow in axillary paniculate heads. Pods 7-10 cm long, with grey pubescence.

Fls. & Frts. : April July.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 480, f. 272. 1909.

Distrib. : Frequent in plains of scrub forests, also planted along roadsides. Mahuli ; Koyna ; Medba.

A. pennata (L.) Willd. Sp. Pl. 4 : 1090. 1806 ; Baker in Hook. f. Fl. Brit. India 2 : 297. 1878 ; Cooke, Fl. Pres. Bombay 1 : 480. 1958 (Repr. ed.). *Mimosa pennata* L. Sp. Pl. 522. 1753. 'Shembi'.

Shrubs, scandent. Pinnae 8-12 pairs; leaflets sessile, 40-50 pairs, elliptic, ca 0.5×0.1 cm, base truncate, apex acute, margin ciliate. Flowers white in terminal panicles. Pods oblong, 6-8 cm long, shortly stalked.

Fls. & Frts. : June August.

Distrib. : Rare in deciduous forests in open areas and along ghats. Fitzgerald ghat, Bole & Almeida (BLAT) ; Koyna, Kochhar 153516.

Acacia polyacantha Willd. Sp. Pl. 4 : 1079. 1806 ; Brenan in Kew Bull. 1956 : 195. 1956. *A. suma* (Roxb.) Buch. Ham. ex Voigt, Hort. Suburb. Calc. 260. 1845 ; Baker in Hook. f. Fl. Brit. India 2 : 294. 1878 ; Cooke, Fl. Pres. Bombay 1 : 476. 1958 (Repr. ed.). 'Sonkhairi'.

Trees, 10–12 m high. Pinnae 14–16 pairs ; leaflets sessile, 40–50 pairs, linear, *ca* 0.5 × 0.2 cm, apex subacute, margin ciliate. Flowers creamish white in 10–12 cm long spikes ; calyx tomentose. Pods 5–15 cm long, apiculate.

Fls. & Frts. : February–March.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 239. 1982.

Distrib. : Occasional in dry deciduous forests. Karanjewadi ; Satara.

A. sinuata (Lour.) Merr. in Trans. Amer. Phil. Soc. 24 : 186. 1935 ; Saldanha & Nicolson, Fl. Hassan Dist. 229. 1976. *Mimosa sinuata* Lour. Fl. Cochinch. 653. 1790. *A. concinna* (Willd.) DC. Prodr. 2 : 464. 1825 ; Baker in Hook. f. Fl. Brit. India 2 : 296. 1878 ; Cooke, Fl. Pres. Bombay 1 : 479. 1958 (Repr. ed.). 'Shikekai'. (Fig. 16).

Shrubs ; branches yellowish pubescent. Pinnae 7–8 pairs ; leaflets subsessile, 15–20 pairs, linear, *ca* 0.5 × 0.2 cm ; base oblique, apex apiculate ; rhachis with a gland below the middle. Flowers creamish in globose heads. Pods oblong, 7–10 cm long.

Fls. & Frts. : March–July.

Distrib. : Common in deciduous forests. Keigbar ghat ; Kumbharli ghat ; Mahabaleshwar ; Research nursery ; Koyna ; Satara ; Shirshingi ; Wada below Mahabaleshwar.

A. torta (Roxb.) Craib in Kew Bull. 1915 : 410. 1915. *Mimosa torta* Roxb. Fl. Ind. (Carey ed.) 2 : 566. 1832. *A. intsia* auct. non Willd. 1806 ; Baker in Hook. f. Fl. Brit. India 2 : 297. 1878 ; Cooke, Fl. Pres. Bombay 1 : 479. 1958 (Repr. ed.).

Shrubs, scandent with young branches pubescent ; Pinnae 8–10 pairs, 3–7 cm long ; leaflets subsessile, 12–20 pairs, oblong, up to 1.0 × 0.3 cm, base truncate, apex acute. Flowers yellowish white in globose heads. Pods oblong, 9–16 cm long.

Fls. & Frts. : April–November.

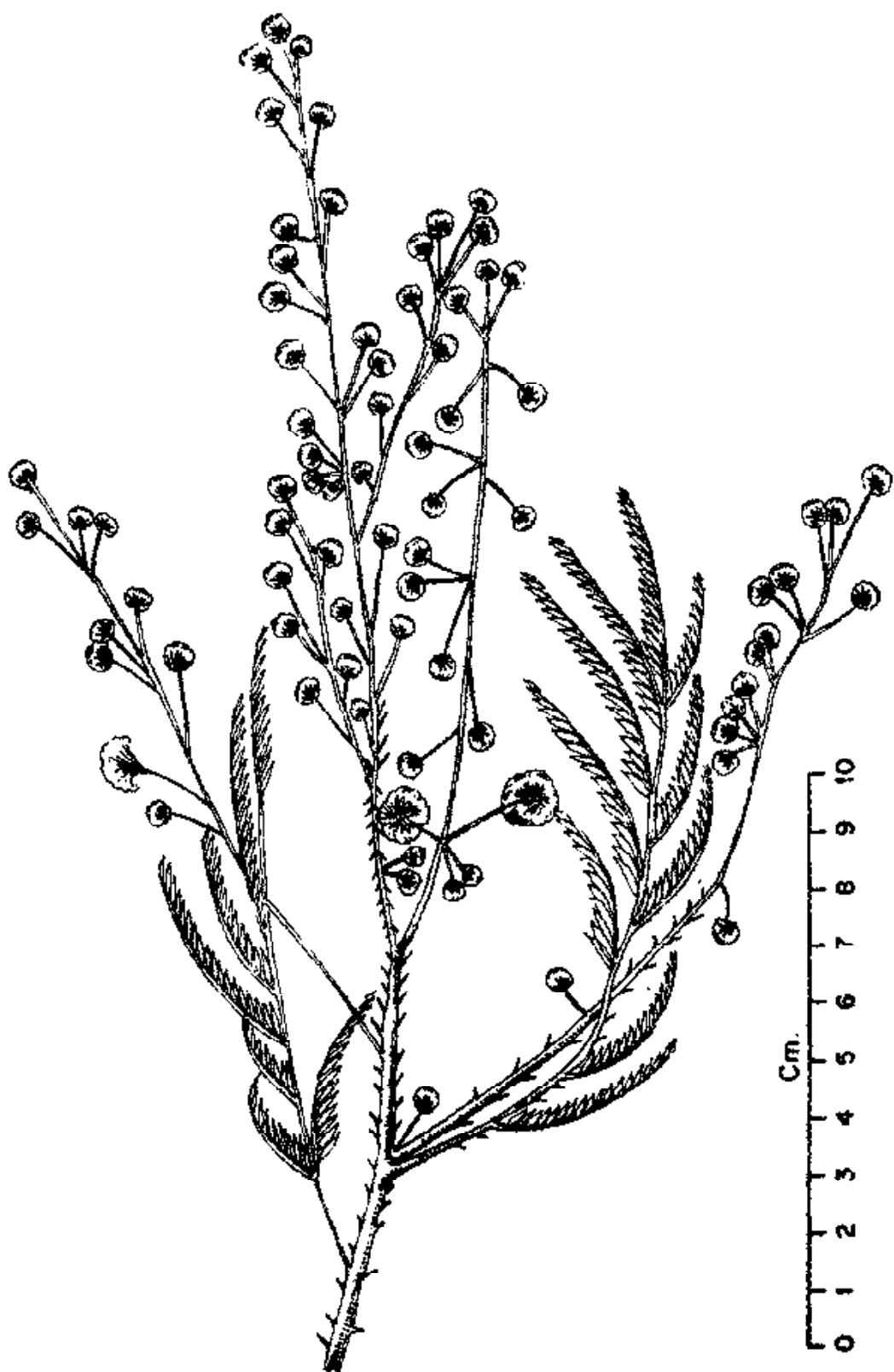


Fig. 16. *Acacia sinuata* (Lour.) Merr.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 493, f. 297. 1909.

Distrib. : Common component of deciduous forests. Ambeghar ; Fitzgerald ghat ; Ghotil ; Karanjewadi ; Research nursery ; Koyna ; Mahabaleshwar ; Panchgani.

CULTIVATED SPECIES

Acacia auriculiformis A. Cunn. ex Bth. in Hook. London J. Bot. 1 : 377. 1877 ; Chatterjee in Bull. Bot. Soc. Beng. 12 : 107. 1958 ; Maheshwari, Delhi 81, f. 81. 1966.

Trees, *ca* 9 m high ; branches drooping. Leaves falcate, 7–12 × 2–3 cm, base attenuate, apex obtuse. Flowers yellowish in axillary fl. 6–8 cm long spikes. Pods 8–10 cm long, coiled.

Fls. & Frts. : May December.

Illus. : Maheshwari, *op. cit.*

Distrib. : Introduced from new Guinea and Australia, planted mostly in drier parts of the district. Karad ; Kunoli ; Pimpodshi ; Rasati.

ALBIZIA Durazz.

- | | | |
|---|-----|------------------------|
| 1. Pinnae 10–14 pairs ; stipules large, leafy | ... | <i>A. chinensis</i> |
| 1. Pinnae 2–5 pairs ; stipules absent : | | |
| 2. Young branches yellowish pubescent ; flowers pedicellate | ... | <i>A. amara</i> |
| 2. Young branches grey pubescent ; flowers sessile | ... | <i>A. odoratissima</i> |

Albizia amara (Roxb.) Boiv. Encycl. 19. Siecle 2 : 34. 1838 ; Baker in Hook. f. Fl. Brit. India 2 : 301. 1878 ; Cooke, Fl. Pres. Bombay 1 : 483. 1958 (Repr. ed.). *Mimosa amara* Roxb. Pl. Cor. t. 122. 1799. ‘*Tugli*’.

Trees, 8–10 m high. Leaves 2 pinnate ; rachis pubescent, glands between the upper most pair of pinnae and in the middle of the petiole ; leaflets 10–30 pairs, linear oblong, base subacute, apex obtuse, glabrous above, puberulous beneath. Flowers yellow in subsessile heads. Pods large, flat, 7–10 cm long.

Fls. & Frts. : April June.

Illus. : Roxb., *op. cit.* ; Bedd. Fl. Sylv. t. 61. 1870.

Distrib. : Rare in dry deciduous forests. Shirgaon ghat, Bhide 1054.

Albizia chinensis (Osb.) Merr. in Amer. J. Bot. 3 : 575. 1916. *Mimosa chinensis* Osb. Dag. Ostind. Resa 233. 1757. *A. stipulata* (Roxb.) Boiv. Encycl. 19 Siecle 2 : 33. 1838 ; Baker in Hook. f. Fl. Brit. India 2 : 300. 1878 ; Cooke, Fl. Pres. Bombay 1 : 483. 1958 (Repr. ed.). 'Udal'.

Trees, ca 6–10 m high : young branches golden-yellow pubescent. Leaflets sessile, 23–35 pairs, elliptic-acute, 0.4–0.7 × 1.5–0.3 cm, base unequal, apex acute, pubescent. Flowers white in paniculate heads. Pods 12–15 cm long, brown.

Fls. & Frts. : February June.

Illus. : Bedd. Fl. Sylv. t. 55. 1870. [*A. stipulata* (Roxb.) Boiv.].

Distrib. : Common at higher elevation in semi-evergreen forests. Fitzgerald ghat ; Kisrude ; Koyna ; Pratapgad ; Shirshingi.

A. odoratissima (L.f.) Bth. in Hook. London J. Bot. 3 : 88. 1844 ; Baker in Hook. f. Fl. Brit. India 2 : 299. 1878 ; Cooke. Fl. Pres. Bombay 1 : 482. 1958 (Repr. ed.). *Mimosa odoratissima* L. f. Suppl. 437. 1781. 'Kala-siras'.

Trees, ca 9–18 m high. Pinnae 6–20 cm long ; leaflets 4–8 pairs, oblong, 1.5–5.0 × 1–3 cm, base unequal, apex rounded, glabrous above, grey pubescent beneath when young. Flowers white in large panicles. Pods oblong, 12–17 cm long.

Fls. & Frts. : May December.

Illus. : Bedd. Fl. Sylv. t. 54. 1870 ; Talbot, For. Fl. Bombay Pres. & Sind 1 : 498, f. 283. 1909.

Distrib. : Frequent in deciduous forests. Ghotil ; Karanjewadi ; Koyna ; Shirshingi.

CULTIVATED SPECIES

A. lebbeck (L.) Bth. in Hook. London J. Bot. 3 : 87. 1844 ; Baker in Hook. f. Fl. Brit. India 2 : 298. 1878 ; Cooke, Fl. Pres. Bombay 1 : 481. 1958 (Repr. ed.). *Mimosa lebbeck* L. Sp. Pl. 516. 1753.

Trees, 12–18 m high. Leaflets 3–5 pairs, elliptic-oblong, 2–5 × 1–3 cm, base obtuse, apex apiculate. Flowers greenish-white in globose heads. Pods linear-oblong, yellowish.

Fls. : April July.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 495, f. 280 & 281. 1909.

Distrib. : Deciduous trees, cultivated in gardens and planted along roadsides as avenue trees. Dhebewadi.

Albizia lucida (Roxb.) Benth. in Hook. London J. Bot. 3 : 86. 1844 ; Baker in Hook. f. Fl. Brit. India 2 : 299. 1878 ; Cooke, Fl. Pres. Bombay 1 : 484. 1958 (Repr. ed.). *Mimosa lucida* Roxb. Fl. Ind. (Carey ed.) 2 : 544. 1832.

Trees, 12–15 m high. Leaflets oblong, acute, membranous. Flowers white in corymbs. Pods 15–20 cm long, brown.

Fls. & Frts. : April May.

Distrib. : Cultivated as an ornamental tree. Lingmala road, Mahabaleshwar.

DICHROSTACHYS (DC.) Wight & Arn. (*nom. cons.*)

Dichrostachys cinerea (L.) Wight & Arn. Prodr. 271. 1834 ; Baker in Hook. f. Fl. Brit. India 2 : 288. 1878 ; Cooke, Fl. Pres. Bombay 1 : 468. 1958 (Repr. ed.). *Mimosa cinerea* L. Sp. Pl. 520. 1753.

Shrubs, 4–5 m high, thorny. Leaves 2 pinnate, 4–5 cm long ; rhachis pubescent, glands between each pair of the pinnae ; pinnae 10 pairs ; leaflets sessile, linear, up to 0.3 × 0.1 cm, base obtuse, apex acute. Flowers yellow in upper half, red in lower half in solitary or paired spikes. Pods 5 cm long, dark brown.

Fls. & Frts. : April June.

Illus. : Wight, Ic. t. 357. 1840.

Distrib. : Rare in scrub forests. Conspicuous because of its two coloured flowers. Satara, Vasavada 5038.

ENTADA Adans. (*nom. cons.*)

Entada pursaetha DC. Mem. Legum. 12. 1825 ; Brenan in Kew Bull. 1955 : 164. 1955 & 20 : 363. 1966. Nayar in Bull. Bot. Surv. India 21 :

229, pl. 1. 1979. *E. scandens* non Bth. 1841; Baker in Hook. f. Fl. Brit. India 2 : 287. 1878; Cooke, Fl. Pres. Bombay 1 : 465. 1958 (Repr. ed.). 'Garambi'.

Lianas. Leaves 2 pinnate; rhachis terminating into bifid tendrils; leaflets 3 pairs, oblong, base cuneate, apex emarginate. Flowers yellow in 20–25 cm long axillary spikes. Pods 1.5 m long, woody. Seeds orbicular, up to 4 cm across, brown, shining.

Fls. & Frts. : April October.

Distrib. . Rare. Shirshingi, Kochhar 153047, 153661; Zadoli, 167689.

Notes : Largest climber in the district in semi-evergreen forest. Sometimes it is misidentified as *E. scandens* Bth. which does not occur in India. The joints of the pod break away leaving an empty frame.

It is on the verge of depletion due to large scale habitat disturbances, resin used in local medicine and loss of seeds due to decay and ant activity which are easily attracted to sugary exudate and gummy substances in the bark and pods (Nayar, *op. cit.*).

MIMOSA L.

Mimosa hamata Willd. Sp. Pl. 4 : 1033. 1806; Baker in Hook. f. Fl. Brit. India 2 : 291. 1878; Cooke, Fl. Pres. Bombay 1 : 471. 1958 (Repr. ed.).

Shrubs, 3–5 m high with straight or curved prickles. Leaflets 6–10 pairs, ovate oblong, apex mucronate. Flowers pink in axillary and terminal heads. Pods pubescent, prickly on sutures.

Fls. & Frts. : March.

Illus. : Maheshwari, Ill. Fl. Delhi f. 76. 1966.

Notes : Represented by a single collection from the district by Chibber deposited at BLAT.

CULTIVATED SPECIES

M. pudica L. Sp. Pl. 518. 1753; Baker in Hook. f. Fl. Brit. India 2 : 291. 1878; Cooke, Fl. Pres. Bombay 1 : 470. 1958 (Repr. ed.). 'Lajahu'.

Herbs; branches diffuse, prickly and clothed with long bristles from bulbous bases. Pinnae 2 pairs; leaflets 14 - 20 pairs, elliptic-oblong, overlapping. Flowers pink in globose heads. Pods oblong, jointed, bristly along margins.

Fls. & Frts. : July August.

Distrib. : Frequent near cultivated fields and along waste places. Nauja ; Sanbur.

XYLIA Bth.

Xyilia xylocarpa (Roxb.) Taub. Centralbl. 47 : 397. 1891. *Mimosa xylocarpa* Roxb. Pl. Cor. t. 100. 1798. *X. dolabriformis* Bth. in Hook. J. Bot. 4 : 417. 1842 ; Baker in Hook. f. Fl. Brit. India 2 : 286. 1878 ; Cooke, Fl. Pres. Bombay 1 : 465. 1958 (Repr. ed.). 'Jambha'.

Trees, 10 - 20 m high; young branches tomentose. Leaflets 2 - 4 pairs, oblong, 4 - 6 × 1.5 - 2.0 cm, base rounded, apex acute. Flowers yellowish white in dense heads. Pods oblong, woody, upto 12 cm long, tomentose.

Fls. & Frts. : April.

Illus. : Roxb. *op. cit.*

Distrib. : Rare. Koyna, Kochhar 153117.

CULTIVATED SPECIES

Prosopis cineraria (L.) Druce in Rep. Bot. Soc. Exch. Cl. Brit. Isles 3 : 422. 1914. *Mimosa cineraria* L. Sp. Pl. 517. 1753 ('*cinerea*'). *P. spicigera* L. Mant. 68. 1767 ; Baker in Hook. f. Fl. Brit. India 2 : 288. 1878 ; Cooke, Fl. Pres. Bombay 1 : 467. 1958 (Repr. ed.). 'Shami'.

Trees, ca 10 m high, armed. Leaflets subsessile, 12 - 20 pairs, oblong, base unequal, apex obtuse. Flowers yellow in axillary spikes. Pods cylindric, turgid, 10 - 15 cm long.

Fls. & Frts. : July.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 1 : 472, f. 267. 1909. (*Prosopis spicigera*).

Distrib. : Planted near temples as a sacred tree. Khatav.

ROSACEAE

1. Armed shrubs	...	RUBUS
1. Unarmed trees	...	PRUNUS

PRUNUS L

Prunus ceylanica (Wight) Miq. Fl. Ind. Bat. 1, 1 : 366. 1855 ; Kalkman in Blumea 13 : 52. 1965. *Polydonta ceylanica* Wight, Ill. 1 : 203. 1840 (*Polyodontia*). *Pygeum acuminatum* Colebr. in Trans. Linn. Soc. 12 : 360, t. 18. 1818 ; Hook. f. Fl. Brit. India 2 : 318. 1878. *P. wightianum* Bl. ex Muell. in Walp. Ann. 4 : 642. 1857 ; Hook. f. *op. cit.* 319 ; Cooke, Fl. Pres. Bombay 1 : 487. 1958 (Repr. ed.). *P. gardneri* Hook. f. *op. cit.* 321 ; Cooke, *op. cit.* 488. 'Daka'.

Trees, *ca* 15 m high. Leaves oblong - lanceolate, 5 - 10 × 3 - 5 cm, coriaceous, base unequal, apex caudate, glandular at the base of the petiole. Flowers creamish in axillary, 2 - 3 cm long, pubescent racemes. Fruits broader than long, up to 1.8 × 2.5 cm, bilobed.

Fls. & Frts. : October - March.

Illus. : Colebr. *op. cit.*

Distrib. : Common along ghats in semi-evergreen forests. Mahabaleshwar.

CULTIVATED SPECIES

P. amygdalus Batsch, Bot. Nat. Med. 3 : 101. 1812 ; Cooke, Fl. Pres. Bombay 1 : 491. 1958 (Repr. ed.), 'Badam'.

Trees, *ca* 7 m high. Leaves oblong - lanceolate, serrate. Flowers pink, solitary, axillary. Fruits oblong - ovoid, pubescent.

Fls. : October - November.

Distrib. : Rare under cultivation. Mahabaleshwar, Bole 1248 (BLAT).

P. persica (L.) Batsch. Beitr. Entw. Pragn. Gesch. Natur. 30. 1801 ; Hook. f. Fl. Brit. India 2 : 313. 1878 ; Cooke, Fl. Pres. Bombay 1 : 492. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 78 : 566. 1981. *Amygdalus persica* L. Sp. Pl. 472. 1753. 'Ahi'.

Trees, up to 8 m high. Leaves oblong, lanceolate, acuminate, margin crenate serrate. Flowers pink, sessile, solitary. Drupes red, fleshy.

Distrib. : Cultivated for edible fruits at Mahabaleshwar.

RUBUS L.

1. Leaves simple	...	<i>R. moluccanus</i>
1. Leaves 3 - foliolate	...	<i>R. ellipticus</i> var. <i>hirta</i>

***Rubus ellipticus* J.E. Sm. var. *hirta* Hook. f. Fl. Brit. India 2 : 336. 1878 ; Cooke, Fl. Pres. Bombay 1 : 489. 1958 (Repr. ed.).**

Shrubs, ascending, 2-3 m high. Leaflets broadly elliptic or obovate, base and apex rounded, margin serrate-dentate. Flowers white in axillary and terminal panicles. Fruits globose, golden yellow.

Notes : Included on Talbot's report from Mahabaleshwar.

***R. moluccanus* L. Sp. Pl. 1197. 1753 ; Hook. f. Fl. Brit. India 2 : 330. 1878 ; Cooke, Fl. Pres. Bombay 1 : 488. 1958 (Repr. ed.). 'Black-berry'.**

Shrubs, subscandent, branches densely villous. Leaves cordate, 5-8 x 4-8 cm, 5 nerved, tomentose and prickly on the midrib beneath. Flowers white in axillary and terminal panicles; bracts pectinate; calyx densely silky; petals obovate. Fruits globose, reddish.

Fls. & Frts. : May.

Illus. : Wight, Ic. t. 225. 1839.

Distrib. : Rare in ravines below old Mahabaleshwar temple. Old Mahabaleshwar, Cooke op. cit.

CULTIVATED SPECIES

***R. niveus* Thunb. Dissert. 9, f. 3. 1813. *R. lasiocarpus* J. E. Sm. in Rees, Cyclop. 30 : 6. 1819 ; Hook. f. Fl. Brit. India 2 : 339. 1878 ; Cooke, Fl. Pres. Bombay 1 : 489. 1958 (Repr. ed.). 'Raspberry'.**

Shrubs, scandent, ca 3 m long. Leaflets ovate, acute, pubescent above, tomentose beneath. Flowers pink in axillary and terminal corymbs, pubescent. Drupes dark purple.

Fls. & Frts. : September November.

Illus. : Wight, Ic. t. 232. 1839.

Distrib. : Extensively cultivated for edible fruits. Mahabaleshwar ; Panchgani.

CULTIVATED SPECIES

Fragaria vesca L. Sp. Pl. 494. 1753 ; Hook. f. Fl. Brit. India 2 : 344. 1878 ; Cooke, Fl. Pres. Bombay 1 : 492. 1958 (Repr. ed.). 'Strawberry'.

Herbs. Leaves 3 foliolate ; leaflets rhomboid-ovate, glabrous above, silky beneath. Flowers reddish in clusters. Achenes numerous, minute, purple.

Fls. & Frts. : March June.

Distrib. : Cultivated along the Venna river banks for edible fruits. Mahabaleshwar.

Pyrus communis L. Sp. Pl. 479. 1753 ; Hook. f. Fl. Brit. India 2 : 374. 1878 ; Cooke, Fl. Pres. Bombay 1 : 492. 1958. (Repr. ed.). 'Pear'.

Trees. Leaves oblong-ovate, entire or lobed. Flowers white in terminal corymbs. Fruits pyriform.

Distrib. : Common ornamental plant. Mahabaleshwar ; Taldeo.

P. malus L. Sp. Pl. 479. 1753 ; Hook. f. Fl. Brit. India 2 : 373. 1878 ; Cooke, Fl. Pres. Bombay 1 : 492. 1958. (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 78 : 567. 1981. 'Apple'.

Trees, ca 9 m high. Leaves ovate, acuminate, tomentose beneath. Flowers pink. Fruits globose.

This species is reported as being cultivated at Mahabaleshwar by Bole & Almeida (*op. cit.*) and at Panchgani by Cooke (*op. cit.*) however, it does not bear fruits.

P. pyrifolia Nakai var. *culta* Nakai in Bot. Mag. Tokyo 40 : 564. 1926 ; Maheshwari, Fl. Delhi 153. 1963.

Trees, 5 - 6 m high. Leaves oblong ovate, acute, 6 - 10 x 6.0 - 7.5 cm. Flowers white. Fruits woody, 2 - 3 cm long.

Rosa cathayensis Bailey, Man. Cult. Pl. 533. 1949.

Climbers, large, prickly. Flowers pink in axillary clusters, fragrant.

Distrib. : Common ornamental plant. Mahabaleshwar ; Taldeo.

Rosa multiflora Thunb. Fl. Jap. 214. 1784 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 78 : 567. 1981. 'Jangli - gulab'.

Climbers. Leaflets 5-9, obovate, acuminate. Flowers pink, fragrant in axillary, dense clusters.

Fls. : Throughout the year.

Distrib. : Common ornamental plant. Mahabaleshwar ; Parut.

VAHLIACEAE

VAHLIA Thunb.

Vahlia digyna (Retz.) O. Ktze. Rev. Gen. Pl. 3 : 227. 1891 ; Sant. in Rec. Bot. Surv. India 16 (1) : 87. 1968 (3rd Rev. ed.). *Oldenlandia digyna* Retz. Obs. Bot. 4 : 23. 1786. *V. viscosa* Roxb. Fl. Ind. (Carey ed.) 2 : 89, 1832 ; C. B. Cl. in Hook. f. Fl. Brit. India 2 : 399. 1878 ; Cooke, Fl. Pres. Bombay 1 : 493. 1958 (Repr. ed.).

Herbs, erect, pubescent. Leaves opposite, subsessile, oblong lanceolate, up to 2 × 0.5 cm. Flowers greenish, axillary, solitary ; calyx 0.3 cm long, glandular hairy ; lobes 5, triangular, shorter than the tube. Capsules ovoid, up to 0.3 cm long.

Fls. & Frts. : January.

Illus. : Wight, Ic. t. 563. 1842.

Distrib. : Rare along river bank. Koyna, Kochhar 158439.

CRASSULACEAE

KALANCHOE Adans.

1. Flowers white :

2. Flowers pure white or with a greenish tinge ;
eglandular

...

K. bheidel

2. Flowers white with a pinkish tinge ; pedicels and calyx glandular - hairy ... *K. olivacea*
1. Flowers yellow ;
3. Glandular herbs ; calyx divided half way ... *K. lanceolata*
3. Glabrous herbs ; calyx divided to the base ;
4. Flowers in dense paniculate cymes ... *K. integra*
4. Flowers in trichotomous corymbose cymes ... *K. floribunda*

***Kalanchoe bhidei* T. Cooke, Fl. Pres. Bombay 1 : 467. 1903 & 1 : 497. 1958 (Repr. ed.) ; Sandhya Deshpande & Sharma in Bull. Bot. Surv. India 26 : 238 - 239. 1986.**

Herbs upto 1 m high with a reddish tinge. Leaves elliptic, 5.0 - 7.5 × 2.0 - 4.5 cm, base tapering, coarsely crenate. Flowers in dense cymose panicles ; bracts linear - lanceolate, up to 0.4 cm long ; calyx deeply divided ; lobes triangular, acute, glabrous ; petals oblong - obovate, acute ; hypogynous scales linear, acute, ca 0.3 cm long. Follicles membranous.

Fls. & Frts. November.

Illus. : Gandhi in Saldanha & Nicolson, Fl. Hassan Dist. 208, f. 46 A. 1976.

Distrib. : Shirgaon ghat between Wathar and Wai, *Bhide* 1243, 166455.

Notes : Cooke described this species (*op. cit.*) based on Bhide's collection in 1902. It escaped the attention of subsequent collectors. During the present studies, it is collected from the type locality after a lapse of 80 years. It is frequent in Karnataka (Sharma *et al.* 1984), but appears to be rare in Maharashtra.

***K. floribunda* Wight & Arn. var. *glabra* C.B. Cl. in Hook. f. Fl. Brit. India 2 : 415. 1878 ; Cooke, Fl. Pres. Bombay 1 : 496. 1958 (Repr. ed.).**

Herbs, ca 1 m high. Leaves elliptic - spatulate, up to 10 cm long, base tapering, apex rounded. Cymes 8 - 10 cm long ; bracts linear - lanceolate ; corolla tube inflated, lobes broadly lanceolate, acute ; hypogynous scales ca 0.2 cm long.

Fls. & Frts. : November.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 254. 1982.

Distrib. : Occasional succulent perennials along hills near Satara, Pasarni ghat.

Kalanchoe integra (Medic.) O. Ktze. Rev. Gen. Pl. 1 : 221. 1981. *Cotyledon integra* Medic. in Acta Acad. Thead. Palat. 3 : 200, t. 9. 1775. *K. spathulata* DC. Pl. Hist. Succ. t. 65. 1811 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 414. 1878 ; Cooke, Fl. Pres. Bombay 1 : 496. 1958 (Repr. ed.).

Herbs, upto 1 m high. Leaves spatulate oblong, 7-12 × 3.0-5.5 cm. Petals broadly lanceolate, acute; hypogynous scales narrowly linear, ca 0.2 cm long. Follicles ca 1 cm long.

Fls. & Frts. : April.

Distrib. : Rare, robust herbs. Panchgani, Puri 14448, Woodrow (Cooke, op. cit.).

K. lanceolata (Forsk.) Pers. Syn. Pl. 1 : 446. 1805. *Cotyledon lanceolata* Forsk. Aeg. Arab. 89. 1775. *K. glandulosa* Hochst. in A. Rich. Fl. Abyss. 1 : 312. 1947 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 414. 1878 ; Cooke, Fl. Pres. Bombay 1 : 495. 1958 (Repr. ed.).

Herbs, 30-60 cm high. Radical leaves ovate to obovate lanceolate, 10-15 cm long; caudine obovate, amplexicaul, pubescent, upper ones lanceolate to oblanceolate, densely glandular pubescent. Flowers in paniculate cymes. Carpels 4.

Notes : Included on Woodrow's report from Satara.

K. olivacea Dalz. & Gibbs. Bomb. Fl. 313. 1861 ; Cooke, Fl. Pres. Bombay 1 : 496. 1958 (Repr. ed.).

Herbs, ca 30 cm high. Leaves elliptic-lanceolate, 5-11 × 2-5 cm, irregularly crenate. Flowers in terminal paniculate cymes. Carpels 4, ca 0.5 cm long.

Fls. & Frts. : October November.

Distrib. : Rare succulent on rocks. Mahabaleshwar, Acland 427 (BLAT) ; Panchgani, Bhide 1067, Sedgwick 4694.

CULTIVATED SPECIES

K. laciniata (L.) Pers. Syn. Pl. 446. 1805 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 415. 1878 ; Cooke, Fl. Pres. Bombay 1 : 497. 1958 (Repr. ed.). *Cotyledon laciniata* L. Sp. Pl. 430. 1753.

Herbs, *ca* 1 m high, pubescent. Leaves variable in shape and size. Flowers yellow in paniculate cymes.

Illus. : Wight, Ic. t. 1158. 1846.

Notes : Included on Gibson's report from Pandavgarh near Wai.

Kalanchoe pinnata (Lam.) Pers. Syn. Pl. 446. 1905. *Cotyledon pinnata* Lam. Encycl. 2 : 141. 1786. *Bryophyllum calycinum* Salisb. Parad. London. t. 3 1805 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 413. 1878 ; Cooke, Fl. Pres. Bombay 1 : 494. 1958 (Repr. ed.). 'Ghaipat'.

Herbs, succulent, stem obtusely 4 - angled, thick. Leaves 3.- 5 foliolate ; leaflets elliptic, crenate. Flowers reddish purple in lax panicles.

Fls. : April.

Illus. : Salisb, *op. cit.*

Distrib. : Frequent near forest clearings and marshy places. Mahabaleshwar ; Old Mahabaleshwar ; Shirshingi ; Wai.

DROSERACEAE

DROsera L.

- | | | |
|---|-----|---------------------|
| 1. Acaulescent herbs ; leaves radical, spatulate ;
capsules 5 - valved | ... | <i>D. burmannii</i> |
| 1. Caulescent herbs, leaves cauline, linear ; capsules
3 - valved | ... | <i>D. indica</i> |

Drosera burmannii Vahl, Symb. Bot. 3 : 50. 1794 ; van Steenis, Fl. Males. 4 : 329. 1953 ; C.B.Cl in Hook. f. Fl. Brit. India 2 : 424. 1878 ; Cooke, Fl. Pres. Bombay 1 : 499. 1958 (Repr. ed.) ; Chavan *et al.* in M.V.M. Patrika 8 : 7. 1973.

Herbs, erect, glandular. Leaves rosulate, upto 1 × 0.5 cm, upper surface with gland tipped hairs. Flowers white, 5 merous in secund racemes ; styles 5. Capsules sub-globose. Seeds many, black, reticulate.

Fls. & Frts. : December February.

Illus. : Wight, Ic. t. 944. 1844 ; Ramamoorthy in Saldanha & Nicolson, Fl. Hassan Dist. f. 31 B. 1976.

Notes : Insectivorous herbs ; easily distinguishable because of the reddish leaves. Included on the authority of Chavan *et al.* (*op. cit.*) who reported it from Kas, Satara.

Drosera indica L. Sp. Pl. 282. 1753 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 424. 1978 ; Cooke, Fl. Pres. Bombay 1 : 499. 1958 (Repr. ed.).

Herbs, 3-5 cm high, glandular hairy. Leaves upto 1.5 cm long with gland tipped tentacles in upper half. Flowers bluish pink, leaf-opposed ; styles 3. Seeds minute, many, reticulate.

Fls. & Frts. : August November.

Illus. : Ramamoorthy in Saldanha & Nicolson, Fl. Hassan Dist. f. 31A. 1976.

Distrib. : Slender insectivorous herbs in wet places and among grasslands. Machutar forest ; Mahabaleshwar.

HALORAGACEAE

MYRIOPHYLLUM L.

Myriophyllum oliganthum (Wight & Arn.) F. v. Muell. Fragm. Phyt. Austr. 10 : 54. 1876 ; van der Meijden in Blumea 17 : 308. 1969. *Haloragis oligantha* Wight & Arn. Prodr. 338. 1834. *M. intermedium* Wight, Ill. 2 : 23, t. 102 excl. f. 8. 1850 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 433. 1878, *excl. syn.* ; Cooke, Fl. Pres. Bombay 1 : 500. 1958 (Repr. ed.).

Herbs, aquatic ; stem reddish. Leaves whorled, linear, acute upto 1.3 cm long ; submerged leaves pectinately dissected. Flowers pink, sessile, unisexual, solitary or in fascicles. Fruits oblong, 0.4 cm long, 4-seeded.

Fls. & Frts. : August September.

Illus. : Wight, Ic. t. 1061. 1846. (*Haloragis oligantha* Wight & Arn.).

Distrib. : Frequent at Mahabaleshwar near Venna lake.

RHIZOPHORACEAE

CARALLIA Roxb.

Carallia brachiata (Lour.) Merr. in Philipp. J. Sci. Bot. 15 : 249. 1919. *Diatoma brachiata* Lour. Fl. Cochinch. 296. 1790. *C. integerrima* DC. Prodr. 3 : 33. 1828 ; Henslow in Hook. f. Fl. Brit. India 2 : 439. 1878 ; Cooke, Fl. Pres. Bombay 1 : 506. 1958 (Repr. ed.). 'Phanashi'.

Trees, 8-10 m high. Leaves variable in shape, broadly elliptic or obovate oblong, 5-7 x 3-5 cm. Flowers white, sessile in axillary trichotomous cymes. Fruits globose, red.

Fls. & Frts. : December March.

Illus. : Wight, Ic. t. 604. 1843 (*Carallia lanceaefolia* Roxb. ex DC.) ; Talbot, For. Fl. Bombay Pres. & Sind 2 : 10, f. 292. 1911.

Distrib. : Occasional in semi-evergreen forests. Forest Nursery, Koyna ; Nauja.

COMBRETACEAE

1. Climbers ; leaves opposite :

2. Young branches rusty tomentose ; petals absent ; calyx accrescent in fruit ... **CALYCOPTERIS**

2. Young branches glabrous ; petals present ; calyx not accrescent in fruit ... **COMBRETUM**

1. Trees ; leaves alternate or subopposite :

3. Leaves glandular (except *T. bellirica*) ; flowers in axillary and terminal spikes ; fruits 5 - angled, not beaked ... **TERMINALIA**

3. Leaves not glandular ; flowers in globose heads ; fruits 2 - winged, beaked ... **ANOGEISSUS**

ANOGEISSUS (A.P.DC.) Guillem. et al.

Anogeissus latifolia (Roxb. ex DC.) Wall. ex Guillem. & Perr. Fl. Seneg. Tent. 1 : 280. 1832 ; C.B. Cl. in Hook. f. Fl. Brit. India 2 : 450. 1878 ; Cooke, Fl. Pres. Bombay 1 : 512. 1958 (Repr. ed.) ; Scott in Kew Bull. 33 : 560. 1979. *Conocarpus latifolia* Roxb. ex DC. Prodr. 3 : 17. 1828. 'Dhavada'.

Trees, 12-15 m high. Leaves elliptic, 4-9 × 2.2-4.5 cm, base cuneate, apex obtuse or shortly cuspidate. Flowers yellow, ca 0.3 cm across; calyx tube compressed, pubescent, 2-winged, teeth broadly triangular; petals absent. Fruits yellowish brown.

Fls. & Frts. : August September.

Illus. : Wight, Ic. t. 994. 1845. (*Conocarpus latifolia* Roxb. ex DC.).

Distrib. : Common component of deciduous forests. Dhamani; Ghat near Wai; Ghat near Wathar.

CALYCOPTERIS Lam.

***Calycopterus floribunda* (Roxb.) Poir.** in Lam. Encycl. Suppl. 2 : 41. 1811; C.B. Cl. in Hook. f. Fl. Brit. India 2 : 449. 1878; Cooke, Fl. Pres. Bombay 1 : 512. 1958 (Repr. ed.); Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 307. 1982. *Getonia floribunda* Roxb. Pl. Cor. t. 87. 1798. 'Baguli'.

Shrubs, straggling. Leaves ovate-lanceolate, 5-8 × 1.5-3.0 cm, base obtuse, apex acuminate, caudate, puberulous above, tomentose beneath. Panicles 20-30 cm long; flowers green, sessile. Fruits oblong, ca 0.7 cm long, 5-ribbed, tomentose.

Fls. & Frts. : March July.

Illus. : Roxb. op. cit.; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 262 & 969a. 1982.

Distrib. : Common along ghats in deciduous forests. It is beautiful to see when in fruiting with brick red wings of the fruits. Koyna; Mahabaleshwar; Shirshingi.

COMBRETUM Loefl. (*nom. cons.*)

- | | | |
|--|-----|-----------------------|
| 1. Flowers usually in axillary panicles; calyx funnel shaped, puberulous without | ... | <i>C. latifolium</i> |
| 1. Flowers in terminal panicles; calyx cup shaped, glabrous without | ... | <i>C. ovalifolium</i> |

***Combretum latifolium* Bl.** Bijdr. 641. 1825. *C. extensum* Roxb. ex G. Don in Trans. Linn. Soc. London 15 : 414. 1827; C.B. Cl. in Hook. f. Fl. Brit. India 2 : 458. 1878; Cooke, Fl. Pres. Bombay 1 : 515. 1958 (Repr. ed.).

Climbers, large. Leaves opposite, broadly elliptic, 8 - 14 × 4 - 7 cm, base cuneate, apex shortly acuminate, coriaceous. Flowers yellowish, sessile ; calyx lobes 4, triangular, reflexed ; petals oblong. Fruits 3 - 4 × 3.2 - 4.2 cm, 4 - winged ; wings horizontally striate, yellow with a reddish tinge.

Fls. & Frts. : December - May.

Illus. : Wight, Ic. t. 227. 1839.

Distrib. : Frequently distributed in moist deciduous forests. Indoli ; Kumbharli ghat ; Punoli.

Combretum ovalifolium Roxb. Fl. Ind. (Carey ed.) 2 : 226. 1832 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 458. 1878 ; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 14. 1897 ; Cooke, Fl. Pres. Bombay 1 : 515. 1958 (Repr. ed.). 'Shendri'.

Shrubs, large, scandent. Leaves subopposite, elliptic, 3 - 11 × 2 - 5 cm, base subacute, apex acuminate. Flowers sessile, creamish. Fruits yellowish - brown, ca 3.5 × 3.0 cm, with 4 papery wings.

Fls. & Frts. : April - June.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 2 : 26, f. 303. 1911.

Distrib. : Occasional in deciduous forests. Asani ; Kumbharli ghat ; Mahabaleshwar.

TERMINALIA L.

1. Leaves entire ; fruits not winged :

 2. Leaves crowded at the apex, glandular ; drupes yellow - tomentose ... *T. bellirica*
 2. Leaves sub-opposite with 2 glands at the base ; drupes glabrous ... *T. chebula*

1. Leaves serrate - crenate ; fruits 3 - 5 - winged :
 3. Leaves alternate ; fruits 3 - winged ... *T. paniculata*
 3. Leaves sub-opposite or alternate ; fruits 5 - winged :
 4. Glands on the midrib beneath ... *T. crenulata*
 4. Glands at the base of leaves:

5. Young branches yellow - tomentose ; nerves on the wings of fruits horizontal ... *T. alata*
5. Young branches glabrous ; nerves on the wings of fruits curved upwards ... *T. arjuna*

Terminalia alata Heyne ex Roth, Nov. Pl. Sp. 379. 1821 : Rau in Bull. Bot. Surv. India 10 : 33. 1969. *T. tomentosa* (Roxb. ex DC.) Wight & Arn. Prodr. 314. 1834 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 447. 1878 ; Cooke, Fl. Pres. Bombay 1 : 510. 1958 p.p. (Repr. ed.).

Trees, 15 - 20 m high. Leaves elliptic - lanceolate, 7 - 14 × 4 - 7 cm, coriaceous, base obtuse, apex acute or emarginate. Flowers greenish-white in tomentose spikes. Drupes ovoid, ca 2.5 cm long, brown.

Fls. & Frts. : April - August.

Distrib. : Rare in deciduous forests. Mahabaleshwar, *Mahajan s. n.* ; Pandavgadh.

T. arjuna (Roxb. ex DC.) Wight & Arn. Prodr. 314. 1834 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 447. 1878 ; Cooke, Fl. Pres. Bombay 1 : 509. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 308. 1982. *Pentaptera arjuna* Roxb. ex DC. Prodr. 3 : 14. 1828. 'Arjun'.

Trees, 10 - 12 m high. Leaves oblong elliptic, 7.5 - 12.5 × 2.5 - 5.5 cm, base unequal, apex obtuse. Flowers greenish white, sessile in 7 - 10 cm long panicles. Drupes ovoid, brown, ca 4.5 cm long.

Fls. & Frts. : April - May.

Ilus. : Bedd. Fl. Sylv. t. 28. 1869.

Distrib. : Occasional along water courses, very conspicuous because of its white bark. Koyna ; Koyna valley, Mahabaleshwar.

T. bellerica (Gaertn.) Roxb. Pl. Cor. t. 198. 1895 ; C.B. Cl. in Hook. f. Fl. Brit. India 2 : 445. 1878 ; Birdwood, Cat. Fl. Matheran & Mahabaleshwar, 13. 1897 ; Cooke, Fl. Pres. Bombay 1 : 508. 1958 (Repr. ed.). *Myrobalanus bellerica* Gaertn. 2 : 90, t. 97, f. a d. 1791. 'Behda'.

Trees, 12 - 15 m high. Leaves broadly elliptic, 7 - 17 × 4 - 11 cm, coriaceous, base alternate, apex subacute or rounded. Flowers greenish in 4 - 15 cm long spikes ; male flowers in upper part of the spike, shortly pedicelled, pubescent ; female in lower part, sessile. Drupes ovoid, obscurely angled when dry.

Fls. & Frts. : April - July.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 2 : 13, f. 294. 1911.

Distrib. : Common along ghats and outskirts of deciduous forests. Koyna ; Mahabaleshwar ; Rasati ; Salve ; Shirshingi.

Terminalia chebula Retz. Obs. Bot. 5 : 31. 1789 ; C.B.Cl. in Hook. f. Brit. Fl. India 2 : 446. 1878 ; Cooke, Fl. Pres. Bombay 1 : 509. 1958 (Repr. ed.). *Hirda*.

Trees, 6–10 m high. Leaves elliptic oblong, 5–9 × 2–4 cm, base rounded, apex obtuse, apiculate, silky when young. Spikes 5–8 cm long ; bracteoles linear, hairy exceeding the flowers ; calyx lobes triangular ; stamens 10, biserrate. Drupes pendulous, ellipsoid, 2.0–3.5 cm long, 5 ribbed when dry.

Fls. & Frts. : April September.

Illus. : Bedd. Fl. Sylv. t. 27. 1869 ; Talbot, For. Fl. Bombay Pres. & Sind 2 : 15, f. 295. 1911.

Distrib. : Widely distributed in evergreen and semi-evergreen forests. Bhikauli forest, Mahabaleshwar ; Dhokewadi ; Junkiti ; Kas ; Lingmala ; Machutar forest ; Karanjewadi ; Old Mahabaleshwar ; Panchgani ; Shirshingi.

T. crenulata Roth. Nov. Pl. Sp. 380. 1821 ; Sant. in J. Bombay Nat. Hist. Soc. 50 : 306. 1952. **T. tomentosa** (Roxb.) Wight & Arn. Prodr. 314. 1834 ; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 14. 1897. **T. tomentosa** var. *crenulata* C.B.Cl. in Hook. f. Fl. Brit. India 2 : 448. 1878. **T. tomentosa** T. Cooke, Fl. Pres. Bombay 1 : 510. 1958 p.p. (Repr. ed.). *'Ain'*.

Trees, 12–15 m high. Lower leaves subopposite, upper alternate, elliptic-oblong, 9–22 × 6–11 cm, base cordate, unequal, apex acute or obtuse ; glands stalked. Flowers yellow in ca 10 cm long panicles. Drupes 3–5 cm long, reddish, wings coriaceous.

Fls. & Frts. : May September.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 2 : 18, f. 297. 1911.

Distrib. : Abundant in deciduous forests. Karad ; Karanjewadi ; Koyna valley ; Research Nursery, Koyna ; Mahabaleshwar ; Tapola ; Vasota.

T. paniculata Roth, Nov. Pl. Sp. 383. 1821 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 448. 1878 ; Cooke, Fl. Pres. Bombay 1 : 510. 1958. (Repr. ed.). *'Kinjal'*. (Fig. 17)

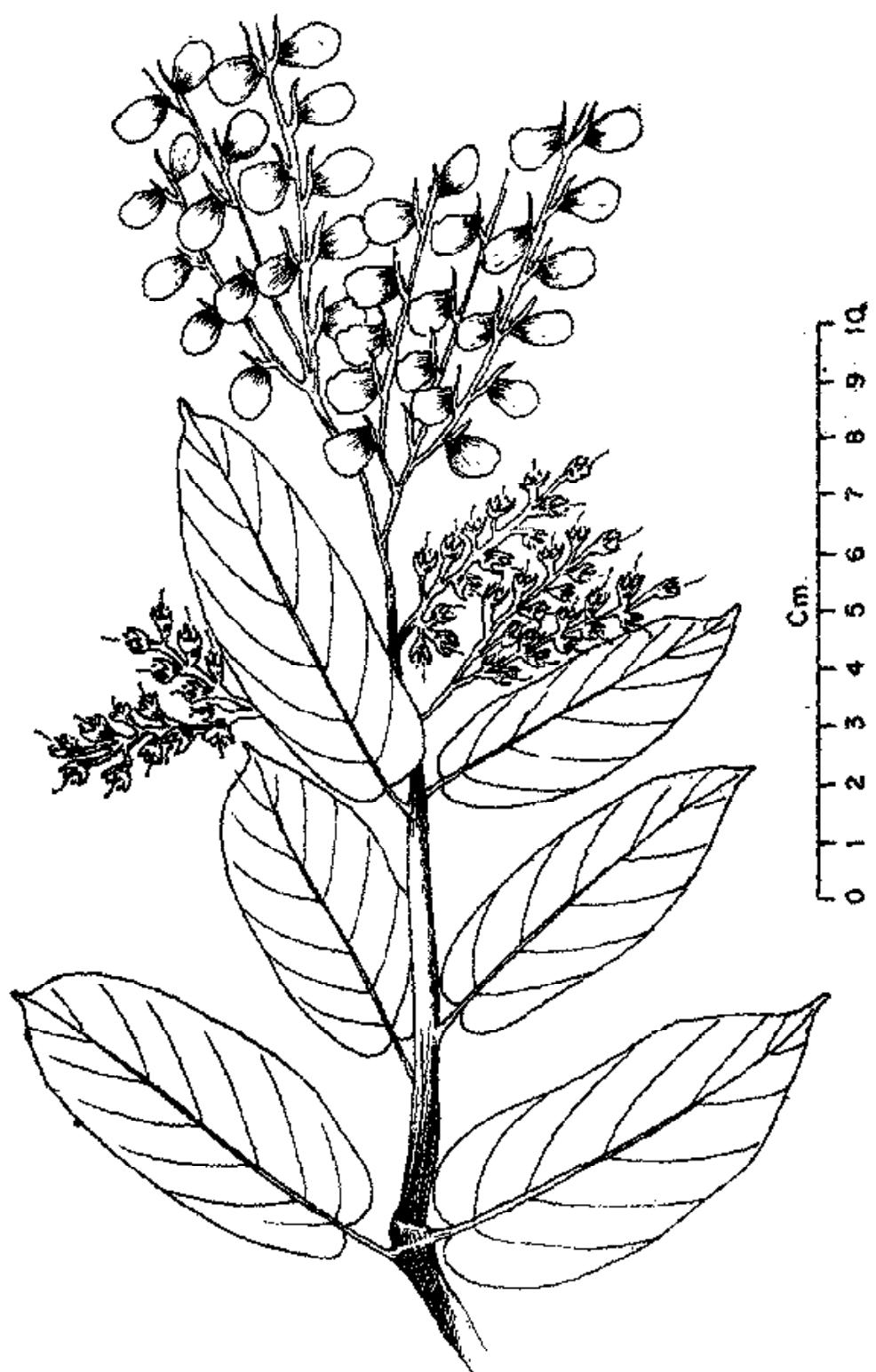


Fig. 17. *Terminalia paniculata* Roth

Trees, 9 - 12 m high. Leaves oblong, upto 10.0 × 4.5 cm, coriaceous, base subcordate, apex acute or acuminate ; usually with 2 glands at the base. Flowers creamish, sessile ; bracts and bracteoles ovate, acute, recurved, pubescent. Drupes sessile, rusty - tomentose ; median wing longer than the two lateral wings.

Fls. & Frts. : August - December.

Distrib. : Common along ghats in semi-evergreen forests. Dicholi ; Junthki ; Koyna ; Gadoli ; Nauja.

CULTIVATED SPECIES

Quisqualis indica L. Sp. Pl. ed. 2. 556. 1670 ; C.B.CI. in Hook. f. Fl. Brit. India 2 : 459. 1878 ; Cooke, Fl. Pres. Bombay I : 517. 1958 (Repr. ed.). '*Lal-chameli*'.

Shrubs, scandent with young branches pubescent. Leaves opposite, elliptic, acuminate, 4 - 8 × 2 - 4 cm. Flowers orange - red in densely tomentose racemes.

Fls. : March - August.

Distrib. : Cultivated as an ornamental plant. Mahabaleshwar.

MYRTACEAE

SYZYGIUM Gaertn. (*nom. cons.*)

- 1. Leaves ovate - lanceolate ; petioles more than 2 cm long ... *S. cumini*
- 1. Leaves elliptic to oblong - lanceolate ; petioles not more than 1 cm long :
 - 2. Flowers in axillary pairs ... *S. phillyraeoides*
 - 2. Flowers in axillary or terminal cymes :
 - 3. Flowers in axillary paniculate cymes ... *S. keyneanum*
 - 3. Flowers in terminal cymes :
 - 4. Branches tetragonal ... *S. rubicundum*
 - 4. Branches cylindrical or compressed ... *S. caryophyllum*

Syzygium caryophyllum (L.) Alst. in Trim. Handb. Fl. Ceyl. 6 : 116. 1931 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 309. 1982.

Myrtus caryophyllatus L. Sp. Pl. 472. 1753. *Eugenia corymbosa* Lam. Encycl. 3 : 199. 1789 ; Duthie in Hook. f. Fl. Brit. India 2 : 490. 1878 ; Cooke, Fl. Pres. Bombay 1 : 522. 1958 (Repr. ed.). 'Nimbuli'.

Shrubs, branches ascending. Leaves opposite, 5-11 × 1-3 cm. Flowers white, almost sessile in 4-6 cm long trichotomous cymes; calyx campanulate; petals suborbicular. Fruits subglobose, ca 0.6 cm across, dark purple when ripe.

Fls. & Frts. : April - May.

Illus. : Wight, Ic. t. 540. 1842.

Distrib. : Occasional in deciduous forests. Mahabaleshwar ; Shirshingi.

Syzygium cumini (L.) Skeels in U.S. Dept. Agric. Bur. Ind. Bull. 2 : 248. 1912. *Myrtus cumini* L. Sp. Pl. 471. 1753. *Eugenia jambolana* Lam. Encycl. 3 : 198. 1789 ; Duthie in Hook. f. Fl. Brit. India 2 : 499. 1879 ; Cooke, Fl. Pres. Bombay 1 : 523. 1958 (Repr. ed.). 'Jambhal'.

Trees, upto 20 m high. Leaves 7-9 × 3-4 cm, coriaceous. Flowers creamish white in paniculate cymes, fragrant; calyx cup shaped; petals calyptrate, deciduous. Berries globose or oblong, purple.

Fls. & Frts. : April - July.

Illus. : Wight, Ic. t. 535. 1842 (*Eugenia jambolana*).

Distrib. : Common component of deciduous and semi-evergreen forests, also planted. It forms a thick community along the margins of streams and one of the major timber species. Dhokewadi ; Gureghar ; Kas ; Kisrude ; Kumbharli ghat ; Lingmala ; Mahabaleshwar ; Nauja ; Satara Road ; Tapola.

S. heynceanum (Duthie) Wall. ex Gamble, Fl. Pres. Madras 482. 1919 [1 : 341. 1957 (Repr. ed.)]. *Eugenia heyneana* Duthie in Hook. f. Fl. Brit. India 2 : 500. 1879 ; Cooke, Fl. Pres. Bombay 1 : 524. 1958 (Repr. ed.). *S. salicifolium* Grah. Cat. Pl. Bombay 73. 1839 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 310. 1982. (Fig. 18)

Shrubs, ca 5 m high. Leaves 7-10 × 1.5-2.5 cm, base tapering, apex subobtuse, pellicid punctate. Flowers white, shortly pedicelled; calyx funnel shaped, rugulose; petals calyptrate. Fruits oblong ellipsoid, ca 1.5 cm long.

Fls. & Frts. : May - June.

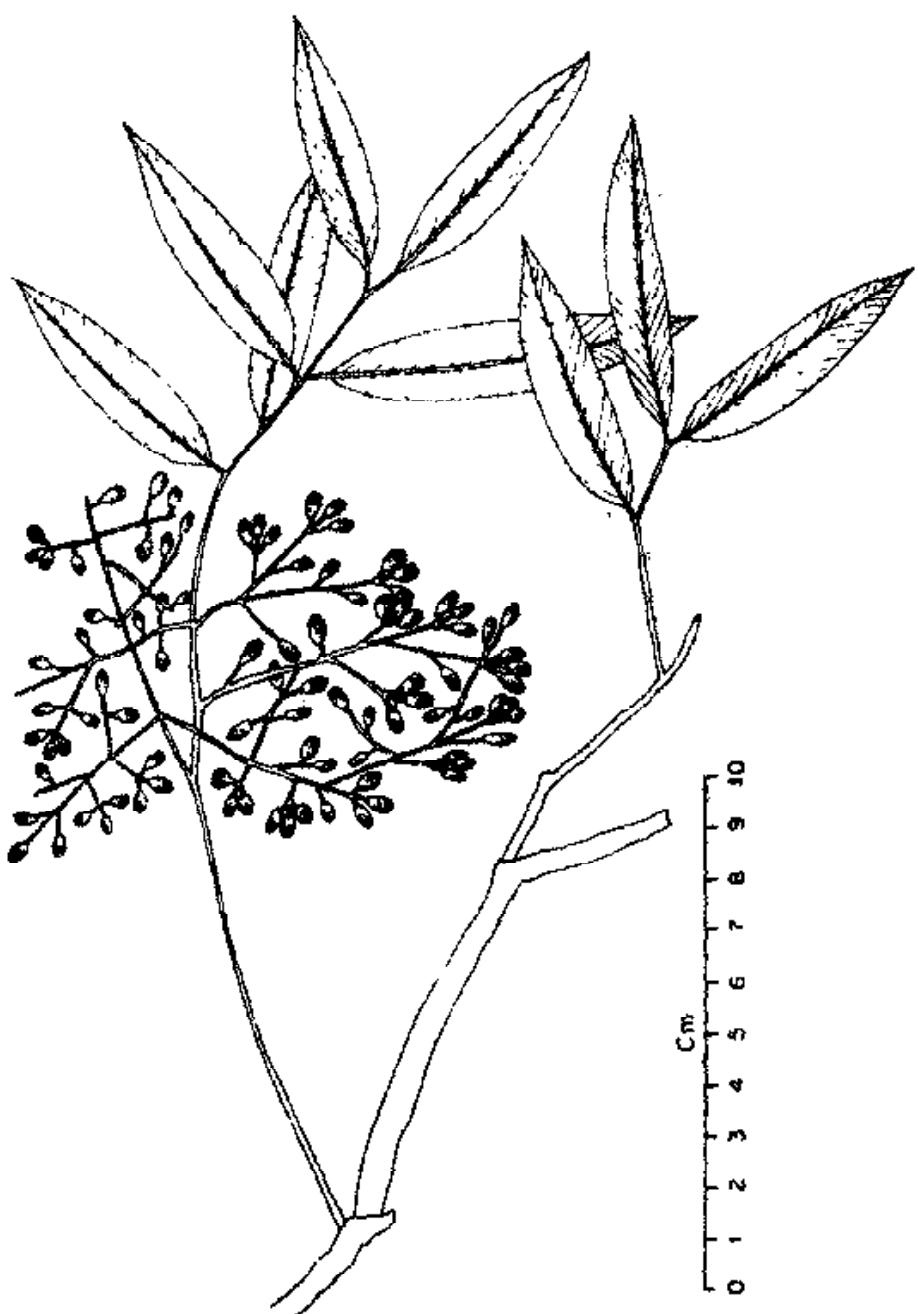


Fig. 18. *Syzygium heyneanum* (Duthie) Wall. ex Gamble

Distrib. : Shrubs along river beds and streams. Koyna ; Koyna river bed above Par bridge ; Koyna valley ; Mahabaleshwar ; Rotunda ghat.

Syzygium phillyraeoides (Trim.) Sant. in Kew Bull. 1948 : 176. 1948. & Rec. Bot. Surv. India 16 (1) : 92. 1967 (3rd Rev. ed.). *Eugenia phillyraeoides* Trim. in J. Bot. 23 : 207. 1885. *E. mooniana* Wight, Ic. t. 551. 1842 ; Duthie in Hook. f. Fl. Brit. India 2 : 505. 1879 ; Cooke, Fl. Pres. Bombay 1 : 525. 1958 (Repr. ed.).

Shrubs, ca 1.5 m high. Leaves 3–6 × 1.5–2.5 cm, base rounded, apex acuminate. Flowers white on filiform pedicels ; calyx tube funnel shaped, lobes obovate, reflexed ; petals broadly ovate. Fruits globose.

Fls. & Frts. : February November.

Illus. : Wight, *op. cit.*

Distrib. : Frequent in semi-evergreen forests. Jangli Jaigad ; Nauja.

S. rubicundum Wight & Arn. Prodr. 330. 1834. *Eugenia rubicunda* Wight, Ill. 2 : 15. 1850 & Ic. t. 538. 1842 ; Duthie in Hook. f. Fl. Brit. India 2 : 495. 1878 ; Cooke, Fl. Pres. Bombay 1 : 521. 1958 (Repr. ed.). ‘*Lendi jambhal*’.

Shrubs or small trees. Leaves oblong, 2.5–6.0 × 1.5–3.5 cm, attenuated at both ends. Flowers small, pale pink, sessile ; calyx rugose outside, lobes obsolete. Fruits globose, black when ripe.

Fls. & Frts. : March June.

Illus. : Wight, *op. cit.*

Distrib. : Rare taxon. Fruits eaten by animals. Mahabaleshwar, Santapau 12405 (BLAT).

CULTIVATED SPECIES

S. jambos (L.) Alst. in Trim. Handb. Fl. Ceyl. 6 : 115. 1931. *Eugenia jambos* L. Sp. Pl. 470. 1753 ; Duthie in Hook. f. Fl. Brit. India 2 : 474. 1878 ; Cooke, Fl. Pres. Bombay 1 : 526. 1958 (Repr. ed.). ‘*Gulab-jamb*’.

Trees, 8–10 m high. Leaves narrowly lanceolate, acuminate. Flowers greenish white in terminal racemes. Fruits subglobose with persistent calyx lobes at apex.

Fls. & Frts. : June November.

Illus. : Wight, Ic. t. 435. 1841.

Distrib. : Frequently cultivated in gardens. Mahabaleshwar ; Old Mahabaleshwar ; Pratapgad.

Callistemon citrinus (Curt.) Stapf in Bot. Mag. 150, t. 9050. 1925 ; Matthew in Rec. Bot. Surv. India 20 (1) : 104. 1969. *Metrocideros citrina* Curt. in Bot. Mag. 8 : t. 260. 1794.

Shrubs or small trees. Leaves alternate, lanceolate, gland-dotted. Flowers pinkish in lax spikes ; calyx pubescent ; petals gland dotted. Capsules globose.

Fls. & Frts. : Throughout the year.

Distrib. : Cultivated as an ornamental plant. Mahabaleshwar ; Forest Nursery, Koyna.

Eucalyptus fibrosa F.v. Muell. in J. Linn. Soc. 3 : 87. 1859.

Trees, 5-6 m high. Leaves alternate, lanceolate. Flowers in axillary, few flowered umbels.

Fls. : December.

Distrib. : Rare. Gureghar Nursery, Kanodia 87049.

E. globulus Labill. Rev. Voy. Recher. Per. 1 : 153, t. 13. 1799 ; Matthew in Rec. Bot. Surv. India 20 (1) : 108. 1969 ; Bailey, Man. Cult. Pl. 727. 1949.

Trees. Leaves linear-lanceolate, upto 17 cm long, curved. Flowers in axillary umbels ; petals calyptrate, deciduous. Capsules hard, loculicidally dehiscing.

Fls. & Frts. : July - November.

Distrib. : Common. Yavteshwar.

E. obliquum L'Her. Sert. Angl. 18. t. 20. 1788 ; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 14. 1897.

Trees. Leaves opposite and alternate mixed, broadly lanceolate to ovate. Flowers in axillary umbels. Fruits pyriform.

Fls. & Frts. : March - May.

Notes : Included on Birdwood's report from Mahabaleshwar.

Myrtus communis L. Sp. Pl. 471. 1753 ; Duthie in Hook. f. Fl. Brit. India 2 : 462. 1878 ; Cooke, Fl. Pres. Bombay 1 : 529. 1958 (Reps. ed.). '*Vilayti mendi*'

Shrubs. Leaves opposite, ovate lanceolate, coriaceous. Flowers white with pink tinge, axillary, solitary. Berries ovoid, 1-2 seeded.

Fls. & Frts. : Throughout the year.

Distrib. : Cultivated for fragrant leaves used in native medicine, also found as an escape. Mahabaleshwar.

Psidium guajava L. Sp. Pl. 470. 1753 ; Duthie in Hook. f. Fl. Brit. India 2 : 468. 1878 ; Cooke, Fl. Pres. Bombay 1 : 529. 1958 (Repr. ed.). '*Peru*'.

Trees, 4-6 m high, bark smooth, deciduous. Leaves oblong, acuminate. Flowers axillary, 1-3 together. Fruits globose or pear-shaped.

Fls. & Frts. : Throughout the year.

Distrib. : Commonly cultivated for edible fruits. Mahabaleshwar ; Shirshingi.

LECYTHIDACEAE

CAREYA Roxb.

Careya arborea Roxb. Pl. Cor. 3 : 14, t. 218. 1819 ; C.B Cl. in Hook. f. Fl. Brit. India 2 : 511. 1879 ; Cooke, Fl. Pres. Bombay 1 : 528. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 310. 1982. '*Kumbha*'.

Trees, ca 15 m high. Leaves broadly obovate, upto 15 × 9 cm, base cuneate, apex acuminate, deciduous. Flowers yellowish - white, in terminal spikes ; sepals and petals oblong to elliptic - oblong ; stamens many, subconnate at base, red. Fruits globose, fleshy, 3-5 cm across.

Fls. & Frts. : April June.

Illus. : Bedd. Fl. Sylv. t. 205. 1872.

Distrib.: Frequent in deciduous forests. Lingmala ; Research Nursery, Koyna ; Rahudi.

MELASTOMATACEAE

- | | | |
|--|-----|-----------|
| 1. Small, stemless herbs | ... | SONERILA |
| 1. Shrubs or medium sized trees : | | |
| 2. Flowers 4 - merous ; fruits 1 - seeded | ... | MEMECYLON |
| 2. Flowers 5 - merous ; fruits many seeded | ... | MELASTOMA |

MELASTOMA L.

Melastoma malabathricum L. Sp. Pl. 390. 1753 ; C.B.CI. in Hook. f. Fl. Brit. India 2 : 523. 1879 ; Cooke, Fl. Pres. Bombay 1 : 532. 1958 (Repr. ed.).

Shrubs, 2 - 3 m high, whole plant clothed with appressed, paleaceous hairs. Leaves lanceolate - oblong, 4 - 9 × 1.5 - 3.5 cm, base rounded, apex acute, strigose above. Flowers purple in terminal cymes ; calyx lobes alternate with intermediate teeth ; petals obovate. Fruits ovoid.

Fls. & Frts. : April September.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 2 : 51, f. 317. 1911.

Distrib.: Occasional near streams in deciduous forests. Deshmukh-wadi ; Koyna.

MEMECYLON L.

- | | | |
|--|-----|-----------------------|
| 1. Leaves yellowish - green on drying ; flowers in fascicles | ... | <i>M. talbotianum</i> |
| 1. Leaves turning black on drying ; flowers in pedunculate cymes | ... | <i>M. umbellatum</i> |

Memecylon talbotianum Brand. in Talbot, Trees Bombay ed. 2. 1902 (Appendix) ; Cooke, Fl. Pres. Bombay 1 : 536. 1958 (Repr. ed.).

Trees, 10 - 15 m high. Leaves elliptic, acuminate, 5 - 8 × 2.0 - 3.5 cm, coriaceous, base acute, apex acuminate. Flowers blue, small, on the branches of fallen leaves ; calyx campanulate ; lobes triangular ; petals orbicular. Berries globose, ca 0.5 cm across, yellow turning purplish black.

Fls. & Frts. : April July.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 2 : 54, f. 320. 1911.

Distrib. : Common in semi-evergreen forests. Kas.

Memecylon umbellatum Burm. f. Fl. Ind. 87. 1768 ; Cooke, Fl. Pres. Bombay 1 : 535. 1958 (Repr. ed.). *M. edule* Roxb. Pl. Cor. t. 82. 1798 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 563. 1879. 'Anjan'.

Trees, 5-8 m high. Leaves ovate-elliptic, 5-8 × 2.5-4.5 cm, base cuneate, apex obtuse. Flowers dark blue ; calyx campanulate becoming saucer-shaped after expansion ; petals orbicular. Berries globose, yellowish turning black, crowned with calyx lobes.

Fls. & Frts. : January June.

Illus. : Roxb. op. cit. ; Talbot, For. Fl. Bombay Pres. & Sind 2 : 53, f. 318. 1911 (*M. edule*).

Distrib. : Common component of evergreen and semi-evergreen forests. Ambeghar ; Jangli Jaigad ; Koyna ; Lingmala ; Mahabaleshwar ; Shirshingi.

SONERILA Roxb.

Sonerila scapigera Hook. Lond. J. Bot. 7 : 672, t. 23. 1848 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 538. 1879 ; Cooke, Fl. Pres. Bombay 1 : 533. 1958 (Repr. ed.).

Herbs. Leaves with a purple tinge, ovate orbicular, 1.0-2.5 × 1-2 cm, base cordate, apex subacute, margins minutely crenate. Flowers rosy, 2-6 together on 1.5-4.0 cm long scapes ; petals obovate. Capsules sub-globose, ca 0.5 cm across.

Fls. & Frts. : July - August.

Distrib. : Occasional monsoon herb on wet rocks. Mahabaleshwar ; Old Mahabaleshwar.

LYTHRACEAE

1. Erect or creeping herbs in marshy places :

2. Flowers in axillary clusters ; petals absent ; capsules dehiscing irregularly ...

AMMANNIA

2. Flowers solitary, axillary or in terminal spikes : petals present ; capsules 2 - 3 - valved	...	ROTALA
1. Shrubs or trees :		
3. Trees ; flowers white ; stamens numerous	...	LAGERSTROEMIA
3. Shrubs ; flowers scarlet ; stamens 12	...	WOODFORDIA

AMMANNIA L.

Ammannia baccifera L. Sp. Pl. 120. 1753 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 569. 1879 ; Cooke, Fl. Pres. Bombay 1 : 541. 1958 (Repr. ed.). *A. salicifolia* Hiern. in Oliv. Fl. Trop. Afr. 2 : 278. 1871 excl. syn. ; non Monti, 1767 ; C.B.Cl. op. cit. ; Cooke, op. cit. 542.

Herbs, 20 - 50 cm high ; branches quadrangular. Leaves opposite, sessile, oblong lanceolate, up to 5 × 1 cm. Flowers purple ; calyx tube hemispheric ; lobes 4, triangular, alternate with accessory teeth. Capsules globose, red. Seeds hemispheric, black.

Fls. & Frts. : February.

Illus. : Tad. & Venkatan. Handb. S. Ind. Weeds 174, f. 68. 1955.

Distrib. : Rare in moist place near rice fields. Mahabaleshwar, Mahajan s. n.

LAGERSTROEMIA L.

1. Leaves sessile ; calyx tube with a ring inside, lobes appressed in fruits	...	<i>L. parviflora</i>
1. Leaves petiolate ; calyx tube without a ring inside, lobes reflexed in fruits	...	<i>L. microcarpa</i>

Lagerstroemia microcarpa Wight, Ic. t. 69. 1838 & t. 109. 1839 ; Furtado & Srisuko in Gard. Bull. Singapore 24 : 192, f. 2a b. 1969. *L. lanceolata* Wall. ex C.B. Cl. in Hook. f. Fl. Brit. India 2 : 576. 1879 ; Cooke, Fl. Pres. Bombay 1 : 545. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 312. 1982.

Trees, 12 - 15 m high. Leaves ovate elliptic, 4 - 10 × 3 - 6 cm, base and apex acute, glabrous above, hoary tomentose beneath. Panicles 6 - 9 cm long ; calyx tube hemispheric, pubescent, teeth 6, triangular ; petals oblong. Capsules ellipsoid, up to 1.5 cm long, 4 - valved. Seeds many, up to 1 cm long.

Fls. & Frts. : April December.

Illus. : Wight, *op. cit.*

Distrib. : Common trees with white bark in dense forests. Ambeghar ; Adoshi ; Koyna ; Mahabaleshwar ; Shirshingi ; Tapola.

Lagerstroemia parviflora Roxb. Pl. Cor. 1 : 47, t. 66. 1795 ; C.B.CI. in Hook. f. Fl. Brit. India 2 : 575. 1879 ; Cooke, Fl. Pres. Bombay 1 : 545. 1958 (Repr. ed.) ; Furtado & Srisuko in Gard. Bull. Singapore 24 : 195, f. 3a b. 1969 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 312. 1982. '*Bondara*'.

Trees, 7-10 m high. Leaves oblong lanceolate, 2.5-6.5 × 1.7-2.5 cm, base cuneate, apex rounded, notched. Panicles 8-12 cm long ; calyx tube campanulate, coriaceous, enlarged in fruits ; petals obovate. Capsules ellipsoid, 2.5-3.5 cm long, coriaceous, 4-valved. Seeds many, compressed, up to 2.3 cm long, winged.

Fls. & Frts. : January April.

Illus. : Roxb. *op. cit.* ; Wight, Ic. t. 69. 1839.

Distrib. : Frequent along ghats in deciduous forests. Koyna valley ; Mahabaleshwar ; Nath hills, Shirala ; Shambgaon.

CULTIVATED SPECIES

L. reginae Roxb. Pl. Cor. t. 65. 1795 ; Furtado & Srisuko in Gard. Bull. Singapore 24 : 261, f. 29 B. 1969. *L. speciosa* (L.) Pers. Syn. Pl. 2 : 72. 1807. *L. flos-reginae* Retz. Obs. Bot. 5 : 2. 1789 ; C.B.CI. in Hook. f. Fl. Brit. India 2 : 577. 1879 ; Cooke, Fl. Pres. Bombay 1 : 546. 1958 (Repr. ed.). *L. flos-reginae* Retz. var. *angusta* C.B.CI. in Hook. f. *op. cit.* '*Mota bondara*'.

Trees, ca 10 m high. Leaves elliptic to oblong lanceolate. Flowers purple in large panicles ; calyx ribbed, tomentose ; petals undulate, spreading. Capsules subglobose or ellipsoid.

Fls. & Frts. : April June.

Illus. : Wight, Ic. t. 413. 1840.

Distrib. : Cultivated as an ornamental plant. Koyna ; Mahabaleshwar.

ROTALA L.

1. Capsules 3 - valved	...	<i>R. densiflora</i>
1. Capsules 2 - valved :		
2. Leaves opposite, ovate or elliptic	...	<i>R. serpyllifolia</i>
2. Leaves alternate, upper linear, lower oblong - obtuse	...	<i>R. floribunda</i>

Rotala densiflora (Roth ex R. & S.) Koehne in Bot. Jahrb. 1 : 164. 1880 ; C.D.K. Cook in Boissiera 29 : 82, f. 17 A H. 1979. *Ammannia densiflora* Roth ex R. & S. Syst. Veg. 3 : 304. 1818. *A. pentandra* sensu C.B.CI. in Hook. f. Fl. Brit. India 2 : 468. 1879 *p.p. non* Roxb. 1820 ; Cooke, Fl. Brit. India 1 : 539. 1958 (Repr. ed.).

Herbs, 15-35 cm long, branches quadrangular, rooting at lower nodes. Leaves sessile, oblong-lanceolate, 1.0-3.5 × 0.3-0.7 cm, base rounded, apex obtuse. Flowers pink, sessile, in axils of floral bracts ; bracteoles as long as the calyx ; calyx teeth triangular, alternate with the longer appendages. Capsules subglobose.

Fls. & Frts. : September October.

Illus. : Wight, Ic. t. 260 B. 1840 (*R. roxburghiana*).

Distrib. : Prostrate herbs near moist places. Koyna ; Mahabaleshwar ; Old Mahabaleshwar ; Panchgani ; Shirshingi.

R. floribunda (Wight) Koehne in Verh. Bot. Vereins Prov. Brandenburg. 19 (Sitz. 2. 41) : 49. 1877 ; C.D.K. Cook in Boissiera 29 : 43, f. 6. 1979. *Nimmonia floribunda* Wight in Madras J. Lit. Sci. 5 : 312, t. 20. 1837. *Ammannia floribunda* (Wight) C.B.CI. in Hook. f. Fl. Brit. India 2 : 567. 1879 ; Cooke, Fl. Pres. Bombay 1 : 539. 1958 (Repr. ed.).

Herbs, 15-30 cm long ; stem reddish. Leaves sessile, ca 2.5 cm long, base and apex obtuse. Flowers pink-violet ; calyx teeth triangular, acute ; petals oblong. Capsules ellipsoid.

Fls. & Frts. : October February.

Distrib. : Common on wet rocks along ghats. Lingmala ; Mahabaleshwar ; Mahabaleshwar Pratapgad.

Notes : It differs from other two species of *Rotala* L. in dimorphic style and stamens. Flowers are with included stamens and a long exerted style and exerted stamens with style included.

Rotala serpyllifolia (Roth) Bremek. in Acta Bot. Neerl. 3 : 149. 1954 ; C.D.K. Cook in Boissiera 29 : 61, f. 11 f - h. 1979. *Micranthus serpyllifolius* Roth, Nov. Pl. Sp. 282. 1821. *Ammannia tenuis* (Wight) C.B.Cl. in Hook. f. Fl. Brit. India 2 : 567. 1879 ; Cooke, Fl. Pres. Bombay 1 : 538. 1958 (Repr. ed.).

Herbs, ascending, 7-10 cm long. Leaves small, subsessile, up to 1.5 cm long. Flowers pink in *ca* 1.5 cm long spikes ; bracts oblong-lanceolate ; bracteoles linear lanceolate ; calyx constricted below the teeth ; petals obovate, shorter or as long as calyx. Capsules and seeds ellipsoid.

Fls. & Frts. : February.

Illus. : Wight, Ic. t. 257 B. 1840 (*Amaletia tenuis*).

Distrib. : Slender herbs near streams. Mahabaleshwar.

WOODFORDIA Salisb.

Woodfordia fruticosa (L.) Kurz in J. Asiatic Soc. Beng. 40 : 56. 1871. *Lythrum fruticosum* L. Sp. Pl. ed. 2. 641. 1762. *W. floribunda* Salisb. Parad. London t. 42. 1806 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 572. 1879 ; Cooke, Fl. Pres. Bombay 1 : 543. 1958 (Repr. ed.). 'Dhayati'. (Fig. 19).

Shrubs, 2-3 m high. Leaves sessile, oblong-lanceolate, 4.0-7.5 × 0.5-2.5 cm, base rounded, apex acute. Flowers in axillary pedunculate cymes ; pedicels short, glandular ; calyx tubular, constricted below, teeth glandular. Capsules ellipsoid, 0.7-1.0 cm long, enclosed within the calyx tube. Seeds cuneate obovoid, brown, smooth.

Fls. & Frts. : February May.

Distrib. : Common component of deciduous forests along ghats. Asani ; Dhokewadi ; Karanjewadi ; Kumbharli ghat ; Mahabaleshwar ; Mahabaleshwar Pratapgad ; Shirshingi ; Wai.

CULTIVATED SPECIES

Lawsonia inermis L. Sp. Pl. 349. 1753 ; Cooke, Fl. Pres. Bombay 1 : 544. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 312. 1982. *L. alba* Lam. Encycl. 3 : 106. 1789 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 573. 1879. 'Mendi'.

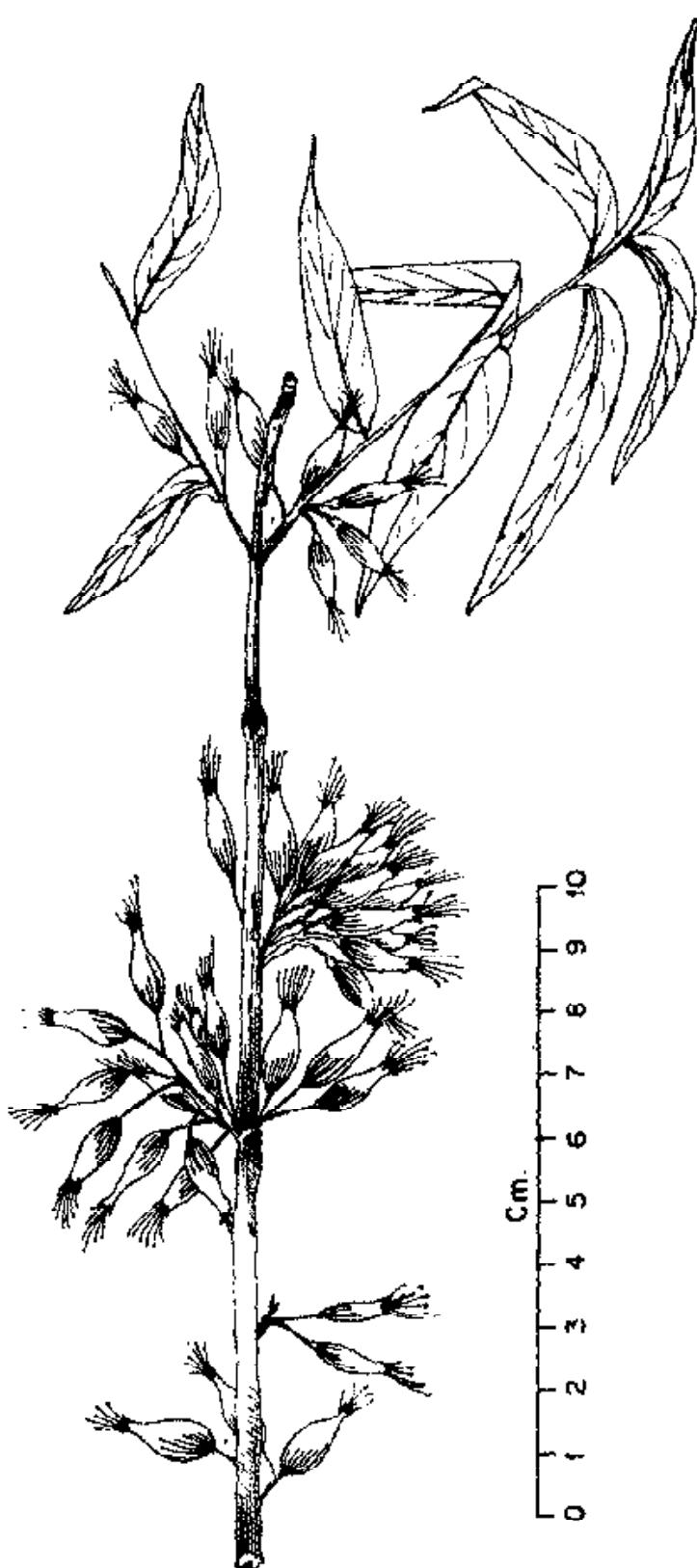


Fig. 19. *Woodfordia fruticosa* (L.) Kurz

Shrubs, spiny. Leaves sessile, lanceolate, apex acute. Flowers white in terminal and axillary cymes. Capsules globose.

Fls. & Frts. : June December.

Distrib. : Cultivated as a hedge plant. Mahabaleshwar ; Patan ; Pimpodshi.

SONNERATIACEAE

CULTIVATED SPECIES

Duabanga grandiflora (Roxb. ex DC.) Walp. Report. 2 : 114. 1843 ; Jayaweera in J. Arnold Arbor. 48 : 96, f. 5. 1967. *Lagerstroemia grandiflora* Roxb. ex DC. in Mem. Soc. Hist. Nat. Genev. 32 : 84. 1826. *D. sonneratioides* Buch. Ham. in Trans. Linn. Soc. 17 : 117. 1835 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 579. 1879.

Trees, ca 15 m high, branches pendent. Leaves oblong, acute, up to 20 × 7 cm. Flowers white in large, terminal panicles. Capsules globose, 4-valved.

Fls. & Frts. : April June.

Distrib. : Introduced in garden as an ornamental plant. Koyna.

PUNICACEAE

CULTIVATED SPECIES

Punica granatum L. Sp. Pl. 472. 1753 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 581. 1879 ; Cooke, Fl. Pres. Bombay 1 : 548. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 313. 1982. 'Dalimb'.

Trees, up to 6 m high ; branchlets armed. Leaves opposite or clustered, oblong obovate, up to 5 × 0.5 cm. Flowers orange red, axillary, solitary or clustered. Fruits globose. Seeds angular.

Fls. & Frts. : Throughout the year.

Distrib. : Cultivated for edible fruits. Mahabaleshwar.

ONAGRACEAE

LUDWIGIA L.

1. Stamens as many as the petals	...	<i>L. perennis</i>
1. Stamens twice as many as the petals :		
2. Bracts minute, deciduous ; capsules uniserrate in lower 1/3 part, multiseriate in upper part	...	<i>L. hyssopifolia</i>
2. Bracts large, persistent ; capsules not as above	...	<i>L. octovalvis</i> ssp. <i>sessiliflora</i>

Ludwigia hyssopifolia (G. Don) Exell, Garcia de Orta 5 : 471. 1957 ; Raven in Reinwardtia 6 : 385. 1963 ; Babu in J. Bombay Nat. Hist. Soc. 69 : 227. 1972. *Jussiaea hyssopifolia* G. Don, Gen. Syst. 2 : 692. 1832. (Fig. 20).

Herbs up to 18 cm high. Leaves alternate, lanceolate, 1–3 × 0.3–1.0 cm, base tapering, apex acuminate. Flowers yellow, solitary, axillary. Capsules cylindric, up to 2.2 cm long. Seeds ellipsoid.

Fls. & Frts. : April.

Distrib. : Annual herbs in waste places. Kumbharli ghat.

L. octovalvis (Jacq.) Raven ssp. **sessiliflora** (Micheli) Raven in Kew Bull. 15 : 476. 1992 & Reinwardtia 6 : 362, f. 3. 1963. *Jussiaea octonervia* var. *sessiliflora* Micheli in Mart. Fl. Bras. 13 : 180. 1875. *J. suffruticosa* L. Sp. Pl. 388. 1753 ; *non Ludwigia suffruticosa* Walt. 1788 ; C.B.CI. in Hook. f. Fl. Brit. India 2 : 587. 1879 ; Cooke, Fl. Pres. Bombay 1 : 549. 1958 (Repr. ed.). ‘Pan lavang’.

Herbs, up to 1 m high. Leaves subsessile, lanceolate, 5.0–7.5 × 1.2–1.7 cm, base and apex tapering. Flower yellow, solitary, axillary ; calyx tube sub quadrangular ; lobes 4, ovate elliptic, hairy ; petals broadly obovate. Capsules up to 3 cm long, ribbed, breaking up between the ribs.

Fls. & Frts. : December–April.

Illus. : Ramamoorthy in Saldanha & Nicolson, Fl. Hassan Dist. f. 53A. 1976.

Distrib. : Rare in swamps. Dhayati, 166630 ; Koyna dam, Kochhar 154767.

L. perennis L. Sp. Pl. 119. 1753 ; Raven in Reinwardtia 6 : 367. 1963. *L. parviflora* Roxb. Fl. Ind. (Carey & Wall. ed.) 1 : 440. 1820 ;

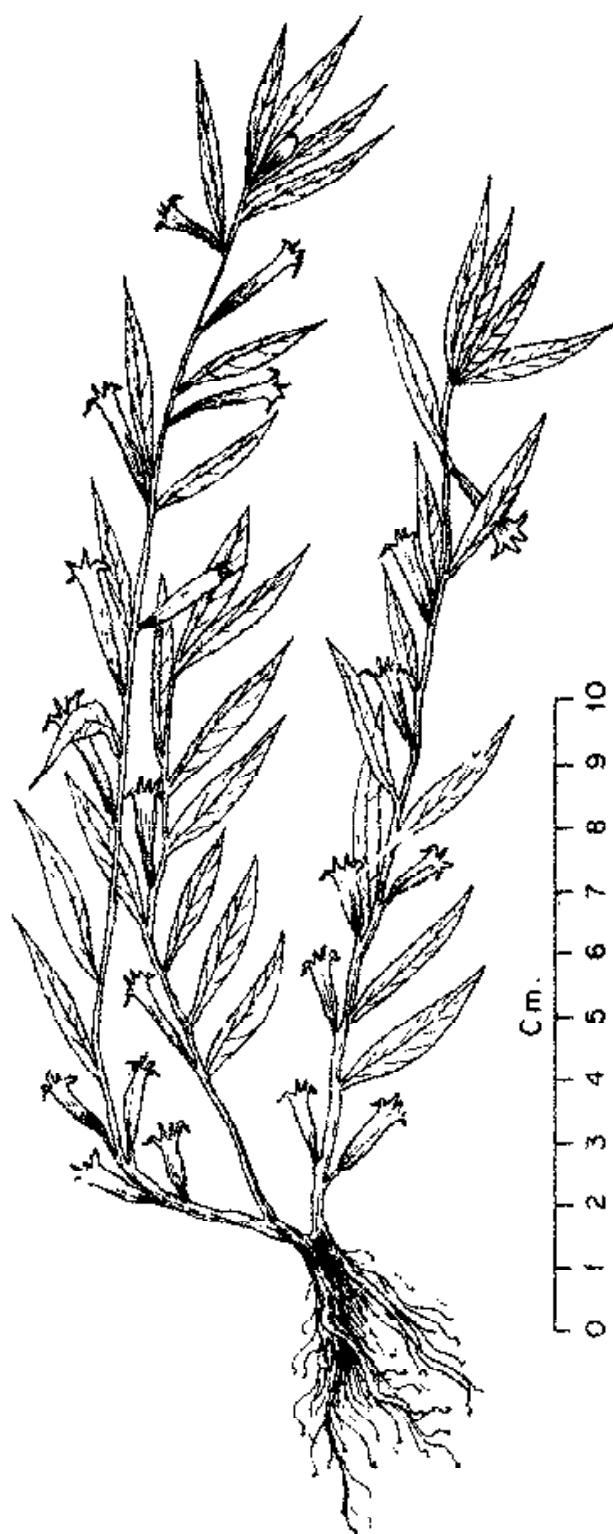


Fig. 20. *Ludwigia hyssopifolia* (G. Don) Exell

C.B.Cl. in Hook. f. Fl. Brit. India 2 : 558. 1879 ; Cooke, Fl. Pres. Bombay 1 : 550. 1958 (Repr. ed.).

Herbs, 15-30 cm high. Leaves oblong lanceolate, 1-2 × 0.5 cm, base attenuate, apex subacute. Flowers yellow; sepals ovate, acute; petals elliptic oblong. Capsules cylindric, up to 2 cm long. Seeds ellipsoid, multiseriate, straw coloured.

Fls. & Frts. : November.

Illus. : Maheshwari, Ill. Fl. Dethi f. 85. 1966.

Distrib. : Rare in wet rice fields. Koyna, Kochhar 154299.

CULTIVATED SPECIES

Fuchsia spp. Cooke, Fl. Pres. Bombay 1 : 551. 1958 (Repr. ed.).

Grows as an ornamental plant. Based on Cooke's report from Mahabaleshwar.

Xylopleurum roseum (W. Ait.) Raimann. in Engl. & Prantl. Pflanzenfam. 11 : 7. 214. 1893 ; Mishra et al. in Indian J. For. 6 : 292. 1983. *Oenothera rosea* W. Ait. Hort. Kew ed. 1. 27 : 3. 1789 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 582. 1879 ; Cooke, Fl. Pres. Bombay 1 : 552. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 313. 1982.

Herbs, prostrate or ascending. Leaves alternate, ovate lanceolate, sparsely hairy. Flowers pink, axillary, solitary. Capsules clavate, pubescent.

Fls. & Frts. : January December.

Distrib. : Small ornamental plant grown in gardens. Mahabaleshwar, Panchgani.

PASSIFLORACEAE

PASSIFLORA L.

Passiflora foetida L. Sp. Pl. 959. 1753 ; Cooke, Fl. Pres. Bombay 1 : 557. 1958 (Repr. ed.).

Climbers. Leaves ovate, 3 lobed, 5-9 × 4.0-7.5 cm, base cordate, apex acute, glandular hairy; stipules semiauriculate with filiform

segments. Flowers white, axillary, solitary ; calyx divided halfway down ; petals oblong. Corona of short threads, many seriate.

Fls. : July.

Distrib. : Occasionally found along hedges, also cultivated. Koyna.

CARICACEAE

CULTIVATED SPECIES

Carica papaya L. Sp. Pl. 1036. 1753 ; Mast. in Hook. f. Fl. Brit. India 2 : 599. 1879 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 313. 1982 ; Cooke, Fl. Pres. Bombay 1 : 557. 1958 (Repr. ed.). 'Papaya'.

Trees. Leaves large, pinnatifid. Flowers uni sexual ; male in drooping panicles, female in axillary clusters. Fruits fleshy, many seeded.

Distrib. : Widely cultivated for edible fruits. Mahabaleshwar.

CUCURBITACEAE

- | | | |
|---|-----|----------------|
| 1. Tendrils 2 - 3 fid : | | |
| 2. Petals fimbriate on margins | ... | TRICHOSANTHES |
| 2. Petals not as above : | | |
| 3. Flowers solitary | ... | CITRULLUS |
| 3. Flowers in fascicles or racemes : | | |
| 4. Fruits 8 - ribbed | ... | LUFFA |
| 4. Fruits smooth | ... | DIPLOCYCLOS |
| 1. Tendrils simple : | | |
| 5. Ovules and seeds erect | ... | DICOELOSPERMUM |
| 5. Ovules and seeds horizontal : | | |
| 6. Male flowers with large, orbicular - reniform bracts ; calyx with 2 - 3 scales at base | ... | MOMORDICA |
| 6. Male flowers without bract as above ; calyx without basal scales : | | |
| 7. Leaves amplexicaul ; connective of anthers not produced | ... | SALVIA |
| 7. Leaves not amplexicaul ; connective of anthers produced : | | |

8. Plants glabrous :		
9. Connective and filaments ciliate ; fruits dehiscing by valves ...		ZEHNERIA
9. Connective and filaments glabrous ; fruits dehiscing by operculum ...		CORALLOCARPUS
8. Plants scabrid :		
10. Fruits setose ...		CUCUMIS
10. Fruits not as above :		
11. Stamens inserted in the middle of calyx tube ; fruits rostrate ...		KEDROSTIS
11. Stamens inserted at the base of calyx tube ; fruits not rostrate ...		MUKIA

CITRULLUS Schrad.

Citrullus colocynthis (L.) Schrad. in Linnaea 12 : 414. 1838 ; C.B.CI. in Hook. f. Fl. Brit. India 2 : 620. 1879 ; Cooke, Fl. Pres. Bombay 1 : 571. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 313. 1982 ; Chakravarty in Fasc. Fl. India 11 : 20, f. 1-7. 1982. *Cucumis colocynthis* L. Sp. Pl. 1011. 1753.

Herbs, trailing ; branches angular, scabrid or hirsute. Leaves ovate deltoid, 3 (5 7) lobed, lobes deeply dissected. Flowers yellowish ; calyx tube campanulate ; lobes recurved. Fruits upto 5 cm across, variegated green and white. Seeds ovate oblong, brownish.

Fls. & Frts. : November January.

Illus. : Wight, Ic. t. 498. 1841 ; Chakravarty, op. cit.

Distrib. : Weed near cultivated fields, used in native medicines in Jaundice and rheumatism. Mahabaleshwar.

CULTIVATED SPECIES

C. lanatus (Thunb.) Mats. & Nakai in Cat. Sem. Hort. Univ. Tokyo 1916 : 30. 1926 ; Chakravarty in Rec. Bot. Surv. India 17 : 114. 1959 & in Fasc. Fl. India 11 : 22. 1982. *Momordica lanata* Thunb. Prodr. Fl. Cap. 13. 1794. *C. vulgaris* Schrad. ex Eckl. & Zeyh. Enum. Pl. Afr.

Austr. 279. 1834 ; C.B.CI. in Hook. f. Fl. Brit. India 2 : 621. 1879 ; Cooke, Fl. Pres. Bombay 1 : 571. 1958 (Repr. ed.), 'Tarbij'.

Herbs, trailing : branches grooved, setose. Leaves 3-6 cm long, 3-lobed, lobes pinnatifid, scabrid ; tendrils 2-fid. Flowers greenish yellow, solitary, axillary. Fruits large, subglobose ellipsoid.

Fls. & Frts. : April June.

Distrib. : Introduced from Africa. Cultivated for edible fruits ; seeds are considered to have cooling effect, used in fever. Girvi.

CORALLOCARPUS Welw. ex Hook. f.

Corallocarpus epigaeus (Roettl.) C.B.CI. in Hook. f. Fl. Brit. India 2 : 628. 1879 ; Cooke, Fl. Pres. Bombay 1 : 578. 1958 (Repr. ed.) ; Jeffrey in Kew Bull. 34 : 793. 1980 ; Chakravarty in Fasc. Fl. India 11 : 28. 1982. *Bryonia epigaea* Roettl. in Neue Schrift. Ges. Naturf. Freunde Berlin 4 : 223. 1803.

Climbers. Leaves alternate, suborbicular, 2-5 × 2.0-3.5 cm, 3-5-lobed ; lobes denticulate, shortly mucronate rough. Flowers greenish, male flowers crowded at apex ; female flowers solitary, axillary. Fruits red when ripe. Seeds pyriform, smooth, upto 2 cm long.

Fls. & Frts. : November.

Illus. : Wight, Ic. 503. 1841 (*Bryonia epigaea*).

Distrib. : Perennials along hill slopes with tuberous roots. Pirachi Wadi. 166472.

CUCUMIS L.

- | | | |
|--|-----|--------------------|
| 1. Annuals ; fruits setose | ... | <i>C. setosus</i> |
| 1. Perennials ; fruits glabrous or pubescent, not setose | ... | <i>C. callosus</i> |

Cucumis callosus (Roettl.) Cogn. in Engl. Pflanzenr. 88 : 129. 1924 ; Chakravarty in Fasc. Fl. India 11 : 31. 1982. *Bryonia callosa* Roettl. in Neue Schrift. Ges. Naturf. Freunde Berlin 4 : 210. 1803. *C. trigonus* Roxb. Fl. Ind. (Carey ed.) 3 : 722. 1832 ; C.B.CI. in Hook. f. Fl. Brit. India 2 : 619. 1879 ; Cooke, Fl. Pres. Bombay 1 : 569. 1958 (Repr. ed.).

Herbs, ca 1 m high, scabrid. Leaves 1-2 cm long, entire or 3-lobed, scabrid, margins dentate. Flowers yellow, usually solitary, rarely

female in axillary fascicles : rudimentary ovary glandular. Fruits ellipsoid, variegated. Seeds ellipsoid, white.

Fls. & Frts. : February July.

Illus. : Wight, Ic. t. 497. 1841 (*C. trigonus*).

Distrib. : Occasional near cultivated fields. Chaphal, 165808.

Cucumis setosus Cogn. in DC. Monogr. Phan. 3 : 491. 1881 ; Chakravarty in Rec. Bot. Surv. India 17 : 106, f. 44. 1959 & in Fasc. Fl. India 11 : 38 1982.

Climbers. Leaves 3-5 cm long, as broad as long, 3-lobed, hairy, margins denticulate. Flowers yellow ; male flowers in axillary clusters on villous, filiform peduncles ; female flowers solitary, axillary ; calyx setose. Fruits oblong, ca 2 cm long. Seeds ovate-oblong, compressed.

Fls. & Frts. : September.

Illus. : Chakravarty, *op. cit.*

Distrib. : Rare, endemic to Maharashtra. Yavateshwar, 165861.

CULTIVATED SPECIES

C. melo L. Sp. Pl. 1011. 1753 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 620. 1879 ; Cooke, Fl. Pres. Bombay 1 : 569. 1958 (Repr. ed.) ; Chakravarty in Fasc. Fl. India 11 : 32, f. 1-10. 1982.

Climbers ; stem slender, hairy. Leaves 2-7 cm long, as broad as long, shallowly 3-5 lobed. Flowers yellow. Fruits ellipsoid. Seeds oblong, white.

Fls. & Frts. : August November.

Illus. : Wight, Ic. t. 496. 1841 (*C. pubescens* Willd.).

Distrib. : Extensively cultivated for its edible fruits. Kisrude.

C. sativus L. Sp. Pl. 1012. 1753 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 620. 1879 ; Cooke, Fl. Pres. Bombay 1 : 570. 1958 (Repr. ed.) ; Chakravarty in Rec. Bot. Surv. India 17 : 105. 1959 & Fasc. Fl. India 11 : 36. 1982 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 314. 1982. 'Kakadi'

Herbs, trailing or climbing. Leaves triangular ovate, scabrous. Flowers yellow in axillary fascicles. Fruits oblong elongate. Seeds many, white, flat.

Fls & Frts. : July October.

Distrib. : Cultivated for edible fruits. Mahabaleshwar.

DICOELOSPERMUM C.B. Cl.

Dicoelospermum ritchiei C.B.CI. in Hook. f. Fl. Brit. India 2 : 630. 1879 ; Cooke, Fl. Pres. Bombay 1 : 580. 1958 (Repr. ed.) ; Chakravarty in Rec. Bot. Surv. India 17 : 177. 1958 & in Fasc. Fl. India 11 : 47. 1982 ; Jeffrey in Kew Bull. 34 : 796. 1980.

Herbs, scandent ; branches grooved, scabrid. Leaves ovate - cordate, 3-8 cm across, obscurely 3-lobed, sparsely hairy above, scabrid beneath. Flowers white in axillary fascicles. Fruits ca 0.5 cm long, red when ripe. Seeds broadly ovoid, compressed.

Fls. & Frts. : June November.

Distrib. : Rare on plateaus. Mahabaleshwar, Bole 1785, 1786, G.L. Shah 10667, Santapau 11751, 11752 (BLAT).

DIPLOCYCLOS (Endl.) Post & O. Ktze.

Diplocyclos palmatus (L.) Jeffrey in Kew Bull. 15 : 352. 1962 ; Chakravarty in Fasc. Fl. India 11 : 48. 1982. *Bryonia palmata* L. Sp. Pl. 1012. 1753. *Bryonopsis laciniosa* L. op. cit. 1013. p.p. ; C.B.CI. in Hook. f. Fl. Brit. India 2 : 622. 1879. *B. laciniosa* sensu Naud. Ann. Sci. Nat. 4. 12 : 141. 1859, pro - majore parte auct non L. 1753 ; Chakravarty in Rec. Bot. Surv. India 17 : 135. 1959 ; Cooke, Fl. Pres. Bombay 1 : 568. 1958 (Repr. ed.). 'Shivlingi'.

Climbers. Leaves 4-6 cm long, palmately 3-lobed, base cordate, apex obtuse, scabrid above, glabrous beneath, margin dentate. Flowers yellowish, male and female in the same axils ; calyx tube campanulate ; lobes subulate ; corolla lobes ovate oblong, pubescent. Fruits ca 2.5 cm across. Seeds pyriform.

Fls. & Frts. : September November.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 297. 1982.

Distrib. : Common in semi-evergreen forests along hill slopes.

KEDROSTIS Medic.

Kedrostis rostrata (Rottl.) Cogn. in DC. Monogr. Phan. 3 : 636. 1881 ; Cooke, Fl. Pres. Bombay 1 : 577. 1958 (Repr. ed.) ; Chakravarty in Fasc. Fl. India 11 : 63. 1982. *Bryonia rostrata* Rottl. in Neue Schrift. Ges. Nat. Freunde Berlin 4 : 212. 1803. *Rhynchoscarpa foetida* C.B.CI. in Hook. f. Fl. Brit. India 2 : 627. 1879.

Climbers, sparsely scabrid. Leaves orbicular, 2-4 cm across, scabrid, margin denticulate. Flowers yellow ; male flowers 2-3 together on filiform peduncles ; calyx campanulate, hairy ; petals oblong lanceolate ; female flowers solitary, axillary. Fruits subsessile, up to 2.5 cm long, pubescent.

Fls. & Frts. : November.

Distrib. : Slender herbs in open areas. Nauja, Kochaar 157964.

LUFFA Mill.

Luffa tuberosa Roxb. Fl. Ind. (Carey ed.) 3 : 717. 1832 ; Chakravarty in Fasc. Fl. India 11 : 74. 1982. *Momordica cymbalaria* Fenzl ex Naud. in Ann. Sci. Nat. 4, 12 : 134. 1859 ; C.B.CI. in Hook. f. Fl. Brit. India 2 : 618. 1879 ; Cooke, Fl. Pres. Bombay 1 : 564. 1958 (Repr. ed.).

Herbs, scandent. Leaves orbicular reniform, shallowly 5-7 lobed, sparsely hairy. Male flowers yellowish in racemes ; stamens 2. Fruits broadly fusiform, sparsely hairy. Seeds broadly ovoid, strophiolate.

Fls. & Frts. : November.

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

CULTIVATED SPECIES

L. cylindrica (L.) M.J. Roem. Syn. Mon. 2 : 63. 1846 : Chakravarty in Rec. Bot. Surv. India 17 : 75. 1959 & in Fasc. Fl. India 11 : 70. 1982 ; Jeffrey in Kew Bull. 34 : 791. 1980. *Momordica cylindrica* L. Sp. Pl. 1009. 1753. *L. aegyptiaca* Mill. Gard. Dict. 4 : 500. 1785 ; C.B.CI. in Hook. f.

Fl. Brit. India 2 : 614. 1879 ; Cooke, Fl. Pres. Bombay 1 : 565. 1958 (Repr. ed.). 'Ghosali'.

Climbers ; branches 5 angled, twisted. Leaves orbicular, palmately 5 lobed, scabrous ; tendrils 4 fid. Male flowers in axillary racemes. Female flowers solitary, axillary. Fruits cylindrical, green, striate.

Fls. & Frts. : November.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 300. 1982.

Distrib. : Cultivated as a vegetable. Satara.

MOMORDICA L.

Momordica dioica Roxb. ex Willd. Sp. Pl. 4 : 605. 1805 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 617. 1879 ; Cooke, Fl. Pres. Bombay 1 : 563. 1958 (Repr. ed.) ; Chakravarty in Rec. Bot. Surv. India 17 : 91. 1959 & in Fasc. Fl. India 11 : 94. 1982 ; Jeffrey in Kew Bull. 34 : 790. 1980. 'Kartoli'.

Climbers, perennials. Leaves broadly ovate, 7-9 × 7-10 cm, 5-lobed, base cordate. Male flowers yellow, solitary ; peduncles 10-12 cm long ; bracts ca 2 cm long, puberulous ; female flowers solitary ; peduncles 5-6 cm long ; bracts absent or if present small. Fruits ovoid, ca 3 cm long.

Fls. & Frts. June September.

Illus. : Wight, Ic. t. 505-506. 1841.

Distrib. : Occasional near forest clearings. Fruits edible. Koyna, Kochhar 158665.

CULTIVATED SPECIES

M. charantia L. Sp. Pl. 1009. 1753 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 616. 1879 ; Cooke, Fl. Pres. Bombay 1 : 562. 1958 (Repr. ed.) ; Chakravarty in Rec. Bot. Surv. India 17 : 88. 1959 & Fasc. Fl. India 11 : 89. 1982. 'Karle'.

Climbers. Leaves deltoid ovate, 3.5-6.0 × 2.5-5.0 cm, 3-5-lobed. Flowers yellow, solitary, axillary ; bracts foliaceous. Fruits fusiform, beaked, tuberculate.

Fls. & Frts. : July September.

Illus. : Wight, Ic. t. 504. 1841.

Distrib. : Cultivated as a vegetable, also as a hedge plant. Ghotil.

MUKIA Arn.

Mukia maderaspatana (L.) M. Roem. Syn. Pep. 47. 1846 ; Jeffrey in Kew Bull. 34 : 794. 1980. *Cucumis maderaspatanus* L. Sp. Pl. 1012. 1753. *Melothria maderaspatana* (L.) Cogn. in DC. Monogr. Phan. 3 : 623. 1881 ; Cooke, Fl. Pres. Bombay 1 : 573. 1958 (Repr. ed.) ; Chakravarty in Rec. Bot. Surv. India 17 : 117. 1959 & in Fasc. Fl. India 11 : 83. 1982 ; Panigr. & Mishra in J. Econ. Tax. Bot. 5 : 416. 1984. *Mukia scabrella* (L. f.) Arn. in Hook. J. Bot. 3 : 276. 1841 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 623. 1879. 'Chirati'.

Herbs, climbing ; stem grooved, scabrous. Leaves deltoid - ovate, 3-5 × 4-6 cm, obtusely 3-5 angled, scabrid, margins dentate ; tendrils striate, scaberulous. Flowers yellow in axillary fascicles. Fruits ca 1 cm across, red when ripe. Seeds ellipsoid, compressed.

Fls. & Frts. : July September.

Illus. : Wight, Ic. t. 501. 1841 (*Bryonia scabrella* L.f. Suppl. 424. 1781).

Distrib. : Common annuals along hill slopes. Dhebewadi.

SOLENA Lour.

Solena amplexicaulis (Lam.) Gandhi in Saldanha & Nicolson, Fl. Hassan Dist. 179. 1976 ; Jeffrey in Kew Bull. 34 : 793. 1980. *Bryonia amplexicaulis* Lam. Encycl. 1 : 496. 1785. *Zehneria umbellata* Thw. Enum. Pl. Zeyl. 125. 1859 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 625. 1879 ; p.p. *Melothria heterophylla* (Lour.) Cogn. in DC. Monogr. Phan. 3 : 618. 1881 ; Cooke, Fl. Pres. Bombay 1 : 575. 1958 (Repr. ed.) ; Chakravarty in Rec. Bot. Surv. India 17 : 159. 1959 & in Fasc. Fl. India 11 : 79. 1982. *M. amplexicaulis* (Lam.) Cogn. op. cit. 621 ; Chakravarty, op. cit. 146 ; Panigr. & Mishra in J. Econ. Tax. Bot. 5 : 416. 1984. *M. angulata* Chakravarty in J. Bombay Nat. Hist. Soc. 5 : 899. 1952 & in Fasc. Fl. India 11 : 78. 1982. 'Gometi'.

Herbs, scandent ; branches grooved. Leaves ovate deltoid, 4-7 x 3.5-5.5 cm. base cordate or hastate, apex acute or acuminate. Flowers yellowish in axillary fascicles ; corolla puberulous ; anthers suborbicular, ciliate. Fruits 2-3 cm across.

Fls. & Frts. : August October.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 303. 1982 (*Solena heterophylla* Lour. Fl. Cochinch. 1 : 514. 1790).

Distrib. : Common along ghats in deciduous and semi-evergreen forests. Khambil chorghe ghat ; Mahabaleshwar ; Tapola ; Vasota.

TRICHOSANTHES L.

Trichosanthes tricuspidata Lour. Fl. Cochinch 589. 1790 ; Jeffrey in Kew Bull. 15 : 366. 1962. *T. bracteata* (Lam.) Voigt, Hort. Sub. Calc. 58. 1845 ; Chakravarty in Rec. Bot. Surv. India 17 : 44. 1959 & in Fasc. Fl. India 11 : 109. 1982. *T. palmata* Roxb. Fl. Ind. (Carey ed.) 3 : 704. 1832 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 606. 1879 ; Cooke, Fl. Pres. Bombay 1 : 560. 1958 (Repr. ed.).

Climbers. Leaves 9-10 x 9-12 cm, 3-lobed, margins denticulate. Male flowers white in axillary racemes ; bracts upto 3.5 cm long, puberulous ; calyx tube longitudinally ribbed ; petals oblong ; female flowers solitary, axillary. Fruits globose. Seeds ellipsoid, attenuate at base, white.

Fls. & Frts. : May July.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 304 & 971a. 1982.

Distrib. : Common on hill slopes. Ambeghar ; Koyna ; Lingmala ; Mahabaleshwar ; Mahabaleshwar Pratapgad.

ZEHNERIA Endl.

Zehneria scabra (L. f.) Sond. in Harv. & Sond. Fl. Cap. 2 : 486. 1862 ; Jeffrey in Kew Bull. 15 : 369. 1962. *Bryonia scabra* L.f. Suppl. 423. 1781. *Z. hookeriana* (Wight & Arn.) Arn. in Hook. J. Bot. 3 : 275. 1841 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 624. 1879. *Melothria perpusilla* (Bl.) Cogn. in DC. Monogr. Phan. 3 : 607. 1881 ; Cooke, Fl. Pres. Bombay 1 : 574. 1958 (Repr. ed.) ; Chakravarty in Rec. Bot. Surv.

India 17 : 146. 1959 & Fasc. Fl. India 11 : 85. 1982. *M. scabra* (L.f.) Panigrahi & Mishra in J. Econ. Tax. Bot. 5 : 417. 1984.

Climbers. Leaves deltoid, 5-8 × 5.0-7.5 cm, 3 angled, margins distantly toothed. Male flowers in umbels or racemes on long peduncles; female solitary, axillary, shortly pedunculate. Fruits ca 1 cm across, red when ripe. Seeds ovate oblong, attenuate at base.

Fls. & Frts. : August November.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 305. 1982.

Distrib. : Common component of semi-evergreen forests, Kas ; Lingmala : Machutar forest ; Mahabaleshwar ; Nauja.

CULTIVATED SPECIES

Coccinia grandis (L.) Voigt, Hort. Suburb. Calc. 59. 1845 ; Jeffrey in Kew Bull. 34 : 794. 1980 ; Chakravarty in Fasc. Fl. India 11 : 24, f. 1-9. 1982. *Bryonia grandis* L. Mant. 1 : 126. 1767. *C. indica* Wight & Arn. Prodri. 347. 1834 ; Cooke, Fl. Pres. Bombay 1 : 572. 1958 (Repr. ed.). *Cephalandra indica* Naud. in Ann. Sci. Nat. 5, 5 : 16. 1859 ; C.B.CI. in Hook. f. Fl. Brit. India 2 : 621. 1879. *Coccinia cordifolia* (L.) Cogn. in DC. Monogr. Phan. 3 : 529. 1881 ; Chakravarty in Rec. Bot. Surv. India 17 : 117. 1959. 'Tondali'.

Climbers. Leaves rhomboid cordate, 6-8 × 5-10 cm, 3-5 angled, margin minutely denticulate. Flowers solitary, axillary ; petals glandular pubescent. Fruits fusiform ellipsoid, green with white streaks, red when ripe.

Fls. & Frts. : July September.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 293. 1982.

Distrib. : Widely cultivated as a vegetable. Occasionally found as an escape. Chaphal ; Pandavgad.

BEGONIACEAE

BEGONIA L.

- | | | |
|----------------------------------|-----|-----------------------|
| 1. Plants tuberous | ... | <i>B. prixophylla</i> |
| 1. Plants not tuberous : | | |
| 2. Capsules winged, 2-celled | .. | <i>B. crenata</i> |
| 2. Capsules not winged, 3-celled | .. | <i>B. malabarica</i> |

Begonia crenata Dryand. in Trans. Linn. Soc. 1 : 164, t. 14, f. 3. 1791 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 651. 1879 ; Cooke, Fl. Pres. Bombay 1 : 584. 1958 (Repr. ed.). (Fig. 21).

Herbs, 15–30 cm high; stems reddish. Leaves alternate, ovate or suborbicular, 4–5 × 3.5–5.0 cm, base cordate, apex acute, glabrous above, silvery white beneath, margins crenate. Flowers unisexual, pinkish with glistening dots when fresh. Capsules membranous, 3-winged, crowned by accrescent perianth. Seeds many, minute, ellipsoid.

Fls. & Frts. : July February.

Distrib. : Common monsoon herbs in moist rocky crevices. Ambeghar ; Kas ; Koyna ; Lingmala Satara road ; Mahabaleshwar ; Mahabaleshwar Lingmala road ; Shirshingi.

B. malabarica Lam. Encycl. 1 : 393. 1785 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 655. 1879 ; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 14. 1897.

Herbs, ca 50 cm high, perennials. Leaves lanceolate, base cordate, unequal, apex acute, pilose above, glabrous beneath. Flowers pink in axillary cymes ; male flowers : sepals and petals orbicular ; stamens monadelphous. Female flowers : perianth segments 5 ; styles 3. Capsules ca 2 cm across.

Illus. : Ramamoorthy in Saldanha & Nicolson, Fl. Hassan Dist. f. 35B. 1976 ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 306. 1982.

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

B. prixophylla Blatt. & McC in J. Ind. Bot. Soc. 10 : 27, t. 1–5. 1931.

Herbs, ca 40 cm high. Leaves broadly ovate to rounded, 19–24 cm across, base unequal, apex acute, densely bristly ; petioles 15–26 cm long ; stipules ovate lanceolate, hairy. Male flowers : sepals orbicular, hairy without ; petals broadly obovate ; stamens many, free. Female flowers : perianth segments 5, elliptic oblong. Capsules trigonous, hispid.

Fls. & Frts. : August October.

Illus. : Blatt. & McC. op. cit.

Distrib. : Rare species, known only by the type collection ; endemic to Mahabaleshwar. Lodwick point, Mahabaleshwar, McCann 2915, 2919, 2923 (BLAT).

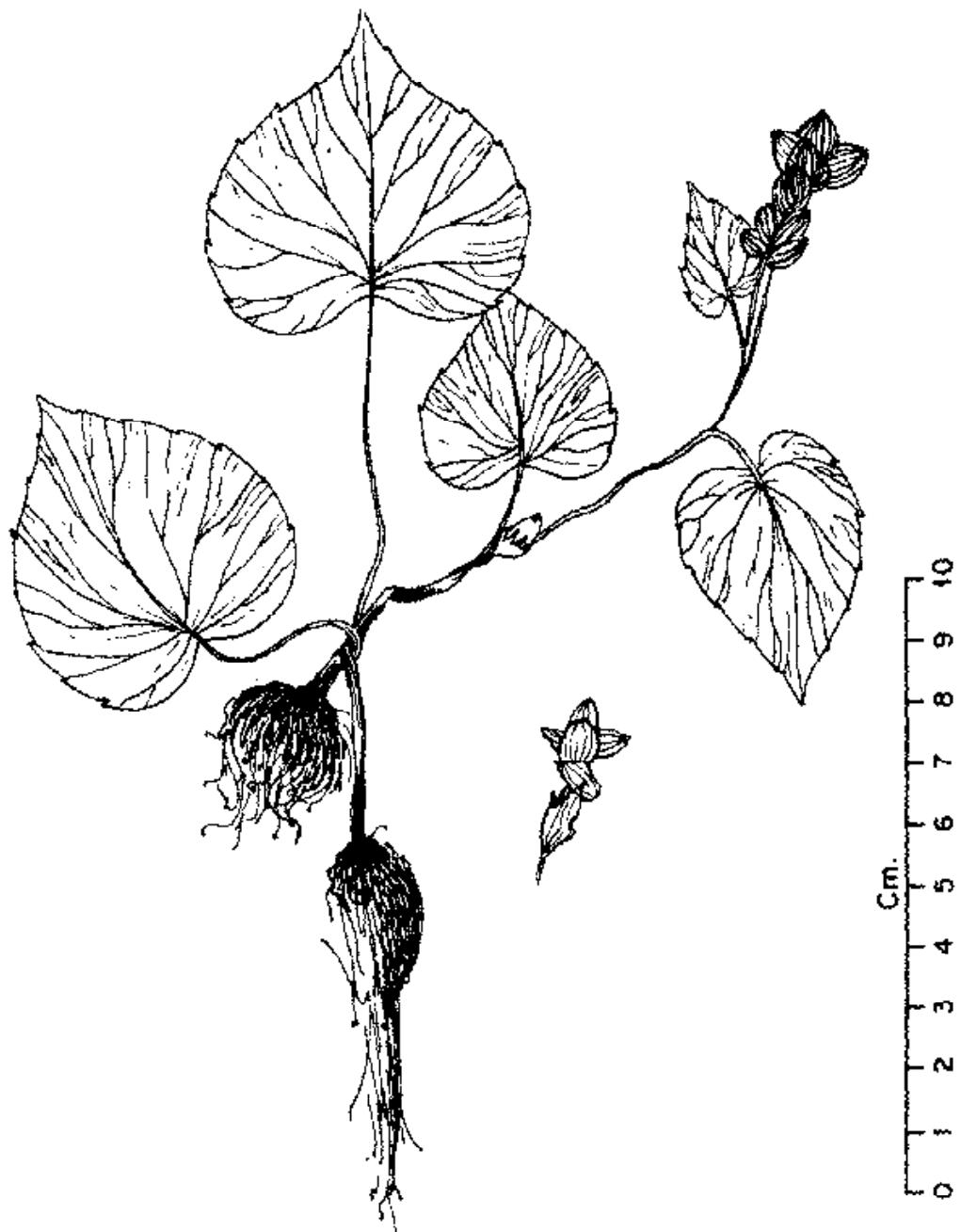


Fig. 21. *Begonia crenata* Dryand.

CACTACEAE

Opuntia elatior Mill. Gard. Dict. ed. 8, no. 4. 1768. *O. dillenii* Grah. ex Dalz. & Gibbs. Bombay Fl. Suppl. 39. 1861 ; C.B.CI. in Hook. f. Fl. Brit. India 2 : 657. 1879. *O. nigricans* Woodrow in Rec. Bot. Surv. India 1 : 89. 1895 ; Cooke, Fl. Pres. Bombay 1 : 587. 1958 (Repr. ed.). 'Nivadung'

Shrubs, succulent ; stem joints oblong-obovate, flat with many areoles bearing sharp spines. Leaves small, terete, deciduous. Flowers yellow, solitary. Berries red.

Fls. & Frts. : April July.

Distrib. : Native of S. America ; found in waste places and along roadsides. Koyna, Kochhar.

MOLLUGINACEAE

- | | |
|--|----------------|
| 1. Leaves obovate-suborbicular, villous ; seeds strophiolate ... | GLINUS |
| 1. Leaves narrowly linear, glabrous ; seeds estrophiolate ... | MOLLUGA |

GLINUS L.

Glinus lotoides L. Sp. Pl. 463. 1753 ; C. Jeffrey in C.B. Hubb. & Milne-Redhead, Fl. Trop. E. Afr. Aizoaceae 14, F. S. 1951. *Mollugo hirta* Thunb. Prodr. Fl. Cap. 24. 1794 ; C.B.CI. in Hook. f. Fl. Brit. India. 2 : 622. 1879 ; Cooke, Fl. Pres. Bombay 1 : 593. 1958 (Repr. ed.). 'Dasara-sag'.

Herbs, prostrate, 15–40 cm long, softly villous. Leaves 3–5 together, ca 0.5–1.3 cm across. Flowers pinkish-white in axillary fascicles ; perianth lobes elliptic-lanceolate, subequal, hairy without. Capsules ovoid, ca 0.5 cm long, 5-valved.

Fls. & Frts. : April May.

Illus. : Maheshwari, Ill. Fl. Delhi, f.90. 1966.

Distrib. : Annuals along waste places and near cultivated fields. Koyna.

MOLLUGO L.

Mollugo pentaphylla L. Sp. Pl. 89. 1753 ; Cooke, Fl. Pres. Bombay 1 : 594. 1958 (Repr. ed.). *M. stricta* L. Sp. Pl. 2. 131. 1762 ; C.B.CI. in Hook. f. Fl. Brit. India 2 : 663. 1879. *M. pentaphylla* var. *rupestris* Cooke, op. cit.

Herbs, diffuse, 5–10 cm high. Leaves 2–4 together, ca 2 cm long. Flowers small, white in terminal cymes; peduncles and pedicels filiform; calyx lobes elliptic-oblong, subequal. Capsules globose, slightly longer than the calyx. Seeds many, reniform to rounded.

Fls. & Frts. : May September.

Distrib. : Common annuals in grass lands and on wet rocks along ghats. Koyna.

AIZOACEAE

TRIANTHEMA L.

Trianthema portulacastrum L. Sp. Pl. 223. 1753 ; Gamble, Fl. Pres. Madras 550. 1919 [1 : 389, 1958 (Repr. ed.)]. *T. monogyna* L. Mant. 69. 1776 ; C.B.CI. in Hook. f. Fl. Brit. India 2 : 660. 1879 ; Cooke, Fl. Pres. Bombay 1 : 589. 1958 (Repr. ed.). 'Ghodh, Ghetoli'.

Herbs, prostrate, much branched. Leaves opposite pairs slightly unequal, broadly obovate, 2.2–3.6 × 1.0–2.5 cm, succulent, base cuneate, apex rounded, apiculate. Flowers pink in axillary fascicles; calyx lobes ovate, acute; petals absent; stamens 10, 2-seriate. Capsules ca 0.5 cm long, truncate at apex.

Fls. & Frts. : July August.

Illus. : Wight, Ic. t. 288. 1840 [*T. obcordata* Roxb. Fl. Ind. (Carey ed.) 2 : 445. 1832] ; Maheshwari, Ill. Fl. Delhi f. 93. 1966.

Distrib. : Rare, in drier part of the district in waste places. Phaltan, 165840.

Notes : Jeffrey (Kew Bull. 14 : 235. 1960) has split the genus *Trianthema* L. into two subgenera viz., *Trianthema* with solitary flowers and 4-many ovules and *Papularia* (Forsk.) Jeffrey with flowers clustered and 2-ovules. According to this classification, the present specimen fits in the subgenus *Papularia*.

APIACEAE

1. Plants trailing ; leaves and umbels simple :
 2. Leaves lobed ; flowers white ; mericarps 3-ribbed ... **HYDROCOTYLE**
 2. Leaves entire ; flowers pink ; mericarps 7-9-ribbed... **CENTELLA**
1. Plants erect ; leaves and umbels compound :
 3. Mericarps laterally compressed, not winged on margin :
 4. Pubescent herbs ; furrows 2-3 vittate ... **PIMPINELLA**
 4. Glabrous herbs ; furrows 1-vittate ... **TRACHYSPERMUM**
 3. Mericarps dorsally compressed, winged on margins :
 5. Plants glabrous ; roots tuberous ... **POLYZYGUS**
 5. Plants hairy ; roots fusiform :
 6. Petals radiant ... **PINDA**
 6. Petals not radiant ... **HERACLEUM**

CENTELLA L.

Centella asiatica (L.) Urb. in Mart. Fl. Bras. 11 : 287. 1879 ; Buwalda in Blumea 2 : 134. 1946. *Hydrocotyle asiatica* L. Sp. Pl. 234. 1753 ; C.B.CI. in Hook. f. Fl. Brit. India 2 : 669. 1879 ; Cooke, Fl. Pres. Bombay 1 : 598. 1958 (Repr. ed.) 'Brahmi'.

Herbs ; stem slender, reddish, internodes long, rooting at nodes. Leaves orbicular-reniform, 1.0-2.2×1.1-3.7 cm, broader than long ; petioles 6-11 cm long. Flowers sessile ; bracts 2, ovate, acute. Mericarps brown, laterally compressed.

Fls. & Frts. : February August.

Illus. : Wight, Ic. t. 565. 1842 (*Hydrocotyle asiatica* L.).

Distrib. : Common near marshy places and grasslands. Gureghar ; Koyna ; Mahabaleshwar.

HERACLEUM L.

1. Flowers yellow ... ***H. grandis***
1. Flowers white :
 2. Primary umbels 6-10 rayed ; mericarps broadly winged... ***H. aquilegifolium***
 2. Primary umbels 8-20 rayed ; mericarps narrowly winged... ***H. sprenzelianum***

Heracleum aquilegifolium C.B.CI. in Hook. f. Fl. Brit. India 2 : 715. 1879 ; Cooke, Fl. Pres. Bombay 1 : 607. 1958 (Repr. ed.).

Herbs. Leaves radical, 2-pinnate; petioles 5-11 cm long, dilated at base; lower leaflets ternate, second pair sessile, simple, third leaflet 3-lobed with winged petioles; upper leaves reduced to sheaths; bracts 3, oblong-lanceolate. Secondary umbels 6-8 rayed; bracteoles 3-5, linear oblong. Mericarps ellipsoid, ca 1 cm long, commissural vittae 4-6.

Fls. & Frts. : August.

Distrib. : Occasional along ghats, Mahabaleshwar ; Panchgani-Wai.

H. grandis (Dalz. & Gibbs.) S.M. Almeida in Indian Forester 111 : 160. 1985. *Pastinaca grandis* Dalz. & Gibbs. Bombay Fl. 107. 1861. *Peucedanum grande* (Dalz. & Gibbs.) C.B.CI. in Hook. f. Fl. Brit. India 2 : 710. 1879 ; Cooke, Fl. Pres. Bombay 1 : 605. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 317. 1982. 'Baphali'. (Figs. 22 & 23).

Herbs, 40-50 cm high. Leaves radical, 2-pinnate, 10-15 cm long; leaflets ca 5.0×2.5 cm long. Primary umbels 4-6 rayed, unequal; secondary umbels 6-10 flowered; bracteoles 5, oblong. Mericarps obovate, ca 1.6×1.1 cm; commissural vittae 4.

Fls. & Frts. : July October.

Distrib. : Common monsoon herb on hill slopes, restricted to Sahyadri ranges. Kusapur ; Mahabaleshwar ; Panchgani ; Pandavgad ; Pratapgad.

H. spengelianum Wight & Arn. Prodr. 372. 1834; C.B.CI. in Hook. f. Fl. Brit. India 2 : 716. 1879 ; Cooke, Fl. Pres. Bombay 1 : 607. 1958 (Repr. ed.).

Herbs ca 1 m high. Lower leaves bipinnate, ovate, sparsely hairy; leaflets 5-7, terminal 3-lobed; upper leaves 3-foliolate, upper most reduced to sheaths; bracts oblong-lanceolate; bracteoles 3-5, deciduous. Mericarps ellipsoid, 4-vittate on dorsal surface.

Fls. & Frts. : August.

Illus. : Wight, Ic. t. 1008. 1845 (*Pastinaca spengeliana*).

Distrib. : Occasional on exposed hill slopes. Panchgani ; Pandavgad.

H. pinda Dalz. & Gibbs. Bombay Fl. 107. 1861 ; C.B.CI. in Hook. f. Fl. Brit. India 2 : 717. 1879 ; Nairne, Fl. Plants Western India 136. 1894 ; Cooke, Fl. Pres. Bombay 1 : 608. 1958 (Repr. ed.).

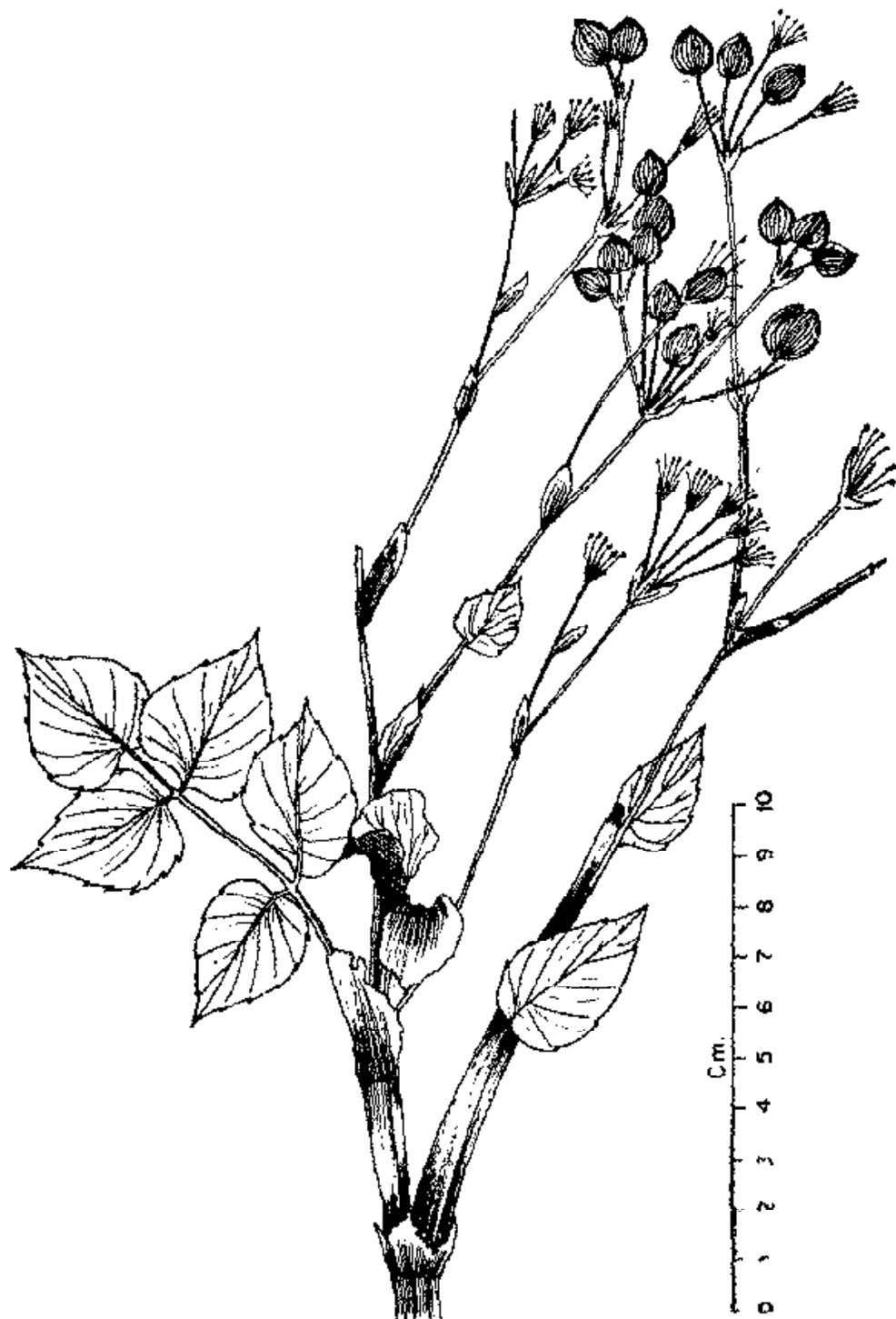


Fig. 22. *Heracleum grandis* (Dalz. & Gibs.) S.M. Almeida

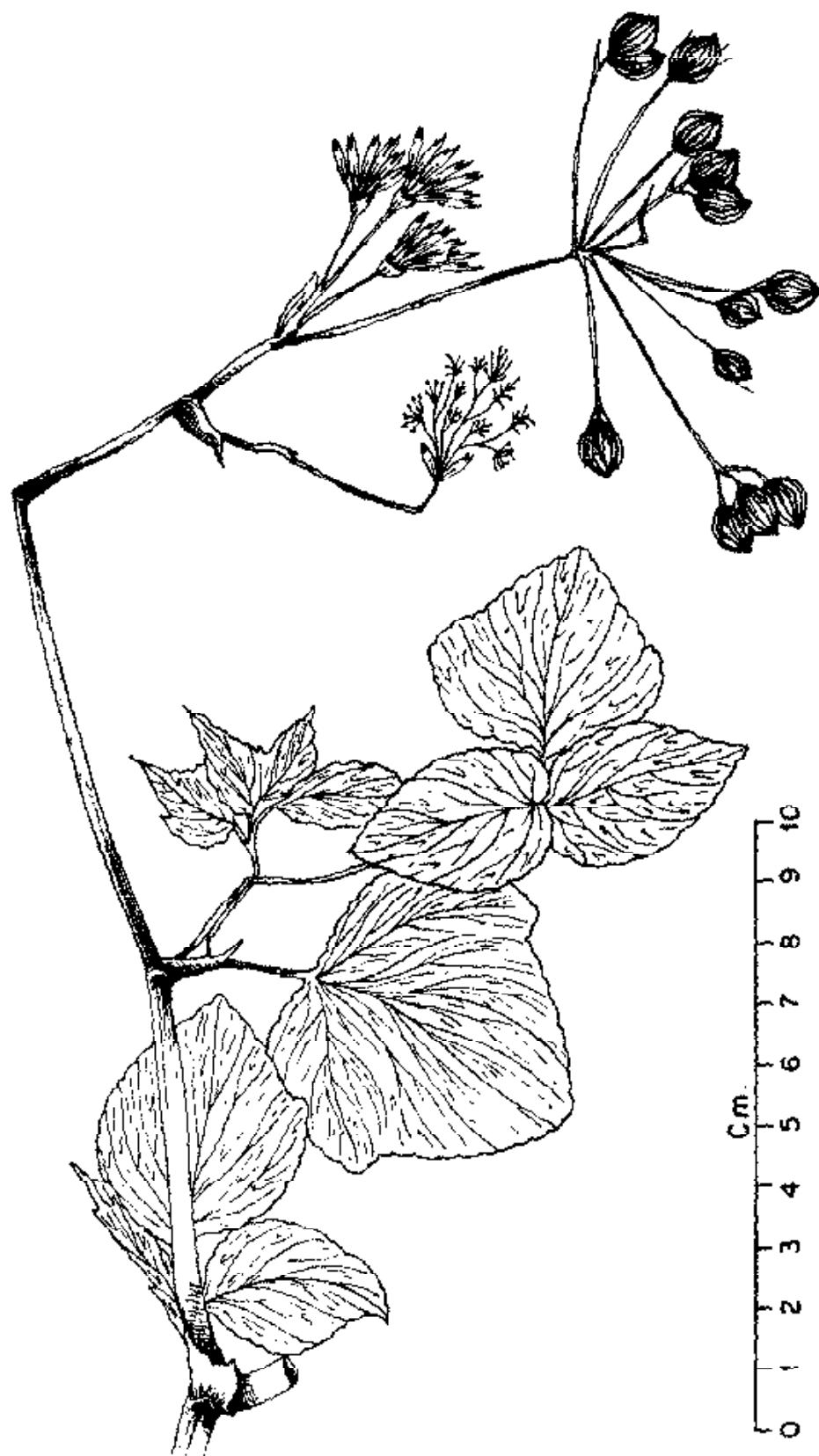


Fig. 23. *Heracleum grandis* (Dalz. & Gibs.) S.M. Almeida

Nairne (*op. cit.*) reported this species on the authority of Cooke (Bombay Gazetteer 19 : 650, 1885), however, Cooke, (*op. cit.*) had not seen this species but included on the authority of Dalz. & Gibbs. who reported it from Harishchandragad and Harsar. Mukherjee (1983) doubts the availability of this species in any herbaria other than the type.

HYDROCOTYLE L.

Hydrocotyle sibthorpioides Lam. Encycl. 3 : 153. 1789; Buwalda in Steenis, Fl. Males. 1. 4 : 115. 1949. *H. rotundifolia* Roxb. ex DC. Prodr. 4 : 64. 1830 ; C.B.CI. in Hook. f. Fl. Brit. India 2 : 668. 1879 ; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 15. 1897.

Herbs, stoloniferous. Leaves orbicular, 0.7–2.5 cm across, palmately lobed, pubescent. Flowers in solitary umbels. Mericarps orbicular, dorsally compressed.

Fls. & Frts. : March.

Illus : Wight, Ic. t. 564. 1842 (*H. rotundifolia*) ; Nasir in Nasir & Ali, Fl. W. Pak. f. 2 E. 1972.

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

PIMPINELLA L.

1. Bracts and bracteoles absent :

2. Leaflets oblong-lanceolate ; mericarps glabrous ... *P. heyneana*

2. Leaflets ovate-circular ; mericarps hispid ... *P. katrajensis*

1. Bracts and bracteoles present :

3. Flowers polygamous ... *P. wallichiana*

3. Flowers bisexual :

4. Prostrate herbs ; bracts 4–6 ; mericarps ovoid, minutely pilose ... *P. adscendens*

4. Erect herbs ; bracts solitary ; mericarps narrowly oblong with white scales ... *P. tomentosa*

Pimpinella adscendens Dalz. in Hook. J. Bot. & Kew Gard. Misc. 2 : 261. 1850 ; C.B.CI. in Hook. f. Fl. Brit. India 2 : 689. 1879 ; Cooke, Fl. Pres. Bombay 1 : 603. 1958 (Repr. ed.).

Herbs, 15–25 cm long. Leaves pinnate, 5–7 cm long; leaflets 4–6 pairs, obovate, base cuneate. Flowers white in terminal umbels; primary umbels 6–8 rayed, unequal; bracts linear-subulate; secondary umbels 6–10 flowered; bracteoles linear-subulate. Mericarps ca 0.2 cm long.

Fls. & Frts. : February December.

Distrib. : Common in open grasslands. Asani ; Koyna ; Mahabaleshwar ; Mhavashi ; Vasota.

Pimpinella heyneana (DC.) Kurz in J. Asiatic Soc. Beng. 46 : 115. 1877 ; C.B.CI. in Hook. f. Fl. Brit. India 2 : 684. 1879 ; Cooke, Fl. Pres. Bombay 1 : 601. 1958 (Repr. ed.). *Helosciadium heyneanum* DC. Prodr. 4 : 106. 1830.

Herbs, ca 1 m high. Leaves 3-foliolate; leaflets 3–5 × 1.5–3.5 cm, deeply lobed, chartaceous. Primary umbels 10–18 rayed, unequal; secondary umbels 6–8 flowered on filiform pedicels; flowers white; petals ovate, apex inflexed, Mericarps ovoid, ca 0.2 cm long.

Fls. & Frts. : November.

Distrib. : Infrequent in semi-evergreen forest edges. Koyna.

P. katrajensis Rolla Rao & Hemadri in Indian Forester 102 : 232, f. 1. 7. 1976.

Herbs, ca 1 m high. Leaves 3-foliolate, the lower-most sometimes simple; leaflets ca 6.5 × 5.5 cm, base cordate, apex acute, sparsely hairy beneath, pubescent above, margin coarsely toothed and cartilaginous. Primary umbels ca 4.5 cm long, puberulous; secondary umbels ca 2.5 cm long; petals ovate-oblong or obcordate. Mericarps ovoid, ca 0.3 × 0.2 cm.

Fls. & Frts. : August November.

Illus. : Rolla Rao & Hemadri, *op. cit.*

Distrib. : Panchgani, Cooke s.n.

Notes : Aromatic perennials. Resembles *P. leschenaultii* DC. & *P. candolleana* Wight & Arn. in general habit but differentiated from the former by its densely hispid fruits and from the latter by the absence of bracts and bracteoles.

Cooke (*op. cit.*) reported *P. candolleana* from Panchgani. However, according to Rolla Rao & Hemadri (*op. cit.*) description of this species is

based on a specimen of *P. candolleana* collected by Meebold from the Nilgiris, which is common in that area and does not occur in Maharashtra. Therefore, Cooke's *P. candolleana* needed a new name.

Pimpinella tomentosa Dalz. ex C.B.Cl. in Hook. f. Fl. Brit. India 2 : 689. 1879 ; Cooke, Fl. Pres. Bombay 1 : 602. 1958 (Repr. ed.).

Herbs, ca 1 m high. Leaves bipinnate; leaflets inciso-serrate; petioles sheathing, striate, pubescent. Flowers small, white; primary umbels 6-8 rayed; secondary umbels 6-12 flowered; bracteoles linear, 3. Mericarps ca 0.5 cm long, ridges obscure.

Fls. & Frts. : January - October.

Distrib. : Frequent along ghats. Mahabaleshwar ; Panchgani-Wai ; Vardhangad.

P. wallichiana (Miq.) Gandhi & Saldanha & Nicolson, Fl. Hassan Dist. 417. 1976. *Helosciadium wallichianum* Miq. in Bot. Zeit. 7 : 775. 1849. *P. monoica* Dalz. in Hook. J. Bot. & Kew Gard. Misc. 3 : 212. 1851 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 687. 1879 ; Cooke, Fl. Pres. Bombay 1 : 602. 1958 (Repr. ed.).

Herbs, 1-2 m tall. Lower leaves caudate, 3-foliate; leaflets ovate-lanceolate, 5-8×2-4 cm, base cordate, margin sharply serrate, puberulous; upper leaves irregularly dissected. Flowers white; primary umbels 8-12 rayed; secondary umbels 8-16 flowered; bracteoles 4, linear-subulate. Mericarps ovoid, minutely papillose.

Fls. & Frts. : January - November.

Distrib. : Frequent at higher elevations as forest undergrowth. Koyna ; Mahabaleshwar ; Panchgani.

PINDA P.K. Mukh. & Constance

Pinda concanensis (Dalz.) P.K. Mukh. & Constance in Kew Bull. 41 : 226. 1986. *Heracleum concanense* Dalz. in Hook. J. Bot. & Kew Gard. Misc. 2 : 260. 1850 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 716. 1879 ; Cooke, Fl. Pres. Bombay 1 : 608. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 316. 1982. (Fig. 24).

Herbs, 30-40 cm high. Leaves biennate, 10-15 cm long; leaflets 3-lobed, margin serrate, pubescent. Flowers white; primary umbels 5-10 rayed; bracts 3, lanceolate; bracteoles 5, lanceolate, strongly

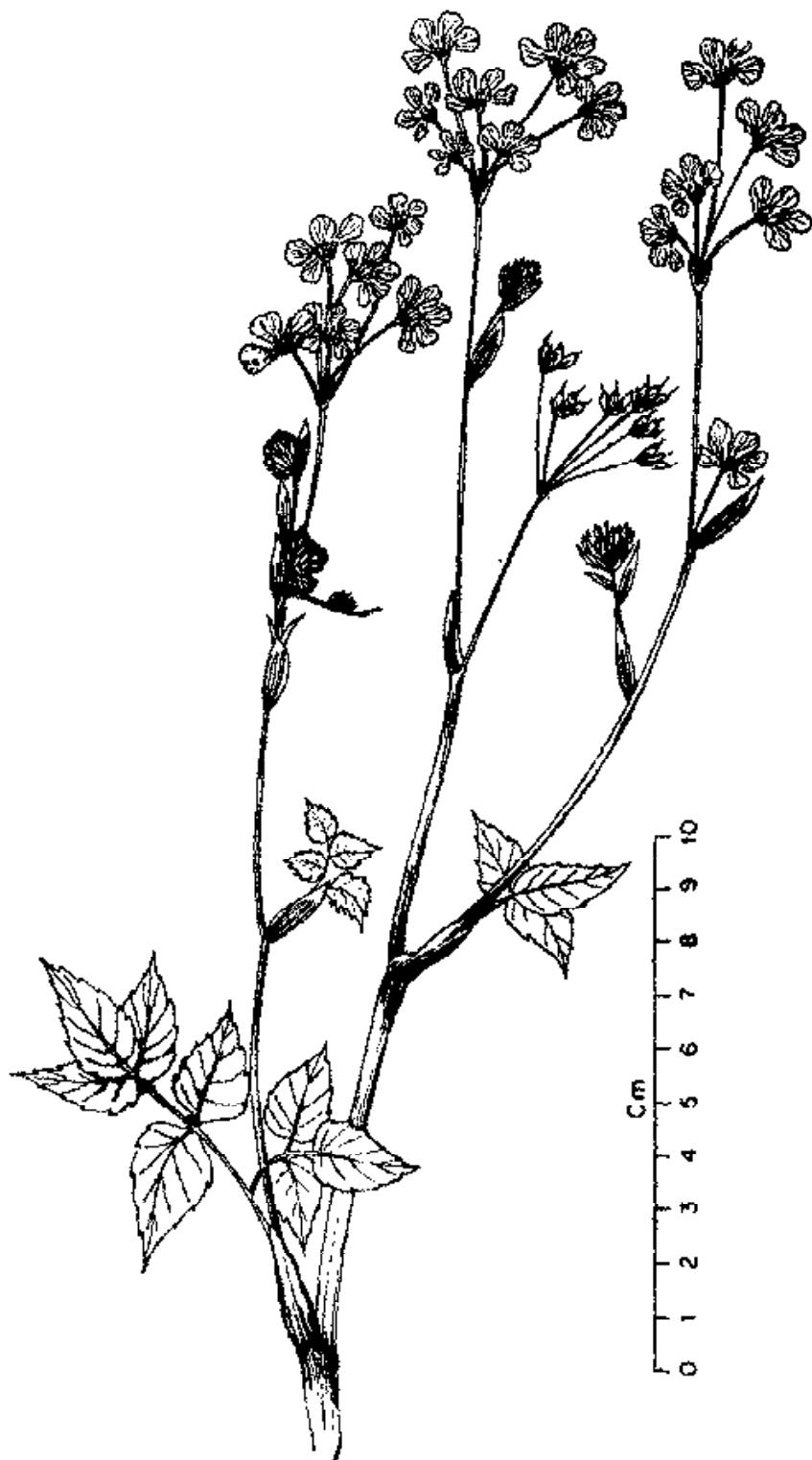


Fig. 24. *Pinda concanensis* (Dalz.) P.K. Mukh. & Constance

nerved ; petals broadly obovate, 2 lobed with short, inflexed tooth between the lobes. Mericarps elliptic, ca 0.7 cm long.

Fls. & Frts. : July - October.

Distrib. : Common along ghats on exposed slopes. Jadholi ; Kas ; Mahabaleshwar ; Panchgani ; Pandavgad ; Shirshingi ; Yavateshwar.

POLYZYGUS Dalz.

Polyzygus tuberosus Dalz. in Hook. J. Bot. & Kew Gard. Misc. 2 : 260. 1850 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 698. 1879 ; Cooke, Fl. Pres. Bombay 1 : 603. 1958 (Repr. ed.).

Herbs, ca 50 cm high ; stem angular, furrowed above, terete below. Leaflets pinnatisect, ovate-lanceolate, segments with bristly pointed serratures. Flowers white ; primary umbels 6 - 8 rayed ; bract 1, subulate ; secondary umbels 8 - 12 flowered ; bracteoles 3, lanceolate. Mericarps ovoid, ca 0.3 cm long.

Fls. & Frts. : July.

Distrib. : Rare in the district as well as in Maharashtra State. Koyna, Vasavada 5017.

TRACHYSPERMUM Link (*nom. cons.*)

Trachyspermum strictocarpum (C.B.Cl.) Wolff in Engl. Pflanzenr. 43 : 89. 1927 ; Sant. in Rec. Bot. Surv. India 16 (1) : 125. 1967 (3rd Rev. ed.) ; Rolla Rao & Hemadri in J. Bombay Nat. Hist. Soc. 67 : 357. 1970. *Carum strictocarpum* C.B.Cl. in Hook. f. Fl. Brit. India 2 : 681. 1879 ; Cooke, Fl. Pres. Bombay 1 : 600. 1958 (Repr. ed.). *Pimpinella lateriflora* Dalz. & Gibbs. Bombay Fl. 106. 1861 ; Cooke, *op. cit.* 603.

Herbs, ca 1 m high. Leaflets deeply cut into linear-lanceolate, glabrous segments. Flowers white in compound umbels ; bracts 5 - 6, linear, acute. Mericarps ellipsoid, brown, puberulous, ridges slender, obscure.

Fls. & Frts. : October December.

Distrib. : Common. Mahabaleshwar ; Mhavashi ; Panchgani ; Shirgaon ghat.

CULTIVATED SPECIES

Anethum graveolens L. Sp. Pl. 263. 1753 ; Buwalda in Blumea 2 : 202. 1936 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 316. 1982. **Peucedanum graveolens** (L.) Hiern. Fl. Trop. E. Afr. 3 : 19. 1871 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 709. 1879 ; Cooke, Fl. Pres. Bombay 1 : 606. 1958 (Repr. ed.). 'Shepu'.

Herbs, slender, erect. Leaves 2-3 pinnate ; segments linear. Primary umbels 6-9 rayed ; secondary umbels 6-14 flowered ; flowers yellow. Mericarps oblong, ca 0.5 cm long, ridges thick.

Fls. & Frts. : December-March.

Distrib. : Cultivated as vegetable, also found as an escape. Mhavashi; Mahabaleshwar.

Coriandrum sativum L. Sp. Pl. 256. 1753 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 717. 1879 ; Cooke, Fl. Pres. Bombay 1 : 609. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 317. 1982. 'Kothimbir, Dhana'.

Herbs, 25-50 cm high. Leaves pinnatisect, 5-8 cm long. Primary umbels 3-4 with single linear bract ; secondary umbels 8-10 flowered ; bracteoles linear. Flowers white. Mericarps ovoid, ca 0.3 cm long.

Fls. & Frts. : Throughout the year.

Distrib. : Commonly cultivated, whole plant and seeds used as condiment. Koyna; Mahabaleshwar.

ARALIACEAE

SCHEFFLERA J. & G. Forst. (*nom. cons.*)

Schefflera elliptica (Bl.) Harms in Engl. Pflanzenr. 3 : 39. 1894 ; Rehder in J. Arnold Arbor. 15 : 114. 1934 ; C.B. Shang in Candollea 39 : 468. 1984. **Sciadophyllum ellipticum** Bl. Bijdr. 878. 1826. **Schefflera venulosa** (Wight & Arn.) Harms in Engl. & Prantl. Pflanzenfam. 3 : 39. 1894. **Heptapleurum venulosum** Seem. in J. Bot. 3 : 80. 1865 ; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 729. 1879 ; Cooke, Fl. Pres. Bombay 1 : 610. 1958 (Repr. ed.). 'Rawanito'.

Climbers. Leaves alternate, digitate, crowded at the apex ; leaflets 3-5, elliptic-oblong, 7-11×4-5 cm ; stipules connate, ca 1 cm long. Flowers greenish-white in paniculate umbels. Fruits subglobose, brown, 5-angled.

Fls. & Frts. : June.

Distrib. : Rare in semi-evergreen forests. Koyna, Kochhar 158445.

RUBIACEAE

1. Climbers :

- 2. Stem herbaceous ; branches scabrid ; flowers in axillary and terminal cymes ... **RUBIA**
- 2. Stem woody ; branches smooth ; flowers in leaf opposed cymes ... **OXYCHROS**

1. Erect or prostrate herbs, shrubs or trees :

3. Herbs :

4. Flowers 5-merous :

- 5. Leaves 3-11 cm long ; flowers in terminal cymes ... **OPHIORRHIZA**
- 5. Leaves ca 1 cm long ; flowers solitary, axillary ... **DENTELLA**

4. Flowers 4-merous :

- 6. Flowers in axillary fascicles or terminal sessile heads ... **SPERMACOCH**
- 6. Flowers in axillary fascicles or terminal cymes :
- 7. Seeds more than 30, angular ... **HEDYOTIS**
- 7. Seeds less than 15, plano-convex or globose with a ventral cavity ... **NEANOTIS**

3. Shrubs or trees :

8. Plants armed :

- 9. Erect or scandent shrubs :
- 10. Flowers in axillary fascicles ; corolla tube glabrous within ... **CANTHIMUM**
- 10. Flowers in axillary cymes ; corolla tube villous within ... **MENNA**

9. Small trees :

- 11. Leaves tomentose beneath ; flowers in fascicles ... **CATUNARBOAM**
- 11. Leaves glabrous beneath ; flowers solitary ... **TAMILNADIA**

8. Plants unarmed :

12. One calyx lobe enlarged, leafy and showy ... MUSSAENDA

12. All calyx lobes equal :

13. Stipules intrapetiolar :

14. Stipules persistent; fruit a berry or capsule ... SPERMADICTYON

14. Stipules deciduous; fruit a drupe :

15. Corolla lobes twisted to left in bud; stigma entire ... PAVETTA

15. Corolla lobes valvate; stigma 2-fid ... PSYCHOTRIA

13. Stipules interpetiolar :

16. Flowers aggregated in globose heads :

17. Flowers orange; corolla lobes imbricate ... NEOLAMARCKIA

17. Flowers white with a creamish or greenish tinge; corolla lobes valvate :

18. Heads solitary ... MITRAGYNA

18. Heads in fascicles ... HALDINA

16. Flowers in fascicles, cymes or panicles :

19. Flowers in dense thyrsoid panicles; corolla lobes imbricate ... WENDLANDIA

19. Flowers in cymes or spicate racemes; corolla lobes valvate :

20. Leaves distichous; calyx split on one side ... LASIANTHUS

20. Leaves opposite or whorled; calyx not split :

21. Flowers in spicate racemes; fruit a capsule ... HYMENODICTYON

21. Flowers in cymes; fruit a drupe :

22. Styles inserted, stigma 2-fid ... IXORA

22. Styles exerted; stigma entire ... CANTHIMUM

CANTHIMUM Lam.

1. Armed shrubs :		
2. Stem scandent ; flowers 5-merous in axillary fascicles ...		<i>C. rheedii</i>
2. Stem erect ; flowers 4-merous in axillary cymes ...		<i>C. parviflora</i>
1. Unarmed trees	...	<i>C. dicoccum</i> var <i>umbellatum</i>

***Canthium dicoccum* (Gaertn.) Teys. & Binn. var. *umbellatum* (Wight)**
 Sant. & Merch. in Bull. Bot. Surv. India 3 : 107. 1962. *C. umbellatum* Wight, Ic. t 1034. 1845 ; Hook. f. Fl. Brit. India 3 : 132. 1880. *Plectronia wightii* T. Cooke, 1 : 606. 1903 [2 : 34. 1958 (Repr. ed.)]. 'Tupa'.

Trees, 4–5 m high. Leaves elliptic-lanceolate, 8–13×3.5–6.0 cm, base tapering, apex shortly acuminate; stipules ovate, acuminate. Corolla densely bearded in the throat within. Drupes obovoid, ca 1.5 cm long, black when ripe.

Fls. & Frts. : September December.

Illus. : Wight, *op. cit.*

Distrib. : Common in semi-evergreen forests. Dhokewadi junkti ; Koyna valley ; Mahabaleshwar ; Shirshing ; Panchgani.

Notes : Wight described *C. umbellatum* which was transferred to *Plectronia* L. by Cooke according to the rule of priority. As specific epithet *umbellatum* was preoccupied for a Madagascar plant, he named it as *P. wightii*. However, this nomenclatural exercise was in futile as *Plectronia* L. was based on two different elements a specimen from Burmann's herbarium belonging to *Oliniaceae* and a figure published by Burmann (1739) belonging to *Rubiaceae*, and so is invalid.

According to Sant. & Merch. (*op. cit.*) typical var. *dicoccum* does not occur in Maharashtra.

***C. parviflorum* Lam.** Encycl. 1 : 602. 1785 ; Hook. f. Fl. Brit. India 1 : 136. 1880. *Plectronia parviflora* (Lam.) Bedd. Fl. Sylv. 124. 1872 ; Cooke, Fl. Pres. Bombay 2 : 35. 1958 (Repr. ed.) 'Kirni'.

Shrubs, 3–4 m high ; spines 1.5–2.5 cm long. Leaves obovate-suborbicular, 2.0–3.5×1.5–2.5 cm, base cuneate, apex obtuse ; stipules triangular, subulate. Calyx lobes triangular, acute ; corolla lobes ovate, acute. Drupes obcordate, didymous, yellow when ripe.

Fls. & Frts. : April July.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 2 : 109, f. 347. 1911.

Distrib. : Occasional in scrub forests. Nath hills ; Shirala ; Satara Road Station.

Canthium rheedii DC. Prodr. 4 : 474. 1830 ; Hook. f. Fl. Brit. India 3 : 134. 1880. *C. angustifolium* Roxb. Fl. Ind. (Carey & Wall. ed.) 2 : 169. 1824 ; Hook. f. op. cit. 135 ; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 15. 1897. *Plectronia rheedii* (DC.) Bedd. Fl. Sylv. 134. 1872 ; Cooke, Fl. Pres. Bombay 2 : 34. 1958 (Repr. ed.), 'Shengali'.

Shrubs, spines ca 1.5 cm long. Leaves ovate, 3-7×1.2-4.0 cm, base rounded, apex acuminate ; stipules ovate, cuspidate. Calyx truncate or obscurely toothed ; corolla lobes linear-lanceolate. Drupes obcordate, didymous, ca 0.5×0.7 cm, rugose.

Fls. & Frts. : February December.

Illus. : Wight, Ic. t. 826. 1845.

Distrib. : Frequent in deciduous forests. Kumbharli ghat ; Nauja ; Mahabaleshwar.

CATUNAREGAM Adans. ex V. Wolf

Catunaregam spinosa (Thunb.) Tirveng. in Taxon 27 : 515. 1978. *Gardenia spinosa* Thunb. Diss. Gard. No. 7. 16, t. 2, f. 4. 1780. *Randia dumetorum* (Retz.) Poir. in Lam. Encycl. 2 : 829. 1812 ; Hook. f. Fl. Brit. India 3 : 110. 1880 ; Cooke, Fl. Pres. Bombay 2 : 27. 1958 (Repr. ed.).

Trees, 5-6 m high. Leaves obovate, 3.5-6.5×1.5-3.5 cm, base cuneate, apex obtuse ; stipules ovate, acuminate. Flowers fragrant, yellowish-white ; calyx and corolla densely hairy without. Berries ca 2 cm across.

Fls. & Frts. : April September.

Illus. : Wight, Ic. t. 580. 1842. (*Randia dumetorum*).

Distrib. : Common. Kas ; Koyna ; Lingmala ; Machutar forest ; Mahabaleshwar ; Panchgani.

DENTELLA J. & G. Forst.

Dentella repens (L.) J. & G. Forst. Char. Gen. Pl. Inst. Mar. Austr. 26, t. 13. 1776 ; Subr. & Sharma in Bull. Bot. Surv. India 10 : 386, f. 1-6. 1968 ; Hook. f. Fl. Brit. India 3 : 42. 1880 ; Cooke, Fl. Pres. Bombay 2 : 12. 1958 (Repr. ed.). *Oldenlandia repens* L. Mant. 1 : 40. 1767.

Herbs, prostrate, rooting at lower nodes. Leaves spathulate, margin bristly hairy ; stipules connate, scarious. Flowers white, sub sessile. Capsules globose, ca 0.3 cm across, villous.

Fls. & Frts. : June July.

Illus. : Subr. & Sharma, *op. cit.*

Distrib. : Slender herbs in marshy places. Dicholi ; Madoshi.

HALDINA Ridsdale

Haldina cordifolia (Roxb.) Ridsdale in Blumea 24 : 361. 1978.
Nauclea cordifolia Roxb. Pl. Cor. I : 40, t. 53. 1795 ; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 15. 1897. *Adina cordifolia* (Roxb.) Hook. f. ex Brand For. Fl. N.W. India 263, f. 33. 1874 & in Hook. f. Fl. Brit. India 3 : 24. 1880 ; Cooke, Fl. Pres. Bombay 2 : 7. 1958 (Repr. ed.). 'Hed, Hedu'.

Trees, *ca* 25 m high, young branches pubescent. Leaves ovate-orbicular, *ca* 16×16 cm, apex acute ; stipules oblong, obtuse, pubescent. Calyx tube angled, hairy ; corolla tube dilated at apex ; lobes ovate-oblong, reflexed. Capsules of 2 downy-pubescent cocci. Seeds winged.

Fls. & Frts. : June September.

Illus. : Roxb. *op. cit.*

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

HEDYOTIS L.

1. Diffuse herbs ; branches terete	...	<i>H. corymbosa</i>
1. Erect herbs ; branches quadrangular :		
2. Flowers solitary ; calyx lobes aristate	...	<i>H. stocksil</i>
2. Flowers 2 - 3 together ; calyx lobes acute	...	<i>H. herbacea</i>

Hedyotis corymbosa (L.) Lam. Encycl. I : 272. 1791. *Oldenlandia corymbosa* L. Sp. Pl. 119. 1753 ; Hook. f. Fl. Brit. India 3 : 64. 1880 ; Cooke, Fl. Pres. Bombay 2 : 15. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 321. 1982.

Herbs ; branches dichotomous, scaberulous-hispid. Leaves linear-lanceolate, 1.0-2.5×0.3-0.5 cm, base decurrent into a short petiole, apex acute, margins recurved ; stipules bristly. Flowers white. Capsules *ca* 0.3 cm across. Seeds pale brown.

Fls. & Frts. : May September.

Illus. : Maheshwari, Ill. Fl. Delhi f. 96. 1966.

Distrib. : Frequent in grasslands and long roadsides. Dhavadi ; Jadholi ; Koyna ; Mahabaleshwar ; Panchgani.

Hedyotis herbacea L. Sp Pl. 102. 1753 ; Rolla Rao & Hemadri in Indian Forester 99 : 376. 1973. *Oldenlandia herbacea* (L.) Roxb Fl. Ind. (Carey & Wall. ed.) 1 : 445. 1820 ; Cooke, Fl. Pres. Bombay 1 : 16. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 321. 1982. *O. heynei* G. Don, Gen. Syst. 3 : 531. 1834 ; Hook. f. Fl. Brit. India 3 : 65. 1880. 'Paripath'.

Herbs, 15–35 cm high. Leaves sessile, linear-lanceolate, 1–2×0.3–0.5 cm, base tapering, apex acute, margins recurved. Flowers white. Capsules ca 0.2 cm across, obscurely didymous, protruded beyond the calyx. Seeds reticulate.

Fls. & Frts. : February–November.

Illus. : Matthew, Fl. Tamilnadu Carnatic 2 : 3. 728, t. 52g. 1983.

Distrib : Common near cultivated fields. Dhokewadi ; Kas ; Koyna ; Mahabaleshwar.

H. stocksii (Hook. f.) Rolla Rao & Hemadri in Indian Forester 99 : 378. 1973 ; Deb & Dutta in J. Bombay Nat. Hist. Soc. 81 : 232. 1984. *Oldenlandia stocksii* Hook. f. & Thoms. in Hook. f. Fl. Brit. India 3 : 67. 1880. *O. maheshwarii* Sant. & Merch. in J. Ind. Bot. Soc. 42A : 213, t. 1–6. 1964. *H. maheshwarii* (Sant. & Merch.) Rolla Rao & Hemadri, *op. cit.* 376.

Herbs, 9–25 cm high ; young branches pubescent. Leaves sessile, linear, 0.4–1.8×0.3–0.5 cm, bristle tipped, scabrid when young ; stipules membranous with 1–3 filiform bristles. Flowers pink or white. Capsules ca 0.3 cm across. Seeds elongate, minutely longitudinally wrinkled, black or brown.

Fls. & Frts. : October.

Illus. : Sant. & Merch. *op. cit.*

Distrib. : Slender annuals on open plateaus. Koyna ; Mahabaleshwar.

Notes : Sant. & Merch. (*op. cit.*) described *O. maheshwarii* from Mahabaleshwar, differentiating it from *O. stocksii* on the basis of pubescent stems, solitary flowers, ovate-oblong to oblong-calyx teeth, longer than corolla which is white or pink. Deb & Dutta (*op. cit.*) studied the type of *O. stocksii* which shows intermediate forms with all characters given for *O. maheshwarii*, the only difference being flower colour, which is blue in *O. stocksii*. Therefore, they merged it under *O. stocksii*, as only flower colour cannot be a differentiating character at the specific level.

HYMENODICTYON Wall.

- | | | |
|--|-----|---------------------|
| 1. Leaves pubescent ; flowers pedicelled | ... | <i>H. orixensis</i> |
| 1. Leaves glabrous ; flowers sessile | ... | <i>H. obovatum</i> |

Hymenodictyon orixensis (Roxb.) Mabberley in Taxon 31 : 66. 1982.
Cinchona orixensis Roxb. Bot. Descr. Swietenia 21. 1793 & Med. Facts
 Obs. 6 : 152. 1795. *C. excelsum* Roxb. Pl. Cor. 2, t. 106. 1798.
H. excelsum (Roxb.) Wall. in Roxb. Fl. Ind. (Carey & Wall. ed.) 2 : 149.
 1824 ; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 15. 1897 ; Hook.
 f. Fl. Brit. India 3 : 35. 1880 ; Cooke, Fl. Pres. Bombay 2 : 9. 1958 (Repr.
 ed.). 'Kala-Keddu'.

Trees, 9-12 m high. Leaves ovate-elliptic, 10-22 × 7.5-10.5 cm,
 apex acuminate ; stipules broadly oblong, recurved, deciduous. Flowers
 greenish-white. Capsules ellipsoid on decurved pedicels.

Fls. & Frts. : June August.

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

H. obovatum Wall. in Roxb. Fl. Ind. (Carey & Wall. ed.) 2 : 153.
 1824 ; Hook. f. Fl. Brit. India 3 : 36. 1880 ; Cooke, Fl. Pres. Bombay
 2 : 10. 1958 (Repr. ed.). 'Kadya-sirid'.

Trees, 9-12 m high. Leaves elliptic-obovate, 8-12 × 4-6 cm, base
 tapering into petiole, apex acuminate. Flowers greenish ; calyx lobes
 triangular, deciduous ; corolla lobes ovate, acute. Capsules 1.0-1.5 cm
 long. Seeds winged.

Fls. & Frts. : September November.

Illus. : Wight, Ic. t. 1159. 1846.

Distrib. : Occasional in moist deciduous forests. Kisrude; Shirshingi.

IXORA L.

- | | |
|--|---------------------|
| 1. Shrubs ; leaves and inflorescence turning black on drying ... | <i>I. nigricans</i> |
| 1. Trees ; leaves and inflorescence not turning black on
drying : | |
| 2. Flower buds globose ; calyx urceolate | <i>I. brachiata</i> |
| 2. Flower buds ellipsoid ; calyx ovate-oblong .. | <i>I. arborea</i> |

Ixora arborea Roxb ex J.E. Sm. in Rees, Cyclop. 19 : 5. 1811 ;
 Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 319. 1982. *I. parviflora*
 Vahl, Symb. Bot. 3 : 11, t. 52. 1794 ; Hook. f. Fl. Brit. India 3 : 142.
 1880 ; Cooke, Fl. Pres. Bombay 2 : 39. 1958 (Repr. ed.). 'Raikuda'.

Trees, 4-5 m high. Leaves oblong-elliptic, 4-10 × 3.5-6.5 cm,
 coriaceous, base rounded, apex obtuse ; stipules ovate, cuspidate. Flowers
 white in trichotomous cymes. Fruits ca 0.5 cm across, didymous.

Fls. & Frts. : January April.

Illus. : Wight, Ic. t. 711. 1843 (*I. parviflora*).

Distrib. : Occasional in deciduous forests. Junkti ; Kole ; Mahabaleshwar.

Ixora brachiata Roxb. Fl. Ind. (Carey & Wall. ed.) 1 : 391. 1820 ; Hook. f. Fl. Brit. India 3 : 142. 1880 ; Cooke, Fl. Pres. Bombay 2 : 39. 1958 (Repr. ed.). 'Gorbale'.

Trees, 5-6 m high. Leaves elliptic-oblong, 5-15 × 2-8 cm, base attenuate, apex obtuse. Flowers white in shortly peduncled cymes ; lower bracts shortly cuspidate, upper lanceolate-subulate. Fruits globose or didymous, purple-black when ripe.

Fls. & Frts. : February April.

Illus. : Wight, Ic. t. 710. 1843.

Distrib. : Common along ghat slopes in deciduous forests. Jangli jaigad ; Junkti ; Nauja.

I. nigricans R. Br. ex Wight & Arn. Prodri. 428. 1834 ; Hook. f. Fl. Brit. India 3 : 148. 1880 ; Cooke, Fl. Pres. Bombay 2 : 38. 1958 (Repr. ed.). 'Kat-kuda'.

Shrubs, 2-3 m high. Leaves elliptic-oblong, 4-15 × 2-6 cm, base rounded, apex acute ; stipules triangular, bristle tipped. Flower buds narrowly fusiform ; bracts lanceolate, cuspidate, flowers white. Fruits globose or didymous.

Fls. & Frts. : November September.

Illus. : Wight, Ic. t. 318. 1840.

Distrib. : Common in semi-evergreen forests. Jadholi ; Jangli jaigad ; Koyna ; Mahabaleshwar ; Nauja ; Pratapgarh.

LASIANTHUS Jack.

- | | | |
|--|-----|---------------------|
| 1. Main nerves prominent beneath, curved upwards ; flowers sessile in axillary fascicles | ... | <i>L. sessilis</i> |
| 1. Main nerves prominent on both surfaces, spreading ; flowers in short peduncled cymes | ... | <i>L. venulosus</i> |

Lasianthus sessilis Talbot, Trees & Shrubs Bombay ed. 1. II4. 1894 & For. Fl. Bombay Pres. & Sind 2 : 131, f. 363. 1911 ; Cooke, Fl. Pres. Bombay 2 : 49. 1958 (Repr. ed.).

Shrubs, 4–5 m high. Leaves elliptic, 4–8 × 2–4 cm, base round-ed or acute, apex acuminate, hairy on the nerves beneath. Flowers white; corolla villous without. Drupes oblong, dorsally tubercled.

Fls. & Frts. : July September.

Illus. : Talbot, *op. cit.*

Distrib. : Infrequent in semi-evergreen forest along ghats. Koyna.

Lasianthus venulosus (Wight & Arn.) Wight, Ic. t. 1032. 1845; Hook. f. Fl. Brit. India 3 : 190. 1880 ; Cooke, Fl. Pres. Bombay 2 : 50. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 320. 1982. **Santia venulosa** Wight & Arn. Prodri. 422. 1834.

Shrubs. Leaves elliptic-oblong, cuspidate, hairy on nerves beneath. Flowers yellowish-white; calyx teeth linear-subulate; corolla hairy at mouth. Drupes globose, ca 0.4 cm across.

Illus. : Wight, *op. cit.*

Notes : Included on Markham's report from Mahabaleshwar Bole & Almeida (*op. cit.*). Cooke (*op. cit.*) had included it on the authority of Dalz. & Gibbs. (1861) who reported it from Western Ghats without any precise locality. According to Gamble (1957) this species occurs in the Shola forests of Nilgiris and Pulney Hills above 1,800 m. Therefore, occurrence of this species within the limits of erstwhile Bombay Presidency is doubtful (Karthikeyan & Sharma, 1983).

MEYNA Roxb. ex Link

Meyna laxiflora Robyns in Bull. Jard. Bot. Bruxelles 11 : 228. 1928 ; Sant. in Bull. Bot. Surv. India 3 : 20. 1961. **Vangueria spinosa** Roxb. Fl. Ind. (Carey & Wall. ed.) 2 : 172. 1824 ; Hook. f. Fl. Brit. India 3 : 136. 1880 ; Cooke, Fl. Pres. Bombay 2 : 36. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 320. 1982. '*Hebu*'.

Shrubs, ca 3 m high, spines 2–5 cm long. Leaves elliptic-oblong 5–9 × 2–5 cm, base cuneate, apex acuminate; stipules broadly triangular at base, shortly acuminate. Flowers greenish-white in axillary cymes from old leaf scars. Drupes globose, ca 1.5 cm across.

Fls. & Frts. : February April.

Illus. : Talbot, For Fl. Bombay Pres. & Sind 2 : 110, f. 348. 1911.

Distrib. : Common in deciduous forests. Dicholi ; Karanjewadi ; Koyna ; Mahabaleshwar ; Shirshingi.

MITRAGYNA Korth. (*nom. cons.*).

Mitragyna parvifolia (Roxb.) Korth. Obs. Naucl. Ind. 19. 1839; Cooke, Fl. Pres. Bombay 2 : 8. 1958 (Repr. ed.). *Nauclea parvifolia* Roxb. Pl. Cor. 1 : 40, t. 52. 1795. *Stephegyne parvifolia* Korth. in Verh. Nar. Ges. 161. 1840; Hook. f. Fl. Brit. India 3 : 25. 1880; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 15. 1897. 'Kadam'.

Trees, upto 25 m high. Leaves elliptic-obovate, 5-10 × 2.5-7.5 cm, subcoriaceous, base rounded or acute, apex acute or acuminate; stipules oblong-spathulate, pink. Flowers greenish-yellow. Capsules oblong, 10-ribbed.

Fls. & Frts. : May - August.

Illus. : Maheshwari, Ill. Fl. Delhi f. 97. 1966.

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

MUSSAENDA L.

1. Flowers golden yellow ; seeds spiny	...	<i>M. glabrata</i>
1. Flowers orange ; seeds not spiny	...	<i>M. laxa</i>

Mussaenda glabrata (Hook. f.) Hutch. ex Gamble, Fl. Pres. Madras 610. 1921 & 2 : 430. 1958 (Repr. ed.); Jayaweera in J. Arnold Arbor. 44 : 241. 1963. *M. frondosa* L. var. *glabrata* Hook. f. Fl. Brit. India 3 : 90. 1880, *M. frondosa* L. Sp. Pl. 177. 1753 p.p.; Cooke, Fl. Pres. Bombay 2 : 24. 1958 (Repr. ed.). 'Butkes'.

Shrubs, scandent. Leaves broadly elliptic, 4.5-10.0 × 3.0-6.5 cm; stipules twin, linear-lanceolate, acute, hairy. Buds clavate, hairy, 5-angled; flowers in terminal cymes; calyx lobes linear-subulate, hairy. Berries ovoid, ca 1 cm long.

Fls. & Frts. : July - October.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 2 : 95, f. 339. 1911.

Distrib. : Rare in deciduous forests. Koyna valley, Cooke op. cit.

M. laxa (Hook. f.) Hutch. ex Gamble, Fl. Pres. Madras 610. 1921 & 2 : 430. 1957 (Repr. ed.); Jayaweera in J. Arnold Arbor. 44 : 242. 1963. *M. frondosa* L. var. *laxa* Hook. f. Fl. Brit. India 3 : 89. 1880. (Fig. 25).

Shrubs, climbing, sparsely hairy. Leaves elliptic-orbicular, 4-13 × 3-7 cm, apex shortly acuminate, sparsely hairy above, pubescent on nerves beneath; stipules ca 1 cm long, 2-lobed. Flowers in terminal

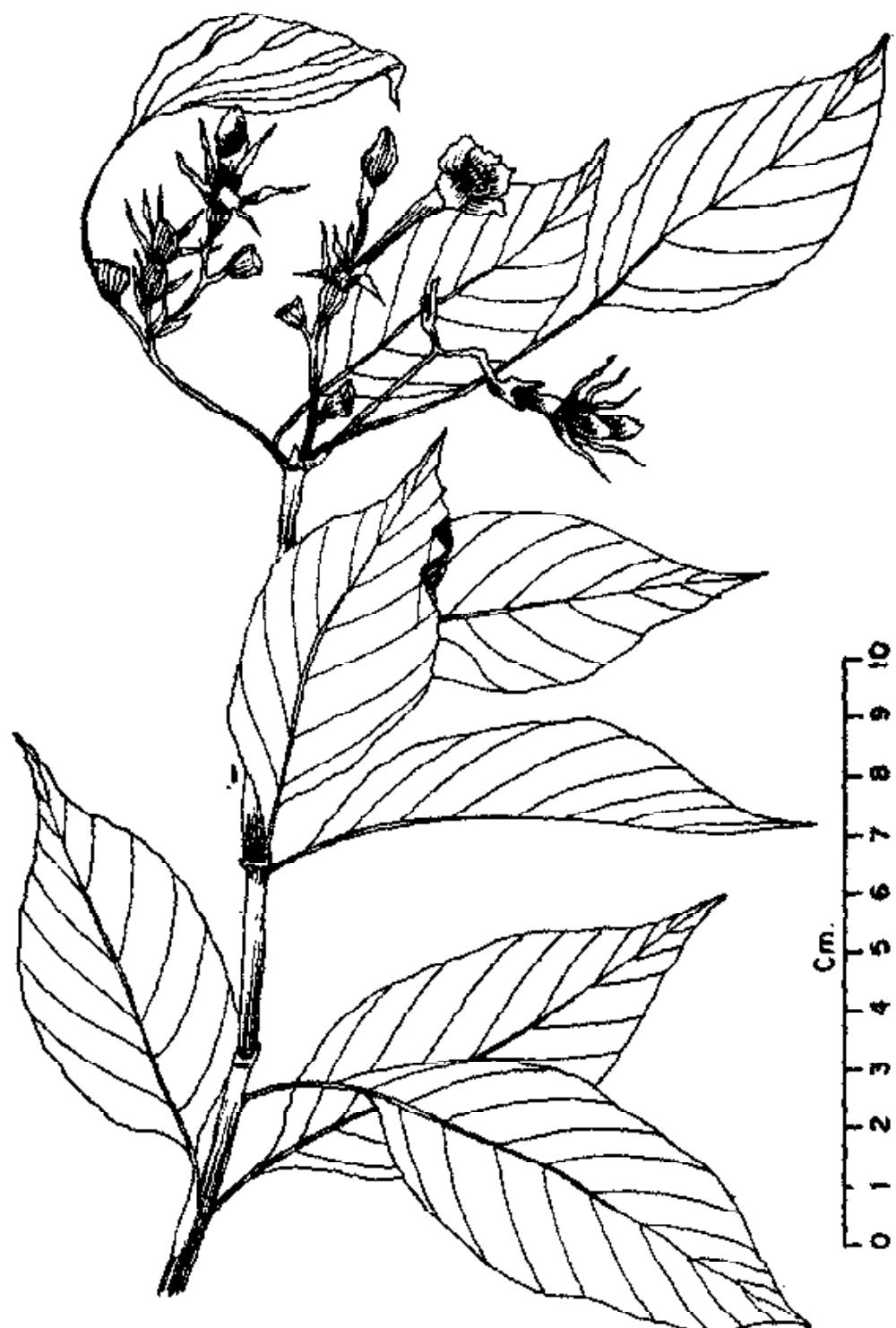


Fig. 25. *Mussaenda laxa* (Hook. f.) Hutch. ex Gamble

tomentose cymes ; bracts and bracteoles linear-subulate, deciduous. Berries obovoid, ca 1.2 cm long, sparsely hairy.

Fls. & Frts. : June September.

Distrib. : Common along ghats in semi-evergreen forests. Ambeghar; Koyna; Shirshingi.

NEANOTIS Lewis

1. Flowers in cymes :

2. Perennials ; stem terete ... *N. concanensis*

2. Annuals ; stem quadrangular :

3. Leaves minutely hairy ; capsules protruded ; seeds rounded on back ... *N. rheedii*

3. Leaves glabrous ; capsules not protruded ; seeds flat ... *N. calycina*

1. Flowers in fascicles :

4. Leaves sessile, scaberulous ... *N. hohenackeri*

4. Leaves petiolate, hairy :

5. Branchlets glabrous ; capsules 4-celled ... *N. tubulosa*

5. Branchlets hispid ; capsules 2-celled ... *N. montholoni*

***Neanotis calycina* (Walt. ex Hook. f.) Lewis in Ann. Mo. Bot. Gdn. 53 : 37. 1966. *Anotis calycina* Wall. ex Hook. f. Fl. Brit. India 3 : 73. 1880.**

Herbs, 5-15 cm high, puberulous. Leaves ovate-lanceolate, 1-2 × 0.5-1.0 cm, apex acuminate. Flowers pale-purple. Capsules subglobose, ca 0.2 cm across. Seeds brown, reticulate.

Fls. & Frts. : August November.

Distrib. : Common monsoon herbs among grasses. Mahabaleshwar; Panchgani.

***N. concanensis* Daniel & Vajr. in J. Econ. Tax. Bot. 3 : 675. 1982. *Hedyotis lancifolia* Dalz. in Hook. Kew J. Bot. 2 : 135. 1850 non Schum. & Thonn. 1827. *Anotis lancifolia* (Dalz.) Hook. f. Fl. Brit. India 3 : 73. 1880; Cooke, Fl. Pres. Bombay 2 : 20. 1958 (Repr. ed.). *N. lancifolia* (Dalz.) Lewis in Ann. Mo. Bot. Gdn. 53 : 39. 1966.**

Herbs, 15–40 cm high, erect or diffuse. Leaves ovate-lanceolate, 3–7 × 0.7–2.0 cm, membranous, base acute or obtuse, apex acuminate, pubescent; stipules bristly. Flowers purple in terminal cymes. Capsules ca 0.5 cm across, didymous, compressed. Seeds ellipsoid, brownish-black, pitted.

Fls. & Frts. : August–January.

Distrib. : Common along roadsides and in open places along hill slopes. Dicholi; Koyna; Lingmala; Mahabaleshwar; Panchgani.

Neanotis hohenackerii Daniel & Vajr. in J. Econ. Tax. Bot. 3 : 675. 1982. *Hedyotis foetida* Dalz. in Hook. Kew J. Bot. 2 : 134. 1850 *non* (Forst.) Spr. 1815. *Anotis foetida* (Dalz.) Hook. f. Fl. Brit. India 3 : 74. 1880; Cooke, Fl. Pres. Bombay 2 : 22. 1958 (Repr. ed.). *N. foetida* (Dalz.) Lewis in Ann. Mo. Bot. Gdn. 53 : 38. 1966; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 320. 1982.

Herbs, 5–10 cm high; stem quadrangular. Leaves linear, 1.0–2.2 × 0.2–0.4 cm, margins recurved. Flowers purple. Capsules ca 0.3 cm across, 2-celled, protruded. Seeds elliptic, pitted, black.

Fls. & Frts. : July–August.

Distrib. : Slender annuals in rock crevices and in grasslands. Koyna; Lingmala; Mahabaleshwar.

N. montholoni (Hook. f.) Lewis in Ann. Mo. Bot. Gdn. 53 : 39. 1966. *Anotis montholoni* Hook. f. Fl. Brit. India 3 : 73. 1880; Cooke, Fl. Pres. Bombay 2 : 22. 1958 (Repr. ed.).

Herbs, ca 20 cm high. Leaves ovate or ovate-lanceolate, 3–7 × 1.0–2.5 cm, apex acute. Flowers purple; calyx aristate. Capsules didymous, hairy, cells 1-3-seeded. Seeds globose, pitted, black.

Fls. & Frts. : August–September.

Distrib. : Annuals near cultivated field. Shirshingi.

N. tubulosa (G. Don) Mabberley in Taxon 29 : 606. 1980. *Oldenlandia tubulosa* G. Don, Gen. Syst. 3 : 531. 1834. *N. quadrilocularis* (Thw.) Lewis in Ann. Mo. Bot. Gdn. 53 : 40. 1966. *A. quadrilocularis* (Thw.) Hook. f. Fl. Brit. India 3 : 74. 1880; Cooke, Fl. Pres. Bombay 2 : 22. 1958 (Repr. ed.).

Herbs, 10–40 cm high, stem rooting at lower nodes. Leaves elliptic-ovate, 1–3 × 0.5–1.3 cm, membranous, base tapering into petioles, apex subacute. Flowers purple-white. Capsules broader than long. Seeds 3 in each cell, semi-ellipsoid, pitted, black.

Fls. & Frts. : September.

Distrib. : Rare annuals near marshy places. Shirshingi ; Kochhar 154105.

Neanotis rheedii (Wall. ex Wight & Arn.) Lewis in Ann. Mo. Bot. Gdn. 53 : 40. 1966; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 321. 1982. *Hedyotis rheedii* Wall. ex. Wight & Arn. Prodr. 409. 1834. *Annotis rheedii* (Wall. ex Wight & Arn.) Hook. f. Fl. Brit. India 3 : 73. 1880 ; Cooke, Fl. Pres. Bombay 2 : 21. 1958 (Repr. ed.).

Herbs, 30–50 cm high. Leaves ovate, 2.5–7.0 × 1.5–3.5 cm, membranous, base tapering into petiole, apex acute or acuminate. Flowers pink in axillary and terminal cymes. Capsules globose, ca 0.3 cm across. Seeds ellipsoid, minutely reticulate, black.

Fls. & Frts. : July.

Distrib. : Included on Bole & Almeida's report from Wada below Mahabaleshwar, in moist rock crevices.

NEOLAMARCKIA Bosser

Neolamarckia cadamba (Roxb.) Bosser in Bull. Mus. Natn. Hist. Nat. Paris 6A, Sec. B, Adansonia 3 : 247. 1984. *Nauclea cadamba* Roxb. Fl. Ind. (Carey & Wall. ed.) 2 : 121. 1824. *Anthocephalus chinensis* (Lam.) A. Rich. ex Walp. Rep. 2 : 491. 1843; Ridsdale in Blumea 24 : 334. 1970 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 318. 1982. *Cephalanthus chinensis* Lam Encycl. 1 : 678. 1785. *A. cadamba* (Roxb.) Miq. Fl. Ind. Bat. 2 : 135. 1856 ; Hook. f. Fl. Brit. India 3 : 23. 1880. *A. indicus* A. Rich. in Mem. Soc. Hist. Nat. Paris 5 : 238. 1834 ; Cooke, Fl. Pres. Bombay 2 : 6. 1958 (Repr. ed.). 'Kadamb'.

Trees, 10–15 m high, young branches pubescent. Leaves elliptic-oblong, 12–20 × 6–10 cm, coriaceous, glabrous above, pubescent beneath. Flowers fragrant in solitary, terminal heads, pubescent. Fruits globose, yellow when ripe.

Fls. & Frts. : November–February.

Distrib. : Infrequent in deciduous forests. Wada below Mahabaleshwar.

OPHIORRHIZA L.

Ophiorrhiza prostrata D. Don, Prodr. Fl. Nepal 136. 1825 ; Sant. & Merch. in Bull. Bot. Surv. India 3 : 109. 1962. *O. harrisiae* Heyne ex

Wight & Arn. Prodr. 405. 1834 ; Hook. f. Fl. Brit. India 3 : 78. 1880 ; Cooke, Fl. Pres. Bombay 2 : 23. 1958 (Repr. ed.).

Herbs, 20–30 cm high, procumbent, woody at base. Leaves elliptic-lanceolate, glabrous above, pubescent on nerves beneath ; stipules with 3 stout bristles. Flowers white ; calyx tube hairy without ; lobes triangular, acute ; corolla funnel-shaped, hairy without. Capsules coriaceous, compressed, broader than long, ca 0.7 cm broad, 2-valved.

Fls. & Frts. : June September.

Illus. : Wight, Ic. t. 1162. 1848 (*O. harrisonii*).

Distrib. : Common in moist places as undergrowth in deciduous forests. Jadholi ; Karanjewadi ; Nauja ; Shirshingi.

OXYCEROS Lour.

Oxyceros rugulosa (Thw.) Tirvengadum in Nord. J. Bot. 3 : 466. 1983. *Griffithia rugulosa* Thw. Enum. Pl. Zeyl. 159. 1859. *Randia rugulosa* (Thw.) Bedd. For. Man. Bot. 133. 1871 ; Hook. f. Fl. Brit. India 3 : 113. 1880 ; Cooke, Fl. Pres. Bombay 2 : 28. 1958 (Repr. ed.).

Climbers. Leaves elliptic-oblong, 7–10 × 2.5–5.5 cm, apex acuminate ; stipules ovate, cuspidate. Flowers white ; bracts connate, cuspidate. Berries globose, ca 1 cm across.

Fls. & Frts. : December July.

Illus. : Bedd. Ic. t. 37. 1874 (*Randia rugulosa*).

Distrib. : Frequent in shady places in semi-evergreen forests. Koyna ; Mahabaleshwar.

PAVETTA L.

- | | | |
|---|-----|------------------------|
| 1. Young branches and leaves tomentose ; corolla lobes oblong | ... | <i>P. tomentosa</i> |
| 1. Young branches and leaves glabrous ; corolla lobes obovate | ... | <i>P. crassicaulis</i> |

Pavetta crassicaulis Bremek. in Fedde, Repert. 37 : 112. 1934 ; Sant. & Merch. in Bull. Bot. Surv. India 3 : 109. 1962. *P. indica* auct. non L. 1753 ; Hook. f. Fl. Brit. India 3 : 150. 1880 ; Cooke, Fl. Pres. Bombay 2 : 41. 1958 (Repr. ed.). 'Papat'.

Shrubs, 3-4 m high ; stems quadrangular. Leaves elliptic-oblong, 6-14 × 2.5-5.0 cm, base acute, apex acuminate. Flowers greenish-white ; stamens exserted. Berries ca 0.6 cm across, black when ripe.

Fls. & Frts. : April October.

Illus. : Wight, Ic. t. 148. 1839 ; Talbot, For. Fl. Bombay Pres. & Sind 2 : 117, f. 353 & 354. 1911.

Distrib. : Common along the slopes and in plains in deciduous forests. Ambeghar ; Gureghar ; Kas ; Kumbharli ghat ; Lingmala ; Machutar Forest ; Mahabaleshwar ; Panchgani ; Parli ; Shirshingi.

Pavetta tomentosa Roxb. ex J.E. Sm. in Rees, Cyclop. 26 : 2. 1819. *P. indica* var. *tomentosa* (Roxb. ex J.E. Sm.) Hook. f. Fl. Brit. India 3 : 151. 1880 ; Cooke, Fl. Pres. Bombay 2 : 41. 1958 (Repr. ed.).

Shrubs, 3-4 m high. Leaves elliptic-lanceolate, 5-15 × 2-6 cm. Flowers white in dense, trichotomous pubescent cymes. Berries globose, ca 0.7 cm across, black when ripe.

Fls. & Frts. : June September.

Illus. : Wight, Ic. t. 1065. 1846. (*P. brunonis*)

Distrib. : Common along the forest edges in deciduous forests. Ghotil ; Kisrude ; Koyna ; Lingmala ; Mahabaleshwar.

PSYCHOTRIA L.

Psychotria truncata Wall. in Roxb. Fl. Ind. (Carey & Wall. ed.) 2 : 162. 1824 ; Hook. f. Fl. Brit. India 3 : 163. 1880 ; Cooke, Fl. Pres. Bombay 2 : 44. 1958 (Repr. ed.).

Shrubs or small trees ca 3-5 m high. Leaves obovate, 8-18 × 2.5-9.5 cm, base cuneate, apex shortly acuminate ; stipules large, ca 2.5 cm long. Flowers white in sessile or subsessile terminal cymes. Fruits ellipsoid, ca 0.8 cm long.

Fls. & Frts. : February June.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 2 : 125, f. 357. 1911.

Distrib. : Abundant as forest undergrowth in shady places in semi-evergreen forests. Jangli jaigad ; Jadholi ; Karanjewadi ; Mahabaleshwar ; Nauja ; Shirshingi.

RUBIA L.

Rubia cordifolia L. Syst. Nat. ed. 12. 3 : 229. 1768 & Mant. Alt. 197. 1771 ; Hook. f. Fl. Brit. India 3 : 202. 1881 ; Cooke, Fl. Pres. Bombay 2 : 54. 1958 (Repr. ed.) ; Deb & Malick in Bull. Bot. Surv. India 10 : 6. 1968. 'Manjistha'.

Climbers ; stem quadrangular, prickly on margins. Leaves ovate, 1.7 - 5.0 × 0.7 - 2.7 cm, base rounded or cordate, apex acute or acuminate ; petioles 1.5 - 3.0 cm long, prickly. Flowers greenish-white. Drupes globose, ca 0.3 cm across, purplish-black when ripe.

Fls. & Frts. : October December.

Illus. : Wight, Ic. t. 187. 1839 [*R. munjista* Roxb. Fl. Ind. (Carey & Wall. ed.) 1 : 383. 1820] ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 347. 1982.

Distrib. : Common near forest clearings and along ghats. Dicholi, Kelghar ghat ; Koyna ; Machutar forest ; Mahabaleshwar, Padolshi ; Shirshingi ; Tadoshi.

SPERMACOCE L.

- | | | |
|---|-----|-------------------|
| 1. Erect herbs ; flowers white ; septum of capsules splitting irregularly | ... | <i>S. pusilla</i> |
| 1. Trailing herbs ; flowers pinkish-white ; septum entire | ... | <i>S. hispida</i> |

Spermacoce hispida L. Sp. Pl. 102. 1753 ; Hook. f. Fl. Brit. India 3 : 200. 1880 ; Cooke, Fl. Pres. Bombay 2 : 53. 1958 (Repr. ed.) ; Deb & R. Dutta in J. Econ. Tax. Bot. 5 : 1046. 1984.

Herbs, ca 50 cm long. Leaves sub-sessile, elliptic-oblong, 1.4 - 3.0 × 0.6 - 1.0 cm, base truncate or attenuate, apex acute ; stipules connate, membranous, bristly. Calyx oblong, hispid without ; corolla hairy within. Capsules ellipsoid, ca 0.5 cm long, hairy.

Fls. & Frts. : September November.

Distrib. : Weed along roadsides. Tapola, 162515.

S. pusilla Wall. in Roxb. Fl. Ind. (Carey & Wall. ed.) 1 : 370. 1820 ; Deb & R. Dutta in J. Econ. Tax. Bot. 5 : 1057, f. 8. 1984. *S. stricta* Willd. Sp. Pl. 3 : 573. 1798 ; Hook. f. Fl. Brit. India 3 : 200. 1881 ; Cooke, Fl. Pres. Bombay 2 : 52. 1958 (Repr. ed.). (Fig. 26).

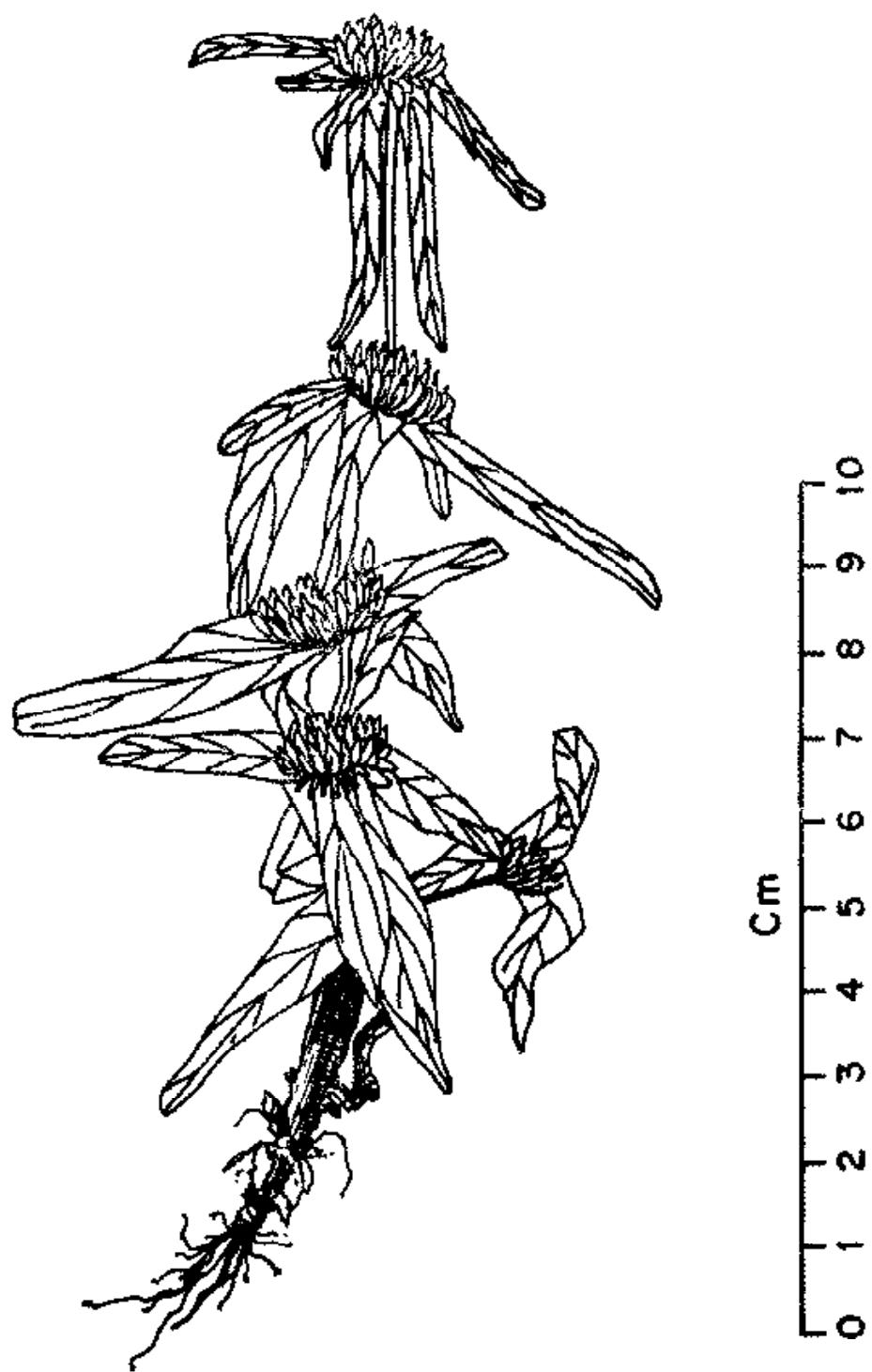


Fig. 26. *Spermatoce pusilla* Wall.

Herbs. 8–10 cm high. Leaves sessile, linear-oblong, 1–2 × 0.3–0.5 cm, base tapering; apex acute. Flowers in dense terminal heads. Capsules oblong, ca 0.3 cm long, pubescent at apex. Seeds ellipsoid, grooved on ventral surface.

Fls. & Frts. : April September.

Illus. : Deb & R. Dutta, *op. cit.*

Distrib. : Common weed near cultivated fields and in wastelands, Bhosgaon ; Koyna.

SPERMADICTYON Roxb.

Spermadictyon suaveolens Roxb. Pl. Cor. 3 : 32, t. 236. 1815 ; Sant. & Merch. in Bull. Bot. Surv. India 3 : 110. 1961. *Hamiltonia suaveolens* Roxb. Fl. Ind. (Carey ed.) 2 : 223. 1824 & 3 : 554. 1832; Hook. f. Fl. Brit. India 3 : 197. 1880 ; Cooke, Fl. Pres. Bombay 2 : 51. 1958 (Repr. ed.). ‘*Gidesa*’.

Shrubs, 1–2 m high. Leaves elliptic-lanceolate, 1.5–10.5 × 1–4 cm, base and apex acute; stipules ovate, acute, hairy. Flowers white in terminal tri-chotomous cymes. Capsules ellipsoid, ca 0.3 cm long.

Fls. & Frts. : November December.

Illus. : Roxb. *op. cit.* ; Talbot, For. Fl. Bombay Pres. & Sind 2 : 135, t. 364. 1911.

Distrib. : Common along hill slopes in rock crevices. Fitzgerald ghat below Mahabaleshwar ; Mahabaleshwar ; Panchgani ; Pratapgad ; Shirgaon ghat.

TAMILNADIA Tirveng. & Sastre

Tamilnadia uliginosa (Retz.) Tirveng. & Sastre in Mauritius Inst. Bull. 8(4) : 85. 1979. *Gardenia uliginosa* Retz. Obs. Bot. 2 : 14. 1781. *Randia uliginosa* (Retz.) DC. Prodr. 4 : 386. 1830 ; Hook. f. Fl. Brit. India 3 : 110. 1880 ; Cooke, Fl. Pres. Bombay 2 : 27. 1958 (Repr. ed.). *Xeromphis uliginosa* (Retz.) Maheshwari in Bull. Bot. Surv. India 3 : 92. 1961. *Catunaregum uliginosa* (Retz.) Sivarajan in Manilal & Sivarajan, Fl. Calicut 132. 1982.

Trees, 6–8 m high. Leaves elliptic-lanceolate, or obovate, 4–15 × 2–6 cm, apex obtuse. Flowers white, fragrant. Fruits ovoid, ca 5 cm across. Seeds ellipsoid, compressed.

Fls. & Frts. : September November.

Illus. : Wight, Ic. t. 397. 1840.

Distrib. : Frequent in deciduous forests. Gureghar ; Nauja.

WENDLANDIA Bartl.

- | | |
|--|----------------------|
| 1. Leaves opposite, pubescent above ; filaments exserted ... | <i>W. heynei</i> |
| 1. Leaves whorled, glabrous above ; filaments included ... | <i>W. thyrsoides</i> |

Wendlandia heynei (R. & S.) Sant. & Merch. in Bull. Bot. Surv. India 3 : 110. 1961. *Rondeletia heynei* R. & S. Syst. 5 : 234. 1819. *W. exserta* (Roxb.) DC. Prodr. 4 : 411. 1830 ; Hook. f. Fl. Brit. India 3 : 37. 1880 ; Cooke, Fl. Pres. Bombay 2 : 10. 1958 (Repr. ed.). (Fig. 27).

Trees, 4-6 m high. Leaves ovate-lanceolate, 8-14 × 3-6 cm, apex acute, tomentose beneath ; stipules ovate, ca 0.5 cm long, 2-lobed, downy. Flowers small, white in 15-20 cm long tomentose panicles, bracts 2-3, linear-lanceolate. Capsules globose, ca 0.2 cm across, 2-valved. Seeds many, black.

Fls. & Frts. : February June.

Distrib. : Frequent in deciduous forests. Kusapur ; Lingmala ; Mahabaleshwar ; Shirshingi.

W. thyrsoides (R. & S.) Steud. Nom. ed. 2. 2 : 786. 1841 ; Raiz. in Indian Forester 92 : 326. 1966. *Canthium thyrsoides* R. & S. Syst. 6 : 207. 1820. *W. notoniana* Wall. ex Wight & Arn. Prodr. 403. 1834 ; Hook. f. Fl. Brit. India 3 : 40. 1880 ; Cooke, Fl. Pres. Bombay 2 : 11. 1958 (Repr. ed.).

Shrubs or small trees, 5-8 m high. Leaves elliptic-lanceolate, 7-12 × 2.5-5.5 cm, base cuneate, apex acuminate, pubescent beneath. Flowers white, fragrant, in dense, pubescent panicles. Capsules globose, with persistent calyx lobes, pubescent.

Fls. & Frts. : February - March.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 2 : 93, f. 338. 1911.

Distrib. : Common on exposed hill slopes and near forest margins. Koyna ; Mahabaleshwar ; Venna river below Lingmala.

CULTIVATED SPECIES

Cinchona condaminia H.B.K. and **C. cordifolia** Mutis ex Humb. have been reported by Lisboa (1883) as having been planted at Lingmala

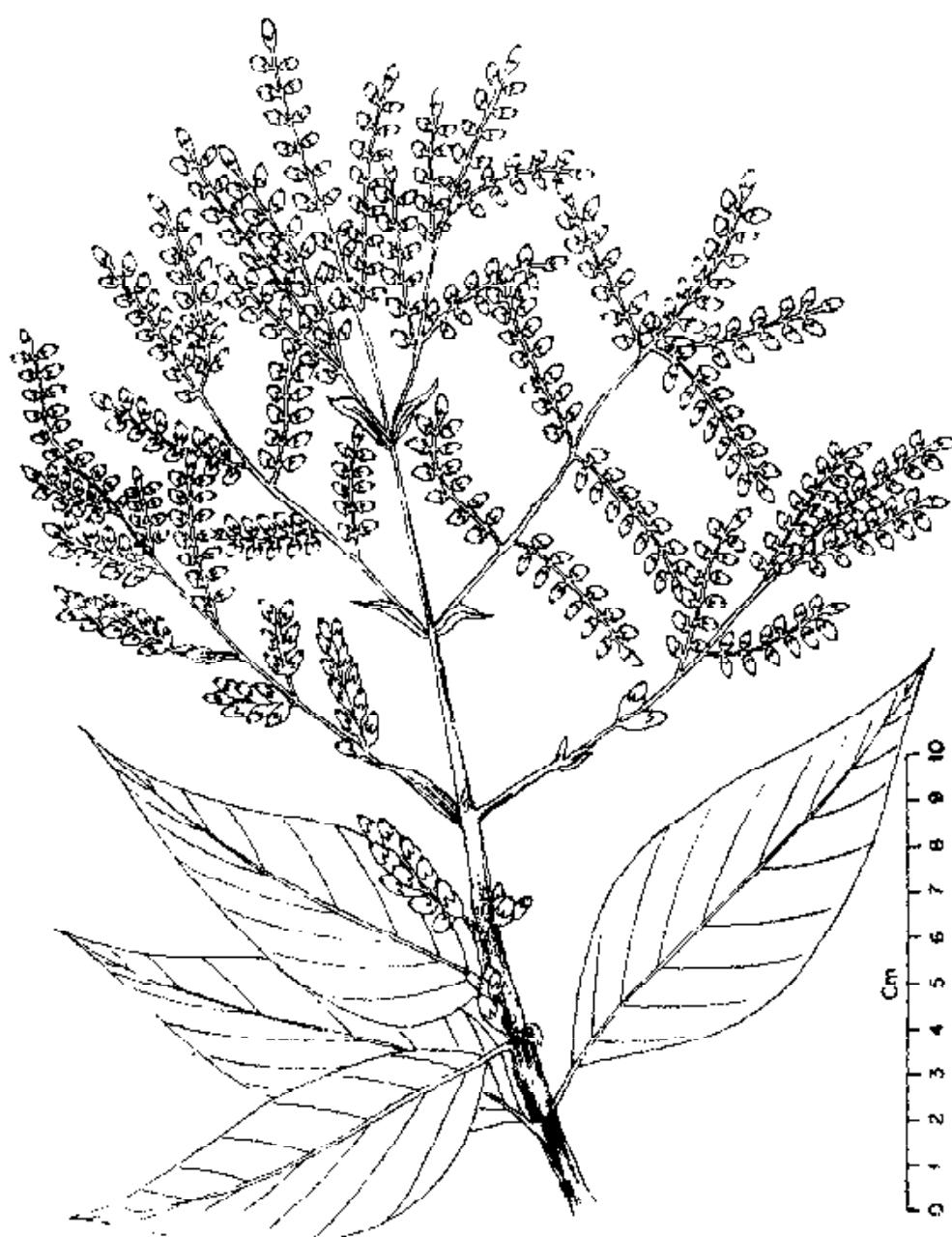


Fig. 27. *Wendlandia heynei* (R. & S.) Sant. & Merch.

and Carvalho's Garden, are not to be found at Mahabaleshwar now (Bole & Almeida 1982).

Cinchona succirubra Pav. ex Kloitzsch in Abh. Akad. Berl. 60, 1857 ; Gamble, Fl. Pres. Madras 589, 1921 [2 : 416, 1957 (Repr. ed.)].

Trees, 5-6 m high. Flowers purple.

Distrib. : Occasional. Lingmala ; Mahabaleshwar.

Coffea arabica L. Sp. Pl. 172, 1753 ; Hook. f. Fl. Brit. India 3 : 153, 1800 ; Cooke, Fl. Pres. Bombay 2 : 55, 1958 (Repr. ed.).

Shrubs, 3-4 m high. Leaves elliptic, acuminate. Flowers white in axillary clusters. Berries 2-seeded.

Fls. & Frts. : January April.

Distrib. : Native of Abyssinia ; cultivated on the hills between Panchgani and Mahabaleshwar.

C. robusta Linden, Cat. Pl. Econ. 64, 1900 ; Anonymous, Wealth of India 2 : 290, f. 104-105, 1950.

Notes : Cultivated at Research Nursery, Koyna on experimental scale.

ASTERACEAE

1. Florets all ligulate :

2. Achenes beaked ... **LACTUCA**

2. Achenes not beaked :

3. Achenes truncate at base and apex ; plants with milky juice ... **LAUNABA**

3. Achenes narrowed at base, slightly truncate at apex ; plants with yellow juice ... **SONCHUS**

1. Florets all or at least disc florets tubular :

4. Achenes spinous :

5. Leaves opposite ... **ACANTHOSPERMUM**

5. Leaves alternate ... **XANTHIUM**

4. Achenes not spinous :

6. Leaves mostly radical, few cauline :

7. Heads in corymbs ; pappus copious ... **EMILIA**

7. Heads in fascicles ; pappus bristly ... **ELEPHANTOPUS**

6. Leaves all caulinne :
8. Leaves opposite :
9. Heads yellow :
10. Heads in axillary and terminal cymes ... BLAINVILLEA
10. Heads axillary, solitary or 2-3 together :
11. Pappus usually absent ; (rarely of 1-2 bristles in *Spilanthes*) :
12. Outer involucral bracts glandular ... SIEGBECKIA
12. Outer involucral bracts not glandular :
13. Heads sessile, axillary .. FLAVERIA
13. Heads peduncled, terminal or axillary :
14. Prostrate or decumbent herbs ; achenes scabrid or ciliate on margins ... SPILANTHES
14. Erect undershrubs ; achenes glabrous ... WEDDIA
11. Pappus present :
15. Pappus feathery ... TRIDAX
15. Pappus awned :
16. Outer involucral bracts foliaceous ; achenes dimorphic, outer ones winged and spinous on the wings, the inner narrow, slender, mucilcate ; awns of pappus 2, slender ... SYNDRELLA
16. Outer involucral bracts not foliaceous, achenes uniform, tetragonal, cuneiform, narrowed above ; awns barbellate ... BIDENS
9. Heads white or purple :
17. Heads solitary or in fascicles :
18. Heads solitary, 1-flowered ; receptacle epaleaceous ... LAGASCEA
18. Heads fascicled, occasionally solitary, many-flowered ; receptacle paleaceous :

19. Leaves 3-nerved ; pappus of short bristles ... **GALINOGA**
19. Leaves peninnerved ; pappus absent or of 1-2 minute scales ... **ECLIPTA**
17. Heads in axillary or terminal panicles :
20. Achenes obconic, glandular hairy ... **ADENOSTEMMA**
20. Achenes angular, glabrous :
21. Achenes 5-angled ... **AGERATUM**
21. Achenes trigonous :
22. Herbs foetid ; heads white ... **EUPATORIUM**
22. Herbs not foetid ; heads violet ... **CHROMOLAENA**
8. Leaves alternate :
23. Heads spiny :
24. Leaves white-tomentose beneath ; heads white ... **ECHINOPS**
24. Leaves glabrous beneath ; heads purple ... **TRICHOLEPIS**
23. Heads not spiny :
25. Plants white woolly ... **GNAPHALIUM**
25. Plants glabrous or hairy :
26. Heads of two colours ; ray floret, white, disc florets yellow ... **FRIESENIA**
26. Heads of one colour :
27. Heads yellow or white :
28. Heads white :
29. Pappus absent ... **ARTEMISIA**
29. Pappus present :
30. Leaves entire; involucral bracts multiseriate ... **ANAPHELIS**
30. Leaves pinnatifid ; involucral bracts 5, uniseriate ... **PARTHENIUM**
28. Heads yellow :
31. Heads in fascicles or panicles ... **BLUMEA**

31. Heads solitary or in cymes :
32. Heads solitary :
- 33. Leaves 3-lobed ; pappus absent ... **TITHONIA**
 - 33. Leaves entire ; pappus present :
 - 34. Achenes glabrous ; pappus of ray florets scaly ... **PULICARIA**
 - 34. Achenes sparsely hairy ; pappus of a few bristles ... **VICOA**
32. Heads in axillary or terminal cymes :
- 35. Pappus of 4 short awns ... **DICHROCEPHALA**
 - 35. Pappus hairy or paleaceous (pappus absent in *Senecio belgaumensis*) :
 - 36. Heads heterogamous :
 - 37. Erect herbs ; pappus 1-2 seriate ... **CONYZA**
 - 37. Erect or suffruticose herbs ; pappus copious or absent ... **SENECIO**
 - 36. Heads homogamous :
 - 38. Achenes glabrous ; styles without appendages ... **KLEINIA**
 - 38. Achenes hairy between the ribs ; styles with hairy appendages ... **GYNURA**
 - 27. Heads purple, pink or red :
 - 39. Heads red ... **CRASSOCEPHALUM**
 - 39. Heads purple or pink :
 - 40. Plants aromatic ; stem narrowly winged ... **Sphaeranthus**
 - 40. Plants not as above :
 - 41. Leaves deeply pinnatifid ... **CYATHOCLINE**
 - 41. Leaves entire or shallowly lobed :
 - 42. Leaves palmately nerved ... **ADENOON**
 - 42. Leaves pinnately nerved :
 - 43. Heads heterogamous ; anthers tailed ... **BLUMBA**

43. Heads homogamous ;
anthers not tailed :
 44. Achenes smooth or
faintly ribbed :
 45. Heads axillary,
solitary ; achenes
notched at apex... **CASULIA**
 45. Heads in pani-
culate cymes ;
achenes not
notched at apex... **LAMPRACHANIUM**
 44. Achenes ribbed or
angled :
 46. Heads solitary,
axillary or ter-
minal ; pappus
shorter than
corolla ... **PHYLLOCEPHALUM**
 46. Heads in ter-
minal or axillary
paniculate cymes ;
pappus longer
than corolla ... **VERNONIA**

ACANTHOSPERMUM Schrank

Acanthospermum hispidum DC. Prodr. 5 : 522. 1836 ; Sant. in Rec. Bot. Surv. India 16(1) : 139. 1967 (3rd Rev. ed.).

Herbs, ca 50 cm high, hairs spreading. Leaves sessile, obovate-spathulate, 2.0–3.5 × 0.8–2.0 cm, margin toothed, hairy. Heads yellow, solitary, axillary. Achenes with a pair of horn like spines.

Fls. & Frts. : August September.

Illus. : Tad. & Venkatan. Handb. S. Ind. Weeds 230, f. 91. 1955 (Rev. ed.) ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 350. 1982.

Distrib. : Weed along roadsides and in moist situations. Bhosgaon ; Satara-Pune Road ; Wai.

ADENOON Dalz.

Adenoon indicum Dalz. in Hook. J. Bot. Kew Gard. Misc. 2 : 344. 1850 ; Hook. f. Fl. Brit. India 3 : 229. 1881 ; Cooke, Fl. Pres. Bombay 2 : 64. 1958 (Repr. ed.).

Herbs, 30–50 cm high; stem with a purple tinge, grooved, hairy. Leaves sessile, obovate or broadly elliptic, 4–9 × 1.5–4.0 cm, base tapering, apex subacute, hairy. Heads ca 1.2 cm across. Involucral bracts elliptic-oblong, aristate, hairy on back. Achenes oblong, ca 0.3 cm long, subcompressed, ribbed.

Fls. & Frts. : October November.

Distrib. : Common in open places. Jadholi ; Mahabaleshwar.

ADENOSTEMMA J. R. & G. Forst.

Adenostemma lavenia (L.) O. Ktze. Rev. Gen. Pl. 1 : 304. 1891 ; Panigr. in Kew Bull. 30 : 648. 1975. *Verbesina lavenia* L. Sp. Pl. 902. 1753. *A. viscosum* Forst. Char. Gen. Pl. 90, t. 45. 1876 ; Hook. f. Fl. Brit. India 3 : 232. 1881 ; Cooke, Fl. Pres. Bombay 2 : 69. 1958 (Repr. ed.). 'Jangli-jira'.

Herbs, ca 1 m high. Leaves broadly ovate, 4–14 × 2–10 cm, base truncate or acute, apex acute, margin coarsely serrate-dentate, glabrescent. Heads white, 0.5–0.7 cm across. Involucral bracts 2-seriate, oblong-elliptic, glandular hairy. Achenes ca 0.5 cm long, blackish-brown.

Fls. & Frts. : July November.

Illus. : Wight, Ic. t. 1087. 1846 ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 351. 1982.

Distrib. : Common in shady places along streams. Mahabaleshwar ; Shirshingi.

AGERATUM L.

- | | | |
|---|-----|------------------------|
| 1. Branches hairy when young, glabrous at length ; involucral bracts oblong-lanceolate, sparsely hairy ; heads 60–75 flowered | ... | <i>A. conyzoides</i> |
| 1. Branches hairy throughout ; involucral bracts linear, acute, densely hairy ; heads 75–100 | ... | <i>A. houstonianum</i> |

Ageratum conyzoides L. Sp. Pl. 839. 1753 ; Hook. f. Fl. Brit. India 3 : 243. 1881 ; Cooke, Fl. Pres. Bombay 2 : 70. 1958 (Repr. ed.). 'Sahadevi'.

Herbs, ca 1 m high with a strong odour. Leaves ovate, 5–7 × 2.5–5.0 cm. Heads white, small in dense panicles. Involucral bracts 2–3 seriate. Achenes ca 0.2 cm long, black ; pappus of 4 connate scales.

Fls. & Frts. : April September.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 352. 1982.

Distrib. : Common weed near cultivated fields and in waste places.
Junkti ; Koyna ; Mahabaleshwar ; Medha.

Ageratum houstonianum Mill. Gard. Dict. ed. 8, n. 2. 1768; Wadhwa et al. in M.V.M. Patrika 6 : 29, f. 1 - 4. 1971 ; Giri & Majumdar in J. Bombay Nat. Hist. Soc. 80 : 453, f. A-C. 1983.

Herbs, 30 - 60 cm high. Leaves deltoid, 2.0 - 6.5 × 1 - 5 cm, sparsely hairy. Heads purple. Achenes ca 0.2 cm long, brownish-black.

Fls. & Frts. : April December.

Illus. : Wadhwa et al., op. cit. ; Giri & Majumdar, op. cit.

Distrib. : Weed in waste places. Koyna ; Lingmala ; Mahabaleshwar.

ANAPHALIS DC.

Anaphalis subdecurrens (DC.) Gamble, Fl. Pres. Madras 695. 1921 [1 : 489. 1957 (Repr. ed.)] ; Grierson in Dassanayake & Fosberg, Rev. Handb. Fl. Ceylon 1 : 194. 1980. *Gnaphalium subdecurrens* DC. in Wight, Contrib. 21. 1834. *A. oblonga* DC. Prodr. 6 : 274. 1837 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 596. 1982.

Herbs. Leaves oblong-spathulate, base semi-amplexicaul, pilose above, tomentose beneath. Heads ca 0.4 cm across. Involucral bracts oblanceolate-oblong, pink. Achenes terete, sparsely hairy.

Notes : Included on Birdwood's report from Mahabaleshwar (Bole & Almeida, op. cit.) ; no sheet from the district is available in any of the herbaria.

ARTEMISIA L.

- | | | |
|---|-----|----------------------|
| 1. Leaves densely white tomentose beneath ; outer florets sterile | ... | <i>A. nilagirica</i> |
| 1. Leaves glabrous or sparsely hairy ; outer florets fertile | ... | <i>A. parviflora</i> |

Artemisia nilagirica (C.B.CI.) Pamp. in Nuovo. Giorn. Bot. Ital. N.S. 33 : 452. 1926 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 596. 1982. *A. vulgaris* L. var. *nilagirica* C.B.CI. Comp. Ind. 162. 1876. *A. vulgaris* auct. non L. 1753 ; Hook. f. Fl. Brit. India 3 : 325. 1881 ; Cooke, Fl. Pres. Bombay 2 : 105. 1958 (Repr. ed.). 'Dhor-davana'.

Shrubs, 2-3 m high; stem striate, pubescent. Leaves 5-9 × 3-4 cm, deeply lobed with stipule-like appendages at base. Heads ca 0.3 cm across; outer involucral bracts ovate, acute; inner oblong, membranous, margins scarious. Achenes oblong, ca 0.15 cm long.

Fls. & Frts. : November - December.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 354. 1982.

Distrib. : Aromatic shrubs, common along ghats. Mahabaleshwar ; Mandhardevi ; Marul ; Panchgani ; Pasarani ghat.

Artemisia parviflora Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 181. 1825 ; Hook. f. Fl. Brit. India 3 : 322. 1881 ; Cooke, Fl. Pres. Bombay 2 : 104. 1958 (Repr. ed.). 'Tel-davana'.

Shrubs, 1-2 m high. Leaves upto 3.0 × 0.7 cm, lower cuneate at base with a pair of stipule-like appendages, toothed at apex; upper minute, entire, lanceolate. Heads numerous, globose in panicled racemes. Involucral bracts ovate, acute, margins scarious. Achenes ellipsoid, brown.

Fls. & Frts. : October - December.

Illus. : Wight, Ic. t. 1111. 1846 (*A. glabrata* DC.)

Distrib. : Common near forest edges. Mahabaleshwar ; Marul ; Panchgani ; Pasarani ghat ; Satara.

BIDENS L.

Bidens biternata (Lour.) Merr. & Sherff ex Sherff in Bot. Gez. 88 : 293. 1829 ; Sant. in Bull. Bot. Surv. India 3 : 12. 1961. *Coreopsis biternata* Lour. Fl. Cochinch. 508. 1790. *B. pilosa* auct. non L. 1753 ; Hook. f. Fl. Brit. India 3 : 309. 1881 ; Cooke, Fl. Pres. Bombay 2 : 101. 1958 (Repr. ed.).

Herbs, 20-30 cm high; stem quadrangular, grooved. Leaves pinnate; petioles sheathing, dilated at base. Heads ca 1 cm across. Outer involucral bracts oblong, subacute, herbaceous, inner longer, membranous. Achenes 0.6-0.8 cm long.

Fls. & Frts. : Throughout the year.

Distrib. : Weed on exposed hill slopes and in waste places near villages. Bhosgaon ; Girvi ; Mahabaleshwar ; Nauja ; Panchgani ; Phaltan.

BLAINVILLEA Cass.

Blainvillea acmella (L.) Philipson in Blumea 6 : 350, f. 1. 1950, *Verbesina acmella* L. Sp. Pl. 901. 1753. *B. latifolia* (L.f.) DC. in Wight, Contrib. 17. 1834; Hook. f. Fl. Brit. India 3 : 205. 1881. *B. rhomboidea* Cass. in Dict. Sci. Nat. 29 : 494. 1823; Cooke, Fl. Pres. Bombay 2 : 97. 1958 (Repr. ed.).

Herbs, 25-50 cm high, scabrid-hairy. Leaves ovate-lanceolate, 3-6 × 0.7-3.2, crenate-serrate, hispid. Outer involucral bracts ovate, acute, hairy; inner rigid, striate with green nerves, persistent. Achenes of ray florets triangulated, ca 0.3 cm long; those of disk florets compressed, ca 0.5 cm long.

Fls. & Frts. : August September.

Illus. : Philipson, op. cit.; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 356. 1982.

Distrib. : Annuals along roadsides, near cultivated fields and in gardens. Dhebewadi; Panchgani; Wai.

BLUMBA DC. (*nom. cons.*)

1. Leaves white-woolly beneath :

2. Heads purple ... *B. solidaginoides*

2. Heads yellow :

3. Prostrate herbs ... *B. oxyodonta*

3. Erect herbs :

4. Heads in leafy clusters; achenes cylindrical ... *B. belangeriana*

4. Heads in terminal panicles; achenes obscurely angled ... *B. malcolmii*

1. Leaves glabrous or hairy, not woolly :

5. Petioles dilated and appendaged at base ... *B. lanceolaria*
var. *spectabilis*

5. Petioles not as above :

6. Heads solitary or in axillary clusters :

7. Achenes 4-5 angled ... *B. fistulosa*

7. Achenes obscurely angled ... *B. eriantha*

6. Heads in panicles :

8. Plants aromatic; leaves hairy ... *B. lacera*

8. Plants not aromatic ; leaves glabrous :
- | | |
|--|-----------------------|
| 9. Stems pilose, stipitate glandular ... | <i>B. membranacea</i> |
| 9. Stems glabrous or sparsely white-pilose ... | <i>B. virens</i> |

Blumea belangeriana DC. Prodr. 5 : 444. 1836 ; Hook. f. Fl. Brit. India 3 : 266. 1881 ; Cooke, Fl. Pres. Bombay 2 : 78. 1958 (Repr. ed.) ; Randeria in Blumea 10 : 277. 1960 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 597. 1982.

Herbs, 50–60 cm high, glabrous at base, silky above. Leaves sessile, obovate, 4–10 × 2–5 cm, margins irregularly dentate, sparsely hairy on upper surface. Heads ca 0.6 cm across. Involucral bracts linear, woolly, ca 0.7 cm long. Achenes ca 0.2 cm long, ribbed, hairy.

Fls. & Frts. : December April.

Distrib. : Occasional in shady places along ghats. Kumbharli ghat, Mahabaleshwar.

B. eriantha DC. in Wight, Contrib. 15. 1834 ; Hook. f. Fl. Brit. India 3 : 266. 1881 ; Cooke, Fl. Pres. Bombay 2 : 78. 1958 (Repr. ed.) ; Randeria in Blumea 10 : 279. 1960. ‘*Nimurdi*’.

Herbs, 20–40 cm high, woolly. Lower leaves petioled, upper sessile, elliptic-oblong, 1–4 × 0.5–1.8 cm, base cuneate, apex acute. Heads yellow. Involucral bracts many seriate. Achenes small, puberulous on angles.

Fls. & Frts. : April December.

Distrib. : Common in cultivated fields and open forests. Shirshingi, Vajegaon ; Vasota.

B. fistulosa (Roxb.) Kurz in J. Asiatic Soc. Beng. 46 : 187. 1877 ; Randeria in Blumea 10 : 256. 1960. *Conyza fistulosa* Roxb. Fl. Ind. (Carey ed.) 3 : 429. 1832. **B. glomerata** DC. in Wight, Contrib. 15. 1834 ; Hook. f. Fl. Brit. India 3 : 262. 1881 ; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 16. 1897 ; Cooke, Fl. Pres. Bombay 2 : 76. 1958 (Repr. ed.). ‘*Bhamburda*’

Herbs, ca 1 m high ; branches ashy-pubescent. Lower leaves petioled, obovate, pinnatifid ; upper sessile, oblong, inciso-serrate. Heads yellow in fascicles. Inner involucral bracts purple. Achenes puberulous.

Fls. & Frts. : December January.

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

Blumea lacera (Burm. f.) DC. in Wight, Contrib. 14. 1834 ; Hook. f. Fl. Brit. India 3 : 263. 1881 ; Cooke, Fl. Pres. Bombay 2 : 76. 1958 (Repr. ed.) ; Randeria in Blumea 10 : 264. 1960 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 598. 1982. *Conyza lacera* Burm. f. Fl. Ind. 180, t. 58, f. 1. 1768. 'Burando'

Herbs. 30–60 cm high. Leaves subsessile, elliptic-oblong, 1.5–2.5 × 1.0–1.5 cm, margins sharply dentate. Heads orange yellow, ca 0.8 cm across. Involucral bracts linear-lanceolate, silky-villous, margins scarious. Achenes oblong.

Fls. & Frts. : September February.

Distrib. : Rare along forest margins and roadsides. Way to Patan, Kochhar 154335 ; Mahabaleshwar, Bole & Almeida (*op. cit.*).

B. lanceolaria (Roxb.) Druce var. **spectabilis** (DC.) Randeria in Blumea 10 : 220. 1960. *B. spectabilis* DC. Prodr. 5 : 445. 1836 ; Hook. f. Fl. Brit. India 3 : 269. 1881 ; Cooke, Fl. Pres. Bombay 2 : 79. 1958 (Repr. ed.).

Shrubs, ca 2 m high ; branches puberulous. Leaves lanceolate to oblanceolate, base tapering into petiole, apex acute, margin shallowly serrate. Heads yellow in elongated panicles, subtended by leafy bracts. Involucral bracts narrow, pubescent. Achenes subterete, silky ; pappus red.

Fls. & Frts. : February.

Distrib. : Rare, represented by a single collection from the district. Differs from the type variety in pedunculate and larger heads. Mahabaleshwar, Sedgwick 4650 (BLAT).

B. malcolmii (C.B.CI.) Hook. f. Fl. Brit. India 3 : 266. 1881 ; Cooke, Fl. Pres. Bombay 2 : 78. 1958 (Repr. ed.) ; Randeria in Blumea 10 : 278. 1960. *Pluchea malcolmii* C.B.CI. Comp. Ind. 95. 1876. (Fig. 28).

Herbs, ca 1 m high ; branches densely silky-woolly. Leaves sessile, obovate, 3–9 × 1.5–2.5 cm, base tapering, apex obtuse, margin irregularly toothed, densely white-woolly beneath. Involucral bracts linear, acute. Achenes sparsely hairy.

Fls. & Frts. : Throughout the year.

Distrib. : Common along ghats at higher elevations. Koyna ; Kumbarli ghat ; Mahabaleshwar ; Nauja ; Mandhardevi.

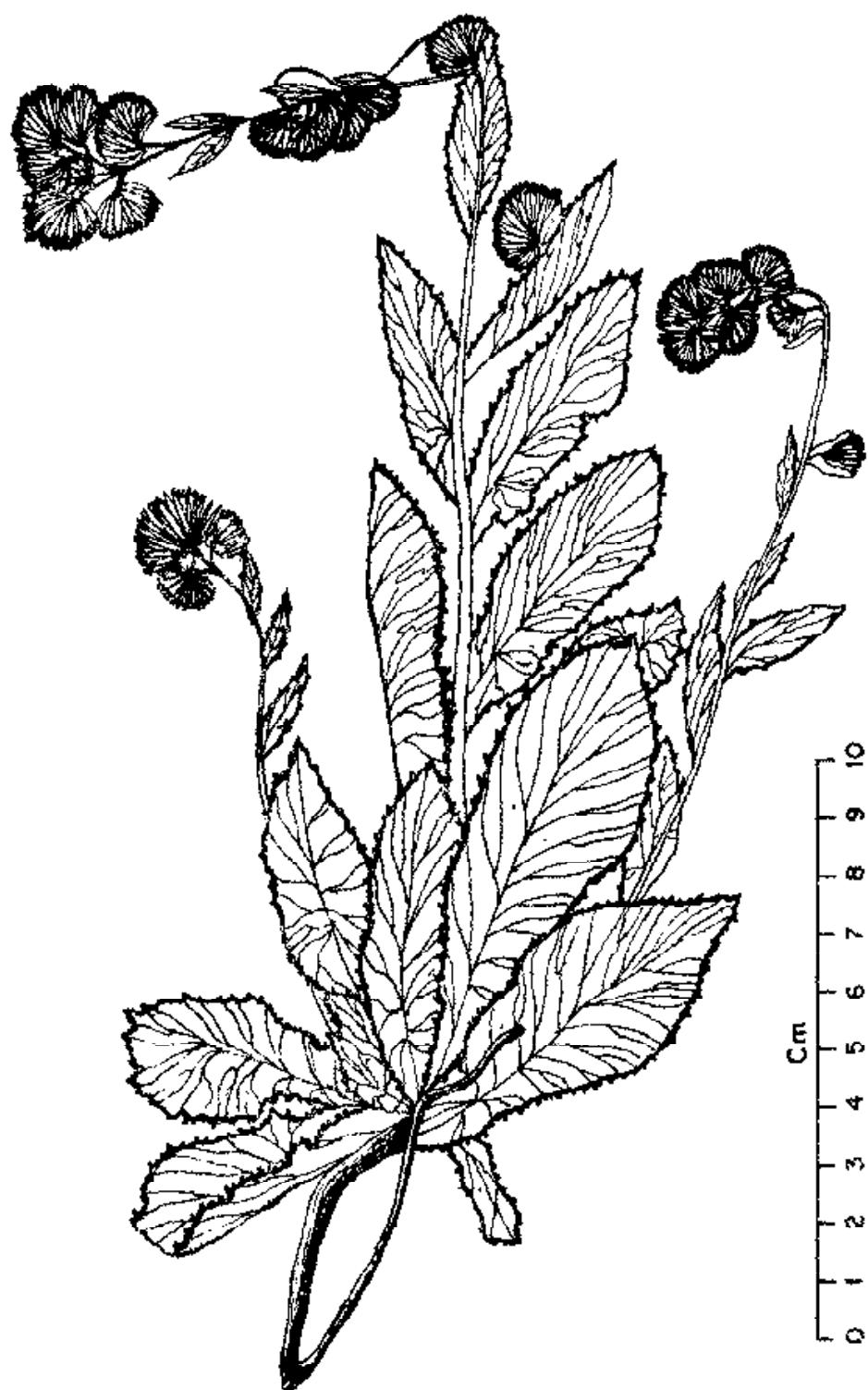


Fig. 28. *Blumea malcolmii* (C.B.CI.) Hook. f.

Blumea membranacea DC. Prodr. 5 : 440. 1836 ; Hook. f. Fl. Brit. India 3 : 265. 1881 ; Cooke, Fl. Pres. Bombay 2 : 77. 1958 (Repr. ed.) ; Randeria in Blumea 10 : 269. 1960. 'Mharbir'.

Herbs, *ca* 1 m high. Leaves sessile, obovate, 3-5 × 1-2 cm, membranous, base tapering, apex acute or obtuse, margins serrate. Heads small, numerous in branched panicles, *ca* 0.5 cm across, on glandular-hairy peduncles. Involucral bracts lanceolate, acute, glandular-hairy. Achenes angled, hairy, *ca* 0.15 cm long.

Fls. & Frts. : December - April.

Distrib. : Rare as forest undergrowth. Fitzgerald ghat, Bole 218 (BLAT) ; Mahabaleshwar, Puri 16726.

B. oxyodonta DC. in Wight, Contrib. 15. 1834 ; Hook. f. Fl. Brit. India 3 : 266. 1881 ; Cooke, Fl. Pres. Bombay 2 : 77. 1958 (Repr. ed.) ; Randeria in Blumea 10 : 280. 1960.

Herbs, 10-25 cm long, branches radiating, hairy. Leaves sessile, elliptic-oblong, 1.5-3.0 × 0.5-1.0 cm, base tapering, apex mucronate, margins spinous-toothed. Heads *ca* 0.5 cm across, solitary or fascicled on slender peduncles. Involucral bracts linear-acute, pubescent. Achenes angled, hairy.

Fls. & Frts. : February - May.

Distrib. : Common annuals in grassy localities and near cultivated fields. Mahabaleshwar ; Nauja ; Punchgani ; Shirshingi.

B. solidaginoides (Poir.) DC. Prodr. 5 : 443. 1836 ; Cufodontis in Bull. Jard. Bot. Brux. Suppl. 36 : 1093. 1966. *Gnaphalium solidaginoides* Poir. Encycl. Suppl. 2 : 805. 1811. *B. mollis* (D. Don.) Merr. in Philipp. J. Sci. Bot. 5 : 395. 1910 ; Randeria in Blumea 10 : 261. 1960 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 598. 1982. *B. wightiana* DC. in Wight, Contrib. 14. 1834 ; Hook. f. Fl. Brit. India 3 : 261. 1881 ; Cooke, Fl. Pres. Bombay 2 : 75. 1958 (Repr. ed.).

Herbs, 30-60 cm high, aromatic, woolly. Leaves elliptic-oblong, 1.5-4.0 × 0.5-1.8 cm, irregularly serrate ; lower shortly petioled, upper sessile. Heads in terminal, dense, spiciform panicles. Involucral bracts linear, hairy. Achenes oblong, 4-5 angled.

Fls. & Frts. : February - November.

Distrib. : Common along roadsides, also found as forest undergrowth. Karad ; Lingmala ; Nauja ; Shirshingi.

Blumea virens Wall. ex DC. in Wight, Contrib. 14. 1834 ; Hook. f. Fl. Brit. India 3 : 264. 1881 ; Cooke, Fl. Pres. Bombay 2 : 77. 1958 (Repr. ed.) ; Randeria in Blumea 10 : 272. 1960 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 598. 1982.

Herbs, ca 1 m high. Lower leaves obovate, lyrate, upper elliptic-oblong, margin serrate. Heads ca 0.5 cm across on filiform peduncles. Involucral bracts linear-lanceolate, outer longer, hairy at apex. Achenes oblong, ribbed, hairy.

Fls. & Frts. : December January.

Distrib. : Slender herbs along hill slopes in open situations. Mahabaleshwar.

CAESULIA Roxb.

Caesulia axillaris Roxb. Pl. Cor. I : 64, t. 93. 1795 ; Hook. f. Fl. Brit. India 3 : 291. 1881 ; Cooke, Fl. Pres. Bombay 2 : 92. 1958 (Repr. ed.).

Herbs, 15–60 cm high. Leaves sessile, lanceolate, 4.5–8.5 × 0.7–1.3 cm, base tapering, apex acute. Involucral bracts 2, orbicular, crenulate. Achenes ca 0.3 × 0.2 cm, flat, broadly winged on sides ; pappus scales 2, ovate.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 1102. 1849 ; Bhandari, Fl. Indian Desert 196, f. 62. 1978.

Distrib. : Common weed near cultivated fields and along roadsides. Mahabaleshwar ; Mhavashi ; Satara-Pune road ; Tarle.

CHROMOLAENA DC.

Chromolaena odorata (L.) King & Robinson in Phytologia 20 : 204. 1970. *Eupatorium odoratum* L. Syst. nat. ed. 10. 1205. 1759 ; Hook. f. Fl. Brit. India 3 : 244. 1881.

Undershrubs, ca 2 m high, glandular pubescent. Leaves rhomboid-ovate, 5–9 × 2–5 cm, sub-palmately 3-nerved, pubescent. Involure cylindrical, multi-seriate. Achenes truncate ; pappus hairy.

Fls. & Frts. : December.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 369. 1982.

Distrib. : Weed along roadsides and near forest clearings, Koyna; Rasati.

Notes : Used as fish poison. Native of S. America, naturalized.

CONYZA Less. (<i>nom. cons.</i>)	..
1. Plants viscid ; involucral bracts with scarious margin ...	<i>C. leucantha</i>
1. Plants not viscid ; bracts without scarious margin ...	<i>C. stricta</i>

Conyzza leucantha (D. Don) Ludlow & Raven in Kew Bull. 17 : 17. 1963. *Erigeron leucanthus* D. Don, Prodr. Fl. Nepal. 171. 1825. *C. viscidula* Wall. ex DC. Prodr. 5 : 383. 1836 ; Hook. f. Fl. Brit. India 3 : 258. 1881.

Herbs, 1-2 m high. Leaves elliptic-lanceolate, 3-6 × 1-2 cm, base tapering, apex acute, margins serrate. Heads ca 0.5 cm across in panicles. Involucral bracts linear-lanceolate, ca 0.5 cm long, hairy. Achenes minute.

Fls. & Frts. : December.

Distrib. : Occasional along ghats, in open situations. Near Guregarh nursery, Koyna ; Fitzgerald ghat.

C. stricta Willd. Sp. Pl. 3 : 1922. 1803 ; Hook. f. Fl. Brit. India 3 : 258. 1881 ; Cooke, Fl. Pres. Bombay 2 : 73. 1958 (Repr. ed.).

Herbs, 30-50 cm high, pubescent. Leaves subsessile, spathulate, 1-4 × 0.5-0.8 cm, irregularly toothed, hairy. Heads ca 0.5 cm across ; bracts below the heads linear-lanceolate, acute, ca 0.5 cm long. Involucral bracts narrowly lanceolate, pubescent on the back. Achenes oblong, compressed.

Fls. & Frts. : April - November.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 360. 1982.

Distrib. : Widely distributed among grasses on open hills. Deshmukhwadi ; Khambil-Chorghe ghat, Mahabaleshwar ; Old Mahabaleshwar ; Natuja ; Panchgani ; Wada below Mahabaleshwar.

CRASSOCEPHALUM Moench.

Crassocephalum crepidioides (Bth.) S. Moore in J. Bot. 1 : 211. 1912 ; Koster in Blumea 26 : 237. 1980 ; Nair & Srinivasan in J. Econ. Tax. Bot. 3 : 290. 1984 ; Londhe & Pradhan, *ibid.* 5 : 151. 1984. *Gynura crepidioides* Bth. in Hook. Niger Fl. 438. 1849.

Herbs, *ca* 1 m high; branches ribbed, pilose between the ribs. Leaves subsessile or shortly petioled, spatulate or oblong, margin serrate-dentate or irregularly lobed, glabrous or sparsely pilose. Heads brick-red in terminal corymbs. Outer involucral bracts short, free; inner linear-lanceolate, connate, ribbed. Achenes cylindrical, ribbed.

Fls. & Frts. : October May.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 361. 1982.

Notes : So far it was reported from South India and now it has extended to Maharashtra (Londhe & Pradhan, *op. cit.*).

CYATHOCLINE Cass.

Cyathocline purpurea (D. Don) O. Ktze. Rev. Gen. Pl. 333. 1891.
Tanacetum purpureum D. Don, Prodr. Fl. Nepal. 181. 1825. **C. lyrata** Cass. in Ann. Sci. Nat. I, 17 : 420. 1829; Hook. f. Fl. Brit. India 3 : 246. 1881; Cooke, Fl. Pres. Bombay 2 : 71. 1958 (Repr. ed.). 'Gangotra'.

Herbs, 30 - 50 cm high. Leaves sessile, *ca* 5 cm long, segments toothed, pubescent. Heads *ca* 0.3 cm across. Involucral bracts linear, acute, margin scarious, ciliate. Achenes minute, oblong.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 1098. 1846 (*C. lyrata*).

Distrib. : Common near water courses. Kas; Kelghar ghat; Khambil-Chorghe ghat; Koyna; Jadholi; Kumbharli ghat; Mahabaleshwar; Way to Pratapgad; Punoli; Shirshingi.

DICHROCEPHALA DC.

Dichrocephala integrifolia (L. f.) O. Ktze. Rev. Gen. Pl. 333. 1891.
Hippia integrifolia L. f. Suppl. 389. 1781. **D. latifolia** (Cham.) DC. in Wight, Contrib. II. 1834; Hook. f. Fl. Brit. India 3 : 245. 1881; Cooke, Fl. Pres. Bombay 2 : 70. 1958 (Repr. ed.).

Herbs, 15 - 20 cm high, pubescent. Leaves ovate, 3 - 5 cm long, pinnatifid, margin crenate-serrate, sparsely hairy. Heads 0.2 - 0.3 cm across. Involucral bracts minute, linear, margins scarious. Achenes compressed, *ca* 0.15 cm long, smooth.

Fls. & Frts. : January October.

Illus. : Wight, Ic. t. 1096, 1846; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 362. 1982.

Distrib. : Common annuals in moist situations. Gureghar ; Koyna ; Mahabaleshwar ; Panchgani.

ECHINOPS L.

Echinops echinatus Roxb. Fl. Ind. (Carey ed.) 3 : 447. 1832 ; Hook. f. Fl. Brit. India 3 : 358. 1887 ; Cooke, Fl. Pres. Bombay 2 : 112. 1958 (Repr. ed.).

Herbs, *ca* 1 m high, white tomentose. Leaves sessile. 2.5–7.5 cm long, pinnatifid ; lobes triangular, spinous, scaberulous above. Heads 1.5–3.5 cm across. Involucral bracts multi-seriate, rigid ; outer bracts oblanceolate, intermediate produced into spines, innermost connate into a tube. Achenes elongate, subterete, villous ; pappus with connate bristles.

Fls. & Frts. : April December.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 364. 1982.

Distrib. : Occasional in waste places and along roadsides. Mahabaleshwar ; Medha ; Pasarani ghat.

ECLIPTA L.

Eclipta prostrata (L.) L. Mant. 2 : 286. 1771 ; Roxb. Fl. Ind. (Carey ed.) 3 : 438. 1832 ; Hook. f. Fl. Brit. India 3 : 304. 1881. *Verbena alba* L. Sp. Pl. 902. 1753 ; Sant. in Rec. Bot. Surv. India 16(1) : 133. 1967 (3rd Rev. ed.). *E. erecta* L. *op. cit.* ; Cooke, Fl. Pres. Bombay 2 : 95. 1958 (Repr. ed.). 'Maka'.

Herbs, *ca* 40 cm high, erect or prostrate, rooting at nodes ; stem and branches white hairy. Leaves sessile, oblong-lanceolate, 2–7 × 1–2 cm, base cuneate, apex acute. Heads *ca* 0.7 cm across. Achenes of ray florets triquetrous, warty, often empty, disc florets compressed.

Fls. & Frts. : October December.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 365. 1982.

Distrib. : Common along roadsides, in waste places. Chaphal ; Dhebewadi ; Gojegaon ; Koyna ; Wai.

ELEPHANTOPUS L.

Elephantopus scaber L. Sp. Pl. 814. 1753 ; Hook. f. Fl. Brit. India 2 : 242. 1881 ; Cooke, Fl. Pres. Bombay 2 : 68. 1958 (Repr. ed.). 'Hastipata'.

Herbs, 15–30 cm high, strigose. Leaves in a rosette, oblanceolate, subacute or rounded at apex, 9–15 × 2.5–4.0 cm, serrate, base tapering into petiole, apex subacute or rounded, hairy, margins serrate. Heads purple, terminal, 1–2 cm across. Involucral bracts broadly ovate, ca 2 cm long, stiff. Achenes truncate at apex, cuneate at base, ca 0.5 cm long, 10-ribbed, pubescent.

Fls. & Frts. : October–November.

Illus. : Wight, Ic. t. 1086. 1846 ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 366. 1982.

Distrib. : Occasional perennials in forest undergrowth, also found in waste places. Kisrude ; Koyna valley.

EMILIA Cass

Emilia sonchifolia (L.) DC. ex Wight, Contrib. 24. 1834 ; Hook. f. Fl. Brit. India 3 : 336. 1881 ; Cooke, Fl. Pres. Bombay 2 : 107. 1958 (Repr. ed.). *Cacalia sonchifolia* L. Sp. Pl. 835. 1753.

Herbs, ca 40 cm high, diffuse. Cauline leaves amplexicaul, distantly toothed ; radical petioled, ca 10 cm long. Heads purple, ca 1 cm long. Involucral bracts linear-oblong, margin scarious. Achenes ca 0.2 cm long, ribbed, brown ; pappus white, as long as bracts.

Fls. & Frts. : July–November.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 367. 1982.

Distrib. : Common in waste places. Bhosgaon ; Dhokewadi ; Dhom dam near Wai ; Koyna.

ERIGERON L.

Erigeron floribundus (H.B.K.) Sch. Bip. in Bull. Soc. Bot. France 12 : 81. 1865 ; Burtt in Kew Bull. 1948 : 372. 1948. *Conyza floribunda* H.B.K. Nov. Gen. Sp. 4 : 73. 1820.

Herbs, ca 1 m high. Leaves linear-lanceolate or oblanceolate, 2–6 cm long. Heads in pyramidal, 2–5 cm long panicles. Achenes ca 0.4 cm long, glabrescent ; pappus hairy, dirty white.

Fls. & Frts. : May–November.

Distrib. : A weed of waste places, and near agricultural fields. Mahabaleshwar.

CULTIVATED SPECIES

Erigeron karvinskianus DC. Prodr. 5 : 285. 1836. *Vittadinia australis* A. Rich. Ess. Fl. Nouv. Zel. 251. 1832 ; Cooke, Fl. Pres. Bombay 2 : 123. 1958 (Repr. ed.).

Herbs, prostrate or decumbent. Leaves radical, lower pinnatifid, upper entire. Disc florets yellow, ray florets pink.

Distrib. : Cultivated as an ornamental plants, rarely found as an escape. Mahabaleshwar ; Panchgani.

EUPATORIUM L.

Eupatorium adenophorum Spr. Syst. 3 : 420. 1826 ; Koster in Blumea 1 : 502. 1935. *E. glandulosum* H.B.K. Nov. Gen. & Sp. 4 : 122. 1820 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 600. 1982.

Herbs, diffuse ; stems with stalked glands. Leaves triangular or rhomboid-ovate, crenate-serrate. Heads in dense clusters. Involucral bracts 3-seriate, elliptic, acute.

Fls. & Frts. : March April.

Distrib. : Occasional in grasslands. Mahabaleshwar.

FLAVERIA A. Juss.

Flaveria trinervia (Spr.) C. Mohr in U.S.D.A. Contrib. Nat. Herb. 6 : 810. 1901 ; Matthew, Fl. Tamilnadu Carnatic 1 : 789. 1981 & Ill. Fl. Tamilnadu Carnatic t. 370. 1982. *Oedera trinervia* Spr. Bot. Gart. Halle 63. 1800.

Herbs, ca 50 cm high, diffuse. Leaves sessile, oblong or spatulate, 1.5–2.5 × 0.7 cm, subcrenate, palmately 3-nerved. Heads yellow, subtended by floral bracts longer than heads. Involucral bracts oblong, plicate. Achenes cylindric, ca 0.25 cm long, ribbed, black.

Fls. & Frts. : July.

Illus. : Matthew, op. cit.

Distrib. : Weed in cultivated fields. Gondavale.

GALINSOGA Ruiz & Pav.

- | | | |
|---|-----|-------------------------|
| 1. Leaves scabrous on nerves ; ligules deeply 3-lobed | ... | <i>G. quadriradiata</i> |
| 1. Leaves glabrous ; ligules shortly 3-lobed | ... | <i>G. parviflora</i> |

Galinsoga parviflora Cav. Ic. 3 : 41, t. 281. 1795 ; Hook. f. Fl. Brit. India 3 : 311. 1881 ; Canne in Rhodora 79 : 373. 1977.

Herbs, 30-40 cm high. Leaves ovate, 2-7 × 1.5-4.0 cm, sparsely hairy, margin crenate. Heads yellow, ca 0.5 cm across, solitary or few together. Achenes angular, ca 0.2 cm long, black.

Fls. & Frts. : May - July.

Distrib. : Introduced from Tropical America. Found near cultivated fields and in waste places. Koyna ; Mahabaleshwar ; Panchgani.

G. quadriradiata Ruiz & Pavon, Syst. Veg. 1 : 198. 1798 ; Canne in Rhodora 79 : 355. 1977. **G. ciliata** (Raf.) Blake in Rhodora 24 : 35. 1922.

Herbs, ca 60 cm high ; stem sparsely pilose below, densely strigose above. Leaves ovate, 1.5-10.0 × 0.5-5.5 cm, base acute, apex acute or acuminate, margin ciliate. Heads ca 0.8 cm across. Achenes angular, strigose.

Fls. & Frts. : September - April.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic t. 371. 1982.

Distrib. : Garden weed, native of Mexico. Mahabaleshwar.

GNAPHALIUM L.

1. Heads in corymbs	...	<i>G. luteo-album</i> ssp. <i>affine</i>
1. Heads in spikes		<i>G. polycaulon</i>

Gnaphalium luteo-album L. ssp. *affine* (D. Don) Koster in Blumea 3 : 484. 1941. **G. affine** D. Don, Prodr. Fl. Nepal. 173. 1825. **G. luteo-album** L. Sp. Pl. 851. 1753 ; Hook. f. Fl. Brit. India 3 : 288. 1881 ; Cooke, Fl. Pres. Bombay 2 : 86. 1958 (Repr. ed.) .(Fig. 29).

Herbs, erect or ascending, 7-17 cm long. Leaves sessile, spatulate-oblong, 2-5 × 0.4-1.5 cm, base semi-amplexicaul, woolly. Heads yellow in axillary and terminal corymbs. Involucral bracts multiseriate, scarious, shining yellow. Achenes small, oblong or obovate ; pappus hairs uniseriate, connate at base, caducous.

Fls. & Frts. : March - April.

Distrib. : Common along riverbeds and in waste places. Koyna ; Mahabaleshwar ; Medha.

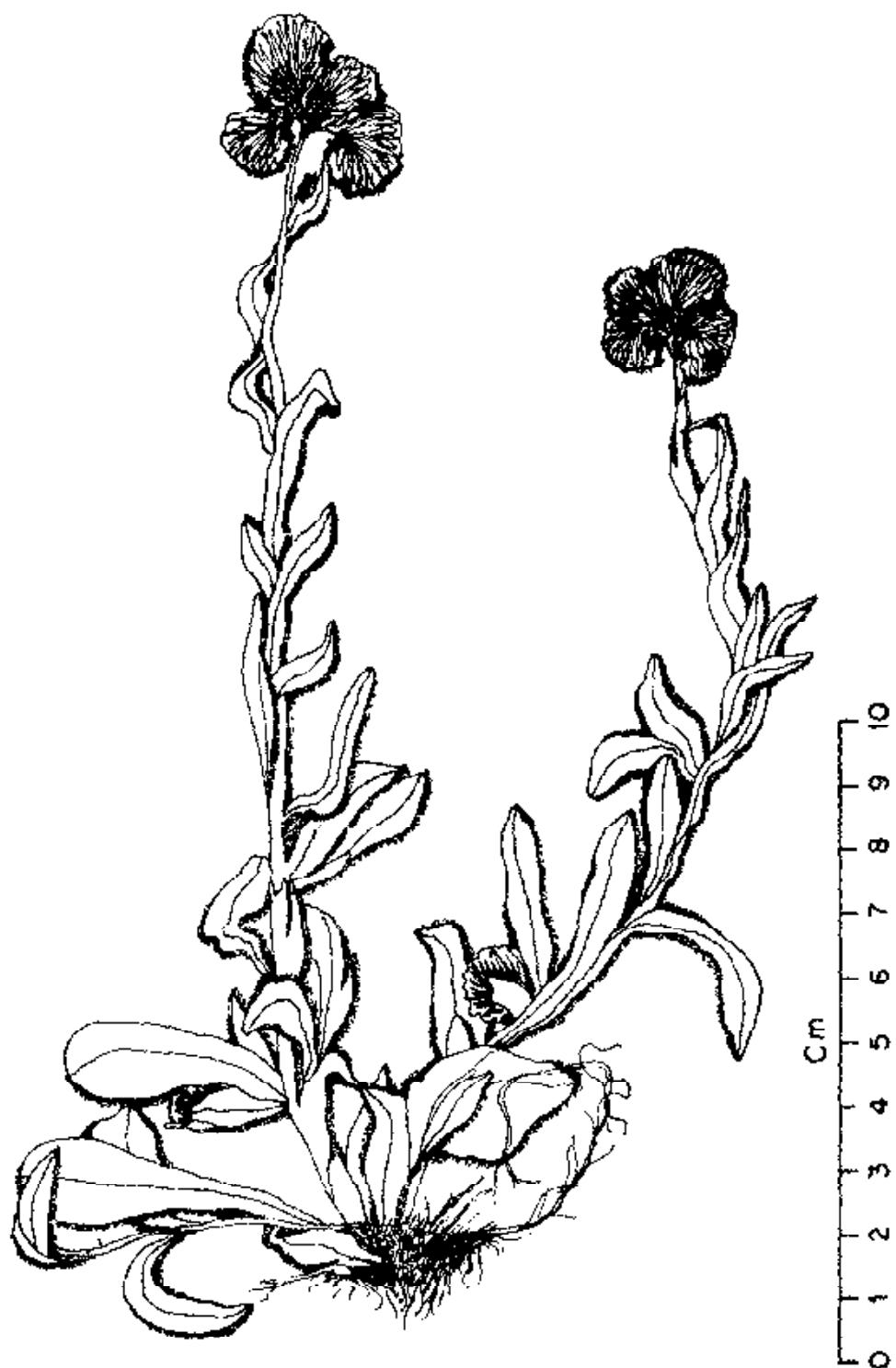


Fig. 29. *Gnaphalium luteo-album* L. ssp. *affine* (D. Don) Koster

Notes : Koster (1941) has separated this species into ssp. *luteo-album* with larger heads and pale brownish involucral bracts and ssp. *affine* (D. Don) Koster with smaller heads and golden yellow bracts.

Gnaphalium polycaulon Pers. Syn. Pl. 2 : 421. 1807 ; Grierson in Notes R. B. G. Edinb. 31 : 137. 1972. *G. indicum* non L. 1753 : Hook. f. Fl. Brit. India 3 : 289. 1881 ; Cooke, Fl. Pres. Bombay 2 : 87. 1958 (Repr. ed.).

Herbs, erect or prostrate, 5–13 cm high. Leaves sessile, obovate, apiculate, 1.0–1.5 × 0.2–0.3 cm, white woolly. Heads golden yellow, ca 0.3 cm across in terminal leafy spikes. Achenes oblong, shortly beaked.

Fls. & Frts. : February May.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 373. 1982.

Distrib. : Common along roadsides and in waste places. Mahabaleshwar : Pratapgad ; Taldeo.

GYNURA Cass.

Gynura bicolor (Roxb. ex Willd.) DC. Prodr. 6 : 299. 1838 ; Hook. f. Fl. Brit. India 3 : 335. 1882 ; Davies in Kew Bull. 35 : 366. 1980. *Cacalia bicolor* Roxb. ex Willd. Sp. Pl. 3 : 1731. 1803. *G. angulosa* DC. Prodr. 6 : 298. 1838 ; Cooke, Fl. Pres. Bombay 2 : 106. 1958 (Repr. ed.).

Undershrubs, 1–2 m high ; stem grooved. Leaves sessile, 16–18 × 5.0–7.5 cm, distantly toothed. Involucral bracts as long as heads, ca 1.2 cm long, linear, acute, margins scarious. Achenes oblong, brown, ca 0.25 cm long, ribbed ; pappus white, silky.

Fls. & Frts. : August October.

Distrib. : Common along moist grassy slopes and near forest edges. Koyna ; Mahabaleshwar ; Panchgani-Mahabaleshwar ; Sanbur ; Shirgaon ghat.

KLEINIA P. Mill.

Kleinia grandiflora (DC.) Rani in Matthew, Fl. Tamilnadu Carnatic 3 : 801, t. 56 d. 1983. *Notonia grandiflora* Wall ex DC. in Guill. Arch. Bot. 2 : 518. 1833 ; Hook. f. Fl. Brit. India 3 : 336. 1881 ; Cooke, Fl. Pres. Bombay 2 : 107. 1958 (Repr. ed.). ‘Vandar-roti’.

Herbs, ca 1.5 m high. Leaves sessile or shortly petioled, obovate or elliptic-lanceolate, 5–12 × 2–6 cm. Heads pale yellow. Involucral bracts linear-oblong, margins scarious. Achenes oblong, striate; pappus hairy.

Fls. & Frts. : September November.

Illus. : Wight, Ic. t. 484. 1841; Matthew, *op. cit.* & Ill. Fl. Tamilnadu Carnatic 2 : t. 381. 1982 (*Notonia grandiflora*).

Distrib. : Succulent perennials along ghats. Khambatki ghat, Panchgani; Khandala ghat near Wai.

LACTUCA L.

- | | |
|--|-----------------------|
| I. Slender herbs; leaves upto 5 cm long; heads pedunculate ... | <i>L. remotiflora</i> |
| II. Stout herbs; leaves more than 5 cm long; heads sessile ... | <i>L. runcinata</i> |

***Lactuca remotiflora* DC.** in Wight, Contrib. 26. 1834; Cooke, Fl. Pres. Bombay 2 : 118. 1958 (Repr. ed.).

Herbs, ca 20 cm high. Radical leaves obovate, base cuneate, apex obtuse; caudine narrow, semi-amplexicaul. Heads pinkish, cylindrical, ca 1 cm long. Involucral bracts linear-oblong, scarious. Achenes oblong, ca 0.7 cm long, ribbed.

Fls. & Frts. : July September.

Distrib. : Rare, slender monsoon herbs. Mahabaleshwar, Soman 157665.

***L. runcinata* DC.** in Wight, Contrib. 26. 1835; Cooke, Fl. Pres. Bombay 1 : 118. 1958 (Repr. ed.). *L. heyneana* DC. Prodr. 7 : 140. 1838; Hook. f. Fl. Brit. India 3 : 403. 1881; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 16. 1897.

Herbs, stem hollow. Leaves sessile, obovate, pinnatifid, lobes recurved. Heads pinkish-white, solitary or in clusters. Achenes compressed, faintly ribbed, muricate.

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

CULTIVATED SPECIES

***L. sativa* L.** Sp. Pl. 795. 1753; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 602. 1982. *L. scariola* var. *sativa* (L.) Hook. f. Fl. Brit.

India 3 : 404. 1881 ; Cooke, Fl. Pres. Bombay 2 : 119. 1958 (Repr. ed.).
'Lettuce, Salad'.

Leaves used as salad.

LAGASCEA Cav.

Lagascea mollis Cav. in Anal. Cienc. Nat. 6 : 332, f. 44. 1803 ; Hook. f. Fl. Brit. India 3 : 302. 1881 ; Cooke, Fl. Pres. Bombay 2 : 93. 1958 (Repr. ed.). 'Jharvad'.

Herbs, *ca* 1 m high, slender, pubescent. Leaves 3–7 × 1–5 cm, base cuneate, apex acute or acuminate, margin crenate. Heads white, *ca* 1.5 cm across. Involucral bracts linear-lanceolate, connate. Achenes *ca* 0.2 cm long.

Fls. & Frts. : Throughout the year.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 378. 1982.

Distrib. : Common weed near cultivated fields, along roadsides and in waste places. Girvi ; Khatav ; Panchgani.

LAMPRACHAENIUM Bth.

Lamprachaenium microcephalum (Dalz.) Bth. in Bth. & Hook. f. Gen. Pl. 2 : 226. 1873 ; Hook. f. Fl. Brit. India 3 : 229. 1881 ; Cooke, Fl. Pres. Bombay 2 : 64. 1958 (Repr. ed.). *Decaneurum microcephalum* Dalz. in Hook. Kew J. Bot. 3 : 231. 1851. 'Brahmadandi'.

Herbs with a purple tinge, 30–50 cm high, hairy. Leaves elliptic, 3–9 × 1.3–4.0 cm, base tapering, apex acuminate, margin distantly toothed, bristly above, woolly tomentose beneath. Heads conical, *ca* 0.5 cm across. Outer involucral bracts foliaceous, *ca* 0.5 cm long, green, margins ciliate ; inner with scarious margins. Achenes obovoid, slightly compressed, *ca* 0.2 cm long, shining.

Fls. & Frts. : October–November.

Distrib. : Common annuals in waste places. Machutar forest, near Mahabaleshwar ; Mahabaleshwar.

LAUNABA Cass.

Lannea procumbens (Roxb.) Rajagopal & Ramayya in Kew Bull. 23 : 465. 1969. *Prenanthes procumbens* Roxb. Fl. Ind. (Carey ed.) 3 : 404.

1832. *L. nudicaulis* auct. pl. non (L.) Hook. f. 1881; Cooke, Fl. Pres. Bombay 2 : 122. 1958 (Repr. ed.). 'Pathari'.

Herbs, 20-50 cm high. Leaves oblong, 7-11 × 2.0-2.5 cm, pinnatifid, segments rounded, margins spinulose with white cartilaginous teeth; caudine few, narrowly oblong, pinnatifid. Heads cylindric, shortly pedicelled, solitary or fascicled. Involucral bracts many seriate; the outer ovate, acute, inner linear, ca 1 cm long. Achenes cylindrical, ribbed; pappus soft, white.

Fls. & Frts. : February September.

Illus. : Maheshwari, Ill. Fl. Delhi f. 99. 1966.

Distrib. : Common on sandy soil on ghats in scrub forest and near cultivated fields. Gojegaon; Nauja; Satara road station.

PARTHENIUM L.

Parthenium hysterophorus L. Sp. Pl. 988. 1753; Rolla Rao in J. Bombay Nat. Hist. Soc. 54 : 218, t. 1. 1956. 'Gajar-gavat'.

Herbs, 1-2 m high. Leaves sessile, lanceolate-oblong, 4-7 × 2.0-3.5 cm, base tapering, apex acute. Heads white, ca 0.2 cm across. Achenes triquetrous, compressed.

Fls. & Frts. : Throughout the year.

Illus. : Rolla Rao, *op. cit.*; Matthew, Ill. Fl. Tamilnadu Carnatic t. 382. 1982.

Distrib. : Native of America spread as a troublesome weed throughout the district. It causes skin allergies. Koyna; Medha.

PHYLLOCEPHALUM Cass.

- | | | |
|---|-----|------------------------|
| 1. Outer involucral bracts 1-many, linear or lanceolate, acute; ribs of achenes conspicuous | ... | <i>P. phyllolaenum</i> |
| 1. Outer involucral bracts 1-2, oblong-lanceolate, bristly at apex; ribs of achenes faint | ... | <i>P. tenue</i> |

Phyllocephalum phyllolaenum (DC.) Narayana in Curr. Sci. 51 : 438. 1982. *Decaneurum phyllolaenum* DC. Prodr. 7 : 264. 1938. *Centratherum phyllolaenum* (DC.) Bth. ex C.B. Cl. Comp. Ind. 4. 1876; Hook. f. Fl. Brit. India 3 : 228. 1881; Cooke, Fl. Pres. Bombay 2 : 62. 1958 (Repr. ed.).

Herbs, ca 1 m high with a purplish tinge. Leaves broadly elliptic, 6–10 × 1.7–3.5 cm, base tapering, apex acuminate, margins spinous-serrate, covered with short setae above, densely white tomentose beneath. Heads ca 1 cm across. Outer involucral bracts linear-lanceolate, longer than heads; inner short, margins ciliate; innermost linear-oblong, acute, purple, scarious. Achenes oblong, ca 0.2 cm long.

Fls. & Frts. : September November.

Distrib. : Frequent in forest undergrowth and in open situations. Kelghar ghat; Forest nursery; Koyna; Nauja; Shirshingi.

Phyllocephalum tenue (Wight ex C.B.CI.) Narayana in Curr. Sci. 51 : 439. 1982. *Centratherum tenue* Wight ex C.B.CI. Comp. Ind. 4. 1876; Hook. f. Fl. Brit. India 3 : 228. 1881; Cooke, Fl. Pres. Bombay 2 : 63. 1958 (Repr. ed.). *C. lilacinum* (Dalz. & Gibbs.) Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 599. 1983.

Herbs, ca 1.5 m high with a purple tinge. Lower leaves petioled, upper sessile, elliptic-lanceolate, 3–9 × 1.2–5.0 cm, base attenuate, apex acute or acuminate, sparsely hairy above, woolly tomentose beneath, margins irregularly serrate. Heads 0.5–1.0 cm across. Involucral bracts oblong-lanceolate, 1–2 cm long. Achenes oblong, ca 0.3 cm long.

Fls. & Frts. : October.

Distrib. : Rare annuals along grassy hill slopes. Mahabaleshwar, Cooke s.n., Talbot 4457.

Notes : Bole & Almeida (*op. cit.*) have based their name on *Decaneurum lilacinum* Dalz. & Gibbs. Bombay Fl. 314. 1861. Hook. f. (*op. cit.* 241) had treated this under "doubtful and imperfectly known species" as there was no specimen in Dalzell's Herbarium and he failed to identify it by the description. Under such circumstances, Bole & Almeida's combination is not acceptable as it is not based on any type specimen.

PULICARIA Gaertn.

Pulicaria wightiana (DC.) C.B.CI. Comp. Ind. 128. 1876; Hook. f. Fl. Brit. India 3 : 298. 1881; Cooke, Fl. Pres. Bombay 2 : 90. 1958 (Repr. ed.). *Poloa wightiana* DC. in Arch. Bot. (Paris) 2 : 514. 1833.

Herbs, 30–50 m high, pubescent. Leaves sessile, 2–6 × 0.5–1.0 cm, base amplexicaul, puberulous. Heads 1.0–1.5 cm across. Involucral bracts linear-oblong, subacute, ca 1.2 cm long, subequal, hairy. Achenes oblong, minute, ribbed; pappus fimbriate.

Fls. & Frts. : November.

Illus. : Wight, Ic. t. 1089. 1846 [*Callistephus wightianus* (DC.) DC.]

Distrib. : Annuals near cultivated fields. Wai.

SENECIO L.

1. Heads ebracteolate :

- 2. Branches pubescent ; achenes hairy *S. belgaumensis*
- 2. Branches glabrous or scabrous ; achenes glabrous ... *S. gibsoni*

1. Heads bracteolate :

- 3. Stem grooved, glabrous ; pappus paleaceous ... *S. bombayensis*
- 3. Stem terete, white pubescent ; pappus hairy :
 - 4. Erect herbs ; leaves linear-oblong ... *S. dalzellii*
 - 4. Subfruticose herbs ; leaves ovate-rhomboid ... *S. edgeworthii*

Senecio belgaumensis (Wight) C.B.Cl. Comp. Ind. 200. 1876 ; Hook. f. Fl. Brit. India 3 : 348. 1881 ; Cooke, Fl. Pres. Bombay 2 : 111. 1958 (Repr. ed.). *Madacarpus belgaumensis* Wight in Calc. J. Nat. Hist. 7 : 157. 1847. 'Sonki'.

Herbs, 20–50 cm high. Leaves lanceolate-rhomboid, 3–9 × 1.7–4.0 cm, toothed, glabrous above, cottony-white beneath, base auricled. Heads on slender peduncles ; bracts scattered. Involucral bracts linear-oblong, acuminate, hairy. Achenes ca 0.4 cm long, 10-ribbed, black.

Fls. & Frts. : August January.

Illus. : Wight, Ic. t. 1152. 1846.

Distrib. : Occasional along exposed hill slopes. Fitzgerald ghat, Koyna ; Mahabaleshwar.

S. bombayensis Balak. in J. Bombay Nat. Hist. Soc. 67 : 61. 1970.
S. reticulatus (Wight) C.B.Cl. Comp. Ind. 199. 1876 non DC. 1837. **S. grahami** Hook. f. Fl. Brit. India 3 : 347. 1881 non Bth. 1857.

Herbs, ca 1 m high. Leaves rhomboid-ovate, 1.7–5.2 × 0.6–3.0 cm, base tapering, apex obtuse or acute, white tomentose beneath, margins irregularly toothed. Heads in lax, terminal corymbs. Involucral bracts equal, connate at base, pubescent. Achenes obconic, longer than pappus, scabrid.

Fls. & Frts. : January November.

Illus. : Wight, Ic. t. 1151, B. 1846. (*S. grahamii*)

Distrib. : Common along ghats. Kelghar ghat, Mahabaleshwar ; Panchgani ; Yavteshwar.

Senecio dalzellii C.B.CI. Comp. Ind. 201. 1876 ; Cooke, Fl. Pres. Bombay 2 : 110. 1958 (Repr. ed.) ; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 17. 1897. *S. lawii* C.B.CI. op.cit. 201 ; Hook. f. Fl. Brit. India 3 : 347. 1881.

Herbs, *ca* 1 m high. Leaves sessile or lower shortly petioled, 2.5-7.0 × 0.4-1.0 cm, coriaceous, scabrid above, woolly beneath, margin recurved. Heads *ca* 1 cm across. Involucral bracts linear-lanceolate, pubescent. Achenes subterete, dorsally compressed, scabrid ; pappus white, rigid, scabrid.

Fls. & Frts. : November December.

Distrib. : Rare annuals, included on Birdwood's report from Mahabaleshwar.

S. edgeworthii Hook. f. Fl. Brit. India 3 : 346. 1881 ; Cooke, Fl. Pres. Bombay 2 : 109. 1958 (Repr. ed.).

Herbs, *ca* 1 m high, woolly when young, glabrous at length. Leaves 2.0-3.5 × 1.5-3.0 cm, white woolly beneath, margins sinuate-dentate ; petioles *ca* 1 cm long, auricled at base. Heads *ca* 1 cm across. Involucral bracts linear-lanceolate, acute, *ca* 0.3 cm long, woolly. Achenes oblong, *ca* 0.2 cm long, faintly ribbed ; pappus white, slightly longer than the achenes.

Fls. & Frts. : August October.

Illus. : Wight, Ic. t. 1151. 1846. (*Doronicum tomentosum*)

Distrib. : Common along ghats. Way to Nauja ; Panchgani ; Panchgani ghat ; Panchgani-Wai.

S. gibsonii Hook. f. Fl. Brit. India 3 : 347. 1881 ; Cooke, Fl. Pres. Bombay 2 : 111. 1958 (Repr. ed.). (Fig. 30).

Herbs, *ca* 1.5 m high. Leaves sessile or shortly petioled, ovate-rhomboid, 2.5-5 × 0.7-3.5 cm, scaberulous above, tomentose beneath, margins irregularly toothed. Heads in lax, dichotomous corymba. Involucral bracts oblong-lanceolate, acute, margins scarious. Achenes obconic, ribbed ; pappus hairs yellowish, rigid, unequal.

Fls. & Frts. : April November.

Distrib. : Frequent along ghats. Koyna.

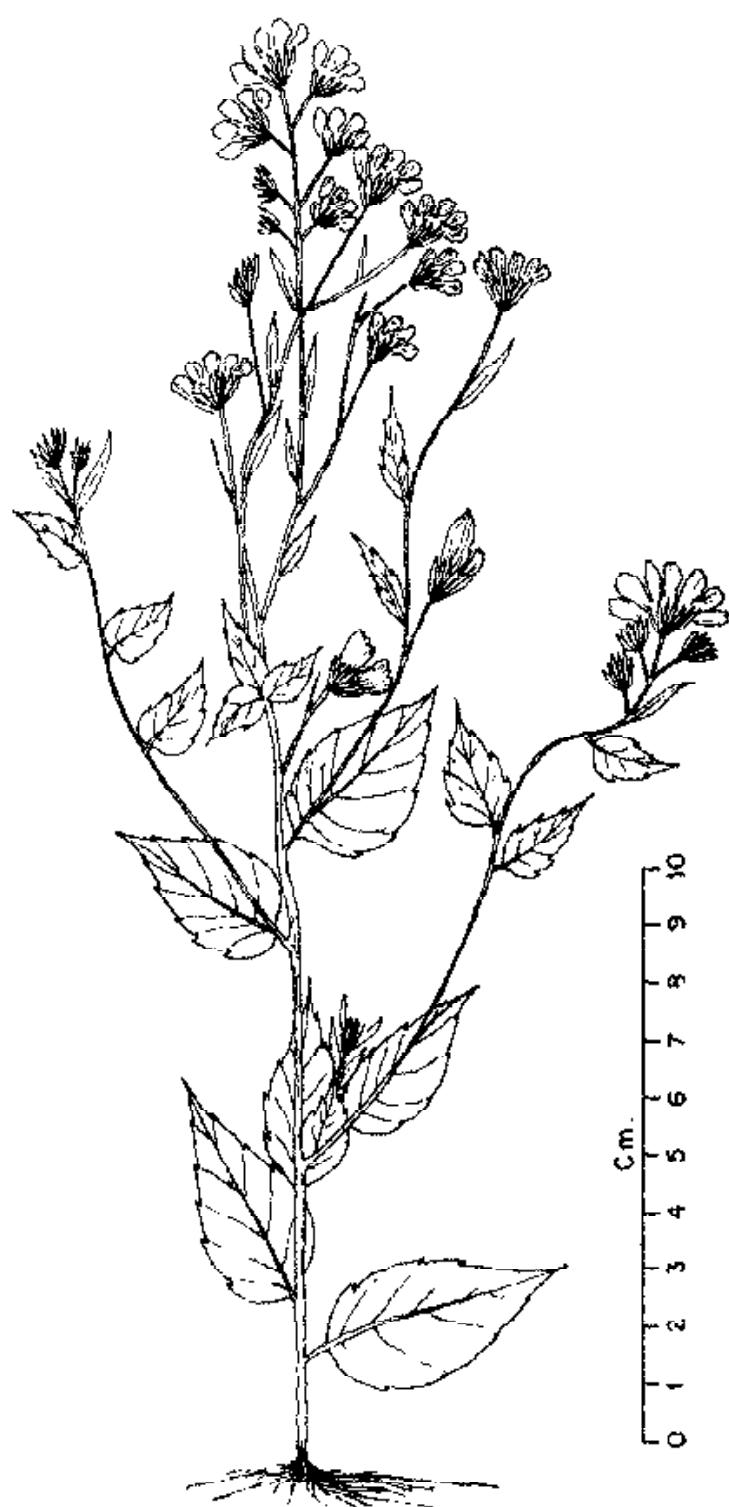


Fig. 30. *Senecio gibsoni* Hook. f.

SIEGESBECKIA L.

Siegesbeckia orientalis L. Sp. Pl. 900. 1753 ; Hook. f. Fl. Brit. India 3 : 304. 1881 ; Cooke, Fl. Pres. Bombay 2 : 94. 1958 (Repr. ed.). 'Katampu'

Herbs, *ca* 1 m high ; branches with a purple tinge, pubescent. Leaves ovate, $4\ 10 \times 3\ 5$ cm, base cuneate, apex acute, pubescent. Disc florets yellow, ray florets red. Outer involucral bracts spathulate or clavate with recurved margins, inner boat shaped, glandular-hairy on the back. Achenes oblong, black.

Fls. & Frts. : November - December.

Illus. : Wight, Ic. t. 1103. 1846 ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 284. 1982.

Distrib : Rare annuals along hill slopes. Panchgani caves.

SONCHUS L.

1. Heads in dense umbels ; achenes elliptic	...	<i>S. asper</i>
1. Heads in lax cymes ; achenes obovoid	...	<i>S. oleraceus</i>

Sonchus asper (L.) Hill, Brit. Herb. 1 : 47, f. 2. 1756 ; Cooke, Fl. Pres. Bombay 2 : 120. 1958 (Repr. ed.) ; Grierson in Dassanayake & Fosberg, Rev. Handb. Fl. Ceylon 1 : 273. 1980. *S. oleraceus* var. *asper* L. Sp. Pl. 794. 1753.

Herbs, *ca* 1 m high. Lower leaves oblanceolate-spathulate, *ca* 15×5 cm, entire or lobed, upper pinnatifid, base auricled, margins dentate. Heads yellow. Involucral bracts many-seriate. Achenes compressed, ribbed ; pappus multi-seriate, slender, hairy.

Fls. & Frts : January - March.

Distrib. : Rare along river banks. Mahabaleshwar, G.L. Shah 10647 (BLAT).

S. oleraceus L. Sp. Pl. 794. 1753 ; Hook. f. Fl. Brit. India 3 : 414. 1881 ; Cooke, Fl. Pres. Bombay 2 : 119. 1958 (Repr. ed.). 'Mhatara'.

Herbs, *ca* 50 cm high. Leaves oblanceolate, $6\ 20 \times 3\ 4$ cm, pinnatifid, base semi-amplexicaul. Heads yellow ; pedicels reddish glandular. Involucral bracts multi-seriate, campanulate. Achenes *ca* 0.25 cm long, ribbed, faintly muricate.

Fls. & Frts. : January November.

Illus. : Wight, Ic. t. 1141. 1846 (*S. ciliatus* Lam. Fl. Franc. 287. 1805) ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 385. 1982.

Distrib. : Common weed in waste places. Dhom dam ; Koyna ; Mahabaleshwar.

SPHAERANTHUS L.

Sphaeranthus indicus L. Sp. Pl. 927. 1753 ; Hook. f. Fl. Brit. India 3 : 275. 1881 ; Cooke, Fl. Pres. Bombay 2 : 84. 1958 (Repr. ed.). 'Gorakh-mundi'.

Herbs, 30 - 50 cm high ; wings of stem toothed, glandular hairy. Leaves sessile, oblong, 2 - 5 × 1 - 3 cm, dentate, hispid ; heads 0.5 - 1.0 cm across. Involucral bracts linear, acuminate. Achenes oblong, smooth or angled.

Fls. & Frts. : February April.

Illus. : Wight, Ic. t. 1094. 1846 (*S. hirtus* Willd. Sp. Pl. 3 : 1395. 1802) ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 386. 1982.

Distrib. : Common along river banks and in moist open places near cultivated fields. Bamnoli ; Jadholi ; Medha ; Mhavashi ; Shirshingi.

SPILANTHES Jacq.

1. Achenes strongly ciliate ; pappus bristly	...	<i>S. paniculata</i>
1. Achenes eciliate ; pappus absent	...	<i>S. calva</i>

Spilanthes calva DC. in Wight, Contrib. 19. 1834. *S. acmella* auct. non (L.) Murr. 1774 ; Hook. f. Fl. Brit. India 3 : 307. 1881 ; Cooke, Fl. Pres. Bombay 2 : 99. 1958 (Repr. ed.). 'Akkalkara'.

Herbs, 20 - 30 cm high, hairy. Leaves ovate, 1.5 - 5.0 × 1.0 - 3.5 cm, base and apex acute, margin irregularly crenate. Heads solitary, ovoid, ca 1.2 × 0.7 cm. Involucral bracts ovate, acute, pubescent. Achenes ca 0.2 cm long, compressed.

Fls. & Frts. : February November.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 387. 1982.

Distrib. : Frequent in open lands. Karanjewadi ; Koyna ; Mahabaleshwar.

Spilanthes paniculata Wall. ex DC Prodr. 5 : 625. 1836 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 603. 1982. *S. acmella* var. *paniculata* C.B.CI. in Hook. f. Fl. Brit. India 3 : 307. 1881.

Herbs ; stems decumbent, glabrescent. Leaves ovate, base narrowed into petioles, apex obtuse or acute, margins serrate. Heads ovoid-conical in axillary panicles. Involucral bracts 2-seriate, elliptic-lanceolate, sparsely pubescent. Achenes obovate, sparsely scabrid ; pappus bristles 1–2.

Fls. & Frts. : December.

Illus. : Wight, Ic. t. 1109, 1846 (*S. calva*).

Distrib. : Included on Bole & Almeida's report after harvest season from Mahabaleshwar.

SYNEDRELLA Gaertn. (*nom. cons.*)

Synedrella nodiflora (L.) Gaertn. Fruct. 2 : 456, t. 171, f. 7. 1791 ; Hook. f. Fl. Brit. India 3 : 308. 1881 ; Sant. in J. Bombay Nat. Hist. Soc. 46 : 377. 1946. *Verbesina nodiflora* L. Amoen. Acad. 4 : 290. 1787.

Herbs, *ca* 1 m high. Leaves ovate-lanceolate, 3–8 × 1–4 cm, sparsely hairy. Heads axillary, sessile. Involucral bracts oblong, *ca* 0.7 cm long. Achenes *ca* 0.4 cm long, black, awns 2, stiff.

Fls. & Frts. : September.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 388. 1982.

Distrib. : Weed along river banks. Native of Central America, first reported by Sant. (*op. cit.*) from Bombay, Kisrude ; Mahabaleshwar.

TITHONIA Desf. ex A. Juss.

Tithonia diversifolia (Hemsley) A. Gray in Proc. Amer. Acad. Arts 1a : 5. 1883 ; Sant. in Rec. Bot. Surv. India 16(1) : 139. 1967 (3rd Rev. ed.) ; Duke in Rhodora 84 : 498. 1982. *Mirasolia diversifolia* Hemsley in Biol. Centr. Amer. Bot. 2 : 168, t. 47. 1881.

Shrubs, 2–3 m high. Leaves 4–7 × 2.0–3.5 cm. Heads bright yellow, *ca* 2 cm across. Involucral bracts biserrate, thin, ovate-oblong, acute. Achenes obscurely 4-angled or flattened.

Fls. & Frts. : November.

Distrib. : In waste lands ; native of Tropical America. Koyna.

TRICHOLEPIS DC.

1. Leaves semi-amplexicaul; pappus absent; achenes obovoid ... *T. amplexicaulis*
1. Leaves not as above; pappus present; achenes oblong:
2. Leaves linear-oblong or lanceolate; achenes faintly ribbed .. *T. glaberrima*
 2. Lower leaves obovate, upper oblong; achenes smooth ... *T. radicans*

Tricholepis amplexicaulis C.B. Cl. Comp. Ind. 240. 1876; Hook. f. Fl. Brit. India 3 : 381. 1881; Cooke, Fl. Pres. Bombay 2 : 115. 1958 (Repr. ed.). 'Dahan'. (Fig. 31).

Herbs, ca 1 m high; branches angled, ribbed, minutely scaberulous. Leaves sessile, linear-oblong, 4-9 × 1.0-1.5 cm, margin minutely denticulate. Heads 0.5-2.0 cm across, woolly-pubescent. Outer involucral bracts linear-lanceolate, scarious, aristate; inner longer, linear, acute. Achenes ca 0.7 cm long, glossy with oblique basal areole.

Fls. & Frts. : Throughout the year.

Distrib. : Common on the hill tops. Jangli jaigad; Mahabaleshwar; Mahabaleshwar-Pratapgad.

T. glaberrima DC. Prodr. 6 : 564. 1837; Hook. f. Fl. Brit. India 3 : 381. 1881; Cooke, Fl. Pres. Bombay 2 : 114. 1958 (Repr. ed.). 'Dahan'.

Herbs, 1-2 m high, branches ribbed, angular. Leaves sessile, 2-5 × 0.3-0.6 cm, spinous-toothed, punctate. Heads solitary, terminal. Involucral bracts linear-lanceolate, aristate, ciliate; pappus subpaleaceous, yellowish-brown.

Fls. & Frts. : October November.

Distrib. : Infrequent on hill slopes and near cultivated fields, Mahabaleshwar; Panchgani.

T. radicans (Roxb.) DC. Prodr. 6 : 564. 1837; Hook. f. Fl. Brit. India 3 : 381. 1881; Cooke, Fl. Pres. Bombay 2 : 114. 1958 (Repr. ed.). *Carduus radicans* Roxb. Fl. Ind. (Carey ed.) 3 : 408. 1832.

Herbs, ca 50 cm high; stem quadrangular, hairy. Leaves 1.5-4.0 × 0.5-1.0 cm, margins coarsely serrate, bristle-pointed. Heads solitary, terminal. Involucral bracts many seriate, bristle pointed. Achenes oblong, truncate; pappus hairy.

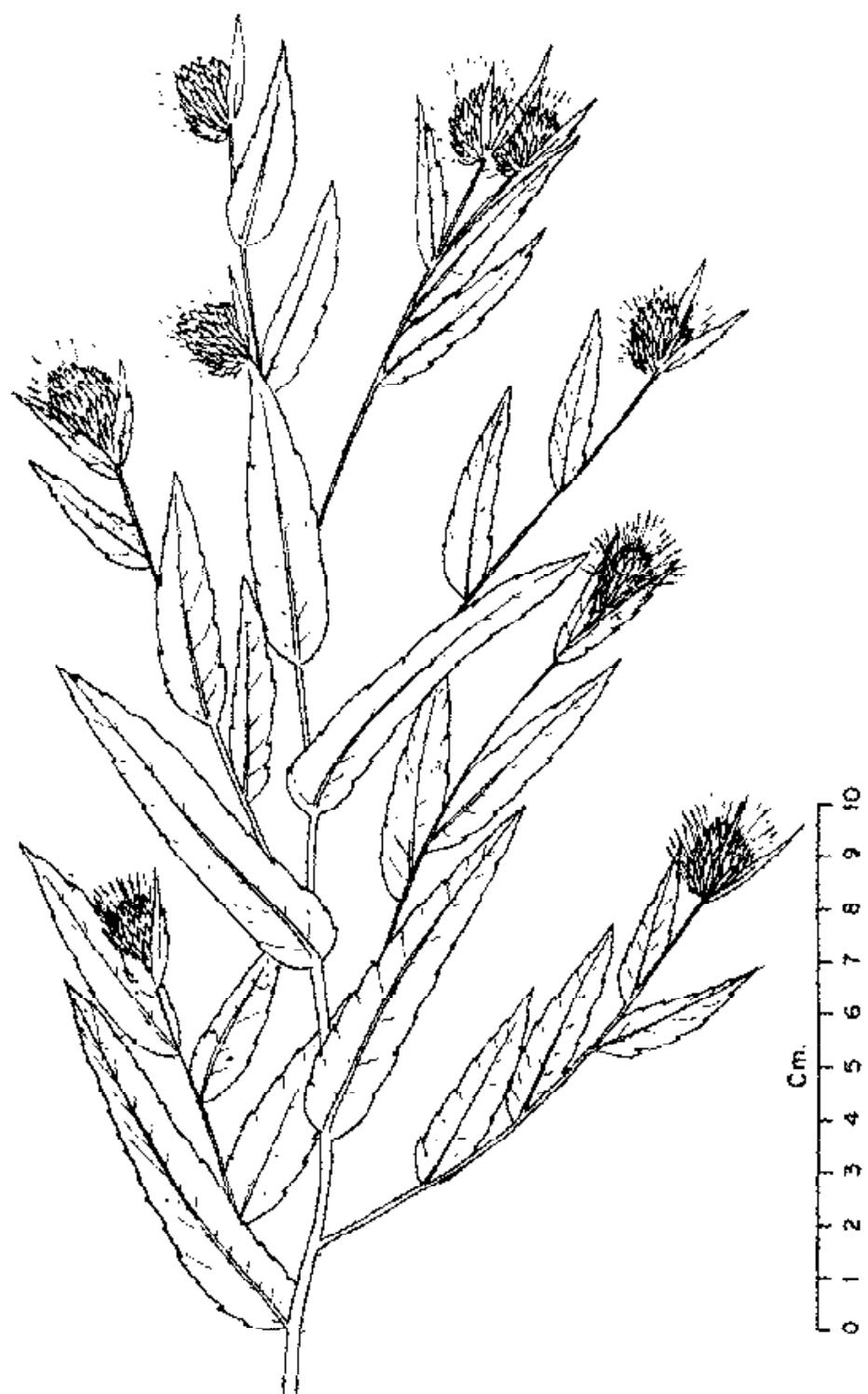


Fig. 31. *Tricholepis amplexicaulis* C.B.Clarke.

Fls. & Frts. : September - November.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 390. 1982.

Distrib. : Slender annuals along lower hill slopes. Kelghar ghat ; Pandavgad.

TRIDAX L.

Tridax procumbens L. Sp. Pl. 900. 1753 ; Hook. f. Fl. Brit. India 3 : 311. 1881; Cooke, Fl. Pres. Bombay 2 : 102. 1958 (Repr. ed.). '*Dagadipala*'.

Herbs, hispid. Leaves ovate-elliptic, 2.0 - 4.5 × 1.5 - 2.5 cm, base and apex acute, margins incisodentate. Heads solitary on long, hairy peduncles. Outer involucral bracts herbaceous, inner scarious. Achenes oblong, silky hairy, black.

Fls. & Frts. : Throughout the year.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 391. 1982.

Distrib. : Common weed growing in all types of habitats. Koyna ; Mahabaleshwar ; Medha ; Panchgani.

Notes : Used to cure toothache and juice applied to bruises.

VERNONTIA Schreb. (*nom. cons.*)

1. Herbs ; achenes not ribbed	...	<i>V. cinerea</i>
1. Shrubs ; achenes 10-ribbed :		
2. Leaves membranous, on the nerves beneath	...	<i>V. divergens</i>
2. Leaves coriaceous, tomentose beneath	...	<i>V. indica</i>

Vernonia cinerea (L.) Less. in Linnaea 4 : 291. 1829 ; Hook. f. Fl. Brit. India 3 : 233. 1881 ; Cooke, Fl. Pres. Bombay 2 : 65. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 604. 1982. *Conyza cinerea* L. Sp. Pl. 682. 1753. '*Sahadevi*'.

Herbs, ca 1.5 m high. Leaves elliptic-lanceolate, 3.5 - 6.5 × 1.5 - 3.0 cm, base rounded or acute, apex acute, pubescent, margins crenate-serrate. Heads ca 0.5 cm across. Involucral bracts linear-lanceolate, silky on back. Achenes minute, hairy ; pappus of white hairs.

Fls. & Frts. : February - November.

Illus. : Maheshwari, Ill. Fl. Delhi f. 101. 1966 ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 247. 1982.

Distrib. : Common weed near cultivated fields and in gardens. Ambeghar ; Dhayari ; Koyna ; Koyna-Karad Rd. ; Mahabaleshwar ; Shirshingi.

Vernonia divergens (Roxb.) Edgew. in J. Asiatic Soc. Beng. 2 : 172. 1853 ; Hook. f. Fl. Brit. India 3 : 234. 1881 ; Cooke, Fl. Pres. Bombay 2 : 67. 1958 (Repr. ed.). *Eupatorium divergens* Roxb. Fl. Ind. (Carey ed.) 3 : 414. 1832. 'Bundar'.

Shrubs, *ca* 2 m high. Leaves elliptic, 4–11 × 1.5–5.0 cm, scabrid above, margins serrate. Heads *ca* 0.6 cm across. Involucral bracts elliptic, acute, mucronate. Achenes 3-4-angled, *ca* 0.3 cm long.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 1084, 1846 ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 247. 1982.

Distrib. : Common perennials along ghats. Jadholi ; Kumbharli ghat, Mahabaleshwar ; Pratapgad road ; Punoli ; Vasota.

V. indica C.B. Cl. Comp. Ind. 16. 1876 ; Hook. f. Fl. Brit. India 3 : 238. 1881 ; Cooke, Fl. Pres. Bombay 2 : 67. 1958 (Repr. ed.).

Shrubs, 1–2 m high, tomentose. Leaves subsessile, elliptic, 4–10 × 1–6 cm, margin serrate. Heads *ca* 0.5 cm across. Bracts below the heads lanceolate, densely tomentose. Involucral bracts ovate-oblong, mucronate, purple tipped, densely tomentose on back. Achenes oblong, sub-compressed, *ca* 0.35 cm long, glandular between the ribs.

Fls. & Frts. : October.

Distrib. : Occasional on grassy hill slopes. Mahabaleshwar ; Panchgani.

VICOA Cass.

- | | | |
|---|-----|------------------|
| 1. Leaves sessile, auricled at base ; ray florets without pappus | ... | <i>V. indica</i> |
| 1. Leaves shortly petioled, cuneate at base ; ray florets with pappus of few bristles | ... | <i>V. cernua</i> |

Vicoa cernua Datz. in Dalz. & Gibbs. Bombay Fl. 126 & 314. 1861 ; Hook. f. Fl. Brit. India 3 : 297. 1881 ; Cooke, Fl. Pres. Bombay 2 : 89. 1958 (Repr. ed.).

Herbs, 20–50 cm high, pubescent. Lower leaves elliptic-lanceolate, 5–8 × 1.7–3.0 cm, upper oblong-lanceolate, 1–2 × 0.5–1.0 cm, scabrid. Heads 1.5 cm across. Involucral bracts slender, setaceous, hairy, outer squarrose. Achenes oblong, minute.

Fls. & Frts. : Throughout the year.

Distrib. : Common along forest margins. Karanjewadi ; Kumbharli ghat, Mahabaleshwar ; Nauja ; Shirshingi ; Tadoshi.

Vicoa indica (L.) DC. in Wight, Contrib. 10. 1834. *Inula indica* L. Sp. Pl. ed. 2. 1236. 1762. *V. auriculata* Cass. in Amer. Sci. Nat. 1, 17 : 418. 1829 ; Hook. f. Fl. Brit. India 3 : 297. 1881 ; Cooke, Fl. Pres. Bombay 2 : 88. 1958 (Repr. ed.). 'Sonakadi'.

Herbs, ca 1 m high. Leaves oblong-lanceolate, 2.5–6.5 × 0.3–1.0 cm. Heads ca 0.5 cm across. Involucral bracts multi-seriate, narrow, scarious. Achenes small, terete. Pappus of few hairs in disc florets.

Fls. & Frts. : November February.

Illus. : Wight, Ic. t. 1148. 1846 ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 395. 1982.

Distrib. : Slender herbs in deciduous forests, also found as a weed in cultivated fields. Asani ; Kelghar ghat ; Kole ; Wai.

WEDELIA N. J. Jacq.

Wedelia urticaefolia DC. in Wight, Contrib. 18. 1834 ; Hook. f. Fl. Brit. India 3 : 306. 1881 ; Cooke, Fl. Pres. Bombay 2 : 98. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 604. 1982.

Undershrubs. Leaves elliptic-ovate, 3–6 × 2.5–4.0 cm, base, truncate or rounded, apex acute, margin serrate. Heads ca 2.5 cm across, outer involucral bracts ovate-oblong, acute ; inner rhomboid-lanceolate. Achenes ca 0.5 cm long.

Fls. & Frts. : August September.

Illus. : Wight, Ic. t. 1106. 1846.

Distrib. : Included on Bole & Almeida's report from Mahabaleshwar. Grows in shady places near forest margins.

XANTHIUM L.

Xanthium strumarium L. Sp. Pl. 987. 1753 ; Hook. f. Fl. Brit. India 3 : 303. 1881 ; Cooke, Fl. Pres. Bombay 2 : 94. 1958 (Repr. ed.). 'Shanke-shvar, Landaga'.

Herbs, *ca* 1.5 m high. Leaves triangular-ovate, 2.5–4.0 × 1.5–2.5 cm, 3-lobed, scaberulous, margin irregularly toothed. Heads in axillary and terminal racemes. Involucre ovoid, bristly and with 2 mucronate beaks. Achenes *ca* 1 cm long, compressed.

Fls. & Frts. : January–April.

Illus. : Wight, Ic. t. 1104. 1846.

Distrib. : Common weed in waste places, near cultivated fields and along roadsides. Asara ; Karad ; Mahabaleshwar ; Vajegaon.

CULTIVATED SPECIES

Calendula officinalis L. Sp. Pl. 921. 1753 ; Hook. f. Fl. Brit. India 3 : 357. 1881 ; Cooke, Fl. Pres. Bombay 2 : 126. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 598. 1982.

Annual herbs. Heads yellow or orange.

Distrib. : Cultivated as an ornamental plant. Mahabaleshwar.

Carthamus tinctorius L. Sp. Pl. 830. 1753 ; Hook. f. Fl. Brit. India 3 : 386. 1881 ; Cooke, Fl. Pres. Bombay 2 : 126. 1958 (Repr. ed.). 'Kardai'.

Herbs, *ca* 1 m high. Leaves spiny. Heads orange-yellow, solitary or in terminal corymbs.

Fls. & Frts. : March–May.

Distrib. : Annuals, cultivated for its oil seeds. Khambatki ghat.

Guizotia abyssinica (L. f.) Cass. in Dict. Sci. Nat. 59 : 248. 1829 ; Hook. f. Fl. Brit. India 3 : 308. 1881 ; Cooke, Fl. Pres. Bombay 2 : 125. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 601. 1982. *Polymnia abyssinica* L. f. Suppl. 383. 1781. 'Kala-til'.

Herbs. Leaves lanceolate, *ca* 5.5 cm long, distantly serrate. Flowers orange-yellow in terminal heads.

Fls. & Frts. : February–September.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 375. 1982.

Distrib. : Cultivated for oil seeds. Common. Kas ; Kisru de ; Mahabaleshwar ; Nauja ; Wai.

Helianthus annuus L. Sp. Pl. 904. 1753 ; Cooke, Fl. Pres. Bombay 2 : 124. 1958 (Repr. ed.). 'Surya phul'.

Shrubs, 1-3 m high. Leaves ovate, acute. Heads bright yellow, ca 10 cm across.

Fls. & Frts. : February May.

Notes : Grown on large scale as economic and ornamental plant throughout the district.

Solidago canadensis L. Sp. Pl. 878. 1753 ; Bailey, Man. Cult. Pl. ed. 2. 1005. 1949.

Herbs, young branches pubescent. Leaves sessile, lanceolate-oblong, distantly serrate, scabrid above, pubescent beneath. Heads yellow in secund racemes.

Fls. & Frts. : October December.

Distrib. : Cultivated in gardens as ornamental plant. Koyna.

Tagetes erecta L. Sp. Pl. 887. 1753 ; Cooke, Fl. Pres. Bombay 2 : 125. 1958 (Repr. ed.).

Herbs, 20-30 cm high. Leaves 3-6 cm long, deeply pinnatifid, margins distantly serrate. Heads orange, terminal, solitary.

Distrib. : Common ornamental herb. Padolshi.

LOBELIACEAE

LOBELIA L.

- | | |
|---|--------------------------|
| 1. Herbs ca 3 m high ; flowers white in terminal racemes ... | <i>L. nicotianifolia</i> |
| 1. Herbs not more than 40 cm high ; flowers solitary, axillary : | |
| 2. Stem winged ; only 2 anthers bearded at apex ; seeds not trigonous ... | <i>L. heyneana</i> |
| 2. Stem not winged ; all anthers bearded at apex ; seeds trigonous ... | <i>L. alsinoides</i> |

Lobelia alsinoides Lam. Encycl. 3 : 588. 1791. *L. trigona* Roxb. Fl. Ind. (Carey & Wall. ed.) 2 : 111. 1824 ; C.B.CI. in Hook. f. Fl. Brit. India 3 : 423. 1831 ; Cooke, Fl. Pres. Bombay 2 : 130. 1958 (Repr. ed.).

Herbs ca 15 cm high. Leaves subsessile, ovate, 1.0-1.5 × 0.5-1.0 cm, base rounded, apex acute, margins shallowly serrate. Flowers purple, 5-merous on 1-2 cm long pedicels. Capsules ellipsoid, ca 0.5 cm long. Seeds brownish-black.

Fls. & Frts. : August November.

Illus. : Wight, Ic. t. 1170. 1848. (*L. trigona*)

Distrib. : Common in moist places among grasses. Koyna ; Mahabaleshwar ; Panchgani.

***Lobelia heyneana* R. & S. Syst. Veg. 5 : 50. 1819. *L. trialata* Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 157. 1825 ; C.B. Cl. in Hook. f. Fl. Brit. India 3 : 425. 1881 ; Cooke, Fl. Pres. Bombay 2 : 130. 1958 (Repr. ed.). (Fig. 32).**

Herbs, 5-7 cm high. Leaves ovate, 0.5-2.0 × 0.3-1.5 cm, base narrowed, apex acute, margin crenate-serrate. Flowers bluish-white. Capsules ellipsoid, ca 0.4 cm long. Seeds brown.

Fls. & Frts. : August November.

Distrib. : Infrequent in grassy localities in moist places. Koyna ; Mahabaleshwar.

***L. nicotianifolia* Roth ex R. & S. Syst. Veg. 5 : 47. 1819. ('*nicotianae-folia*') ; C.B. Cl. in Hook. f. Fl. Brit. India 3 : 427. 1881 ; Cooke, Fl. Pres. Bombay 2 : 131. 1958 (Repr. ed.). 'Dhaval'.**

Stems hollow, shining. Leaves oblong-lanceolate, 9-12 × 1.5-2.0 cm, base tapering, apex acute, glabrous above, pubescent beneath, margins serrulate. Racemes stout, ca 20 cm long ; pedicels pubescent ; bracts leafy ; anthers purple, the lower two bearded. Capsules subglobose, ca 0.6 cm across.

Fls. & Frts. : November February.

Illus. : Wight, Ic. t. 135. 1839.

Distrib. : Common along ghats above 700 m altitude. Bamnoli ; Gureghar ; Jadholi ; Mahabaleshwar ; Nauja ; Parut ; Pratapgad hills ; Shirshingi.

CAMPANULACEAE

- | | | |
|---|-----|---------------|
| 1. Capsules dehiscing at the base or sides below the calyx teeth | ... | CAMPANULA |
| t. Capsules dehiscing loculicidally within the calyx teeth : | | |
| 2. Stem dichotomously branched, hairy ; corolla rotate, deeply divided, stigma capitite | ... | CEPHALOSTIGMA |
| 2. Stem not dichotomously branched ; corolla campanulate, stigma lobed | ... | WAHLENBERGIA |

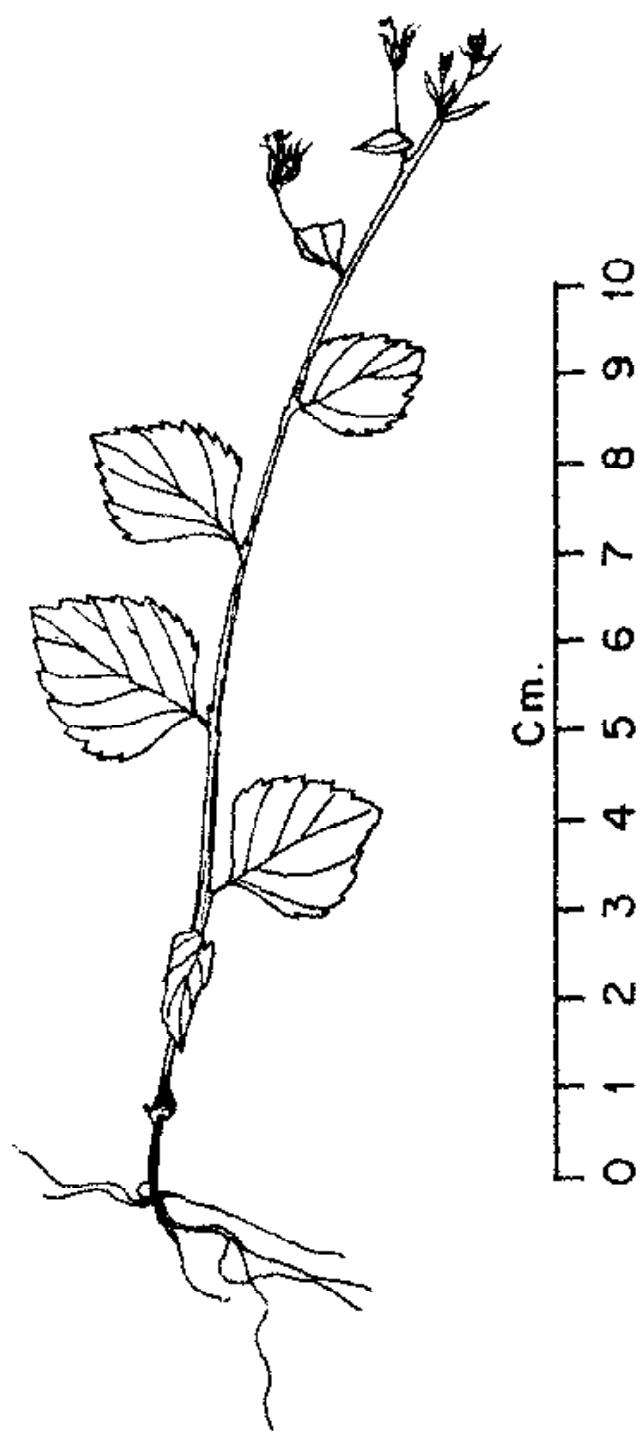


Fig. 32. *Lobelia heyneana* R. & S.

CAMPANULA L.

I Flowers dimorphic ; stems straight	...	<i>C. colorata</i>
I Flowers monomorphic ; stems spreading	...	<i>C. alphonseii</i>

Campanula alphonseii Wall. ex A. DC. in DC. Prodr. 7 : 473. 1839 ; C.B. Cl. in Hook. f. Fl. Brit. India 3 : 440. 1881; Cooke, Fl. Pres. Bombay 2 : 134. 1958 (Repr. ed.).

Herbs, 6–8 cm high, hairy. Leaves alternate, subsessile, ovate-elliptic, upto 1.0 × 0.5 cm, hairy. Flowers blue, in terminal, lax corymbs ; calyx tube campanulate, hairy ; lobes triangular, acute, with intermediate teeth ; corolla half way divided, lobes oblong, subacute. Capsules obovoid. Seeds ellipsoid, minute.

Fls. & Frts. : October.

Illus. : Wight, Jc. t. 1177. 1848.

Distrib. : Rare, variable in habit and leaf size. Mahabaleshwar, Acland 648 (BLAT), Cooke s.n., Sontapau 22876 (BLAT).

C. colorata Wall. ex Roxb. Fl. Ind. (Carey ed.) 2 : 101. 1832 ; Rau in Bull. Bot. Surv. India 10 (Suppl. 2) : 45. 1969. *C. canescens* Wall. ex DC. Prodr. 7 : 474. 1838 non Roth 1827 ; C.B. Cl. in Hook. f. Fl. Brit. India 3 : 439. 1881. *C. dimorphantha* Schweinf. Beitr. Fl. Aethiop. 140. 1867 ; Sabnis & Bhatt in Geobios new rep. 3 : 157. 1984. *C. wallichii* Babu in J. Bombay Nat. Hist. Soc. 65 : 808. 1968.

Herbs, 15–40 cm high ; branches hispid. Basal leaves subsessile, obovate in a rosette ; upper leaves sessile, linear-lanceolate, pubescent. Flower purple, in solitary, spiciform panicles ; one flower perfect, in other either corolla or stamens wanting. Capsules obovoid, hairy, many seeded.

Fls. & Frts. : November December.

Distrib. : Slender herbs in moist places. Lingmala ; Mahabaleshwar ; Sajjangad ; Satara.

Notes : Sabnis & Bhatt (*op. cit.*) have discussed about the nomenclature of this plant and claimed *C. dimorphantha* as the correct name. However *C. colorata* antedates it.

CEPHALOSTIGMA A. DC.

Cephalostigma flexuosa Hook. f. & Thoms. in J. Linn. Soc. 2 : 9. 1858 ; Cooke, Fl. Pres. Bombay 2 : 132. 1958 (Repr. ed.).

Herbs, branches ascending. Leaves sessile, ovate-elliptic, base and apex tapering. Flowers bluish-white in racemes. Capsules enclosed within calyx teeth.

Notes : This species is included on the authority of Cooke, who reported it in his 'List of principal Mahabaleshwar Plants, Appendix-A (Bombay Gazetteer 19 : 650. 1885).

WAHLENBERGIA Schrad.

- | | |
|---|---------------------|
| 1. Leaves sessile, margin entire ; corolla lobes oblong ... | <i>W. marginata</i> |
| 1. Leaves subsessile, margin crisped, subdentate ; corolla lobes lanceolate ... | <i>W. erecta</i> |

Wahlenbergia erecta (Roth ex R. & S.) Moel. & Tuyn in Steenis, Fl. Males. 1, 6 : 113. 1960. *Dentella erecta* Roth ex R. & S. Syst. Veg. 5 : 25. 1819. *Cephalostigma schimperi* Hochst. ex A. Rich. Tent. Fl. Abyss. 2 : 2. 1851 ; C.B. Cl. in Hook. f. Fl. Brit. India 1958 (Repr. ed.).

Herbs, ca 30 cm high, hairy. Leaves elliptic-oblong, 1-2×0.3-0.5 cm, apex acute, hairy above and on nerves beneath. Flowers blue in lax, terminal cymes. Capsules conical, hairy. Seeds oblong ca 0.5 cm long.

Fls. & Frts. : October December.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic t. 400. 1982.

Distrib. : Rare ; slender annuals in shady areas. Mahabaleshwar ; Santapau 11742 (BLAT) ; Panchgani, Woodrow (Cooke, *op. cit.*).

W. marginata (Thunb.) DC. Monogr camp. 143. 1830 ; Moel. & Tuyn in Steenis, Fl. Males. 1, 6 : 115. 1960. *Campanula marginata* Thunb. Fl. Jap. 84. 1784. *W. gracilis* (Forst.) DC. *op. cit.* 142 ; C.B. Cl. in Hook. f. Fl. Brit. India 3 : 429. 1881 ; Cooke, Fl. Pres. Bombay 2 : 133. 1958 (Repr. ed.).

Herbs, 15-20 cm high. Leaves linear-oblong, 2-3×0.3 cm, glabrous above, pubescent beneath. Flowers blue, solitary or in lax cymes. Capsules ca 0.5 cm long, tapering into stalk. Seeds ellipsoid, yellowish-brown.

Fls. & Frts. : April.

Illus. : Wight, Ic. t. 1175, 1848 (*W. agrestis* DC.).

Distrib. : Rare, restricted to higher elevations. Mahabaleshwar, Puri 182.

PLUMBAGINACEAE

PLUMBAGO L.

Plumbago zeylanica L. Sp. Pl. 151. 1753 ; C.B.CI. in Hook. f. Fl. Brit. India 3 : 480. 1882 ; Cooke, Fl. Pres. Bombay 2 : 136. 1958 (Repr. ed.). 'Chitrak'.

Undershrubs, ca 1 m high. Leaves elliptic-ovate, 4–6 × 2–3 cm, base tapering into petiole, apex subacute; petioles auricled at base. Flowers white in terminal, spiciform racemes; calyx densely covered with stalked glands; corolla lobes obovate-oblong. Capsules oblong, membranous.

Fls. & Frts. : January November.

Illus. : Wight, Ill. t. 179, 1850 ; Maheshwari, Ill. Fl. Delhi f. 116, 1966.

Distrib. : Common along hill slopes, near forest clearings in scrub jungles. Kelghar ghat ; Khatav ; Mahabaleshwar ; Panchgani ghat ; Pimpodshi ; Umarkanchan.

CULTIVATED SPECIES

P. auriculata Lam. Encycl. 2 : 270. 1876. *P. capensis* Thunb. Prodri. Fl. Cap. 33. 1794 ; Cooke, Fl. Pres. Bombay 2 : 137. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 606. 1982. 'Nila-Chitrak'.

Shrubs. Leaves elliptic-obovate, base and apex acute. Flowers blue in 3–4 cm long spikes. Capsules oblong, 5-valved.

Fls. : May December.

Distrib. : Grown in gardens as ornamental plant. Mahabaleshwar.

P. indica L. in Stickman, Herb. Amb. 24. 1754 ; Merr. Interpr. Rumph. 414. 1917 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 606. 1982. *P. rosea* L. Sp. Pl. ed. 2. 215. 1765 ; C.B.CI. in Hook. f. Fl. Brit. India 3 : 481. 1882 ; Cooke, Fl. Pres. Bombay 2 : 137. 1958 (Repr. ed.). 'Lal-Chitrak'.

Undershrubs. Leaves elliptic, tapering at base and apex. Flowers red in spikes.

Distrib. : Grown as ornamental plant. Mahabaleshwar.

PRIMULACEAE

ANAGALLIS L.

1. Leaves opposite ; flowers blue	—	<i>A. arvensis</i>
1. Leaves alternate ; flowers white	...	<i>A. pumila</i>

Anagallis arvensis L. Sp. Pl. 148. 1753 ; Hook. f. Fl. Brit. India 3 : 506. 1882 ; Cooke, Fl. Pres. Bombay 2 : 139. 1958 (Repr. ed.).

Herbs, 20–45 cm high. Leaves sessile, elliptic-ovate, 1.0–2.2 × 0.7–1.0 cm, base rounded, apex acute. Calyx lobes lanceolate, acuminate; corolla lobes ovate, glandular-hairy. Capsules globose, ca 0.3 cm across. Seeds trigonous.

Fls. & Frts. : January–October.

Illus. : Maheshwari, Ill. Fl. Delhi f. 117, 1966 ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 404. 1982.

Distrib. : Common near cultivated fields among grasses. Mahabaleshwar ; Panchgani ; Taldeo ; Vardhangad ; Yavteshwar.

A. pumila Swartz, Prodr. Veg. Ind. Occ. 1 : 40. 1788 ; Sant. in J. Bombay Nat. Hist. Soc. 17 : 20. 1965. *Centunculus tenellus* Duby in DC. Prodr. 8 : 72. 1844 ; Hook. f. Fl. Brit. India 3 : 506. 1881 ; Cooke, Fl. Pres. Bombay 2 : 140. 1958 (Repr. ed.).

Herbs, ca 15 cm high. Leaves subsessile, ovate, ca 0.6 × 0.3 cm, base cuneate, apex subacute. Calyx lobes lanceolate-oblong, mucronate ; corolla lobes ovate-lanceolate, apiculate. Capsules subglobose, ca 0.3 cm across.

Fls. & Frts. : September–December.

Illus. : Wight, Ic. t. 2000. 1853 ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 405. 1982.

Distrib. : Occasional in moist places and in fallow fields. Lingmala; Mahabaleshwar.

Lysimachia obovata Buch.- Ham. ex Hook. f. Fl. Brit. India 3 : 502. 1881 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 606. 1982.

Herbs, 15–45 cm high. Leaves obovate-spathulate, gland-dotted. Flowers in 5–10 cm long racemes. Capsules globose, ca 0.3 cm across.

Notes : Reported by Lisboa (Climate of Mahabaleshwar, 1886), but so far it has not been collected from the district. Probably an escape from cultivation.

MYRSINACEAE

1. Leaves serrate ; calyx tube adnate to the ovary ; fruits many-seeded	...	MAESA
1. Leaves usually entire (Occasionally dentate in <i>E. tsjeriam-cottam</i>) calyx tube free from ovary ; fruits 1-seeded	...	EMBELIA

EMBELIA N. Burm.

1. Small trees	...	<i>E. tsjeriam-cottam</i>
1. Scandent shrubs		
2. Flowers 4-merous ; fruits red when ripe	...	<i>E. basaal</i>
2. Flowers 5-merous ; fruits black when ripe	...	<i>E. ribes</i>

Embelia basaal (R. & S.) A. DC. in Trans. Linn. Soc. London 17 : 131. 1834 ; Matthew & Rani in Fl. Tamilnadu Carnatic 1 : 651. 1983. *Ardisia basaal* R. & S. in L. Syst. Veg. 4 : 517. 1819. *E. viridiflora* (A. DC.) Scheff. Comm. Myrs. Arch. Ind. 45. 1867 ; C.B.Cl. in Hook. f. Fl. Brit. India 3 : 516. 1882 ; Cooke, Fl. Pres. Bombay 2 : 145. 1958 (Repr. ed.).

Large climbers ; branches warty. Leaves elliptic, 6–16 × 4–7 cm, coriaceous, base rounded or acute, apex obtuse or acute, punctate. Flowers white in short cylindric racemes ; calyx lobes triangular, gland-dotted ; petals oblong-obovate, gland-dotted. Fruits globose, ca 0.4 cm across.

Fls. & Frts. : December–April.

Illus. : Wight, Ic. t. 1591, 1850 (*Samara rheedii* Wight) ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 408. 1982.

Distrib. : Common in semi-evergreen forests, Mahabaleshwar, Panchgani.

E. ribes N. Burm. Fl. Ind. 62, t. 23. 1768 ; C.B.Cl. in Hook. f. Fl. Brit. India 3 : 513. 1882 ; Cooke, Fl. Pres. Bombay 2 : 143. 1958 (Repr. ed.). 'Vaivarang'.

Shrubs scandent. Leaves elliptic, $6-10 \times 3-4$ cm, base rounded or acute, apex obtusely acuminate, punctate below. Flowers greenish-white, in lax, terminal, pubescent, paniculate racemes; calyx connate at base, teeth broadly ovate; petals elliptic, pubescent. Fruits globose, ca 0.2 cm across.

Fls. & Frts. : February.

Illus. : Wight, Ic. t. 1207. 1848.

Distrib. : Infrequent along ghats. Fitzgerald ghat; Kisrude; Mahabaleshwar.

Embelia tsjeriam-cottam (R. & S.) A. DC. in Trans. Linn. Soc. London 17 : 131. 1834. *Ardisia tsjeriam-cottam* R. & S. Syst. 4 : 518. 1819. *E. robusta* C.B. Cl. in Hook f. Fl. Brit. India 3 : 515. 1882 non Roxb. 1832; Cooke, Fl. Pres. Bombay 2 : 144. 1958 (Repr. ed.). 'Ambati'.

Trees, ca 6 m high. Leaves broadly elliptic, $5-11 \times 3-6$ cm, base rounded or acute, apex acuminate. Flowers greenish-yellow in axillary, pubescent racemes; calyx lobes ovate, connate at base, gland-dotted; petals elliptic-oblong. Fruits globose, apiculate.

Fls. & Frts. : February December.

Distrib. : Common in deciduous forests along edges. Dhokewadi; Gadoli; Koyna; Mahabaleshwar; Tapola.

MAESA Forsk.

Maesa indica (Roxb.) A. DC. in Trans. Linn. Soc. London 17 : 134. 1834; C.B. Cl. in Hook. f. Fl. Brit. India 3 : 509. 1882; Cooke, Fl. Pres. Bombay 2 : 141. 1958 (Repr. ed.). *Baeobotrys indica* Roxb. Fl. Ind. (Carey & Wall. ed.) 2 : 230. 1824. *M. dubia* (Wall.) DC. *op. cit.*; C.B. Cl. *op. cit.* 510; *M. indica* (Roxb.) DC. var. *dubia* (Wall.) Cooke, *op. cit.* *M. indica* var. *perrottetiana* (A. DC.) C.B. Cl. *op. cit.* 509. 'Atki'.

Trees, 7-9 m high; stem lenticelled. Leaves elliptic-lanceolate, $10-15 \times 3-5$ cm, base and apex acute. Flowers small, white, in axillary panicles; bracts and bracteoles ovate, acute; calyx lobes ovate, marked with dark lines, shortly contracted at the base. Berries globose.

Fls. & Frts. : November - June.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 2 : 144, t. 367. 1911.

Distrib. : Common along ghats in semi-evergreen forests. Dicholi; Jadholi; Karanjewadi; Kumbharli ghat; Mahabaleshwar.

Notes : The specimens show variation in branches and leaves densely ferruginous tomentose when young to glabrous when old with intermediates.

SAPOTACEAE

I. Armed trees ; flowers 5-merous	...	XANTOLIS
I. Unarmed trees ; flowers 4-merous	...	MIMUSOPS

MIMUSOPS L.

Mimusops elengi L. Sp. Pl. 349 1753 ; C.B. Cl. in Hook. f. Fl. Brit. India 3 : 548. 1882 ; Cooke, Fl. Pres. Bombay 2 : 155. 1958 (Repr. ed.) ; van Royen in Blumea 6 : 594. 1952. 'Bakuli'.

Trees, *ca* 12 m high. Leaves elliptic, 10–17×4–7 cm, coriaceous, base attenuate, apex shortly acuminate. Flowers white, solitary or in axillary fascicles ; calyx lobes, biserrate, the outer ovate-lanceolate, acute, fulvous-tomentose, the inner linear-lanceolate ; corolla lobes 24 ; stamens 8, alternate with densely hairy staminodes. Berries ovoid, *ca* 1 cm across.

Fls. & Frts. : February April.

Illus. : Wight, Ic. t. 1586, 1850; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : 414. 1982.

Distrib. : Occasional in semi-evergreen forests, also planted for its fragrant flowers. Mahabaleshwar ; Vasota.

XANTOLIS Rafin.

Xantolis tomentosa (Roxb.) Rafin. Sylv. Tell. 36. 1838; van Royen in Blumea 8 : 226. 1957. *Sideroxylon tomentosum* Roxb. Pl. Cor. t. 28, 1795 ; C.B. Cl. in Hook. f. Fl. Brit. India 3 : 538. 1882; Cooke, Fl. Pres. Bombay 2 : 150. 1958 (Repr. ed.). 'Kumbal'.

Trees, 9–15 m high ; young branches tomentose. Leaves elliptic or elliptic-obovate, 4–8×2–5 cm, subcoriaceous, base acute, apex rounded or subacute, tomentose when young. Flowers white, small in axillary clusters ; calyx campanulate, fulvous-pubescent. Berries ovoid, 1–2 cm long, yellowish-green, pubescent when young.

Fls. & Frts. : September December.

Illus. : Wight, Ic. t. 1218, 1848 ; Talbot, For. Fl. Bombay Pres. & Sind 2 : 154, f. 371. 1911.

Distrib. : Common along ghats in deciduous forests. Dicholi ; Karanjewadi ; Kumbharli ghat ; Mahabaleshwar ; Nauja ; Rotunda ghat below Mahabaleshwar.

CULTIVATED SPECIES

Manilkara zapota (L.) van Royen in Blumea 7 : 410. 1953 ; H.E. Moore & Stearn in Taxon 16 : 383. 1967. *Achras zapota* L. Sp. Pl. 1190. 1753 ; C.B.CI. in Hook. f. Fl. Brit. India 3 : 534. 1882 ; Cooke, Fl. Pres. Bombay 2 : 156. 1958 (Repr. ed.). *M. achras* (Mill.) Fosberg in Taxon 13 : 255. 1964. 'Chiku'.

Cultivated throughout the district for edible fruits.

EBENACEAE

DIOSPYROS L.

- | | | |
|---|-----|-----------------------|
| 1. Flowers 3-merous | ... | <i>D. nigrescens</i> |
| 1. Flowers 4 - 5-merous : | | |
| 2. Leaves alternate and subopposite mixed ; style 1 | ... | <i>D. melanoxylon</i> |
| 2. Leaves all alternate ; styles 4 : | | |
| 3. Male corolla tubular ; fruiting calyx woody | ... | <i>D. ebenum</i> |
| 3. Male corolla urceolate ; fruiting calyx coriaceous : | | |
| 4. Leaves glabrous ; calyx pubescent | ... | <i>D. sylvatica</i> |
| 4. Leaves pubescent ; calyx glabrous | ... | <i>D. montana</i> |

Diospyros ebenum Koenig ex Retz. Phys. Salsk. Handl. 1 : 176. 1780 ; Hook. f. Fl. Brit. India 3 : 558. 1882 ; Cooke, Fl. Pres. Bombay 2 : 163. 1958 (Repr. ed.). *D. assimilis* Bedd. Madras For. Rep. 20, t. 1. 1866 ; Birdwood, cat. Fl. Matheran & Mahabaleshwar 17. 1897.

Trees, 10 - 15 m high. Leaves elliptic-oblong, 5 - 10 × 2.5 - 5.5 cm, coriaceous, shining above, pale beneath. Male flowers in axillary, subsessile cymes ; calyx cupular, lobes minute ; corolla greenish-yellow ; female flowers solitary. Fruits globose, beaked ; fruiting calyx lobes reflexed.

Fls. & Frts. : February - March.

Illus. : Wight, Ic. t. 188. 1839 ; Bedd. Fl. Sylv. t. 65. 1870.

Notes : Rare, known only by Birdwood's report from Mahabaleshwar.

Diospyros melanoxylon Roxb. Pl. Cor. 1 : 36, t. 46. 1795 & Fl. Ind. (Carey ed.) 2 : 530. 1832 ; C.B. Cl. in Hook. f. Fl. Brit. India 3 : 564. 1882, Cooke, Fl. Pres. Bombay 2 : 159. 1958 (Repr. ed.). 'Tamrang'

Trees, 12–15 m high ; young branches tomentose. Leaves elliptic, 5–10 × 2–4 cm, base obtuse, apex subacute, glabrous above, pubescent beneath. Flowers white ; male in panicled cymes ; female flowers solitary, subsessile. Fruits ovoid, 3–4 cm across, yellow turning red ; fruiting calyx accrescent, fulvous-tomentose.

Fls. & Frts. : September–January.

Illus. : Wight, Ic. t. 1223. 1848 (*D. dubia* Wall. ex A. DC. in DC. Prodr. 8 : 223, 1848).

Distrib. : Common in deciduous forests. Kiwal ; Shirgaon ghat.

D. montana Roxb. Pl. Cor. 1 : 37, t. 48. 1795 & Fl. Ind. (Carey ed.) 2 : 538. 1832 ; C.B. Cl. in Hook. f. Fl. Brit. India 3 : 555. 1882, p.p. ; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 17. 1897; Cooke, Fl. Pres. Bombay 2 : 165. 1958 (Repr. ed.).

Trees, 5–10 m high. Leaves ovate-elliptic, 6–9 × 3–5 cm, base truncate, apex acute or obtuse. Flowers greenish-white ; male in short, axillary umbels ; female solitary, axillary ; staminodes 4. Berries globose, ca 2.5 cm across, orange when ripe.

Fls. & Frts. : June–November.

Illus. : Wight, Ic. t. 1225, 1848 ; Talbot, For. Fl. Bombay Pres. & Sind 2 : 170, f. 377. 1911.

Distrib. : Common component of deciduous forests. Dicholi; Koyna; Mahabaleshwar; Padolshi; Shirshingi.

D. nigrescens (Dalz.) Saldanha in Saldanha & Nicolson, Fl. Hassan Dist. 197, f. 41A-AD. 1976. Bole & Almeida in J. Bombay Nat. Hist. Soc. 81 : 365. 1984. *Maba nigrescens* Dalz. in Dalz. & Gibbs. Bombay Fl. 142. 1861 ; C.B. Cl. in Hook. f. Fl. Brit. India 3 : 551. 1882, Cooke, Fl. Pres. Bombay 2 : 157. 1958 (Repr. ed.). 'Rakta-rora'.

Trees, ca 6 m high. Leaves oblong-lanceolate, 5–7 × 1.8–2.2 cm, base cordate, apex subacute, glabrous above, fulvous-hairy beneath, margin undulate ; petioles densely fulvous-hairy. Flowers white ; male in subsessile cymes ; calyx densely fulvous-hairy ; corolla lobes hairy on the

back ; female flowers solitary or in pairs. Fruits ellipsoid, fulvous-hairy when young.

Fls. & Frts. : April June.

Illus. : Saldanha *op. cit.*

Distrib. : Infrequent. Mahabaleshwar ; Nauja ; Shirshingi.

Diospyros sylvatica Roxb. Pl. Cor. 1 : 34, t. 47. 1795 & Fl. Ind. (Carey ed.) 2 : 537. 1832 ; C.B. Cl. in Hook. f. Fl. Brit. India 3 : 559. 1882 ; Cooke, Fl. Pres. Bombay 2 : 160. 1958 (Repr. ed.).

Trees, 18–20 m high. Leaves elliptic, 6–11 × 3–4 cm, base and apex acute. Male flowers in axillary cymes ; female solitary ; staminodes 4. Fruits globose, ca 1.5 cm across.

Frts. : September November.

Illus. : Roxb. *op. cit.* ; Bedd. Ic. t. 121. 1874.

Distrib. : Occasional, restricted to higher elevation in semi-evergreen forests Dicholi ; Shirshingi.

SYMPLOCACEAE

SYMPLOCOS Jacq.

1. Flowers shortly pedicelled ; fruits oblong, smooth ... *S. beddomei*

1. Flowers sessile ; fruits globose, ribbed ... *S. laurina*

Symplocos beddomei C.B. Cl. in Hook. f. Fl. Brit. India 3 : 582. 1882 ; Cooke, Fl. Pres. Bombay 2 : 169. 1958 (Repr. ed.). 'Lenda' (Fig. 33)

Trees, 8–10 m high. Leaves elliptic-lanceolate, 8–18 × 3.5–6.0 cm, margin crenate. Flowers in axillary spicate racemes, 8–14 cm long, pubescent ; bracts ovate, deciduous ; bracteoles 2, ovate, ciliate ; petals oblong, obtuse. Drupes dark-blue becoming yellow, ca 1.5 cm long.

Fls. & Frts. : November April.

Distrib. : Common. Mahabaleshwar ; Wada below Mahabaleshwar.

Notes : Ramamoorthy (1976) has treated this species as a synonym of *S. racemosa* Roxb. According to C.B. Cl. (*op. cit.*) *S. beddomei* differs from *S. racemosa* in less coriaceous leaves, inflorescence and ovoid-oblong fruits (Bole & Almeida, 1984).

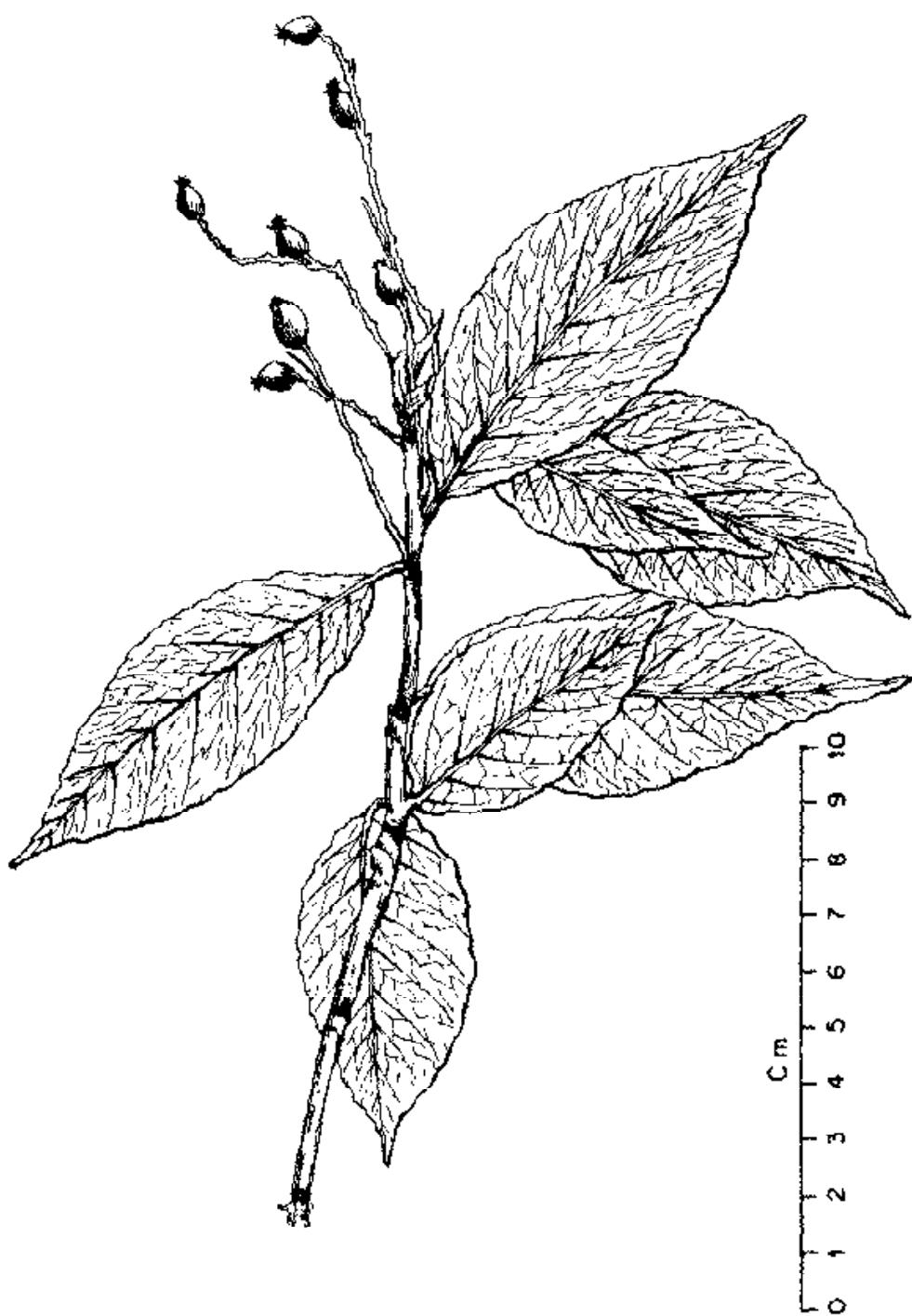


Fig. 33. *Symplocos beddomei* C.B.CI.

Symplocos laurina (Retz.) Wall. ex Rehd. & Wils. in Sargent, Fl. Wils. 2 : 594. 1916. *Myrtus laurina* Retz Obs. Bot. 4 : 26. 1786. *S. spicata* Roxb. Fl. Ind. (Carey ed.) 2 : 541. 1832 ; C.B.Cl. in Hook. f. Fl. Brit. India 3 : 573. 1882 ; Cooke, Fl. Pres. Bombay 2 : 169. 1958 (Repr. ed.). *S. cochinchinensis* ssp. *laurina* (Retz.) Nooteboom in Leiden Bot. 1. 156. 1975 & in Steenis, Fl. Males. 1, 8 : 243. 1977. 'Mirjoli'.

Trees, 6–8 m high. Leaves elliptic-lanceolate, 8–12 × 4.5–5.5 cm, base acute or attenuate, apex acute. Spikes solitary or 2–3 together; corolla lobes oblong, rounded. Drupes 0.5 cm across.

Fls. & Frts. : January.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 417. 1982.

Distrib. : Rare in semi-evergreen forests. Mahabaleshwar-Panchgani, Maharashtra 13094.

OLEACEAE

1. Climbing herbs or shrubs	...	JASMINUM
1. Trees :		
2. Flowers in terminal thyrsoid panicles	...	LIGUSTRUM
2. Flowers in axillary paniculate cymes or fascicles :		
3. Flowers polygamous, white	...	OLEA
3. Flowers bisexual, yellowish-white	...	CHIONANTHUS

CHIONANTHUS L.

Chionanthus mala-elengi (Dennst.) P. S. Green in Bull. Bot. Surv. India 26 : 124. (1984) 1985. *Forsythia mala-elengi* Dennst. Schlussel. Hort. Malab. 12, 21 & 31. 1818. *Linociera malabarica* Wall. ex G. Don, Gen. Syst. 4 : 53. 1838 ; C.B.Cl. in Hook. f. Fl. Brit. India 3 : 607. 1882 ; Cooke, Fl. Pres. Bombay 2 : 178. 1958 (Repr. ed.). *Chionanthus malabaricus* (Wall. ex G. Don) Bedd. For. Man. Bot. 154. 1872 & Fl. Sylv. t 239. 1872 ; Nair & Janardhanan in J. Bombay Nat. Hist. Soc. 78 : 331. 1981 ; Bole & Almeida, ibid. 81 : 366. 1984 ; Panigr. in Ind. J. For. 8 : 56. 1985. 'Heddi'.

Trees, 5–8 m high. Leaves elliptic-oblong, 6–11 × 3–6 cm, base and apex obtuse. Calyx lobes ovate, acute, puberulous without; corolla lobes lanceolate, acute. Drupes ellipsoid, ca 1 cm long.

Fls. & Frts. : November–February.

Illus. : Wight, Ic. t. 1246. 1848 ; Bedd., Fl. Sylv. t. 239A. 1872.

Distrib. : Rare tree with fragrant flowers along moist hill slopes or streams. Kisrude, Kochhar 158299 ; Mahabaleshwar, Bole & Almeida (*op. cit.*).

JASMINUM L.

1. Leaves 3-foliojate	...	<i>J. azoricum</i>
t. Leaves simple :		
2. Bracts leafy, ovate-lanceolate, pubescent	...	<i>J. rotterianum</i>
2. Bracts not leafy, linear-subulate, glabrous :		
3. Leaves glabrous ; calyx lobes 0.6 cm long	...	<i>J. malabaricum</i>
3. Leaves pubescent at least when young ; calyx lobes less than 0.6 cm long :		
4. Calyx teeth linear	...	<i>J. arborescens</i> var. <i>latifolia</i>
4. Calyx teeth triangular	...	<i>J. roxburghianum</i>

Jasminum arborescens var. latifolia (Roxb.) C B Cl in Hook. f. Fl. Brit. India 3 : 594. 1882 ; Cooke, Fl. Pres. Bombay 2 : 173. 1958 (Repr. ed.). *J. latifolia* Roxb. Fl. Ind. (Carey & Wall. ed.) 1 : 93. 1820.

Shrubs scandent ; branches hairy. Leaves ovate, 7-10 × 2.5-5.0 cm, apex acute. Flowers white in terminal trichotomous cymes. Carpels ellipsoid, black when ripe.

Illus. : Wight, Ic. t. 699. 1843.

Distrib. : Kamthadi ; Satara, Gammie 15246.

Notes : Though, Cooke (*op. cit.*) doubted about the occurrence of it in the then Bombay Presidency, the above mentioned specimen and Naik's (1979) report from Osmanabad district confirms its occurrence (Karthikeyan & Sharma, 1983).

***J. azoricum* L.** Sp. Pl. 7. 1753 ; Backer & Bakh. f. Fl. Java 2 : 217. 1965. *J. flexile* Vahl, Symb. Bot. 3 : 1. 1794 ; C.B. Cl. in Hook. f. Fl. Brit. India 3 : 601. 1882 ; Cooke, Fl. Pres. Bombay 2 : 175. 1958 (Repr. ed.).

Climbers. Leaflets oblong-elliptic, 2-3 × 0.7-1.8 cm, base rounded, apex acute. Flowers white, fragrant in terminal cymes ; calyx lobes

minute, puberulous at apex : corolla lobes oblong, rounded. Carpels broadly ovoid, purple when ripe.

Fls. & Frts. : October.

Illus. : Wight, Ic. t. 1253, 1848.

Distrib. : Rare in semi-evergreen forests. Satara, *Patwardhan, A. M.* s. n.

Jasminum malabaricum Wight, Ic. t. 1250. 1848 ; C.B.Cl. in Hook. f. Fl. Brit. India 3 : 594. 1882 ; Cooke, Fl. Pres. Bombay 2 : 172. 1958 (Repr. ed.) 'Kusar'

Climbers, large. Leaves opposite, broadly ovate, apex acuminate, $5-8 \times 2.5-5.0$ cm. Flowers white in terminal cymes. Berries oblong, 1.0-1.5 cm long, black when dry.

Fls. & Frts. : March May.

Illus. : Wight, *op. cit.*

Distrib. : Abundant in semi-evergreen and deciduous forests. Karanjewadi; Kas ; Kumbharli ghat ; Mahabaleshwar ; Shirshingi ; Yavteshwar.

J. rottlerianum Wall. ex A. DC. in DC. Prodr. 8 : 305. 1844 ; C.B. Cl. in Hook. f. Fl. Brit. India 3 : 593. 1882 ; Cooke, Fl. Pres. Bombay 2 : 173. 1958 (Repr. ed.).

Shrubs, scandent, fulvous-hairy. Leaves elliptic, 4-10 \times 2-4 cm, apex acute or acuminate, glabrous above, tomentose beneath when young; petioles jointed in the middle, densely villous. Flowers white, in terminal cymes ; bracts 1.0-1.5 cm long. Berries ellipsoid, black when ripe.

Fls. : February April.

Illus. : Wight, Ic. t. 1249, 1848.

Distrib. : Frequent along ghats and near forest edges. Dicholi ; Jadholi ; Kumbharli ghat.

J. roxburghianum Wall. ex C.B. Cl. in Hook. f. Fl. Brit. India 3 : 595. 1882 ; Cooke, Fl. Pres. Bombay 2 : 174. 1958 (Repr. ed.).

Climbers, young branches pubescent. Leaves broadly ovate, base subcordate, apex acute, 2-4 \times 1-2 cm. Flowers white in trichotomous cymes ; calyx lobes hairy. Carpels ellipsoid, ca 1 cm long.

Fls. & Frts. : September.

Distrib. : Infrequent along the ghat slopes in deciduous forests. Pandavgad ; Shirgaon ghat.

CULTIVATED SPECIES

Jasminum grandiflorum L. Sp. Pl. ed. 2, 9. 1762 ; C.B.Cl. in Hook. f. Fl. Brit. India 3 : 603. 1882 ; Cooke, Fl. Pres. Bombay 2 : 176. 1958 (Repr. ed.). 'Chameli'.

Shrubs, scandent. Leaves pinnately compound. Flowers white with a reddish tinge.

Fls. : September.

Distrib. : Cultivated in gardens for fragrant flowers. Koyna ; Panchgani.

J. multiflorum (Burm. f.) Andr. Bot. Rep. t. 496. 1801 ; Kobuski in J. Arnold Arbor. 13 : 172. 1932; Bole & Almeida in J. Bombay Nat. Hist. Soc. 81 : 366. 1984. *Nyctanthes multiflora* Burm. f. Fl. Ind. 5, t. 3, f. 1, 1768. *J. pubescens* Willd. Sp. Pl. 1 : 37. 1797 ; C.B. Cl. in Hook. f. Fl. Brit. India 3 : 592. 1882 ; Cooke, Fl. Pres. Bombay 2 : 173. 1958 (Repr. ed.). 'Mogra'.

Shrubs, scandent, young branches tomentose. Leaves ovate, apex acute, pubescent when young. Flowers white in dense, terminal cymes ; bracts foliaceous, ovate, acute.

Fls. : Throughout the year.

Distrib. : Elegant shrub, grown as an ornamental plant. Mahabaleshwar.

J. sambac Ait. Hort. Kew. 1 : 8. 1789. C.B. Cl. in Hook. f. Fl. Brit. India 3 : 591. 1882 ; Cooke, Fl. Pres. Bombay 2 : 172. 1958 (Repr. ed.). Bole & Almeida in J. Bombay Nat. Hist. Soc. 81 : 366. 1984. 'But-mogra'.

Shrubs, suberect. Leaves ovate-elliptic, apex obtuse or acuminate. Flowers white, solitary or in terminal cymes.

Fls. : Throughout the year.

Illus. : Wight, Ic. t. 704. 1843.

Distrib. : Cultivated for fragrant flowers. Mahabaleshwar.

LIGUSTRUM L.

Ligustrum perrottetii A. DC. in DC. Prodr. 8. 294. 1844 ; C.B.Cl. in Hook. f. Fl. Brit. India 3 : 615. 1882. *L. neilgherrense* Wight var. *obovata* (Decne.) C.B. Cl. op. cit. ; Cooke, Fl. Pres. Bombay 2 : 181. 1958 (Repr. ed.).

Trees, 6-10 m high. Leaves elliptic-ovate, 4-7 × 2.4-4.0 cm, main nerves 4-6 pairs; petioles short, channelled. Flowers white, fragrant. Drupes obovoid, dark purple when ripe.

Fls. & Frts. : October - November.

Illus. : Wight, Ic. t. 1243 & 1244. 1848.

Distrib. : Common at Mahabaleshwar, used for making walking sticks. Lingmala ; Machutar forest ; Mahabaleshwar ; old Mahabaleshwar ; Panchgani-Mahabaleshwar ; Parut.

OLEA L.

Olea dioica Roxb. Fl. Ind. (Carey ed.) 1 : 106. 1832 ; C.B. Cl. in Hook. f. Fl. Brit. India 3 : 612. 1882 ; Cooke, Fl. Pres. Bombay 2 : 179. 1958 (Repr. ed.). 'Parjamb'.

Trees, 8-12 m high. Leaves elliptic lanceolate, 4-15 × 1.0-5.5 cm, coriaceous, apex acuminate, margins serrate. Drupes ellipsoid, 0.5-1.0 cm long, purple, becoming black when ripe.

Fls. & Frts. : December - April.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 2 : 197, f. 390. 1911.

Distrib. : Common component of semi-evergreen and deciduous forests. Ambeghat ; Jadholi ; Jangli Jaigad ; Karanjewadi ; Kusapur ; Mahabaleshwar ; way to Pratapgad ; Nauja ; Shirshingi.

APOCYNACEAE

1. Plants armed ; fruit a berry	...	CARISSA
1. Plants unarmed ; fruit a capsule, drupe or follicle :		
2. Large woody climbers	...	ANODENDRON
2. Erect herbs, shrubs or trees :		
3. Leaves whorled ; drupe as broad or broader than long	...	RAUVOLPIA
3. Leaves opposite ; follicles much longer than broad :		
4. Corona present ; anthers connate to the stigma	...	WRIGHTIA

4. Corona absent ; anthers free from the stigma :
 5. Follicles cylindrical, upto 25 cm long ; seeds with white coma ... **HOLARRHENA**
 5. Follicles obliquely lanceolate, upto 2 cm long ; seeds without coma ... **ERVATAMIA**

ANODENDRON DC.

Anodendron manubriatum Merr. in Philipp. J. Sci. 7 : 333. 1912 ; Huber in Abeyw. Rev. Handb. Fl. Ceylon 1 : 26. 1973. *A. paniculatum* (Roxb.) A. DC. in DC. Prod. 8 : 444. 1844 ; Hook. f. Fl. Brit. India 3 : 668. 1882 ; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 18. 1897 ; Cooke, Fl. Pres. Bombay 2 : 204. 1958 (Repr. ed.). 'Lamtani'.

Climbers. Leaves elliptic-oblong, 8–15 × 3–7 cm, base rounded, apex acute. Flowers yellow in trichotomous cymes ; calyx lobes alternate with glandular scales ; corolla tube inflated above middle. Follicles swollen at base, tapering towards apex, reddish-brown when ripe. Seeds with white coma.

Fls. & Frts. : December–March.

Illus. : Wight, Ic. t. 396. 1840.

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

A. paniculatum (Roxb.) DC. is based on *Echites paniculata* Roxb Fl. Ind. (Carey ed.) 2 : 17. 1832 *non* Poiret, 1812. Hence Merrill has provided a new name taking the specific epithet from *E. manubriata* Wall. (Cat. 1663. 1829).

CARISSA L. (*nom. cons.*).

- | | | |
|---|-----|--------------------|
| 1. Spines straight or slightly curved, upto 2.5 cm long | ... | <i>C. congesta</i> |
| 1. Spines recurved, upto 4.5 cm long | ... | <i>C. inermis</i> |

Carissa congesta Wight, Ic. t. 1289. 1848. *C. carandas* non L. 1767. Hook. f. Fl. Brit. India 3 : 630. 1882. p.p. ; Cooke, Fl. Pres. Bombay 2 : 186. 1958 (Repr. ed.). 'Karvand'.

Shrubs, 3–5 m high. Leaves broadly ovate, 3–6 × 3–4 cm, base acute or cuneate, apex mucronate. Flowers white with a pink tinge in axillary and terminal dichotomous cymes ; calyx lobes lanceolate, pubescent ; corolla tube swollen, pubescent above the middle ; lobes oblong-lanceolate, acute. Berries 1 cm long, purplish black when ripe.

Fls. & Frts. : November May.

Illus. : Wight, *op. cit.*

Distrib. : One of the most common components of deciduous forests. Fruits edible. Bamnoli; Karanjewadi; Kisrude; Koyna; Mahabaleshwar; Nauja; Panchgani-Mahabaleshwar; Parli; Vasota.

Carissa inermis Vahl, Symb. Bot. 3 : 43. 1794 ; Cooke, Fl. Pres. Bombay 2 : 187. 1958 (Repr. ed.). *C. suavissima* Bedd. ex Hook. f. Fl. Brit. India 3 : 632. 1882 ; Cooke, *op. cit.* 188.

Shrubs, *ca* 5 m high. Leaves elliptic, 6–10 × 4–5 cm, base and apex acute, coriaceous. Flowers white in dichotomous cymes; corolla tube inflated at apex; lobes linear-lanceolate, acute. Berries ellipsoid, 1–2 cm long, purple when ripe.

Fls. & Frts. : June November.

Distrib. : Common along ghats. Dhokewadi; Jadholi; Nauja.

ERVATAMIA Stapf

Ervatamia heyneana (Wall.) T. Cooke, Fl. Pres. Bombay 2 : 134. 1904 [2 : 196. 1958 (Repr. ed.)]. *Tabernaemontana heyneana* Wall. in Bot. Reg. 7 : Sub. t. 1273. 1829 ; Hook. f. Fl. Brit. India 3 : 646. 1882. 'Nagkuda'

Trees, *ca* 6 m high. Leaves 5–15 × 3–6 cm, coriaceous, base acute, apex acuminate. Flowers white in corymbose cymes; corolla lobes imbricate, broadly oblong, obtuse; tube inflated near the mouth. Follicles twin, subsessile, beak recurved, yellow when ripe.

Fls. & Frts. : February September.

Distrib. : Frequent in deciduous forests along ghats. Koyna; Kumbharli ghat.

CULTIVATED SPECIES

E. divaricata (L.) Burkhill in Rec. Bot. Surv. India 10 : 320. 1925 ; Huber in Abeyw. Rev. Handb. Fl. Ceylon 1 : 2. 1973. *Nerium divaricatum* L. Sp. Pl. 209. 1753. *Tabernaemontana coronaria* (Jacq.) Willd. Enum. Hort. Berol. 275. 1809 ; Hook. f. Fl. Brit. India 3 : 646. 1882. *E. coronaria* (Jacq.) Stapf in Oliver, Fl. Trop. Afr. 4 : 127. 1902 ; Cooke, Fl. Pres. Bombay 2 : 197. 1958 (Repr. ed.). 'Tagar'.

Shrubs, 2-3 m high. Leaves elliptic-oblong, 9-15 × 5.5-6.0 cm. Flowers white in dichotomous cymes. Follicles oblong, 2.5-3.5 cm, recurved.

Fls. & Frts. : Almost throughout the year.

Illus. : Wight, Ic. t. 477. 1842 (*T. coronaria*).

Distrib. : Common garden plant, also grown near temples Mahabaleshwar.

HOLARRHENA R. Br.

Holarrhena pubescens (Buch.-Ham.) Wall. ex G. Don, Gen. Syst. 4 : 78. 1837 ; N. Rani & Matthew, Fl. Tamilnadu Carnatic 3 : 910, t. 649. 1983. *Echites pubescens* Buch.-Ham. in Trans. Linn. Soc. London 13 : 521. 1821. *H. antidyserterica* Wall. ex A. DC. in DC. Prodr. 8 : 413. 1844; Hook. f. Fl. Brit. India 3 : 644. 1882 ; Cooke, Fl. Pres. Bombay 2 : 195. 1958 (Repr. ed.). 'Kuda'.

Shrubs or small trees, 4-6 m high. Leaves elliptic-oblong, chartaceous, 9-18 × 3-7 cm, base rounded, apex acuminate. Flowers white in paniculate cymes; calyx cupular, glandular within ; corolla tube inflated at apex. Follicles twin, curved at apex.

Fls. & Frts. : April November.

Illus. : Wight, Ic. t. 1297 & 98. 1848. (*H. malaccensis*) ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 430. 1982 (*H. antidyserterica*).

Distrib. : Common component of deciduous forests. Ambeghar ; Gadoli ; Koyna ; Kumbharli ghat ; Mahabaleshwar ; Morgiri.

RAUVOLFIA L.

- | | | |
|---|-----|------------------------|
| 1. Shrubs, ca 3 m high ; corolla tube broad, inflated below the mouth ; fruits reddish when ripe | ... | <i>R. verticillata</i> |
| 1. Herbs, ca 50 cm high ; corolla tube slender, inflated above the middle ; fruits purplish-black when ripe | ... | <i>R. serpentina</i> |

Rauvolfia serpentina (L.) Bth. ex Kurz, For. Fl. Burma 2 : 171. 1877 ; Hook. f. Fl. Brit. India 3 : 632. 1882 ; Cooke, Fl. Pres. Bombay 2 : 188. 1958 (Repr. ed.) ; Sulochana in J. Ind. Bot. Soc. 38 : 578. 1959. *Ophioxylon serpentinum* L. Sp. Pl. 1043. 1753. 'Hadki, Sarpagandha'

Herbs. Leaves in whorls of 3, oblanceolate, $5 - 10 \times 2.0 - 3.3$ cm, base attenuate, apex acute. Flowers white in axillary, corymbose cymes; calyx purple, lobes ovate-lanceolate; corolla lobes obovate. Drupes of 2 pyrenes, connate at base.

Fls. & Frts. : August November.

Illus. : Wight, Ic. t. 849. 1844 ; Maheshwari, Ill. Fl. Delhi f. 121. 1966.

Distrib. : Rare in deciduous forests. Koyna, Kochhar 157947 Mahabaleshwar, 166740.

Notes : Roots used in hypertension. Plant used as an antidote for snake-bites and scorpion stings.

Rauvolfia verticillata (Lour.) Baillon in Bull. Soc. Linn. Paris 1 : 768. 1888 ; Chakrav. in Bull. Bot. Soc. Beng. 9 : 7. 1955 ; Markgraf in Blumea 30 : 160. 1984. *Dissolaena verticillata* Lour. Fl. Cochinch. 137. 1790. *R. densiflora* (Wall.) Benth. ex Hook. f. Fl. Brit. India 3 : 633. 1882 ; Cooke, Fl. Pres. Bombay 2 : 189. 1958 (Repr. ed.) ; Sulochana in J. Indian Bot. Soc. 38 : 580, t. 1. 1959.

Shrubs ; stem woody. Leaves in whorl, or 3 - 4, oblanceolate, $7 - 15 \times 2 - 5$ cm, base tapering, apex acuminate. Flowers white in lax cymes. Drupes ellipsoid, solitary or in pairs.

Fls. & Frts. : June September.

Illus. : Sulochana, *op. cit.*

Distrib. : Common in partially shaded areas. Jadboli; Lingmala; Mahabaleshwar; Nauja.

WRIGHTIA R. Br.

Wrightia tinctoria R. Br. in Mem. Wern. Soc. 1 : 47. 1811 ; Hook. f. Fl. Brit. India 3 : 653. 1882 ; Cooke, Fl. Pres. Bombay 2 : 200. 1958 (Repr. ed.) ; P. T. Ngan in Ann. Mo. bot. Gdn. 52 : 143. 1965 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 81 : 369. 1984. 'Kala kuda'.

Trees, ca 3 m high. Leaves elliptic or oblong-lanceolate, $5 - 12 \times 1.5 - 5.0$ cm, base acute or rounded, apex acuminate. Flowers white in terminal, dichotomous cymes, bracteate; calyx lobes oblong, margin membranous, glandular inside; corolla lobes oblong, acute; corona of many linear scales, some inserted with the filaments and some on the corolla lobes. Follicles 2, cylindric, tapering towards apex, 30 - 60 cm long. Seeds linear, attenuated at apex, 2 cm long, coma deciduous.

Fls. & Frts. : April November.

Illus. : Wight, Ic. t. 444. 1841.

Distrib. : Common in deciduous forests. Karanjewadi; Kumbharli ghat; Mahabaleshwar.

Notes : Ngan (1965) has described corena in this species in three series, differentiating it into supplementary, alternipetalous and antepetalous lobes. However, in one specimen collected by Nayar (153166) only outer series of antepetalous lobes and inner series of unequal lobes have been observed. It cannot be differentiated as supplementary and alternipetalous lobes. According to Nayar & Kochhar (1980), it might be due to hybridization or aberration as suggested by Ngan (*op. cit.*).

CULTIVATED SPECIES

Allamanda cathartica L. Mant. 2 : 214. 1771 ; Cooke, Fl. Pres. Bombay 2 : 207. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 81 : 367. 1984.

Climbers, large. Leaves 4-5 in whorls, lanceolate, upto 8.5 cm long, hairy on nerves beneath. Flowers large, yellow.

Fls. : Throughout the year.

Distrib. : Native of Brazil, often grown in gardens and near houses as an ornamental plant. Koyna; Mahabaleshwar.

Catharanthus roseus (L.) G. Don, Gen. Syst. 4 : 95. 1837 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 81 : 368. 1984. *Vinca rosea* L. Syst. Nat. ed. 10. 944. 1759 ; Hook. f. Fl. Brit. India 3 : 640. 1882. *Lochnera rosea* (L.) Reichb. Consp. Regni Veg. 134. 1828 ; Cooke, Fl. Pres. Bombay 2 : 192. 1958 (Repr. ed.). 'Sadaphuli'.

Undershrubs, ca 50 cm high. Leaves obovate. Flowers pink or white, solitary or in pairs.

Fls. : Throughout the year.

Distrib. : Cultivated as an ornamental plant. Mahabaleshwar.

Nerium oleander L. Sp. Pl. 209. 1753 ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 432. 1982 & Fl. Tamilnadu Carnatic 3 : 914. 1983. *Nerium indicum* Mill. Gard. Dict. ed. 8. 2. 1768 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 81 : 368. 1984. *N. odoratum* Soland. in Ait. Hort. Kew. ed. 1. 1 : 297. 1789. Hook. f. Fl. Brit. India 3 : 655. 1882 ; Cooke, Fl. Pres. Bombay 2 : 206. 1958 (Repr. ed.). 'Kanher'.

Shrubs, erect, woody. Leaves whorled, 3 per node, linear-lanceolate, 10-15 cm long. Flowers red or white in terminal corymbose cymes.

Fls. : January July.

Distrib. : Cultivated in gardens and near temples for its fragrant flowers. Kiwal; Koyna; Mahabaleshwar; Satara Road station.

Plumeria rubra L. Sp. Pl. 209. 1753 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 81 : 368. 1984. *P. acutifolia* Poir. in Lam. Encycl. Suppl. 2. 667. 1812 ; Hook. f. Fl. Brit. India 3 : 641. 1882 ; Cooke, Fl. Pres. Bombay 2 : 206. 1958 (Repr. ed.). 'I al chapha'.

Trees, 10-15 m high. Leaves oblong-lanceolate, 21-31 × 4-70 cm. Flowers red, fragrant. Follicles paired.

Fls. & *Frts.* : April.

Distrib. : Cultivated as an ornamental plant in gardens and near temples. Koyna; Mahabaleshwar; Medha.

Thevetia peruviana (Pers.) Merr. in Philipp. J. Sci. Bot. 9 : 130. 1914 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 81 : 369. 1984. *Cerbera peruviana* Pers. Syn. 1 : 267. 1805. *T. nerifolia* Juss. ex Steud. Nom. ed. 2. 2 : 680. 1841 ; Cooke, Fl. Pres. Bombay 2 : 207. 1958 (Repr. ed.). 'Pivala-Kanher'.

Trees, 4-6 m high, juice milky. Leaves 7-11 cm long, oblong, tapering at both ends. Flowers yellow in sub-terminal or terminal cymes. Fruits rounded, 5 cm across, black when dry.

Fls. & *Frts.* : April July.

Distrib. : Cultivated as an ornamental plant. Mahabaleshwar; Phaltan; Yavteshwar.

ASCLEPIADACEAE

1. Erect herbs or shrubs :

2. Leaves minute on young branches, caducous ... **CARALLUMA**

2. Leaves well developed, persistent :

3. Flowers solitary or in pairs ... **FERRIA**

3. Flowers in cymes :

4. Tuberous herbs ; corolla lobes connate at apex ... **CROPEGIA**

4. Plants and flowers not as above :
- 5. Leaves sessile, base semi-amplexicaul ... CALOTROPIS
 - 5. Leaves petioled, base not as above :
 - 6. Leaves ovate ; corona adnate basally to staminal column, free above ... TYLOPHORA
 - 6. Leaves lanceolate ; corona adnate throughout to the staminal column ... WATTAKAKA
1. Twining herbs or shrubs :
- 7. Tuberous perennials ; corolla lobes connate at apex ... CEROPEGIA
 - 7. Plants not as above :
 - 8. Corona an annular ring, entire ... HOLOSTEMMA
 - 8. Corona distinctly lobed :
 - 9. Corona uniserrate :
 - 10. Pollen masses erect :
 - 11. Corona corolline ... GYMNEMA
 - 11. Corona staminal :
 - 12. Epiphytic plants, rooting at nodes ... HOYA
 - 12. Terrestrial plants, not rooting at nodes :
 - 13. Flowers purple ... TYLOPHORA
 - 13. Flowers yellowish-green ... WATTAKAKA
 - 10. Pollen masses pendulous or suberect :
 - 14. Flowers in lateral, sessile cymes ... LEPTADENIA
 - 14. Flowers in axillary, pedunculate cymes :
 - 15. Stipule-like leaves 2 ; corolla glabrous ... CYNANCHUM
 - 15. Stipule-like leaves absent ; corolla puberulous ... PENTATROPIS
 - 9. Corona biserrate :
 - 16. Leafless herbs or shrubs ; flowers in lateral and terminal umbels ... SARCOSTEMMA
 - 16. Leafy herbs ; flowers in lateral or sub-axillary cymes :

17. Flowers greenish-yellow; inner corona spurred at base, horned at apex ...	PERGULARIA
17. Flowers purple; corona not as above ...	SESHAGIRIA

CALOTROPIS R. Br.

Calotropis gigantea (L.) R. Br. in Ait. Hort. Kew. ed. 2. 2 : 78. 1811; Hook. f. Fl. Brit. India 4 : 17. 1883; Cooke, Fl. Pres. Bombay 2 : 214 1958 (Repr. ed.); Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 17. 1962; Bole & Almeida in J. Bombay Nat. Hist. Soc. 81 : 370. 1984. *Asclepias gigantea* L. Sp. Pl. 214. 1753. 'Rui'.

Shrubs, 2-3 m high, latex milky; young branches white tomentose. Leaves elliptic-oblong, 5-10 × 4-6 cm, white tomentose. Flowers white or purple; corona of 5 fleshy, laterally compressed lobes. Follicles paired, boat-shaped, 5-8 × 2-4 cm. Seeds broadly-ovate, brown with white, silky coma.

Fls. & Frts. : February-July.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 437. 1982.

Distrib. : Common in waste places. Kumbharli ghat; Mahabaleshwar; Nauja; Panchgani; Parli.

CARALLUMA R. Br.

Caralluma adscendens var. *fimbriata* (Wall.) Grav. & Mayur. in Bull. Madras Govt. Mus. n.s. Nat. Hist. Sect. 4 : 12. 1931; Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 21, t. 1. 1962. *C. fimbriata* Wall. Pl. As. Rar. 1 : 7, t. 8, t. 1. 1830; Hook. f. Fl. Brit. India 4 : 77. 1883; Cooke, Fl. Pres. Bombay 2 : 244. 1958 (Repr. ed.). 'Makadsing'.

Herbs, 15-40 cm high; stem thick, fleshy. Flowers purple with yellow streaks, shortly pedicelled; calyx lobes lanceolate, acute; corolla rotate, deeply 5-lobed; lobes linear, apiculate. Follicles cylindric, ca 8 cm long.

Fls. & Frts. : June-August.

Illus. : Wight, Ic. t. 1268. 1848.

Distrib. : Rare in open areas. Kole. 166695; Pasarni ghat, Blatter & Fernandez s.n. (Sant. & Irani, op. cit.).

CEROPEGIA L.

1. Erect herbs :		
2. Leaves linear to linear-lanceolate	...	<i>C. noorjahaniae</i>
2. Leaves ovate to ovate-lanceolate	...	<i>C. panchganiensis</i>
1. Twining herbs :		
3. Plants densely hairy ; inner corona lobes hooked	...	<i>C. hirsuta</i>
3. Plants puberulous when young or glabrous ; inner corona lobes not hooked :		
4. Leaves fleshy	..	<i>C. bulbosa</i>
4. Leaves membranous :		
5. Corolla lobes equal or longer than the tube	...	<i>C. vincaeifolia</i>
5. Corolla lobes shorter than the tube :		
6. Corolla tube funnel shaped ; lobes oblong ; corona biserrate	...	<i>C. oculata</i>
6. Corolla tube sub-cylindric ; lobes orbicular ; corona uniserrate	...	<i>C. santapauli</i>

***Ceropegia bulbosa* Roxb.** Pl. Cor. I : 11, t. 7. 1795 ; Hook. f. Fl. Brit. India 4 : 67. 1883 ; Cooke, Fl. Pres. Bombay 2 : 240. 1958 (Repr. ed.) ; Chavan *et al.* in M.V.M. Patrika 8 : 9. 1973 ; Ansari in Fasc. Fl. India 16 : 10. 1984.

Twiners. Leaves long petioled, ovate-orbicular, 3×0.5 –1.0 cm. Flowers greyish-purple ; corolla tube funnel-shaped, inflated at base ; lobes ovate-deltoid, hairy inside ; outer corona saucer-shaped, entire, inner corona divergent. Follicles cylindric, ca 10 cm long.

Fls. & Frts. : July–October.

Illus. : Wight, Ic. t. 845. 1844-45.

Notes : Rare along hills. Included on the authority of Chavan *et al.* (*op. cit.*) who reported it from Kas.

C. hirsuta Wight & Arn. in Wight, Contrib. 30. 1834 ; Hook. f. Fl. Brit. India 4 : 71. 1883 ; Cooke, Fl. Pres. Bombay 2 : 242. 1958 (Repr. ed.) ; Huber in Mem. Soc. Broter. 12 : 63. 1957, *excl. syn.* *C. vincaeifolia* Hook. 1839 ; Ansari in Fasc. Fl. India 16 : 16, t. 3 : 11, f. 7, 1984, *C. hirsuta* var. *stenophylla* Hook. f. *op. cit.* *C. hispida* Blatt. & McC. in J. Bombay Nat. Hist. Soc. 35 : 409. 1931. '*Haamana*'.

Climbers ; roots tuberous. Leaves ovate-lanceolate, 6-8 × 2-3 cm, base acute or truncate, apex acute, hispid. Flowers green with purple spots ; peduncles 1 cm long, hairy ; corolla tube 3 cm long, inflated at base, lobes ca 1.8 cm long, oblong ; outer corona lobes deltoid, apex bifid ; inner linear. Follicles ca 10 cm long.

Fls. & Frts. : July September.

Illus. : Ansari, *op. cit.*

Distrib. : Occasional among grasses on rocky hill slopes. Panchgani, McCann 3566 (BLAT) ; Pandavgad, 169037.

Ceropegia noorjahaniae Ansari in J. Bombay Nat. Hist. Soc. 69 : 249, t. 1, f. 1-5. 1972, & Fasc. Fl. India 16 : 26. 1984.

Herbs, 15-40 cm high, pubescent when young. Leaves 7-9 × 0.3-1.5 cm, hairy on upper surface. Flowers in pedunculate, usually 3-flowered cymes ; corolla tube ca 1.2 cm long, inflated at base ; lobes 0.9-1.3 cm long, ovate-deltoid below, linear above ; outer corona lobes bifid or emarginate ; inner lobes linear-subclavate. Follicles in pairs, ca 9 cm long, tapering at both ends.

Fls. & Frts. : July September.

Illus. : Ansari, *op. cit.*

Distrib. : Rare on hill slopes among grasses. It develops twining habit under cultivation (Ansari, *op. cit.*). Wai-Panchgani ghat, Ansari 104880 A.

C. oculata Hook. Bot. Mag. t. 4093. 1844 ; Hook. f. Fl. Brit. India 4 : 72. 1883 ; Cooke, Fl. Pres. Bombay 2 : 242. 1958 ; Huber in Mem. Soc. Broter. 12 : 64, t. 3, f. 319. 1957 ; Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 33. 1962. Ansari in Fasc. Fl. India 16 : 26, t. 4, f. 20. 1984. *C. stocksii* Hook. f. *op. cit.* 74 ; Cooke, *op. cit.* 243.

Twingers. Leaves 4.5-9.0 × 1.7-4.8 cm, ovate, base rounded, apex acuminate, glabrous. Flowers in axillary, 4-8 flowered cymes ; peduncles white hairy ; corolla tube 4 cm long ; inflated at base ; outer corona of 5 shortly bifid lobes ; teeth acute, ciliate ; inner lobes erect. Follicles in pairs.

Fls. & Frts. : July October.

Illus. : Ansari, *op. cit.* ; Huber, *op. cit.*

Distrib. : Rare in forest undergrowth, endemic to Maharashtra. Mahabaleshwar, McCann 3439, Santapau 11806 (BLAT) ; Tapola 162517.

Ceropegia panchganiensis Blatt. & McC. in J. Bombay Nat. Hist. Soc. 36 : 534. 1933 ; Ansari in Bull. Bot. Surv. India 22 : 199, f. 1-4. 1980 & in Fasc. Fl. India 16 : 27, t. 4, f. 16. 1984.

Herbs, *ca* 50 cm high, stem pubescent when young. Leaves 6-9 × 3-6 cm, base rounded, apex acute, puberulous above. Flowers in pedunculate cymes ; peduncle and pedicels hairy ; corolla tube 2.0-2.8 cm long, hairy within ; lobes *ca* 0.6 cm long, obovate ; outer corona lobes bifid, hairy ; inner clavate.

Fls. : July August.

Illus. : Ansari, *op. cit.*

Distrib. : Rare. Lingmala, Ansari 105090 A ; Mahabaleshwar, Santapanu 13094 (BLAT) ; Panchgani, Blatter 200 (BLAT).

Notes : The present species was earlier treated as synonymous to *C. lawii* Hook. f. hence the occurrence of *C. lawii* Hook. f. from Lingmala in Satara Dist. as reported by Bole and Almeida (1984) is based on the specimens of *C. panchganiensis* only. Ansari (*op. cit.*) has clarified the distinctness of these two species. So far the true *C. lawii* Hook. f. has not been reported from Satara Dist.

C. santapani Wadhwa & Ansari in Bull. Bot. Surv. India 10 : 95. t. 1, f. 1-9. 1968 ; Ansari in Fasc. Fl. India 16 : 30, t. 25, f. 17. 1984.

Climbers. Leaves ovate-lanceolate, 3-13 × 2.0-3.5 cm. Flowers greenish-purple in axillary cymes ; peduncle and pedicels sparsely hairy ; corolla tube *ca* 0.8 cm long ; lobes *ca* 0.5 cm long ; corona of 5, elongated, convergent processes, hairy without. Follicles paired, *ca* 7 cm long.

Fls. & Frts. : August October.

Illus. : Ansari, *op. cit.*

Distrib. : Rare, endemic to Maharashtra. Kumbharli ghat, Kochhar 159502 ; Mahad ghat, near Mahabaleshwar, Wadhwa 109640 A.

C. vineaefolia Hook. Bot. Mag. t. 3740. 1839 *emend.* Ansari in Bull. Bot. Surv. India 13 : 187. 1974 & in Fasc. Fl. India 16 : 31, t. 4, 1984. *C. hirsuta* var. *vineaefolia* (Hook.) Hook. f. Fl. Brit. India 4 : 72. 1883. *C. stocksii* Hook. f. *op. cit.* 74 ; Cooke, Fl. Pres. Bombay 2 : 243. 1958 (Repr. ed.). *C. polyantha* Blatt. & McC. in J. Bombay Nat. Hist. Soc. 34 : 936. 1931. *C. oculata* var. *subhirsuta* Huber in Mem. Soc. Broter. 12 : 65. 1957 ; Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 34, t. 4. 1962.

Twiners. Leaves ovate, 5-10 × 2.5-4.5 cm, puberulous. Flowers in pedunculate cymes ; peduncles hirsute ; corolla tube 1.6-4.5 cm long,

inflated at base, funnel shaped at apex ; lobes 1.5 - 3.5 cm long, ovate, deltoid at base, linear at apex, pubescent ; outer corona lobes entire or shortly bifid ; inner oblanceolate.

Fls. : August September

Illus. : Ansari, *op. cit.*

Distrib. : Common on open hills in scrub forests. Lingmala, Mahabaleshwar.

CYNANCHUM L.

Cynanchum callialata Buch -Ham. ex Wight, Contrib. 56. 1834 & Ic. t. 1279. 1848 ; Hook. f. Fl. Brit. India 4 : 24. 1883 ; Cooke, Fl. Pres. Bombay 2 : 221. 1958 (Repr. ed.) ; Sant. & Irani in Univ. Bombay Bot Mem. 4 : 39. 1962.

Large twiners, juice milky. Leaves 5 - 7 × 2.8 - 3.8 cm, base cordate, apex acuminate, glaucous beneath ; stipule-like leaves ca 1 cm long. Flowers brownish on short peduncles ; corolla lobes obtuse, plicate, membranous ; corona 5 lobed, bifid at apex. Follicles 6 - 8 cm long, apex narrowed, winged.

Fls. & Frts. : September December.

Illus. : Wight, Ic. t. 1279. 1848.

Distrib. : Rare as forest undergrowth in semi-evergreen forests. Lingmala; Mahabaleshwar, M.R. Almeida 2244, Santapau 13155 (BLAT) ; Nauja, Kochhar 154245.

FREREA Dalz.

Frerea indica Dalz. in J. Linn. Soc. London 8 : 10, t. 3. 1865 ; Hook. f. Fl. Brit. India 4 : 76. 1883 ; Cooke, Fl. Pres. Bombay 2 : 243. 1858 (Repr. ed.) ; Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 44, t. 7. 1962. *Caralluma frerei* Rowley, Nat. Cact. & Succ. J. 30 : 78. 1958. 'Shindal-makudi'.

Herbs, 10 - 15 cm high. Leaves subsessile, oblong, 3 - 5 × 1.8 - 2.5 cm, fleshy. Flowers purple with yellow spots, corona purple. Follicles linear, 7 - 10 cm long.

Fls. & Frts. : September December.

Notes : Rare and endemic species, restricted to Purandhar fort area and Junnar (Pune District) in Western Ghats on bare rocks. There is no

authentic sheet of the present species from Satara District. It is reported to have been seen by Acland at Kates Point, Mahabaleshwar (personal communication with Santapau, Sant & Irani, *op. cit.*). Rowley (1958) merged this species with *Caralluma* R. Br. on the basis of succulent stems and rotate corolla. However, the distinct floral features and absence of any intermediate species in *Caralluma* with fleshy leaves justify Dalzell's treatment of this under a separate genus (Raghavan, 1976).

GYMNEMA R. Br.

- | | | |
|--|-----|---------------------|
| 1. Leaves pubescent ; corolla lobes ovate ; corona lobes exceeding the corolla | ... | <i>G. sylvestre</i> |
| 1. Leaves glabrous ; corolla lobes oblong ; corona lobes not exceeding the corolla | ... | <i>G. montanum</i> |

Gymnema montanum (Roxb.) Hook. f. Fl. Brit. India 4 : 31. 1883 ; Cooke, Fl. Pres. Bombay 2 : 225. 1958 (Repr. ed.) ; Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 48. 1962. *Asclepias montana* Roxb. Fl. Ind. (Carey ed.) 2 : 45. 1832.

Shrubs, twining. Leaves variable, oblong, ovate-oblong or oblong-lanceolate. Flowers greenish-yellow in corymbose or racemose cymes. Follicles lanceolate, acuminate, smooth.

Notes : Cooke reported the present species in his list of Principal Mahabaleshwar Plants in Bombay Gazetteer. According to Sant. & Irani (*op. cit.*) there is no authentic sheet of the above species in any of the Indian herbaria, the only sheet available at Kew is from Konkan by Law.

G. sylvestre (Retz.) R. Br ex R. & S. in Syst. Veg. 6 : 57. 1819 ; Hook. f. Fl. Brit. India 4 : 29. 1883 ; Cooke, Fl. Pres. Bombay 2 : 224. 1958 (Repr. ed.) ; Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 47. 1962. *Periploca sylvestris* Retz. Obs. Bot. 2 : 15 1781. 'Kavali'.

Climbers, pubescent when young. Leaves ovate or ovate-elliptic, 3-6 x 1.5-3.5 cm, base rounded, apex acute or shortly acuminate. Flowers yellow in extra-axillary cymes ; bracts ovate-oblong, hairy ; calyx deeply divided, pubescent ; corolla lobes deltoid-ovate ; corona lobes alternate with corolla lobes. Follicles lanceolate, 6.0-7.5 cm long. Seeds ovoid-oblong with a marginal wing, brown with white coma.

Fls. & Frts. : November-June.

Illus. : Wight, Ic. t. 349. 1840 ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 445. 1982.

Distrib. : Common woody species in open forests. Dicholi; Kisrude; Koyna; Mahabaleshwar; Pratapgad Road.

Notes : Leaves used as antidiabetic by local people.

HOLOSTEMMA R. Br.

Holostemma ads-kodien Schultes in L. Syst. Veg. 6 : 95. 1820 ; Matthew, Fl. Tamilnadu Carnatic 3 : 949. 1983. *H. annulare* (Roxb.) K. Schum. in Engl. Pflanzenfam. 4 : 250, f. 71, J-K. 1895 ; Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 53, t. 8. 1962 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 81 : 371. 1984. *Asclepias annularia* Roxb. Fl. Ind. (Carey ed.) 2 : 37. 1832. *H. rheedei* Wall. Pl. As. Rar. 2 : 51. 1831 ; Hook. f. Fl. Brit. India 4 : 21. 1883. *H. rheedianum* T. Cooke, Fl. Pres. Bombay 2 : 156. 1904 [2 : 220. 1958 (Repr. ed.)]. *non* Spr. 1825. 'Tultuli'.

Shrubs, twining. Leaves broadly ovate, 3–5 × 1.5–3.5 cm, base cordate, apex acute. Flowers pinkish red in axillary cymes ; calyx lobes broadly ovate, obtuse ; corolla lobes ovate, acute. Follicles boat-shaped, turgid.

Fls. & Frts. : June–October.

Illus. : Wight, Ic. t. 597. 1842 (*H. rheedei*).

Distrib. : Rare as undergrowth in forest clearings. Included on Bole & Almeida's report from Mahabaleshwar.

HOYA R. Br.

Hoya wightii Hook. f. Fl. Brit. India 4 : 59. 1883 ; Cooke, Fl. Pres. Bombay 2 : 234. 1958 (Repr. ed.). *H. pendula* Wight & Arn. in Wight Contrib. 36. 1834. p.p. (excl. syn. *non* Wight Ic. t. 474. 1841) ; Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 56. 1962. 'Ambri'.

Climbers, stout. Leaves elliptic, 7–8 × 3.0–3.5 cm, base acute, apex acuminate. Flowers pale yellow in lateral, pedunculate umbels ; corona fleshy, radiating from the staminal column.

Fls. : April–October.

Distrib. : Occasional perennials growing on rocks or on tree trunks. Karanjewadi; Lingmala; Mahabaleshwar.

LEPTADENIA R. Br.

Leptadenia reticulata (Retz.) Wight & Arn. in Wight Contrib. 47. 1834 ; Hook. f. Fl. Brit. India 4 : 63. 1883 ; Cooke, Fl. Pres. Bombay 2 : 237. 1958 (Repr. ed.); Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 60. 1962 ; *Cynanchum reticulatum* Retz. Obs. Bot. 2 : 15. 1781. 'Hirandodi'

Climbers. Leaves elliptic-oblong, 3-6 × 1.5-4.0 cm, base rounded, apex acute, glabrous above, finely pubescent beneath ; petioles 1.0-2.5 cm long, puberulous. Flowers small, greenish-yellow, puberulous ; calyx lobes divided upto middle ; corolla lobes ovate-oblong, subobtuse, pubescent ; corona of 5 truncate lobes. Follicles paired, cylindric, 3-5 cm long.

Fls. & Frts. : April August.

Illus. : Wight, Ic. t. 350. 1840 ; Maheshwari, Ill. Fl. Delhi f. 127. 1966.

Distrib. : Rare in scrub forests. Nath Hills, Shirala, W. Burns s.n.

PENTATROPIS R. Br.

Pentatropis capensis (L.f.) Bullock in Kew Bull. 1955 : 284. 1955 ; Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 69. 1962. *Cynanchum capense* L. f. Suppl. 168. 1781. *P. microphylla* (Roxb.) Wight & Arn. in Wight, Contrib. 52. 1834 ; Hook. f. Fl. Brit. India 4 : 20. 1883 ; Cooke, Fl. Pres. Bombay 2 : 218. 1958 (Repr. ed.). 'Porparam'.

Herbs. Leaves elliptic, 1.5-2.5 × 0.7-1.4 cm, base rounded, apex mucronate. Flowers purple on filiform pedicels ; calyx lobes lanceolate, acute, glandular ; corolla lobes deltoid-lanceolate ; corona radiating, spurred at base. Follicles ca 4 cm long, inflated at base.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 352. 1840 (*P. microphylla*).

Distrib. : Occasional twiner with watery latex in drier plains of the district, Gondavale.

PERGULARIA L.

Pergularia daemia (Forsk.) Chiov. Result. Sc. Miss. Stefan. Paoli Somal. Ital. 1 : 115. 1916 ; Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 74. 1962. *Asclepias daemia* Forsk. Fl. Aeg.-Arab. 51. 1775. *Daemia extensa* R. Br. in Mem. Wein. Soc. 5 : 50. 1811 ; Hook. f. Fl. Brit.

India 4 : 20. 1883 ; Cooke, Fl. Pres. Bombay 2 : 219. 1958 (Repr. ed.).
'Utarni'.

Herbs, twining, juice milky. Leaves ovate-cordate, 2.0 - 4.5 × 1.7 - 4.5 cm, apex acuminate, pubescent above, tomentose beneath. Flowers in lateral cymes on 6 - 8 cm long peduncles; outer corona subquadrangular, membranous. Follicles lanceolate, 6 - 7 cm long, reflexed, echinate. Seeds ovate, truncate at apex, ca 0.6 cm long, brown, velvety pubescent.

Fls. & Frts. : November.

Illus. : Wight, Ic. t. 596. 1842 (*Daemla extensa*).

Distrib. : Common climber on shrubs in scrub forests, Kas; Pirachi wadi.

SARCOSTEMMA R. Br.

I. Flowers white; style apex fusiform, much exerted	...	<i>S. intermedium</i>
I. Flowers pale greenish; style apex conical, not exerted	...	<i>S. acidum</i>

Sarcostemma acidum (Roxb.) Voigt, Hort. Sub. Calc. 542. 1845; Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 76. 1962. *Asclepias acida* Roxb. Fl. Ind. (Carey ed.). 2 : 31. 1832. *S. brevistigma* Wight & Arn. in Wight, Contrib. 59. 1834; Hook. f. Fl. Brit. India 4 : 26. 1883; Lisboa in J. Roy. Asiat. Soc. (Bombay) 217. 1883; Cooke, Fl. Pres. Bombay 2 : 222. 1958 (Repr. ed.). 'Soma'.

Herbs, twining. Flowers small on slender pedicels; calyx deeply divided, glandular within; corolla campanulate, lobes ovate-oblong; outer corona lobes cupular, inner erect, apex inflexed. Follicles lanceolate, narrowed at base and apex.

Fls. & Frts. : April July.

Illus. : Wight, Ic. t. 595. 1842 (*S. brevistigma*).

Distrib. : Leafless herbs on steep slopes. Chaphal; Khambatki ghat; Mahabaleshwar; Tapola.

S. intermedium Decne. in DC. Prodr. 8 : 538. 1844; Hook. f. Fl. Brit. India 4 : 27. 1883; Cooke, Fl. Pres. Bombay 2 : 223. 1958 (Repr. ed.); Blatt. in J. Bombay Nat. Hist. Soc. 36 : 530. 1933; Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 77. 1962.

Shrubs, scandent. Calyx lobes ovate-oblong, deeply divided; corolla lobes oblong, obtuse. Follicles oblong. Seeds oblong, winged.

Fls. & Frts. : December.

Illus. : Wight, Ic. t. 1281. 1848 (*S. viminalis* Wight & Arn.).

Distrib. : Khambatki ghat, *Graham* (Cooke, *op. cit.*) Pasarni ghat; *Fernandez s. n.*; Khandala ghat, *McCann* (Blatt, *op. cit.*).

Notes : Cooke and Blatter (*op. cit.*) have reported it from the above mentioned localities, however, Sant. & Irani (*op. cit.*) have expressed doubt about the occurrence of this species and its probable confusion with *S. acidum* by the previous workers as there is no sheet in any of the herbaria from Satara district.

SESHAGIRIA Ansari & Hemadri

Seshagiria sahyadrica Ansari & Hemadri in Indian Forester 97 : 126, t. 1, f. 1-9. 1971 & in Bull. Bot. Surv. India 13 : 357, t. 1, f. A-B. 1974. '*Khobardoda*'.

Twining. Leaves ovate, acuminate or ovate-oblong, 7-12 × 3.5-6.5 cm, glandular on midrib on upper surface, 6-8 nerved. Calyx lobes ovate, acute, ciliate on margins; corolla rotate, deeply divided; outer corona cupular, fleshy, 5-lobed; inner corona of 5, dilated, fleshy, subglobose masses. Follicles ovate-lanceolate, warty. Seeds many, ovoid with white coma upto 2.5 cm long.

Fls. & Frts. : May - October.

Illus. : Ansari & Hemadri, *op. cit.*

Distrib. : Rare perennial. Gureghar, Ansari, 105077 A-D.

TYLOPHORA R. Br.

- | | | |
|---|-----|-----------------------|
| 1. Suberect herbs; leaves ovate; flowers brown | ... | <i>T. fasciculata</i> |
| 1. Twining undershrubs; leaves ovate-oblong; flowers purple | ... | <i>T. dalzellii</i> |

Tylophora dalzellii Hook. f. Fl. Brit. India 4 : 43. 1883; Cooke, Fl. Pres. Bombay 2 : 227. 1958 (Repr. ed.); Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 87, t. 11, 1962.

Twining, latex milky, young branches pubescent. Leaves 2-9 × 1-4 cm, base rounded, apex inuncinate, glabrous above, sparsely hairy

beneath. Flowers small, on zigzag rachis; bracts many, linear-lanceolate; calyx deeply divided, hispid without, lobes lanceolate, acute; corona of 5 dark lobes, adnate to the staminal column. Follicles 5-7 cm long.

Fls. & Frts. : May November.

Illus. : Sant. & Irani *op. cit.*

Distrib. : Common in scrub forests and on hedges along roadsides. Ambeghar ; Dicholi ; Jhadoli ; Mahabaleshwar ; Satara ; Shirgaon ghat ; Shirshingi.

Tylophora fasciculata Buch. Ham. ex Wight, Contrib. 50. 1834; Hook. f. Fl. Brit. India 4 : 40. 1883; Cooke, Fl. Pres. Bombay 2 : 226. 1958 (Repr. ed.); Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 85. 1962. 'Bhindoli'.

Herbs, pubescent. Leaves 2-4 x 1-3 cm, base rounded, glabrous above, sparsely pubescent on the nerves beneath; petioles ca 1.5 cm long. Flowers on slender pedicels; bracts lanceolate; small; calyx deeply divided; corolla lobes oblong-lanceolate; corona of 5 ovoid lobes radiating from the staminal column. Follicles fusiform, striate.

Fls. & Frts. : October.

Illus. : Wight, Ic. t. 848. 1844.

Distrib. : Rare perennials in open areas. Mahabaleshwar, Talbot 4535.

WATTAKAKA Hassk.

- | | | |
|---|-----|------------------------|
| 1. Suberect undershrubs; leaves lanceolate | ... | <i>W. angustifolia</i> |
| 1. Climbing shrubs; leaves broadly ovate-suborbicular | ... | <i>W. volubilis</i> |

Wattakaka angustifolia (Hook. f.) Sandhya Deshpande comb. nov. *Dregea volubilis* var. *angustifolia* Hook. f. Fl. Brit. India 4 : 47. 1883. *Marsdenia lanceolata* T. Cooke, Fl. Pres. Bombay 2 : 167. 1904 [2 : 231. 1958 (Repr. ed.)]. *M. volubilis* var. *angustifolia* (Hook. f.) Blatt. & McC. in J. Bombay Nat. Hist. Soc. 36 : 532. 1933. *D. angustifolia* (Hook. f.) Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 41. 1962.

Undershrubs, 30-60 cm high. Leaves silky pubescent. Flowers in lateral, globose cymes, bracteate.

Fls. & Frts. : May June.

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

Wattakaka volubilis (L.f.) Stapf in Curtis, Bot. Mag. Sub t. 8976. 1923; Huber in Abeyw. Fl. Ceylon 1 : 50. 1973. *Asclepias volubilis* L. f. Suppl. 70. 1781. *Dregea volubilis* (L. f.) Bth. ex Hook. f. Fl. Brit. India 4 : 46. 1883 ; Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 42, t. 6. 1962. *Marsdenia volubilis* (L. f.) T. Cooke, Fl. Pres. Bombay 2 : 166. 1904 [2 : 230. 1958 (Repr. ed.)]. 'Hirandodi'.

Climbers, large. Leaves 6–13 × 4–11 cm, base rounded, apex acuminate. Flowers in lateral umbellate cymes; peduncles 2–3 cm long, puberulous; calyx lobes ovate-oblong, obtuse; corolla lobes broadly ovate, obtuse; corona 5-lobed, fleshy with small apiculation on inner side. Follicles paired, divaricate, tomentose when young.

Fls. & Frts. : April February.

Illus. : Wight, Ic. t. 586. 1840. (*Hoya viridiflora* R. Br. in Mem. Wern. Soc. 1 : 27. 1809).

Distrib. : Perennial in hedges and open areas. Common. Lingmala; Mahabaleshwar; Mahabaleshwar-Panchgani; Nath hills; Shirale; Nauja; Panchgani.

CULTIVATED SPECIES

Asclepias curassavica L. Sp. Pl. 215. 1753 ; Hook. f. Fl. Brit. India 4 : 18. 1883 ; Cooke, Fl. Pres. Bombay 2 : 245. 1958 (Repr. ed.) ; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4 : 15. 1962 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 81 : 370. 1984.

Herbs, ca 50 cm high juice milky. Leaves lanceolate, 6–10 × 1.5–3.5 cm, puberulous. Flowers red in umbellate cymes. Follicles 6–7 cm long, flat.

Fls. & Frts. : April July.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 436. 1982.

Distrib. : Native of West Indies, grown as an ornamental plant in gardens. Khatav; Mahabaleshwar.

PERIPLOCACEAE

- | | | |
|--|-----|-------------|
| 1. Lateral nerves many, uniting into intra-marginal nerves; flowers in pedunculate cymes; corolla lobes ca 8 mm long | ... | CRYPTOLEPIS |
| 1. Lateral nerves few, not uniting into intra-marginal nerves; flowers in subsessile cymes; corolla lobes ca 4 mm long | ... | HEMIDESMUS |

CRYPTOLEPIS R. Br.

Cryptolepis buchanani R. & S. Syst. 4 : 409. 1819 ; Hook. f. Fl. Brit. India 4 : 5. 1883 ; Cooke, Fl. Pres. Bombay 2 : 210. 1958 (Repr. ed.) ; Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 91. 1962. 'Kavali'.

Shrubs, climbing. Leaves elliptic-oblong, 6–15 × 3–6 cm, green above, whitish beneath. Flowers small, greenish in dichotomous cymes ; corolla lobes linear ; corona scales 5, clavate ; stamens 5 ; anthers triangular. Follicles divaricate, 6–10 cm long. Seeds ovate, black with long, white, silky coma at apex.

Fls. & Frts. : April June.

Illus. : Wight, Ic. t. 494. 1840.

Distrib. : Widely distributed in deciduous forests, along the roadsides and on hedges near cultivated fields. Asani ; Dhokewadi ; Kole ; Koyna ; Mahabaleshwar ; Nath hills ; Shirala ; Panchgani ; Vardhangad ; Yavteshwar.

HEMIDESMUS R. Br.

Hemidesmus indicus (L.) Schultes in R. & S. Syst. Veg. 6 : 126. 1819 ; Hook. f. Fl. Brit. India 4 : 5. 1883 ; Cooke, Fl. Pres. Bombay 2 : 210. 1958 (Repr. ed.) ; Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 96. 1962. *Periploca indica* L. Sp. Pl. 211. 1753. 'Anantmul'.

Twiners. Leaves elliptic-lanceolate, 3–7 × 1–2 cm, apex apiculate. Flowers small, bracteate ; calyx glandular at base, margin ciliate ; corolla tube short, lobes ovate-oblong ; corona scales 5, short, alternate with petals ; stamens inserted at the base of the tube. Follicles cylindric, 8–10 cm long.

Fls. & Frts. : July December.

Illus. : Wight, Ic. t. 594. 1842.

Distrib. : Common in forest undergrowth, also found in waste-lands. Roots used as tonic. Dicholi ; Gadoli ; Karanjewadi ; Khambil chorghe ghat ; Kisrude ; Koyna ; Pasarni ghat.

CULTIVATED SPECIES

Cryptostegia grandiflora R. Br. in Bot. Reg. 5 : t. 435. 1918 ; Hook. f. Fl. Brit. India 4 : 6. 1885 ; Cooke, Fl. Pres. Bombay 2 : 245. 1958 (Repr. ed.) ; Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 93. 1962. 'Vilayati-yakundi'.

Shrubs, suberect or climbing. Leaves elliptic-oblong, 7–10 × 3–4 cm. Flowers large, pale purple in terminal, dichotomous cymes. Follicles thick, divaricate, ca 10 cm long, 3-winged.

Fls. & Frts. : February July.

Distrib. : Cultivated in gardens as a hedge plant, also found as an escape. Gondavale ; Karad ; Koyna ; Parli ; Plahtan.

BUDDLEJACEAE

BUDDLEJA L.

Buddleja asiatica Lour. Fl. Cochinch. 72. 1790 ; C.B. Cl. in Hook f. Fl. Brit. India 4 : 82. 1883 ; Cooke, Fl. Pres. Bombay 2 : 248. 1958 (Repr. ed.).

Shrubs, ca 5 m high, tomentose. Leaves lanceolate, 3.5–10.0 × 1–2 cm, base and apex acute, green above, white tomentose beneath. Flowers small, white in dense, terminal, 8–15 cm long, spikes ; bracts lanceolate, tomentose, ca 0.3 cm long ; calyx campanulate, tomentose, lobes ovate, acute ; corolla tubular, lobes obovate, spreading. Capsules oblong, ca 0.5 cm long, apiculate.

Fls. & Frts. : February November.

Illus. : Wight, Ic. t. 894. 1944 (*B. discolor* Roth, Nov. Pl. Sp. 83. 1821) ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 459. 1982.

Distrib. : Common along ghats in semi-evergreen forests. Ambeghar ; Fitzgeralda ghat ; Kelghar ghat ; Kumbharli ghat ; Mahabaleshwar.

GENTIANACEAE

1. Flowers zygomorphic	...	CANSORA
I. Flowers actinomorphic :		
2. Petals glandular	...	SWERTIA
2. Petals eglandular :		
3. Flowers 5-merous	...	CENTAURIUM
3. Flowers 4-merous	...	EXACUM

CANSORA Lam.

1. Calyx distinctly winged :		
2. Bracts linear-lanceolate	...	<i>C. concanensis</i>
2. Bracts orbicular, perfoliate	—	<i>C. perfoliata</i>
1. Calyx not winged :		
3. Stem obtusely quadrangular, obscurely winged ; bracts suborbicular	...	<i>C. diffusa</i>
3. Stem distinctly quadrangular, 4-winged ; bracts linear or ovate-lanceolate :		
4. Pedicels thickened at apex ; bracts linear	...	<i>C. pauciflora</i>
4. Pedicels not thickened ; bracts ovate-lanceolate :		
5. Calyx keeled	...	<i>C. khandalensis</i>
5. Calyx not keeled	...	<i>C. decurrens</i>

Cansora concanensis C.B. Cl. in Hook. f. Fl. Brit. India 4 : 104. 1883 ; Cooke, Fl. Pres. Bombay 2 : 258. 1958 (Repr. ed.) ; Ahuja & Cherian in J. Bombay Nat. Hist. Soc. 66 : 655, f. 4. 1970.

Herbs, ca 22 cm high ; stem quadrangular, obscurely winged. Leaves sessile, ovate, 1.5-2.5 × 0.5-1.5 cm, apex acute. Flowers bluish purple in terminal, dichotomous cymes ; calyx tubular, membranous ; corolla imbricate in bud, lobes obovate. Capsules oblong, elliptic, 2-valved. Seeds many, minute, ovoid.

Fls. & Frts. : September.

Illus. : Ahuja & Cherian, *op. cit.*

Distrib. : Rare, monsoon annual on rocky slopes. Koyna, Kochhar 152531.

C. decurrens Dalz. in Kew J. Bot. 2 : 136. 1850 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 103. 1883 ; Cooke, Fl. Pres. Bombay 2 : 257. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 81 : 372. 1984.

Herbs, 30-45 cm high. Leaves sessile ; lower oblong, attenuate at base ; upper leaves ovate-lanceolate, apex acute. Flowers pink in sub-trichotomous cymes ; calyx teeth minute, lanceolate, acute ; corolla lobes oblong, obtuse. Capsules oblong, ca 0.5 cm long.

Fls. & Frts. : October - December.

Distrib. : Rare, slender herbs near cultivated fields. Koyna, *Kochhar* 158427; Mahabaleshwar, *Raju* s.n., *Santapau* 11862, *Tavakari* s.n. (*BLAT*).

Canscera diffusa (Vahl) R. Br. Prodr. 451. 1810 (in obs.) ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 103. 1883 ; Cooke, Fl. Pres. Bombay 2 : 257. 1958 (Repr. ed.). *Gentiana diffusa* Vahl, Symb. Bot. 3 : 47. 1794.

Herbs, *ca* 50 cm high. Leaves broadly ovate, 0.7–1.2 × 0.4–1.0 cm, membranous, 3-nerved. Flowers pink in lax, terminal cymes; calyx *ca* 0.6 cm long, lobes lanceolate acute; corolla *ca* 1 cm long, lobes ovate, obtuse, unequal. Capsules oblong, *ca* 0.5 cm long.

Fls. & Frts. : August–May.

Illus. : Wight, Ic. t. 1327. 1848 (*C. lawii*).

Distrib. : Widely distributed on moist, rocks, under shade. Bamnoli; Bhikauli forest; Lingmala; Kas; Kelghar ghat; Koyna; Mahabaleswar; Nanal.

C. khandalensis Sant. in Kew Bull. 1948 : 485. 1949 & in Rec. Bot. Surv. India 16 (1) : 162. 1967 (3rd Rev. ed.).

Herbs, 10–25 cm high. Leaves sessile to subsessile, ovate or elliptic-lanceolate, *ca* 6.0 × 2.5 cm, base decurrent, apex subacute. Flowers pale pink in dichotomous cymes, bracteate; calyx quadrangular. Capsules *ca* 0.7 × 0.3 cm.

Fls. & Frts. : November–January.

Distrib. : Slender herbs, rare in rock crevices. Mahabaleshwar, *Santapau* 23245 (*BLAT*).

C. pauciflora Dalz. in Kew J. Bot. 2 : 136. 1850 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 103. 1883 ; Cooke, Fl. Pres. Bombay 2 : 258. 1958 (Repr. ed.).

Herbs, *ca* 30 cm high. Leaves sessile, ovate or obovate, 0.7–1.0 × 0.4–0.6 cm, apex obtuse. Flowers pink in lax, dichotomous cymes; pedicels winged; calyx 12-ribbed; corolla lobes oblong, obtuse. Capsules *ca* 0.4 cm long, membranous.

Fls. & Frts. : September.

Distrib. : Rare on grassy slopes. Koyna, *Kochhar* 160309.

C. perfoliata Lam. Encycl. 1 : 601. 1785 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 104. 1883 ; Cooke, Fl. Pres. Bombay 2 : 258. 1958 (Repr. ed.).

Herbs, 15-20 cm high; stem 4-winged. Leaves elliptic, ca 3×1 cm, apex acute. Flowers pink in terminal cymes, rarely solitary; corolla lobes obovate. Capsules ca 0.8 cm long.

Fls. & Frts. : February.

Illus. : Wight, Ic. t. 1326. 1848 (*C. grandiflora*) ; Ramamoorthy in Saldanha & Nicolson, Fl. Hassan Dist. 422, f. 85. 1976.

Distrib. : Occasional in moist, shady places along ghat slopes. Mahabaleshwar.

CENTAURIUM Hill.

Centaurium centaurioides (Roxb.) Rolla Rao & Hemadri in J. Bombay Nat. Hist. Soc. 67 : 357. 1970. *Chironia centaurioides* Roxb. Fl. Ind. (Carey ed.) 1 : 584. 1832 ('centaureoides'). *Erythraea roxburghii* D. Don in London & Edinb. Phil. Mag. & J. Sci. 8 : 77. 1836 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 102. 1883 ; Cooke, Fl. Pres. Bombay 2 : 255. 1958 (Repr. ed.). 'Luntak'.

Herbs, 10-15 cm high, ascending. Leaves sessile; radical leaves rosulate, oblong, 2.0-2.5 \times 0.3-0.6 cm, apex obtuse; caudine leaves linear-oblong. Flowers pink in dichotomous cymes; anthers spirally twisted at apex. Capsules oblong, 0.5-0.8 cm long.

Fls. & Frts. : December - February.

Illus. : Wight, Ic. t. 1325. 1848 (*E. roxburghii*).

Distrib. : Common herb in harvested rice-fields. Gadoli ; Kumbharli ghat ; Mahabaleshwar ; Shirshingi.

EXACUM L.

- | | | |
|---|-----|---------------------|
| 1. Leaves petioled | ... | <i>E. petiolare</i> |
| 1. Leaves sessile : | | |
| 2. Robust herbs ca 1 m high ; corolla ca 2.5 cm long | ... | <i>E. bicolor</i> |
| 2. Slender herbs ca 20 cm high ; corolla ca 1 cm long : | | |
| 3. Flowers in cymes ; calyx winged | ... | <i>E. pumilum</i> |
| 3. Flowers solitary ; calyx not winged | ... | <i>E. lawii</i> |

Exacum bicolor Roxb. Fl. Ind. (Carey & Wall. ed.) 1 : 413. 1820 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 96. 1883 ; Cooke, Fl. Pres. Bombay 2 : 252. 1958 (Repr. ed.). 'Udichirayet'.

Stems quadrangular. Leaves variable in shape and size, ovate, elliptic or lanceolate. Flowers in terminal cymes, bracteate ; calyx lobes ovate, aristate, keeled, keels winged, decurrent ; corolla blue in upper half and white in lower half. Capsules ellipsoid, apiculate, 0.7-1.0 cm long.

Fls. & Frts. : August November.

Illus. : Wight, Ic. t. 1321. 1848.

Distrib. : Common on plateaus in grasslands. Koyna ; Mahabaleshwar.

E. lawii C.B. Cl. in Hook. f. Fl. Brit. India 4 : 98. 1883 ; Cooke, Fl. Pres. Bombay 2 : 254. 1958 (Repr. ed.).

Herbs, 5-7 cm high, stem subquadrangular, narrowly winged. Leaves ovate, ca. 0.8 × 0.3 cm, apex subobtuse, 3-nerved. Flowers purple ; calyx 0.3-0.4 cm long, lobes broadly ovate, 3-nerved, margin ciliolate ; corolla 0.7-0.8 cm long, lobes broadly obovate. Capsules subglobose, 0.2-0.4 cm across.

Fls. & Frts. : September October.

Distrib. : Rare, slender herbs in moist grassy places. Machutar forest, Ansari 67528 ; Mahabaleshwar, 166544, Ansari 67587.

E. petiolare Griseb. in DC. Prodr. 9 : 46. 1845 ; C. B. Cl. in Hook. f. Fl. Brit. India 4 : 98. 1883 ; Klackenberg in Nord. J. Bot. 3 : 368. 1983. *E. pedunculatum* L. var. *petiolare* (Griseb.) Trim. Handb. Fl. Ceyl. 3 : 182. 1895 ; Cooke, Fl. Pres. Bombay 2 : 253. 1958 (Repr. ed.) ; Puri & Mahajan in Bull. Bot. Surv. India 2 : 127. 1960.

Herbs, 15-40 cm high. Leaves elliptic to lanceolate, 2.5-4.5 × 0.7-1.2 cm, 5-nerved. Flowers blue in terminal cymes, bracteate ; calyx membranous, lobes lanceolate, strongly winged, mucronate ; corolla lobes lanceolate, acute. Capsules globose, 0.5 cm across.

Fls. & Frts. : October - December.

Illus. : Wight, Ic. t. 1324, f. 2. 1848.

Distrib. : Included on Puri & Mahajan's report from Mahabaleshwar.

Exacum pumilum Griseb. in DC. Prodr. 9 : 46. 1845 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 98. 1883 ; Cooke, Fl. Pres. Bombay 2 : 254. 1958 (Repr. ed.).

Stems quadrangular. Leaves linear lanceolate, $1 - 2 \times 0.4$ 0.6 cm, base narrowed, apex subobtuse. Flowers bluish purple ; calyx lobes ovate, acute, keeled at base, pointed at apex ; corolla lobes broadly elliptic suborbicular. Capsules subglobose, ca 0.4 cm across.

Fls. & Frts. : September February.

Illus. : Wight, Ic. t. 1324. 1848.

Distrib. : Common in moist places or among grasses on rocky plateaus. Mahabaleshwar ; Mhavashi ; Shirgaon ghat ; Shirshingi.

SWERTIA L.

- | | | |
|--|-----|----------------------|
| 1. Flowers white with blue veins ; corolla lobes broadly ovate, single nectary at the base of each petal | ... | <i>S. densifolia</i> |
| 1. Flowers blue ; corolla lobes oblong, with 2 nectaries at the base of each petal | ... | <i>S. minor</i> |

***Swertia densifolia* (Griseb.) Kashyapa** in Kew Bull. 15 : 42. 1961. *Ophelia densifolia* Griseb. in DC. Prodr. 9 : 125. 1845. *S. decussata* Nimmo ex C.B. Cl. in Hook. f. Fl. Brit. India 4 : 127. 1883 ; Cooke, Fl. Pres. Bombay 2 : 259. 1958 (Repr. ed.). 'Kadavi'. (Fig. 34)

Herbs, 40 - 80 cm high ; stem obtusely quadrangular. Leaves numerous, sessile, decussate, ovate, $1.5 - 3.5 \times 1.0 - 2.5$ cm long, apex obtuse or shortly apiculate, 5 nerved. Flowers in dense, terminal corymbose cymes ; bracts foliaceous, lanceolate, acute, ca 0.8 cm long, 3 nerved ; calyx lobes lanceolate, acute ; nectary yellow, fimbriate. Capsules oblong, 0.3 - 0.5 cm long.

Fls. & Frts. : October January.

Distrib. : Common annual in open areas. Jadholi-Nauja ; Lingmala ; Mahabaleshwar ; Panchgani ; Pirachi wadi, *Ralph, Wight* (Cooke, op. cit.) ; Panchgani, Ansari 67731, A.S. Rao 77978, Woodrow (Cooke, op. cit.) ; Pirachi wadi, 166486.

Notes : Common annual in open areas.

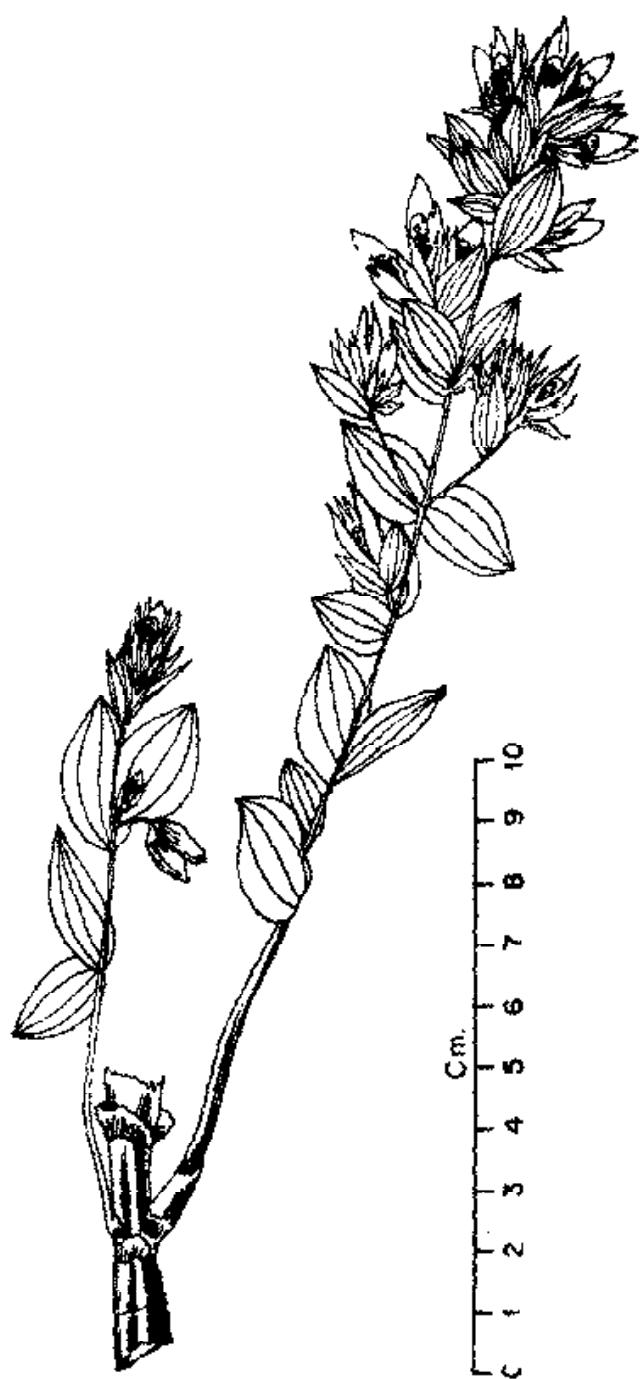


Fig. 34. *Swertia densifolia* (Griseb.) Kashyapa

Swertia minor (Griseb.) Knobl. in Bot. Centrabl. 60 : 321. 1894 ; Cooke, Fl. Pres. Bombay 2 : 259. 1958 (Repr. ed.). *Ophelia minor* Griseb. in DC. Prodr. 9 : 126. 1845. *Pleurogyne minor* C.B. Cl. in Hook. f. Fl. Brit. India 4 : 120. 1883.

Herbs. Leaves ovate, 1-2 × 0.5-0.8 cm, apex acute. Flowers small, in leafy paniculate cymes; calyx tube short, lobes 4, ovate, acute; corolla subrotate, tube short; stamens 4; filaments flattened, bluish; stigma 2-lobed. Capsules oblong, 0.4-0.6 cm long.

Fls. & Frts. : July November.

Illus. : Wight, Ic. t. 1332. 1848 (*O. minor*).

Distrib. : Frequent on hill tops and in cultivated fields. Mahabaleshwar-Lingmala; Mahabaleshwar-Tapola; Panchgani; Taldeo; Tapola; Yavteshwar.

MENYANTHACEAE

NYMPHOIDES J. Hill

Nymphaoides indica (L.) O. Ktze. Rev. Gen. Pl. 429. 1891; Backer & Bakh. f. Fl. Java 2 : 441. 1965; *Menyanthes indica* L. Sp. Pl. 145. 1753; Chavan *et al.* in M.V.M. Patrika 8 : 9. 1973. *Limnanthemum indicum* Griseb. emend. Thw. Enum. 205. 1861; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 131. 1883; Cooke, Fl. Pres. Bombay 2 : 261. 1958 (Repr. ed.).

Herbs, rooting at the nodes. Leaves orbicular, 5-10 cm across, base cordate. Flowers in clusters from the basal node; corolla white with yellow centre, lobes 4-6, oblong, obtuse, densely hairy. Capsules subglobose, many seeded.

Fls. & Frts. : April September.

Illus. : Ramamoorthy in Saldanha & Nicolson, Fl. Hassan Dist. 675, f. 90B. 1976.

Distrib. : Occasional in tanks. Kas; Panchgani.

BORAGINACEAE

1. Trees	...	CORDIA
1. Herbs, or shrubs :		
2. Leaves opposite or subopposite :		
3. Leaves petiolated; flowers in simple or forked spikes	...	HELIOTROPIUM
3. Leaves sessile; flowers solitary or in cymes	...	TRICHODESMA

2. Leaves alternate or fascicled :
4. Flowers solitary or 2-3 together :
- 5. Prostrate herbs ; flowers white ; style 2-lobed ... *COLDENIA*
 - 5. Erect shrubs ; flowers bluish pink ; style entire ... *ROTULA*
4. Flowers in racemes or cymes :
- 6. Bases of nutlets produced downwards ... *CYNOGLOSSUM*
 - 6. Bases of nutlets not produced :
 - 7. Nutlets glochidiate ... *ADELOCARYUM*
 - 7. Nutlets not glochidiate ... *MATTIASTRUM*

ADELOCARYUM Brand.

1. Flowers pale blue with dark centre ; stamens included ; nutlets sparsely glochidiate ... *A. coelestinum*
1. Flowers dark blue : stamens exserted ; nutlets densely glochidiate ... *A. malabaricum*

***Adelocaryum coelestinum* (Lindl.) Brand.** in Fedde, Report. 13 : 549. 1915 & in Engl. Pflanzenr. 78 : 78, f. 8. 1921. *Cynoglossum coelestinum* Lindl. in Bot. Reg. 25 : t. 36. 1839. *Paracaryum coelestinum* (Lindl.) Bth. & Hook. f. Gen. Pl. 2 : 850. 1876 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 160. 1883 ; Cooke, Fl. Pres. Bombay 2 : 285. 1958 (Repr. ed.). 'Nisurdi'.

Herbs, 1.0-1.5 m. high. Leaves radical, broadly ovate, ca. 17 × 14 cm, sparsely hairy except on nerves ; caudine ca. 8 × 4 cm, glabrous. Calyx ovate, hairy, margin ciliate, slightly enlarged in fruit ; corolla lobes spreading with scales at the mouth of the tube. Nutlets 4, broadly ovate.

Fls. & Frts. : July October.

Illus. : Wight, Ic. t. 1394. 1850 [*Echinospermum coelestinum* (Lindl.) Wight].

Distrib. : Common along grassy hill slopes and in forest edges. Jadholi ; Khambil chorghe ghat ; Mahabaleshwar ; Nauja.

A. malabaricum (C.B. Cl.) Brand. in Fedde, Report 13 : 549. 1915 & Engl. Pflanzenr. 78 : 79. 1921. *Paracaryum malabaricum* C.B. Cl. in Hook. f. Fl. Brit. India 4 : 160. 1883 ; Cooke, Fl. Pres. Bombay 2 : 286 (Repr. ed.). 'Kalanisurdi'.

Herbs, 30–50 cm high; stems smooth below, strigose above. Radical leaves broadly ovate, 7–15 × 5–16 cm, base cordate, apex acute, strigose with white bulbous based hairs above, densely hairy on the nerves beneath; upper caudine leaves sessile, lower petioled. Flowers in cymes; calyx hairy, enlarging in fruit, lobes ovate, subacute. Nutlets ovoid, acute, ca 0.7 cm long, margin incurved.

Fls. & Frts. : August October.

Distrib. : Common along ghats, Mahabaleshwar; Mahabaleshwar Lingmala; Old Mahabaleshwar.

COLDENIA L.

Coldenia procumbens L. Sp. Pl. 125. 1753; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 144. 1883; Lisboa in J. Roy Asiat. Soc. (Bombay) 15 : 218. 1883; Cooke, Fl. Pres. Bombay 2 : 271. 1958 (Repr. ed.); Kazmi in J. Arnold Arbor. 51 : 148. 1970. 'Tripakshi'.

Herbs, white hairy. Leaves obovate oblong, 1–3 × 0.6–1.5 cm, margin coarsely serrate, hairy. Calyx lobes ovate, acute, ciliate; corolla lobes oblong, rounded at apex. Drupes 4 lobed, grooved on two sides and ribbed on two sides, beaked, muricate.

Fls. & Frts. : September October.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 468. 1982.

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

CORDIA L.

- | | | |
|---|-----|---------------------|
| 1. Leaves pubescent above, densely tomentose beneath; calyx cupular, ribbed | ... | <i>C. macleodii</i> |
| 1. Leaves glabrous; calyx saucer-shaped, not ribbed | ... | <i>C. dichotoma</i> |

Cordia dichotoma Forst. f. Prodr. 18. 1786; Kazmi in J. Arnold Arbor. 51 : 141. 1970. *C. obliqua* Willd. Phytogr. 4, t. 4. 1794; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 137. 1883, excl. vars. *C. myxa* auct. pl. non L. 1753; C.B. Cl. op. cit. 136; Cooke, Fl. Pres. Bombay 2 : 265. (Repr. ed.). 'Bhokar'.

Trees, 6–9 m high. Leaves broadly ovate, 5.5–14.0 × 4–11 cm, base rounded, apex obtuse, 3 nerved. Flowers white, polygamous in axillary and terminal paniculate cymes; corolla lobes oblong, obtuse, recurved. Drupes ovoid, 1–2 cm long, pinkish, becoming black, shining.

Fls. & Frts. : April.

Illus. Talbot, For. Fl. Bombay Pres. & Sind 2 : 270, f. 422. 1911.

Distrib. : Scarcely distributed in deciduous forests. Nauja, Kochhar 153146, 154756.

Cordia macleodii (Griff.) Hook. f. & Thoms. in J. Linn. Soc. 2 : 128. 1858 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 139. 1883 ; Cooke, Fl. Pres. Bombay 2 : 266. 1958 (Repr. ed.) ; Kazmi in J. Arnold Arbor. 51 : 143. 1970. *Hemigymnia macleodii* Griff in Calc. J. Nat. Hist. 3 : 363. 1843. 'Dahivan'.

Trees, 8–10 m high. Leaves ovate, 4.0–7.5 × 3–6 cm, 3–5 nerved; petioles 2.0–2.5 cm long, tomentose. Flowers white in terminal, paniculate cymes. Drupes ovoid, acute, ca 1.5 cm long.

Fls. & Frts. : April.

Illus. : Talbot, For Fl. Bombay Pres. & Sind 2 : 272, f. 422. 1911.

Distrib. : Occasional in deciduous forests, sometimes planted. Nath hills ; Shirala.

CYNOGLOSSUM L.

- | | |
|--|---------------------|
| 1. Stems white hairy ; leaves with tubercle based hairs ; styles cylindrical, filiform | <i>C. wallichii</i> |
| 2. Stems grey pubescent ; leaves without tubercle based hairs ; styles 4-angled, thick | <i>C. zeylanica</i> |

Cynoglossum wallichii G. Don, Gen. Syst. 4 : 354. 1838 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 157. 1883 ; Kazmi in J. Arnold Arbor. 52 : 347. 1971 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 81 : 374. 1984.

Herbs, 30–50 cm high, branches with tubercle based hairs. Leaves ca 5.0 × 1.5 cm, base narrowed into short petiole, margin ciliate or denticulate. Flowers blue in elongated racemes ; calyx lobes ovate, obtuse, spreading in fruits ; corolla tube with 5 scales at mouth, lobes imbricate in bud. Nutlets 4, glochidiate.

Fls. & Frts. : June–November.

Distrib. : Included on Bole & Almeida's report from Mahabaleshwar.

C. zeylanicum (Vahl ex Hornem.) Thunb. ex Lehm. Neue Schriften Naturf. Ges. Halle 3 (2) : 20. 1817 ; Kazmi in J. Arnold Arbor. 52 : 344. 1971. *Anchusa zeylanica* Vahl ex Hornem. Enum. Hafn. 3 : 1807.

C. furcatum Wall. ex Roxb. Fl. Ind. (Carey ed.) 2 : 6. 1824 ; C.B.CI. in Hook f. Fl. Brit. India 4 : 155. 1883. *C. denticulatum* A. DC. var. *zeylanicum* (Vahl ex Hornem.) C.B. Cl. op. cit. 157 ; Cooke, Fl. Pres. Bombay 2 : 284. 1958 (Repr. ed.). 'Lichardi'.

Herbs, 30–50 cm high. Leaves sessile, oblong-lanceolate, 3–6 × 1.2–2.3 cm, appressed hairy. Flowers blue in axillary and terminal racemes ; calyx lobes ovate oblong, hairy, ciliate on margins ; stamens 5, inserted on the corolla tube beneath the scales. Nutlets 4, glochidiate, margins prickly.

Fls. & Frts. : January November.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic t. 470. 1982.

Distrib. : Common annual in open situations. Gureghar ; Koyna ; Kusapur ; Mahabaleshwar ; Panchgani ; Pratapgad.

HELIOTROPIUM L.

Heliotropium indicum L. Sp. Pl. 130. 1753 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 152. 1883 ; Cooke, Fl. Pres. Bombay 2 : 273. 1958 (Repr. ed.), 'Bhurundi'

Herbs, 30–50 cm high ; branches ascending, densely hairy. Leaves ovate or ovate-oblong, 5–10 × 2.5–5.5 cm, apex subacute, sparsely hairy above, pilose beneath ; petioles winged. Flowers bluish-white, in extra-axillary spikes ; calyx bristly, lobes linear-lanceolate, unequal ; corolla lobes orbicular-oblong, hairy outside. Nutlets 2-lobed, compressed, beaked.

Fls. & Frts. : October December.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 ; t. 473. 1982.

Distrib. : Common weed in waste places and along road-sides. Ghotil ; Gojegaon ; Koyna ; way to Nauja.

MATTIASTRUM Brand.

Mattiastrum lambertianum (C.B. Cl.) Brand. in Engl. Pflanzenr. 78 : 61. 1921. *Paracaryum lambertianum* C.B. Cl. in Hook. f. Fl. Brit. India 4 : 161. 1883 ; Cooke, Fl. Pres. Bombay 2 : 287. 1958 (Repr. ed.).

Herbs, ca 1 m high ; young branches appressed hairy. Upper leaves sessile, lanceolate, 7–9 × 1.5–3.0 cm, base cuneate, apex acute ; lower leaves petioled, ca 10.0 × 10.5 cm, scabrid above, pubescent on

nerves beneath. Flowers in racemes *ca* 25 cm long, ebracteate; calyx accrescent in fruits. Nutlets ovate to orbicular, *ca* 1 cm across.

Fls. & Frts. : October November.

Distrib. : Common along hill slopes. Mahabaleshwar ; Fitzgerald ghat.

ROTULA Lour.

Rotula aquatica Lour. Fl. Cochinch. 121. 1790. *Rhabdia lycicoides* Mart. Nov. Gen. & Sp. Pl. 2 : 137, t. 195. 1827 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 145. 1883 ; Cooke, Fl. Pres. Bombay 2 : 272. 1958 (Repr. ed.). 'Machim'.

Shrubs, 1.0–1.5 m high. Leaves sessile, spatulate, 1.0–2.5 × 0.4–0.6 cm, base cuneate, apex rounded or shortly apiculate, hairy. Flowers axillary, shortly pedicelled; calyx hairy, deeply divided; corolla lobes oblong, spreading. Drupes subglobose, tipped with long, persistent style.

Fls. & Frts. : October December.

Illus. : Wight, Ic. t. 1385. 1848 (*Ehretia cuneata*) ; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 474. 1982.

Distrib. : Occasional along river banks on wet rocks. Koyna valley ; Marule.

TRICHODESMA R. Br. (*nom. cons.*)

Trichodesma sedgwickianum S.P. Banerjee in Bull. Bot. Soc. Beng. 16 : 10. 1962 ; S.P. Banerjee & Pramanik in Bull. Bot. Surv. India 17 : 116, f. A-D. 1978. *T. amplexicaule* DC. Prodr. 10 : 172. 1846 non Roth 1821 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 154. 1883 p.p. *T. indicum* var. *amplexicaule* T. Cooke, Fl. Pres. Bombay 2 : 282. 1958 p.p. (Repr. ed.).

Herbs, *ca* 50 cm high. Leaves ovate or lanceolate-oblong, 4–8 × 1.5–4.5 cm, base cordate, apex subacute or obtuse, strigose on the nerves beneath. Flowers bluish white; calyx 5-lobed, deeply divided, hispid; corolla lobes ovate deltoid. Nutlets 4, ovoid, rugose on inner face.

Fls. & Frts. : August October.

Illus. : S.P. Banerjee & Pramanik, *op. cit.*

Distrib. : Common annuals along roadsides and in cultivated fields.
Dhom dam near Wai; Panchgani; Satara-Pune Road; Wai; Yavteshwar.

CONVOLVULACEAE

1. Leafless, parasitic herbs	...	CUSCUTA
1. Leafy, non-parasitic herbs or shrubs :		
2. Prostrate herbs with woody base ; styles 2, stigmas 4 ...		EVOLVULUS
3. Corolla tube uniformly enlarged from base to apex ; bands on the lobes not well defined :		
4. Flowers solitary, axillary	...	CONVOLVULUS
4. Flowers in axillary racemes or cymes :		
5. Calyx much enlarged in fruit ; flowers in lax racemes ; bracts leafy, cordate, persistent ...		PORANA
5. Calyx not enlarged in fruits ; flowers in axillary cymes; bracts linear, caducous ...		MERREMIA
3. Corolla tube not uniformly enlarged from base to apex ; bands on the lobes well-defined :		
6. Sepals coriaceous, slightly or not enlarged in fruit ; fruits indehiscent	...	ARGYREIA
6. Sepals herbaceous, enlarged in fruit ; fruits dehiscent	...	IPOMOEA

ARGYREIA Lour.

1. Erect shrubs	...	A. cuneata
1. Scandent shrubs :		
2. Bracts minute, caducous	...	A. elliptica
2. Bracts large, 2-4 cm long, persistent :		
3. Stems and bracts strigose ; bracts ca 0.5 cm long ...		A. strigosa
3. Stems and bracts glabrous or sparsely hairy ; bracts 2-4 cm long :		
4. Leaves densely appressed-pilose to subsericeous beneath, base rounded ; flowers in subcapitately cymes	...	A. involucrata
4. Leaves minutely pilose becoming glabrescent beneath, base cordate ; flowers in elongate cymes	...	A. baseana

Argyreia boseana Sant. & Patel in Trans. Bose Res. Inst. Calcutta 22 : 35, t. 3. 1958. *A. hookeri* sensu Cooke, Fl. Pres. Bombay 2 : 255. 1908 [2 : 325. 1958 (Repr. ed.)] non C.B. Cl. 1883.

Stems grooved, glabrescent. Leaves broadly ovate, 13–23 × 9–20 cm; petioles 5–13 cm long. Flowers pink; bracts oblong, subacute, puberulous; sepals ovate lanceolate, ca 1.5 cm long, hairy on the back; corolla 7–9 cm long. Berries globose, ca 1.5 cm across.

Fls. & Frts. : July December.

Illus. : Sant. & Patel, op. cit.

Distrib. : Common along hill tracts and also in plains. Fitzgerald ghat; Kas; Koyna; Mahabaleshwar; Shirshingi; Wada below Mahabaleshwar.

Notes : Cooke reported *A. hookeri* from Mahabaleshwar and Panchgani (*op. cit.*) which is close to *A. involucrata* C.B. Cl. and differs significantly from *A. hookeri* C.B. Cl. an Eastern Himalayan species.

A. cuneata (Willd.) Ker-Gawl. in Bot. Reg. 8, t. 661. 1822; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 191. 1883; Cooke, Fl. Pres. Bombay 2 : 327. 1958 (Repr. ed.). *Convolvulus cuneata* Willd. Sp. Pl. 1 : 873. 1798. '*Mhalungi*'.

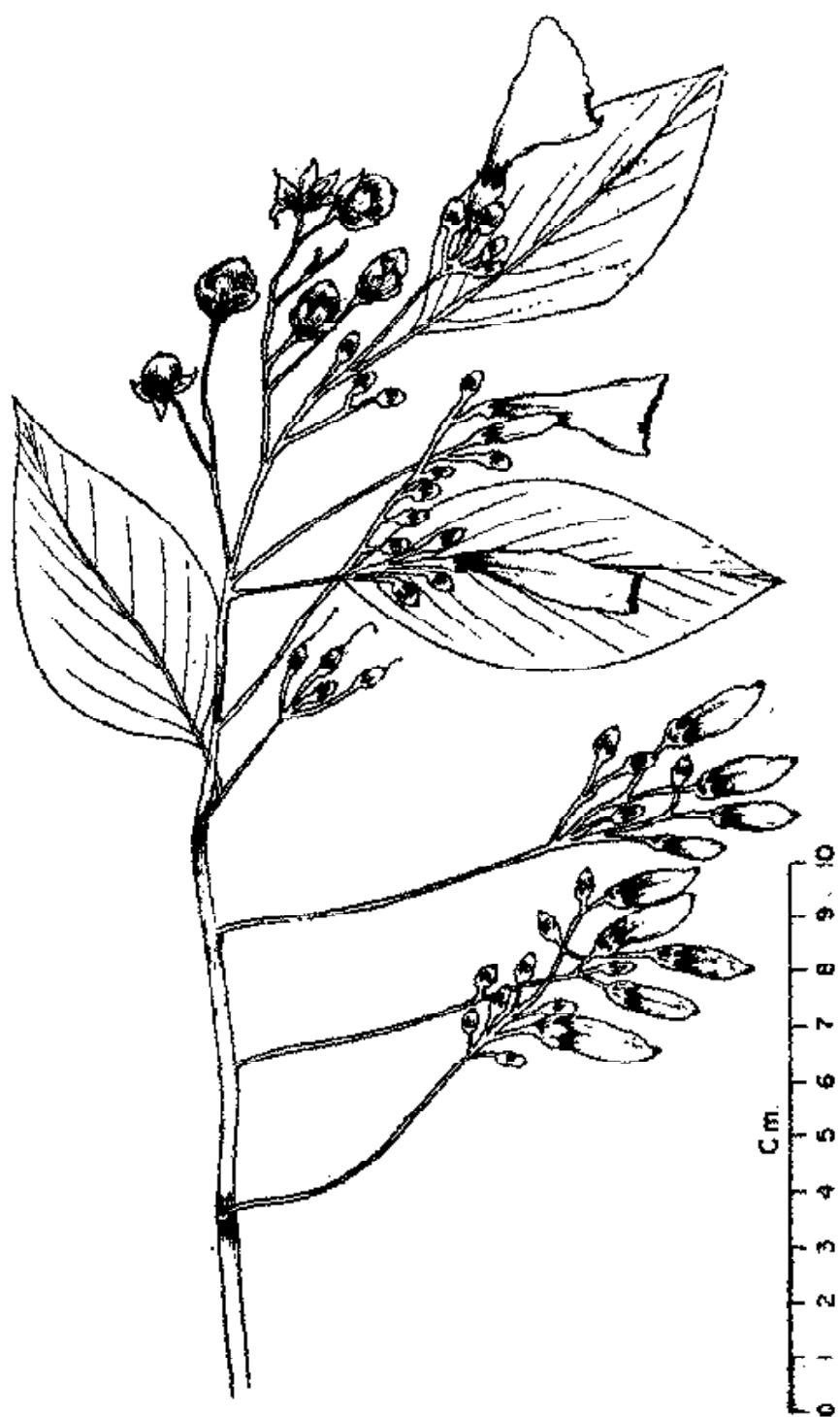
Stems pubescent when young. Leaves obovate-oblong, 6–9 × 1.5–3.0 cm, apex apiculate, glabrous above, hairy beneath. Flowers bright purple in 3-flowered cymes; bracts linear-lanceolate, ca 1 cm long; sepals orbicular, pubescent; corolla 3.0–4.5 cm long. Berries ellipsoid, ca 1.2 cm long, yellowish brown.

Fls. & Frts. : July January.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 476 & 974 C. 1982.

Distrib. : Common on dry hill slopes and near forest clearings. Dhawadi; Koyna; Panchgani; Shamgaon.

A. elliptica (Roth) Choisy in Mem. Soc. Phys. Geneve 6 : 417. 1834; Sant. in Rec. Bot. Surv. India 16(1) : 172. 1967 (3rd Rev. ed.). *Ipomoea elliptica* Roth, Nov. Pl. Sp. 113. 1821. *Letsomia elliptica* (Roth) Wight, Ic. 4 : 12. t. 1356. 1848; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 192. 1883; Cooke, Fl. Pres. Bombay 2 : 329. 1958 (Repr. ed.). '*Bondvel*'. (Fig. 35).

Fig. 35. *Argyreia elliptica* (Roth) Choisy

Stems slender, pubescent when young becoming woody and glabrescent at length. Leaves elliptic-lanceolate, $7.5 - 11.5 \times 3.3 - 6.2$ cm, glabrous above, sparsely hairy beneath. Flowers pink with purple bands; sepals outer 3 elliptic, inner 2 orbicular, margin membranous. Berries globose $\text{ca } 0.8$ cm across.

Fls. & Frts. : September February.

Distrib. : Common in semi-evergreen forests. Ambeghar ; Dicholi ; Karanjewadi ; Mahabaleshwar ; Morgiri ; Rohine ; Satara ; Vajegaon.

Argyreia involucrata C.B. Cl. in Hook. f. Fl. Brit. India 4 : 187. 1883 ; Cooke, Fl. Pres. Bombay 2 : 325. 1958 (Repr. ed.).

Stems appressed-hairy. Leaves ovate, $\text{ca } 11 \times 8$ cm, glabrous above, petioles $\text{ca } 3.5$ cm long. Flowers purple, bands dark, hairy ; bracts oblong-lanceolate ; sepals : outer 2 ovate-lanceolate, acuminate, inner 3 ovate, acute, shorter, hairy on the back. Berries $\text{ca } 1$ cm across.

Fls. & Frts. : July October.

Distrib. : Common in deciduous forests. Jodholi ; Kisrude ; Koyna ; Nauja ; Taldeo ; Wada below Mahabaleshwar.

A. strigosa (Roth) Roberty in Candollea 14 : 44. 1952 ; Sant. & Patel in Trans. Bose Res. Inst. Calcutta 22 : 41. 1958. *I. strigosa* Roth, Nov. Pl. Sp. 113. 1821. *Leitsomia setosa* Roxb. Fl. Ind. (Carey & Wall. ed.) 2 : 80. 1824 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 194. 1883 ; Cooke, Fl. Pres. Bombay 2 : 330. 1958 (Repr. ed.). 'Dudh-vel'.

Leaves broadly ovate, $9 - 11 \times 9 - 13$ cm, apex acute, base cordate. Flowers rose coloured in corymbose cymes ; sepals oblong-orbicular, densely strigose ; corolla 3 - 4 cm long. Berries ovoid, $\text{ca } 1.5$ cm long, red when ripe.

Fls. & Frts. : November.

Illus. : Wight, Ic. t. 1360. 1848 (*L. setosa*).

Distrib. : Occasional in deciduous forests. Pirachi Wadi.

CONVOLVULUS L.

Convolvulus arvensis L. Sp. Pl. 153. 1753 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 219. 1883 ; Cooke, Fl. Pres. Bombay 2 : 303. 1958 (Repr. ed.). 'Chandvel'.

Herbs ; stems trailing, angular. Leaves oblong, $2.5 - 3.0$ cm long, base auriculate, apex obtuse. Flowers white with pink streaks. Capsules globose, $0.5 - 0.8$ cm across. Seeds reddish-brown.

Fls. & Frts. : July.

Illus. : Maheshwari, Ill. Fl. Delhi f. 146. 1966.

Distrib. : Occasional near cultivated fields and along roadsides.
Phaltan.

CUSCUTA L.

Cuscuta reflexa Roxb. Pl. Cor. 2 : 3, t. 104. 1798 & Fl. Ind. (Carey ed.) 1 : 446. 1832 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 225. 1883 ; Cooke, Fl. Pres. Bombay 2 : 292. 1958 (Repr. ed.) ; Ooststr. in Steenis, Fl. Males. 1, 4 : 393. 1953.

Twiners, slender. Flowers greenish white in axillary fascicles : bracts ovate-oblong ; corolla lobes deltoid with obovate scales at the base ; styles thick, short ; stigmas 2, ovoid. Capsules globose, ca 0.6 cm across.

Fls. & Frts. : August - November.

Illus. : Roxb. op. cit.

Distrib. : Common parasite on *Carissa congesta* and *Duranta repens*. Way to Nauja, Mahabaleshwar.

EVOLVULUS L.

Evolvulus alsinoides (L.) L. Sp. Pl. ed. 2. 392. 1762 ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 220. 1883 ; Cooke Fl. Pres. Bombay 2 : 297. 1958 (Repr. ed.). *Convolvulus alsinoides* L. Sp. Pl. 157. 1753. 'Vishnu-kranta'.

Herbs, much branched, pilose. Leaves sessile, elliptic - oblong, ca 0.6 × 0.4 cm, densely pilose. Flowers solitary, light blue ; calyx densely silky, lobes lanceolate, acute. Capsules globose, 4-valved.

Fls. & Frts. : April - August.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 479. 1982.

Distrib. : Frequent in glasslands. Chaphal ; Dhebewadi ; Mahabaleshwar ; Pandavgad ; Vardhangad.

IPOMOEA L.

1. Plants aquatic	...	<i>I. aquatica</i>
1. Plants terrestrial :		
2. Leaves 3 - 5-lobed :		
3. Flowers solitary	...	<i>I. diversifolia</i>
3. Flowers in cymes :		
4. Leaves glabrous ; sepals acute, mucronate at apex ; corolla ca 0.5 cm long	...	<i>I. triloba</i>
4. Leaves pubescent ; sepals with long acumens at apex ; corolla 5-6 cm long	...	<i>I. nil</i>
2. Leaves entire :		
5. Erect shrubs ; flowers in panicles	...	<i>I. carnea</i> ssp. <i>fistulosa</i>
5. Twiners ; flowers solitary, in fascicles or in cymes :		
6. Flowers in subsessile, capitate fascicles ; sepals densely sericeous	...	<i>I. eriocarpa</i>
6. Flowers solitary or in cymes ; sepals glabrous or puberulous :		
7. Flowers cream coloured with a purple centre	...	<i>I. curassavica</i>
7. Flowers purple with darker bands	—	<i>I. campanulata</i>

Ipomoea aquatica Forsk. Fl. Aeg. Arab. 44. 1775 ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 210. 1883 ; Cooke, Fl. Pres. Bombay 2 : 315. 1958 (Repr. ed.) ; Ooststr. in Steenis, Fl. Males. 1, 4 : 473. 1953.

Stems rooting at nodes. Leaves elliptic-oblong, base cordate or hastate, apex acuminate. Flowers purple in pedunculate cymes ; bracts linear-lanceolate ; sepals oblong-lanceolate, membranous ; corolla infundibuliform, lobes obscure. Capsules ovoid.

Fls. & Frts. : November April.

Illus. : Matthew, Fl. Tamilnadu Carnatic 3 : t. 73g & 74a. 1983.

Distrib. : Occasional annuals in tanks or moist places. Koyna.

I. campanulata L. Sp. Pl. 160. 1753 ; Cooke, Fl. Pres. Bombay 2 : 916. 1958 (Repr. ed.) ; Austin in Dassanayake & Fosberg, Rev. Handb. Fl. Ceylon 1 : 327. 1980. *I. campanulata* var. *illustris* C.B.Cl. in Hook. f. Fl. Brit. India 4 : 211. 1883. *I. illustris* (C.B. Cl.) Prain, Beng. Pl. 2. 735. 1903 ; Ooststr. in Steenis, Fl. Males. 1, 4 : 485. 1953. 'Tambarel'.

Stems angular, glabrescent. Leaves broadly ovate, 6-11 × 5-8 cm, apex acuminate; petioles ca 5 cm long. Sepals finely pubescent, slightly enlarged in fruit; corolla 5-7 cm long. Capsules globose, ca 1 cm across.

Fls. & Frts. : December January.

Illus. : Wight, Ic. t. 1375. 1848 ; Talbot, For. Fl. Bombay Pres. & Sind 2 : 294, f. 431. 1911.

Distrib. : Common near forest clearings. Fitzgerald ghat ; Koyna ; Punoli.

Ipomoea carnea Jacq. subsp. *fistulosa* (Mart. ex Choisy) Austin in Taxon 26 : 237. 1977. *I. fistulosa* Mart. ex Choisy in DC. Prodr. 9 : 349. 1845. *I. carnea* Jacq. Enum. Pl. Carib. 13. 1760; Cooke, Fl. Pres. Bombay 2 : 321. 1958 (Repr. ed.). *I. crassicaulis* (Bth.) B.L. Robinson in Proc. Amer. Acad. 51 : 530. 1860 ; Ooststr. in Steenis, Fl. Males. I, 4 : 485. 1953. 'Beshram'. (Fig. 36).

Shrubs, 2-3 m high; stems ascending, puberulous when young. Leaves ovate oblong, 7-12 × 3-10 cm, base cordate or truncate, apex acuminate. Flowers purple; sepals broadly ovate, puberulous without. Capsules globose, ca 1 cm across.

Fls. & Frts. : Throughout the year.

Distrib. : Common in waste places in marshy localities, also planted as a hedge plant. Dhebewadi ; Koyna.

I. carassavica All. Auct. Syn. 10. 1773 ; Dandy in Taxon 19 : 622. 1970. *I. obscura* (L.) Ker-Gawl. in Bot. Reg. 3 : t. 239. 1817 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 207. 1883 ; Cooke, Fl. Pres. Bombay 2 : 317. 1958 (Repr. ed.) ; Ooststr. in Steenis, Fl. Males. I, 4 : 471, f. 44. 1953. 'Pungli'.

Stems prostrate, glabrescent. Leaves ovate orbicular, 1.5-2.5 × 1.3-2.5 cm, base cordate, apex acute or acuminate. Bracts lanceolate, minute; sepals oblong, shortly apiculate; corolla ca 2 cm long. Capsules subglobose, ca 0.7 cm across.

Fls. & Frts. : December April.

Illus. : Ooststr. op. cit.

Distrib. : Common climbers along roadsides and near forest edges. Karad ; Khatav ; Nauja.

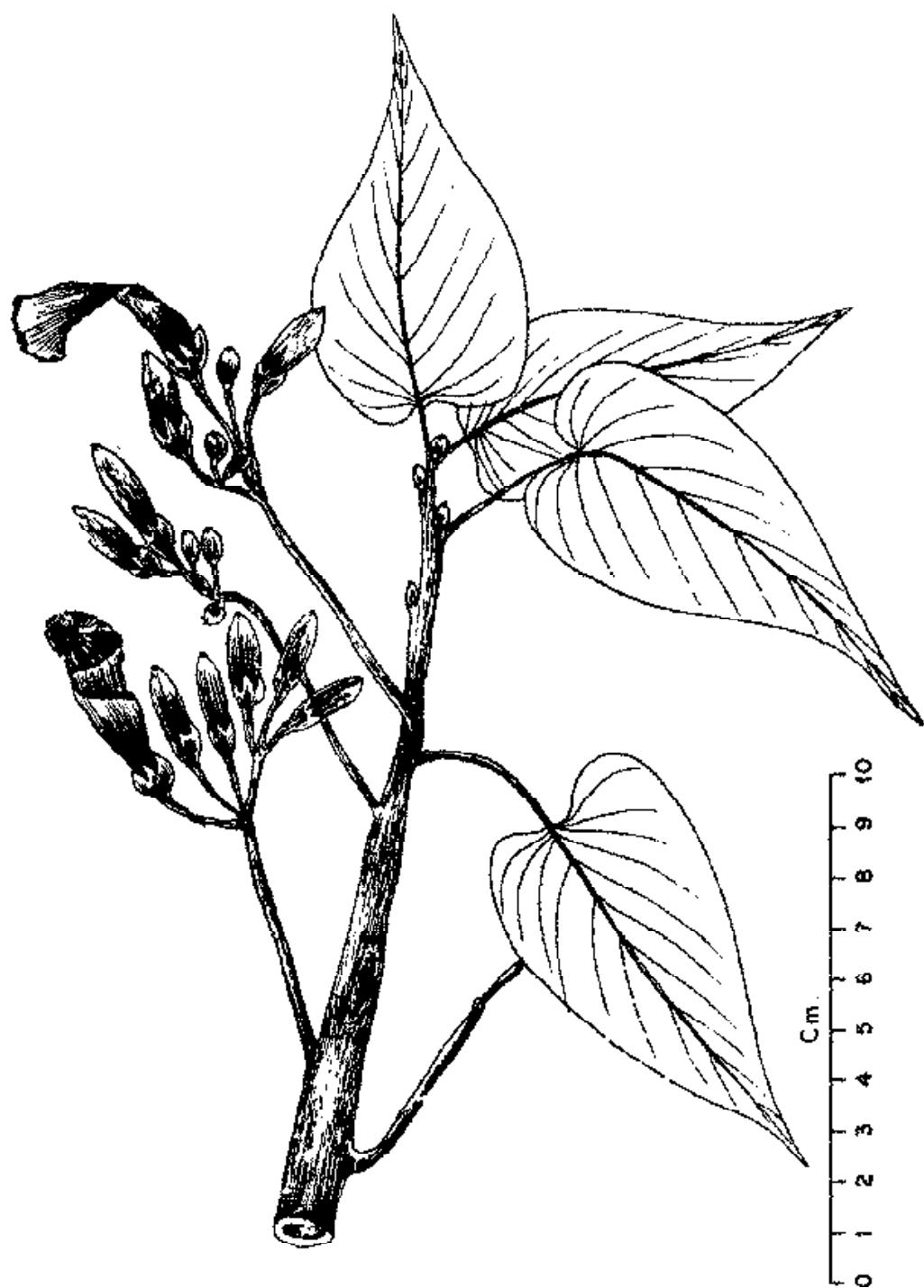


Fig. 36. *Ipomoea carnea* Jacq. ssp. *fistulosa* (Mart. ex Choisy) Austin

Ipomoea diversifolia R. Br. Prodr. 487. 1810; Ooststr. in Steenis, Fl. Males. 1, 4 : 479. 1953. *I. laciniata* C.B.Cl. in Hook. f. Fl. Brit. India 4 : 200. 1883; Cooke, Fl. Pres. Bombay 2 : 319. 1958 (Repr. ed.).

Stems angled, twining or creeping. Leaves 2 - 5 cm across, subdigitate, lobes elliptic or linear, margin serrate or pinnatifid; petioles 0.5 - 1.5 cm long. Flowers axillary on 1 - 2 cm long peduncles; bracts linear lanceolate; sepals elliptic, mucronate, ribbed. Capsules subglobose, ca 0.8 cm across.

Fls. & Frts. : October.

Distrib. : Infrequent in grasslands. Mahabaleshwar ; Panchgani.

I. eriocarpa R. Br. Prodr. 484. 1810; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 204. 1883; Cooke, Fl. Pres. Bombay 2 : 312. 1958 (Repr. ed.); Ooststr. in Steenis, Fl. Males. 1, 4 : 462, f. 35. 1953.

Stems hairy. Leaves ovate-lanceolate, 3 - 8 × 1 - 2 cm, apex acuminate, base cordate; petioles 1.5 - 3.0 cm long, densely hairy. Flowers white, mouth pale pink; bracts short, linear, hairy; sepals narrowly ovate, acuminate, 0.5 - 0.7 cm long; corolla ca 1 cm across. Capsules globose, ca 0.5 cm across.

Fls. & Frts. : October.

Illus. : Wight, Ic. t. 169. 1839 (*I. sessiliflora* Roth).

Distrib. : Rare in grasslands. Panchgani ghat. Ansari 67751.

I. nil (L.) Roth, Cat. Bot. 1 : 36. 1797; Ooststr. in Steenis, Fl. Males. 1, 4 : 465. 1953; Austin in Ann. Mo. bot. Gdn. 62 : 193. 1975. *Convolvulus nil* L. Sp. Pl. ed. 2. 219. 1762. *I. hederacea* auct. non Jacq. 1786; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 199. 1883; Cooke, Fl. Pres. Bombay 2 : 321. 1958 (Repr. ed.).

Stems hispid. Leaves ovate, ca 12 × 10 cm, base cordate, apex acute or acuminate; bracts linear hairy; sepals narrowly ovate, ca 2.5 cm long, densely villous at base, sparsely at apex; corolla tube white, lobes purple. Capsules subglobose. Seeds many, trigonous, black.

Fls. & Frts. : September December.

Illus. : Maheshwari, Ill. Fl. Delhi f. 145. 1966.

Distrib. : Common near cultivated fields, along river beds and on hedges. Bhosgaon ; Jadholi ; Padolshi ; Pandavgad ; Shirshingi ; Tapola.

Ipomoea triloba L. Sp. Pl. 161. 1753; Ooststr. in Blumea 3 : 509. 1940 & in Steenis, Fl. Males. 1, 4 : 468, f. 41. 1953; Austin in Dassanayake & Fosberg, Rev. Handb. Fl. Ceylon 1 : 341. 1980.

Herbs, twining; stems rooting at nodes. Leaves broadly ovate orbicular, 1.5–3.0 × 1.7–3.0 cm. Flowers purple in axillary, umbellate-cymes; sepals elliptic, margins ciliate; corolla with darker throat. Capsules subglobose, brown.

Fls. & Frts. : April.

Illus. : Ooststr. *op. cit.*

Distrib. : Native of Tropical America; grows wild in waste places, also near cultivated fields. Karad.

CULTIVATED SPECIES

I. cairica (L.) Sweet, Hort. Brit. 287. 1827; Ooststr. in Steenis, Fl. Males. 1, 4 : 478. 1953; Sant. in Rec. Bot. Surv. India 16 (1) : 195. 1967 (3rd Rev. ed.). *Convolvulus cairicus* L. Syst. Nat. ed. 10. 922. 1759. *I. palmata* Forssk. Fl. Aeg. Arab. 43. 1775; C. B. Cl. in Hook. f. Fl. Brit. India 4 : 214. 1883; Cooke, Fl. Pres. Bombay 2 : 319. 1958 (Repr. ed.).

Twiners. Leaves palmately 5–7 lobed; lobes oblanceolate, 3–6 × 1.0–2.5 cm. Flowers violet, solitary, axillary. Capsules sub-globose, ca 1.2 cm across.

Fls. & Frts. : April.

Illus. : Wight, Ic. t. 156. 1839 (*I. pulchella*).

Distrib. : Grown on walls and gates. Kumbharli ghat; Mahabaleshwar.

I. congesta R. Br. Prodr. 485. 1810; Ooststr. in Blumea 3 : 500. 1940 & in Steenis, Fl. Males. 1, 4 : 465. 1953; Bole & Almeida in J. Bombay Nat. Hist. Soc. 81 : 375. 1984.

Stems twining or prostrate, pilose. Leaves ovate orbicular, 3 lobed. Flowers blue fading to red, in axillary umbellate cymes.

Distrib. : Grown in gardens as an ornamental plant. Mahabaleshwar; Panchgani.

Ipomoea hederifolia L. Syst. Nat. ed. 10. 925. 1759. *I. coccinea* C.B. Cl. in Hook. f. Fl. Brit. India 4 : 199. 1883 *non* L. 1794. *Quamoclit coccinea* Moench. Meth. 453. 1795; Cooke, Fl. Pres. Bombay 2 : 330. 1958 (Repr. ed.).

Twiners. Leaves broadly ovate, 3-lobed, membranous. Flowers scarlet in axillary cymes. Capsules subglobose.

Fls. & Frts. : December January.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 481. 1982.

Distrib. : Cultivated in gardens as an ornamental plant also found as an escape. Chaphal ; Karad.

MERREMIA Dennst. ex Hall. f. (*nom. cons.*)

- | | | |
|---|-----|---------------------|
| 1. Leaves entire ; flowers white ; sepals glabrous | ... | <i>M. umbellata</i> |
| 1. Leaves palmately 5-lobed ; flowers yellow ; sepals densely hairy without | ... | <i>M. vitifolia</i> |

Merremia umbellata (L.) Hall. f. in Bot. Jahrb. Syst. 16 : 552. 1893 ; Cooke, Fl. Pres. Bombay 2 : 305. 1958 (Repr. ed.) ; Austin in Ann. M. bot. Gdn. 62 : 183. 1975. *Convolvulus umbellatus* L. Sp. Pl. 155. 1753. *Ipomoea cymosa* (Desr.) R. & S. Syst. Nat. 4 : 241. 1819 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 211. 1883.

Stems angular, glabrescent. Leaves ovate lanceolate, 5-7 × 2.0-3.5 cm, base hastate, apex acuminate. Sepals broadly elliptic, aristate ; corolla limb plicate with obscure bands ; anthers twisted. Capsules ovoid, ca 1 cm long. Seeds hairy.

Fls. & Frts. : February April.

Distrib. : Common near villages, also near forest clearings. Ambeghar ; Jadholi ; Koyna ; Shirshingi.

M. vitifolia (Burm. f.) Hall. f. in Bot. Jahrb. Syst. 16 : 552. 1893 ; Cooke, Fl. Pres. Bombay 2 : 307. 1958 (Repr. ed.) ; Ooststr. in Steenis, Fl. Males. 1, 4 : 448. 1953 ; Austin in Dassanayake & Fosberg. Rev. Handb. Fl. Ceylon 1 : 355. 1980. *Convolvulus vitifolius* Burm. f. Fl. Ind. 45, t. 18, f. 1. 1768. *Ipomoea vitifolia* (Burm. f.) Bl. Bijdr. 709. 1825 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 213. 1883. 'Navli'.

Stems hirsute when young. Leaves broadly ovate, 6-8 × 5.0-6.5 cm, base cordate, apex acuminate, margins serrate-dentate. Sepals

elliptic, obtuse, accrescent in fruits; corolla with well-defined bands. Capsules ovoid, ca 1 cm long.

Fls. & Frts. : December February.

Distrib. : Common perennial along ghats in open grasslands. Dicholi ; Koyna ; Kumbharli ghat.

PORANA Burm.

Porana racemosa Roxb. Fl. Ind. (Carey & Wall. ed.) 2 : 41. 1824 ; Ooststr. in Steenis, Fl. Males. I, 4 : 403. 1953 ; Sant. & Patel in Trans. Bose Res. Inst. Cal. 22 : 14. 1958. *P. malabarica* C.B. Cl. in Hook. f. Fl. Brit. India 4 : 223. 1883 ; Cooke, Fl. Pres. Bombay 2 : 294. 1958 (Repr. ed.). 'Bhauri'.

Large climbers. Leaves ovate, 3-9 × 2-8 cm, base cordate, apex acute. Flowers white; sepals narrowly oblong, accrescent in fruits. Capsules cylindric, ca 1 cm long.

Fls. & Frts. : October November.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 2 : 298, f. 432. 1911.

Distrib. : Common on hill slopes in large patches. Koyna; Lingmala; Mahabaleshwar; Panchgani-Mahabaleshwar.

SOLANACEAE

1. Flowers solitary or in fascicles :

2. Fruit a capsule ... **Datura**

2. Fruit a berry :

3. Calyx accrescent in fruit :

4. Stems hoary-tomentose ... **WITHANIA**

4. Stems glabrous :

5. Flowers bluish-white ... **NICANDRA**

5. Flowers yellow ... **PHYSALIS**

3. Calyx not accrescent in fruit :

6. Plants armed ... **SOLANUM**

6. Plants unarmed ... **LYCIANTHUS**

1. Flowers in cymes or racemes :

7. Flowers in racemes ; fruit a capsule	...	NICOTIANA
7. Flowers in cymes ; fruit a berry	...	SOLANUM

DATURA L.

1. Capsules spiny :

2. Leaves glabrescent ; capsules dehiscing by 4-valves, nodding or pendulous	...	<i>D. stramonium</i>
2. Leaves grey-pubescent ; capsules dehiscing irregularly, erect	...	<i>D. metel</i>
1. Capsules not spiny	...	<i>D. suaveolens</i>

Datura metel L. Sp. Pl. 179. 1753; Cooke, Fl. Pres. Bombay 2 : 344. 1958 (Repr. ed.) ; Deb in J. Econ. Tax. Bot. 1 : 37. 1980. *D. fastuosa* L. Syst. Nat. ed. 10. 932. 1759 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 242. 1883 ; Cooke, op. cit. 'Kala datura'.

Herbs, ca 1 m high ; stems divaricately branched, pubescent. Leaves ovate, 4-9 x 2-4 cm, base truncate, apex acute. Flowers white, solitary, axillary ; calyx tubular, 8-9 cm long, pubescent ; teeth triangular, acute ; corolla tube 12-13 cm long ; lobes shortly deltoid. Capsules subglobose. 2-3 cm across.

Fls. & Frts. : November.

Illus. : Wight. Ic. t. 1396. 1848 (*D. fastuosa*).

Distrib. : Frequent in waste places and along roadsides. Koyna ; Mahabaleshwar.

D. stramonium L. Sp. Pl. 179. 1753 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 242. 1883 (excl. var. *tatula*) ; Deb in J. Econ. Tax. Bot. 1 : 38. 1980.

Herbs, ca 1.5 m high. Leaves ovate - oblong, 6-15 x 3-12 cm, margins irregularly lobed. Flowers white to purple, solitary, axillary. Capsules ovoid.

Fls. & Frts. : June September.

Distrib. : Occasional in waste places, along river banks. Mahabaleshwar.

Datura suaveolens H. & B. ex Willd. Enum. Hort. Berol. 227. 1809 ; Deb in J. Econ. Tax. Bot. 1 : 38. 1980. *D. gardeneri* Hook. in Curtis, Bot. Mag. 72 : t 4254. 1846.

Herbs, 1-2 m high. Leaves elliptic, 19-25 × 7-10 cm, base unequal, apex acute, glabrous above, hairy beneath. Flowers pale yellow or white ; calyx tube 6-11 cm long, angular ; corolla ca 27 cm long, tube pubescent, plicate without.

Fls. & Frts. : January-March.

Distrib. : Occasional in waste lands. Mahabaleshwar.

CULTIVATED SPECIES

D. arborea L. Sp. Pl. 179. 1753 ; Cooke, Fl. Pres. Bombay 2 : 344. 1958 ; Deb in J. Econ. Tax. Bot. 1 : 37. 1980.

Large shrubs or small trees. Leaves ovate lanceolate, margins entire or obscurely lobed. Flowers white with greenish nerves ; solitary, axillary. Capsules broadly ovoid.

Fls. & Frts. : December.

Distrib. : Cultivated along roadsides. Mahabaleshwar.

LYCIANTHUS (Dunal) Hassl.

Lycianthus laevis (Dunal) Bitter in Abh. Nat. ver. Bremen 24 : 484. 1920 ; Backer & Bakh. f. Fl. Java 2 : 476. 1965 ('*leavis*') ; Deb in J. Econ. Tax. Bot. 1 : 39. 1980. *Solanum laeve* Dunal, Solan. Synop. 22. 1816. *S. bigeminatum* Nees in Trans. Linn. Soc. London 17 : 42. 1837 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 231. 1883 ; Cooke, Fl. Pres. Bombay 2 : 334. 1958 (Repr. ed.).

Shrubs ; stems straggling, quadrangular. Lower leaves solitary, upper in unequal pairs, lanceolate, 8-16 × 3-5 cm, membranous, base decurrent, scabrid above, glabrous beneath, margins ciliate. Flowers whitish, 2-6 together. Berries globose, 0.5-1.0 cm across on obscurely toothed, saucer shaped calyx.

Fls. & Frts. : July-December.

Distrib. : Common undergrowth in semi-evergreen forests. Research Nursery; Koyna; Mahabaleshwar; Wada, below Mahabaleshwar.

NICANDRA Adans.

Nicandra physaloides (L.) Gaertn. Fruct. 2 : 237, t. 131, f. 2. 1791 ; C.B. Cl. in Hook. f. Fl. Brit. India 2 : 240. 1883 ; Cooke, Fl. Pres. Bombay 2 : 346. 1958 (Repr. ed.) ; Deb in J. Econ. Tax. Bot. 1 : 42. 1980. *Atropa physaloides* L. Sp. Pl. 181. 1753.

Herbs, 30-50 cm high ; stems angular, ribbed. Leaves ovate elongate, 5-11 cm long, membranous, margins coarsely serrate. Flowers axillary, solitary ; calyx lobes ovate, acute, winged at base. Seeds brown, pitted.

Fls. & Frts. : August - November.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 489. 1982.

Distrib. : Common weed in waste places. Koyna ; Panchgani ; Pandavgad ; Umarkanchan.

NICOTIANA L.

Nicotiana plumbaginifolia Viv. Elench. Pl. Hort. Bot. 26, t. 5. 1802 ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 246. 1883 ; Sant. in J. Bombay Nat. Hist. Soc. 57 : 446. 1960 ; Deb in J. Econ. Tax. Bot. 1 : 42. 1980.

Herbs, viscid-pubescent. Radical leaves obovate-spathulate, base decurrent ; caudine leaves sessile, lanceolate. Flowers pink. Capsules ellipsoid, irregularly dehiscing.

Fls. & Frts. : November - January.

Distrib. : Rare near cultivated fields and in gardens. Mahabaleshwar, G.L. Shah 10648, 10650 (BLAT).

CULTIVATED SPECIES

N. tabacum L. Sp. Pl. 180. 1753 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 245. 1883 ; Cooke, Fl. Pres. Bombay 2 : 346. 1958 (Repr. ed.) ; Deb in J. Econ. Tax. Bot. 1 : 43. 1980. '*Tambakhu*'.

Herbs, ca 1 m high. Leaves sessile, lanceolate - oblong, subacute, ca 13 × 5 cm. Flowers white. Capsules globose, 1.0-1.5 cm across.

Fls. & Frts. : April - June.

Distrib. : Usually cultivated, rarely found as an escape. Ambeghar ; Mahabaleshwar.

PHYSALIS L.

- | | | |
|--|-----|----------------------|
| 1. Flowers yellow with brown spots; anthers greenish or greyish-blue | ... | <i>P. longifolia</i> |
| 1. Flowers uniformly yellow; anthers yellow | ... | <i>P. minima</i> |

Physalis longifolia Nutt. in Trans. Amer. Phil. Soc. 5 : 93. 1837 ; Sant. et al. in J. Bombay Nat. Hist. Soc. 58 : 550. 1961.

Herbs, ca 1 m high; stems dichotomously branched, pubescent when young. Leaves ovate or oblong ovate, 5-10 × 3.5-6.5 cm, glabrous above, puberulous beneath. Flowers solitary, axillary. Berries subglobose, ca 1 cm across with persistent calyx.

Fls. & Frts. : November.

Distrib. : Rare perennial found near cultivated fields. Sant. et al. (*op. cit.*) reported this from Maharashtra for the first time, Mahabaleshwar, Soman 156203.

P. minima L. Sp. Pl. 183. 1753 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 238. 1883 ; Cooke, Fl. Pres. Bombay 2 : 340. 1958 (Repr. ed.) ; Deb in J. Econ. Tax. Bot. 1 : 43. 1980. '*Ran-papati*'.

Herbs, ca 1 m high. Leaves ovate-elliptic, 3-8 × 1.2-4.5 cm, base rounded, apex acute. Flowers solitary, axillary; calyx ca 0.4 cm reaching upto 2.5 cm in fruiting. Seeds subreniform, orange-yellow, minutely rugose.

Fls. & Frts. : February August.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 490. 1982.

Distrib. : Common weed in cultivated fields. Gojegaon ; Forest Nursery; Koyna; Mahabaleshwar.

CULTIVATED SPECIES

P. peruviana L. Sp. Pl. ed. 2. 1670. 1763 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 238. 1883 ; Cooke, Fl. Pres. Bombay 2 : 340. 1958 (Repr. ed.) ; Deb in J. Econ. Tax. Bot. 1 : 44. 1980. '*Popati*'.

Shrubs, ca 1 m high; branches striate, viscid-pubescent. Leaves ovate, 4-8 × 3-5 cm, base unequal, acuminate, margins subentire, pubescent. Berries ellipsoid, ca 2 cm long, yellow.

Fls. & Frts. : December January.

Distrib. : Cultivated for edible fruits ; also found as an escape.
Mahabaleshwar; Panchgani.

SOLANUM L.

1. Plants armed :		
2. Herbs ; flowers solitary, axillary	...	<i>S. surattense</i>
2. Shrubs ; flowers in corymbose cymes :		
3. Leaves lobed, prickly on the midrib	...	<i>S. indicum</i>
3. Leaves entire, not prickly on the midrib	...	<i>S. giganteum</i>
1. Plants unarmed :		
4. Herbs	...	<i>S. nigrum</i>
4. Shrubs or small trees :		
5. Flowers white ; berries yellow	...	<i>S. erianthum</i>
5. Flowers purple ; berries red	...	<i>S. denticulatum</i>

Solanum denticulatum Bl. Bijdr. 697. 1825 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 231. 1883 ; Cooke, Fl. Pres. Bombay 2 : 334. 1958 (Repr. ed.).

Shrubs, 1 - 2 m high. Lower leaves solitary, upper in unequal pairs, elliptic-lanceolate, 5 - 12 × 2.5 - 5.5 cm, sparsely hairy above, glabrous beneath. Flowers in lateral fascicles. Berries globose, ca 1 cm across.

Fls. & Frts. : October - November.

Illus. : Wight, Ic. t. 1397. 1848.

Distrib. : Frequent along ghats. Mahabaleshwar.

S. erianthum D. Don, Prodr. Fl. Nepal. 96. 1825 ; Roe in Taxon 17 : 176. 1968 ; Deb in J. Econ. Tax. Bot. 1 : 46. 1980. *S. verbascifolium* auct. pl. non L. 1753 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 230. 1883 ; Cooke, Fl. Pres. Bombay 2 : 333. 1958 (Repr. ed.).

Trees, 4 - 6 m high, branches tomentose. Leaves ovate - oblong, 8 - 23 × 3 - 14 cm, pubescent above, tomentose beneath. Flowers in dense, dichotomous corymbose cymes ; calyx cup - shaped, densely woolly. Berries ca 0.8 cm across.

Fls. & Frts. : August.

Illus. : Wight, Ic. t. 1398. 1848 (*S. verbascifolium*).

Distrib. : Rare in deciduous forests along hill slopes. Mahabaleshwar; Talbot *op. cit.*; Wai, Cooke s.n.

Solanum giganteum Jacq. Collect. 4 : 125. 1790 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 233. 1883 ; Cooke, Fl. Pres. Bombay 2 : 336. 1958 (Repr. ed.) ; Deb in J. Econ. Tax. Bot. 1 : 47. 1980.

Shrubs, 3 - 5 m high, armed with broad, triangular spines; young branches, inflorescence and lower surfaces of leaves densely tomentose. Leaves 10 - 17 × 3 - 5 cm, base unequal, apex acute. Flowers blue in dense, lateral or subterminal cymes. Berries globose, 0.6 - 0.8 cm across.

Fls. & Frts. : November.

Illus. : Wight, Ic. t. 893. 1845.

Distrib. : Common on higher hills near forest clearings. Ambeghar; Karanjewadi; Mahabaleshwar.

S. indicum L. Sp. Pl. 187. 1753 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 234. 1883 ; Cooke, Fl. Pres. Bombay 2 : 336. 1958 (Repr. ed.) ; Deb in J. Econ. Tax. Bot. 1 : 47. 1980.

Shrubs, 1 - 2 m high; stems prickly, stellately tomentose. Leaves ovate oblong, 4 - 13 × 1 - 5 cm, tomentose. Flowers pale-purple in lateral cymes; calyx stellately hairy, lobes triangular. Berries globose, ca 1 cm across, yellow. Seeds minutely pitted.

Fls. & Frts. : June - November.

Illus. : Maheshwari, Ill. Fl. Delhi f. 151. 1960.

Distrib. : Common among undergrowth in deciduous forests. Koyna; Kumbharli ghat; Lingmala; Machutar Forest; Mahabaleshwar; Nauja; Panchgani.

S. nigrum L. Sp. Pl. 186. 1753 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 229. 1883 ; Cooke, Fl. Pres. Bombay 2 : 332. 1958 (Repr. ed.) ; Deb in J. Econ. Tax. Bot. 1 : 49. 1980. 'Kangani'.

Herbs, ca 1 m high. Leaves ovate lanceolate, 2 - 13 × 1.5 - 6.0 cm, thin, base tapering, margins entire or slightly toothed, sparsely pubescent. Flowers white, in extra-axillary, subumbellate cymes. Berries globose, 0.5 - 0.8 cm across, purplish-black when ripe.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 344. 1840 (*S. rubrum* Mill. Gard. Dict. ed. 8. n. 4. 1768).

Distrib. : Common weed near cultivated fields, in gardens and along road sides. Khatav; Koyna; Mahabaleshwar; Padolshi; Panchgani; Panchgani ghat; Shirshingi.

Solanum surattense Burm. f. Fl. Ind. 57. 1768 ; Merr. in Philipp. J. Sci. 19 : 377. 1921 ; Deb in J. Econ. Tax. Bot. 1 : 51. 1980. *S. xanthocarpum* Schrad. & Wendl. Sert. Hannov. 1 : 8, t. 2. 1795 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 236. 1883 ; Cooke, Fl. Pres. Bombay 2 : 335. 1958 (Repr. ed.). 'Kate-ringni'.

Herbs, branches diffuse ; spines yellow, glabrous, shining, 0.5-1.7 cm long. Leaves elliptic, 3-7 × 1.5-5.5 cm, margins deeply lobed, spiny on the midrib and nerves. Flowers blue ; calyx spiny ; stamens yellow. Berries ca 1 cm across, yellow, blotched with green.

Fls. & Frts. : November April.

Illus. : Wight, Jc. t. 1401. 1848 (*S. jacquini* Willd. Sp. Pl. 1 : 1041. 1798).

Distrib. : Common in waste lands and near cultivated fields. Karad ; Kelghar ghat ; Nauja ; Yavteshwar.

CULTIVATED SPECIES

S. melongena L. Sp. Pl. 186. 1753 ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 235. 1883 ; Cooke, Fl. Pres. Bombay 2 : 339. 1958 (Repr. ed.) ; Deb in J. Econ. Tax. Bot. 1 : 48. 1980. 'Vangi'.

Widely cultivated for fruits used as vegetable throughout the district.

S. tuberosum L. Sp. Pl. 185. 1753 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 229. 1883 ; Cooke, Fl. Pres. Bombay 2 : 339. 1958 (Repr. ed.) ; Deb in J. Econ. Tax. Bot. 1 : 52. 1980. 'Batata'.

Notes : Extensively cultivated throughout the district for edible tubers.

S. wendlandii Hook. f. in Curtis, Bot. Mag. 113 : t. 6914. 1887 ; Deb in J. Econ. Tax. Bot. 1 : 52. 1980.

Climbers. Leaves : upper simple, oblong, acuminate, lower 3-lobed, prickly on the midrib. Flowers violet in large fascicles. Berries globose.

Fls. & Frts. : June.

Distrib. : Mahabaleshwar, Patel 1391 (BLAT).

Notes : Cultivated as an ornamental plant.

WITHANIA Pauq.

Withania somnifera (L.) Dunal in DC. Prodr. 13 : 453. 1852 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 239. 1883 ; Cooke, Fl. Pres. Bombay 2 : 341. 1958 (Repr. ed.) ; Deb in J. Econ. Tax. Bot. 1 : 52. 1980. *Physalis somnifera* L. Sp. Pl. 182. 1753.

Undershrubs, 1–2 m high. Leaves ovate, 6–8 × 3.0–4.5 cm, pubescent on nerves; petioles ca 1 cm long, stellately tomentose. Flowers greenish-yellow in axillary umbellate cymes; calyx and corolla stellate tomentose. Berries globose, enclosed within enlarged calyx.

Fls. & Frts. : July.

Illus. : Wight, Ic. t. 853. 1844 (*P. somnifera*).

Distrib. : Rare in waste places in drier part. Khatav 165777.

CULTIVATED SPECIES

Browallia americana L. Sp. Pl. 631. 1753 ; Sant. in Rec. Bot. Surv. India 16(1) : 176. 1967 (3rd Rev. ed.) ; Deb in J. Econ. Tax. Bot. 1 : 34. 1980. *B. demissa* L. Syst. ed. 10. 1118. 1759 ; Cooke, Fl. Pres. Bombay 2 : 346. 1958 (Repr. ed.).

Herbs, ca 50 cm high. Leaves ovate, 2–4 × 1.0–2.5 cm, base cuneate. Flowers blue in terminal racemes. Capsules ellipsoid, ca 0.5 cm long, ribbed.

Fls. & Frts. : December.

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

B. viscosa H.B.K. Nov. Gen. Sp. 2 : 373. 1818 ; Deb in J. Econ. Tax. Bot. 1 : 34. 1980.

Herbs, glandular hairy. Leaves ovate-rhomboid, 1–2 × 0.8–2.0 cm, puberulous. Flowers blue in terminal racemes.

Fls. : December.

Distrib. : Introduced from S. America, cultivated in gardens, as an ornamental plant, also found as an escape. Mahabaleshwar.

Capsicum annuum L. Sp. Pl. 188. 1753 ; Cooke, Fl. Pres. Bombay 2 : 347. 1958 (Repr. ed.) ; Deb in J. Econ. Tax. Bot. 1 : 35. 1980. *C. frutescens* Roxb. Fl. Ind. (Carey ed.) 1 : 574. 1832 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 239. 1883 non L. 1753. 'Lal-mirchi'.

Notes : Cultivated for fruits used as spices.

Cestrum diurnum L. Sp. Pl. 191. 1753 ; Deb in J. Econ. Tax. Bot. 1 : 37. 1980.

Shrubs, 2-3 m high. Leaves oblong or elliptic, glabrous above, puberulous beneath. Flowers white, sessile in axillary clusters.

Notes : Cultivated in gardens for fragrant flowers.

C. nocturnum L. Sp. Pl. 191. 1753 ; Bailey, Man. Cult. Pl. 874. 1949 (2nd ed.) ; Deb in J. Econ. Tax. Bot. 1 : 36. 1980. 'Rat - Rani'.

Shrubs, scandent. Leaves lanceolate, 6-12 × 2-5 cm. Flowers greenish white in paniculate cymes.

Notes : Widely cultivated throughout the district for its fragrant flowers in gardens and also along roadsides.

Lycopersicon esculentum Mill. Gard. Dict. ed. 8. n. 2. 1768 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 237. 1883 ; Cooke, Fl. Pres. Bombay 2 : 345. 1958 (Repr. ed.) ; Terrell in Taxon 32 : 310. 1983. *Solanum lycopersicum* L. Sp. Pl. 185. 1753. *L. lycopersicum* (L.) Karsien, Deut. Fl. 966. 1882 ; Deb in J. Econ. Tax. Bot. 1 : 41. 1980. 'Tomato'.

Herbs, ca 1 m high. Leaves pinnatifid ; lobes triangular-ovate, 3-9 × 1.0-4.5 cm. Flowers yellow in lax racemes. Berries subglobose, fleshy.

Fls. & Frts. : Throughout the year.

Distrib. : Widely cultivated for edible fruits. Satara; Taldeo; Wai.

Petunia violacea Lindl. Bot. Reg. t. 1626. 1833-34 ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 81 : 378. 1984 ; Deb in J. Econ. Tax. Bot. 1 : 43. 1980.

Herbs ; branches prostrate, glandular hairy. Leaves shortly petioled, ovate, acute. Flowers pink or violet, solitary.

Fls. : January-February.

Distrib. : Cultivated as an ornamental plant in gardens.

SCROPHULARIACEAE

1. Leaves all or atleast upper alternate :

2. Prostrate herbs ; leaves triangular-hastate ... **KICKXIA**

2. Erect herbs ; leaves not as above :

3. Corolla saccate at base ... **ANTIRRHINUM**

3. Corolla not as above :
4. Flowers solitary, axillary ... RHAMPHICARPA
4. Flowers in terminal spikes or racemes :
5. Leaves entire ; flowers in spikes :
6. Whole plant with a purple tinge ; corolla tube curved, 2 upper lobes smaller than the others ... STRIGA
6. Plant not as above ; corolla tube more or less straight, lobes subequal ... BUCHNERA
5. Leaves pinnatisect ; flowers in racemes :
7. Leaves all alternate ; capsules sub-globose ... VERBASCUM
7. Upper leaves alternate, lower opposite ; capsules oblong-ellipsoid ... SOPHIA
1. Leaves opposite or whorled :
8. Leaves whorled :
9. Aquatic herbs ; leaves dimorphic ... LIMNOPHILA
9. Terrestrial herbs ; leaves monomorphic ... SCOPARIA
8. Leaves opposite :
10. Prostrate herbs :
11. Flowers solitary or in pairs :
12. Stamens 4 :
13. Plants glandular-hairy ... SUTERA
13. Plants glabrous ... BACOPA
12. Stamens 2 :
14. Leaves narrowly spatulate ... GLOSSOSTIGMA
14. Leaves ovate, ovate-cordate or suborbicular ... LINDERMIA
11. Flowers in racemes :
15. Corolla glandular within ; capsules included within calyx ... MAZUS
15. Corolla glabrous ; capsules exceeding calyx ... LINDERMIA
10. Erect or ascending herbs :
16. Flowers solitary or in pairs :
17. Calyx spathaceous, split down the front ... CENTRANTHERA

17. Calyx campanulate, 5-lobed :
18. Stems glandular-hairy ... **LINDENBERGIA**
18. Stems glabrous or pubescent ... **LINDERNIA**
16. Flowers in racemes or subumbellate fascicles :
19. Leaves pinnatisect :
20. Calyx spathaceous, split down the front ; capsules obliquely ovoid ... **PEDICULARIS**
20. Calyx campanulate, 5-lobed ; capsules oblong-ellipsoid ... **SOPUBIA**
19. Leaves entire :
21. Flowers in subumbellate fascicles ; stamens 4 ... **TORENIA**
21. Flowers in racemes ; stamens 2 :
22. Capsules twice the length of calyx ... **LINDERNIA**
22. Capsules as long as calyx ... **VERONICA**

ANTIRRHINUM L.

Antirrhinum erodium L. Sp. Pl. 617. 1753 ; Hook. f. Fl. Brit. India 4 : 253. 1884 ; Vartak in J. Bombay Nat. Hist. Soc. 64 : 584. 1968.

Herbs, 15-45 cm high, glandular hairy. Leaves sessile, linear, 2.5-5.0 × 0.2-0.3 mm, apex subacute. Flowers white with purple streaks, in spiciform racemes ; calyx glandular-pubescent. Capsules obliquely ovoid, ca 1 cm long, hairy.

Fls. & Frts. : December - May.

Distrib. : Weed in wheat field, reported by Vartak (*op. cit.*) for the first time from Maharashtra. Wheat Research Station, Mahabaleshwar.

BACOPA Aubl. (*nom. cons.*).

Bacopa monnieri (L.) Pennell in Proc. Acad. Nat. Sci. Philad. 98 : 94. 1946 ; Philcox in Kew Bull. 33 : 679. 1979. **Lysimachia monnierii** L. Cent. Pl. 2 : 9. 1756. **Herpestis monnievia** (L.) Kunth, Nov. Gen. & Sp. Pl. 2 : 366. 1818 ; Hook. f. Fl. Brit. India 4 : 272. 1884. **Moniera cuneifolia** Michx. Fl. Bor. Amer. 2 : 22. 1803 ; Cooke, Fl. Pres. Bombay 2 : 356. 1958 (Repr. ed.). '*Nira-brahmi*'.

Herbs, 10–25 cm long, rooting at nodes. Leaves sessile, obovate oblong, 0.5–2.0 × 0.2–7.0 cm. Flowers bluish-white; one sepal ovate, longer than remaining 4 sepals; corolla lobes with glistening dots when fresh. Capsules ovoid, ca 0.5 cm long. Seeds oblong, minute.

Fls. & Frts. : January May.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 494. 1982.

Distrib. : Rare, along water courses. Mahabaleshwar, Cooke s.n., Santapau 12615 (BLAT), Soman 157135.

BUCHNERA L.

Buchnera hispida Buch. Ham. ex D. Don, Prodr. Fl. Nepal. 91. 1825; Hook. f. Fl. Brit. India 4 : 298. 1884; Cooke, Fl. Pres. Bombay 2 : 373. 1958 (Repr. ed.).

Herbs, 30–70 cm high, drying black. Leaves: upper alternate, linear lanceolate, lower opposite, oblong, 3–5 × 0.6–2.0 cm, hairy; bracts leafy. Flowers purple; calyx tube ribbed; stamens didynamous, included. Capsules oblong, ca 0.4 cm long.

Fls. : November December.

Illus. : Wight, Ic. t. 1413. 1849.

Distrib. : Root parasite, occasional in grasslands. Gadoli; Karanjewadi; Koyna valley.

CENTRANTHERA R. Br.

Centranthera indica (L.) Gamble, Fl. Pres. Madras 971. 1924 [2 : 683. 1958 (Repr. ed.)]; Sant. in Rec. Bot. Surv. India 16(1) : 184. 1967 (3rd Rev. ed.). *Rhinanthus indica* L. Sp. Pl. 603. 1753. *C. hispida* R. Br. Prodr. 438. 1810; Hook. f. Fl. Brit. India 4 : 301. 1884; Cooke, Fl. Pres. Bombay 2 : 381. 1958 (Repr. ed.).

Herbs, 7–15 cm long; stems quadrangular. Leaves elliptic-oblong, ca 1.5 × 0.5 cm, scabrid. Calyx ovoid, ca 1 cm long, hispid. Capsules ca 1 cm long.

Fls. & Frts. : October.

Distrib. : Common annual among grasses in open lands. Koyna: Koyna valley; Mahabaleshwar; Shirshingi; Wada, below Mahabaleshwar.

GLOSSOSTIGMA Wight & Arn. ex Arn.

Glossostigma diandrum (L.) O. Ktze. Rev. Gen. Pl. 461. 1981.
Limosella diandra L. Mant. Pl. 252. 1767. *G. spathulatum* (Hook.) Arn. ex Bth. in Comp. Bot. Mag. 2 : 59. 1836 ; Hook. f. Fl. Brit. India 4 : 288. 1884 ; Cooke, Fl. Pres. Bombay 2 : 371. 1958 (Repr. ed.) ; Sant. in J. Bombay Nat. Hist. Soc. 49 : 41. 1950.

Herbs, creeping. Leaves radical, ca 0.7 × 0.2 cm, base tapering into petiole. Flowers blue on slender ca 1 cm long pedicels ; calyx lobes 3, ovate-deltoid. Capsules globose, enclosed in slightly enlarged calyx.

Fls. & Frts. : October December.

Illus. : Matthew, Fl. Tamilnadu Carnatic 3 : t. 77 e & 79. 1983.

Distrib. : Rare, near wet places, grows in large patches. Mahabaleshwar, Nana 7300, Sedgwick 4577 (BLAT).

KICKXIA Dumort.

I. Stems pubescent ; leaves broadly ovate	...	<i>K. incana</i>
I. Stems glabrous ; leaves triangular-hastate	...	<i>K. ramosissima</i>

Kickxia incana (Wall.) Pennell, Scroph. West. Himal. 59. 1943 ; Sant. in J. Bombay Nat. Hist. Soc. 49 : 27. 1950. *Linaria incana* Wall. Pl. As. Rar. 2 : 43. 1831. *L. cabulica* Bth. in DC. Prodr. 10 : 270. 1846 ; Hook. f. Fl. Brit. India 4 : 252. 1883 ; Cooke, Fl. Pres. Bombay 2 : 354. 1958 (Repr. ed.).

Herbs, rootstock woody. Leaves small, ca 1.2 × 0.8 cm, pubescent. Flowers solitary, axillary on filiform ca 1 cm long pedicels ; calyx densely hairy. Capsules subglobose, ca 0.3 cm across. Seeds many, minute, black.

Fls. & Frts. : December.

Distrib. : Rare herbs on rocky walls. Mahabaleshwar, Soman 157532, 157681, Santapau 22879 (BLAT).

Notes : Cooke (*op. cit.*) has placed this plant under excluded species as there was no authentic specimen from the Bombay Presidency. However, Sant. (*op. cit.*) collected it from Purandhar and also the present collection confirms its occurrence in the erstwhile Bombay Presidency.

Kickxia ramosissima (Wall.) Janchen in Oest. Bot. Zeist. 82 : 152. 1933 ; Sant. in J. Bombay Nat. Hist. Soc. 49 : 27. 1950. *Linaria ramosissima* Wall. Pl. As. Rar. 2 : 43, t. 153, 1831 ; Hook. f. Fl. Brit. India 4 : 251. 1883 ; Cooke, Fl. Pres. Bombay 2 : 353. 1958 (Repr. ed.).

Herbs, 30 - 50 cm long. Leaves 1.5 - 2.5 × 0.5 - 0.7 cm. Flowers yellow, axillary, solitary ; pedicels slender, 1.5 - 2.0 cm long. Capsules ovoid, ca 0.4 cm across. Seeds many, echinulate.

Fls. & Frts. : June October.

Illus. : Maheshwari, Ill. Fl. Delhi, f. 153. 1966.

Distrib. : Common perennial on old walls and rocky grounds. Pandavgad ; Pasarni ghat ; Wai.

LIMNOPHILA R. Br.

1. Flowers distinctly pedicelled	—	<i>L. indica</i>
1. Flowers sessile or subsessile :		
2. Lower leaves submerged	—	<i>L. heterophylla</i>
2. Leaves not submerged	—	<i>L. sessiliflora</i>

Limnophila heterophylla (Roxb.) Bth. Scroph. Ind. 25. 1835 ; Hook. f. Fl. Brit. India 4 : 270. 1884 ; Philcox in Kew Bull. 24 : 124. 1970. *Columnea heterophylla* Roxb. Fl. Ind. (Carey ed.) 3 : 97. 1832.

Herbs, 15 - 40 cm long. Upper leaves lanceolate, acute, 2.0 × 0.8 cm, 3-nerved ; lower pinnatifid, segments narrow, linear. Flowers subsessile, axillary, solitary. Capsules subglobose, ca 0.4 cm across. Seeds small, angular.

Fls. & Frts. : August September.

Distrib. : Rare perennial in water logged areas. Mahabaleshwar, Soman 156101.

L. indica (L.) Druce in Rep. Bot. Exch. Club. Soc. Brit. Isles 3 : 420. 1914 ; Philcox in Kew Bull. 24 : 115. 1970. *Hottonia indica* L. Syst. nat. ed. 10. 919. 1759. *L. gratioloides* R. Br. Prodr. 442. 1810 ; Hook. f. Fl. Brit. India 4 : 271. 1884 ; Cooke, Fl. Pres. Bombay 2 : 362. 1958 (Repr. ed.). 'Turti'.

Herbs, 10 - 20 cm long ; stems subquadrangular, rooting at lower nodes. Leaves sessile, oblong-lanceolate, 1.8 - 2.5 × 0.4 - 0.8 cm, margin serrate, 3-nerved. Flowers pinkish-purple in pairs at each node ;

bracteoles linear-subulate ; calyx membranous, divided half-way down. Capsules subglobose, enclosed in persistent calyx.

Fls. & Frts. : January October.

Illus. : Wight, Ic. t. 861. 1844.

Distrib. : Common in water logged areas. Bamnoli ; Karanjewadi ; Koyna ; Mahabaleshwar ; Umarkanchan.

Limpophila sessiliflora (Vahl) Bl. Bijdr. 749. 1826 ; Hook. f. Fl. Brit. India 4 : 270. 1884 ; Cooke, Fl. Pres. Bombay 2 : 362. 1958 (Repr. ed.) ; Philcox in Kew Bull. 24 : 112. 1970. *Hottonia sessiliflora* Vahl, Symb. Bot. 2 : 36. 1791.

Herbs, ca 20 cm high ; stems puberulous. Upper leaves lanceolate, ca 1 cm long, entire, 3-nerved ; lower leaves pinnatisect, segments narrow. Flowers pink, solitary, axillary ; calyx glandular-hairy, lobes lanceolate, acute. Capsules subglobose, ca 0.3 cm across.

Fls. & Frts. : August April.

Distrib. : Rare perennial along river banks. Koyna, Kochhar 160342 ; Mahabaleshwar, Cooke, Woodrow (Cooke, op. cit.).

LINDENBERGIA Lehn.

Lindenbergia muraria (Roxb. ex D. Don) Brühl. in J. Dept. Sci. Calcutta Univ. 2 (Bot.) 27. 1920 ; Prijanto in Reinwardtia 7 : 548. 1969. *Stemodia muraria* Roxb. ex D. Don, Prodr. Fl. Nepal. 89. 1825. *L. polyantha* Royle ex Bth. Scroph. Ind. 22. 1835 ; Hook. f. Fl. Brit. India 4 : 262. 1884 ; Cooke, Fl. Pres. Bombay 2 : 380. 1958 (Repr. ed.). 'Dhal'.

Herbs, 10 - 20 cm high. Leaves ovate, 1.0 - 2.5 × 1.0 - 1.5 cm, base attenuate, apex subacute, margin crenate, sparsely hairy. Flowers yellow. Capsules oblong, ca 0.4 cm long, hairy in upper half. Seeds elliptic oblong.

Fls. & Frts. : October.

Illus. : Maheshwari, Ill. Fl. Delhi, f. 154. 1966.

Distrib. : Rare annual in open lands. Mahabaleshwar, Santapau 22877 (BLAT) ; Wai, Talbot 4514.

LINDERNIA All.

1. Diffuse or prostrate herbs :
2. Flowers axillary, solitary ... *L. pusilla*
2. Flowers in axillary and terminal racemes :
3. Leaves oblong ; stamens 2 ... *L. antipoda*
3. Leaves ovate-elliptic ; stamens 4 ... *L. crustacea*
1. Erect herbs :
4. Capsules twice the length of calyx :
5. Leaves ovate-suborbicular ; capsules elliptic ... *L. nummularifolia*
5. Leaves ovate-oblong ; capsules linear,
lanceolate ... *L. anagallis*
4. Capsules as long as or shorter than calyx :
6. Stamens 4 ... *L. procumbens*
6. Stamens 2 :
7. Flowers solitary, axillary ... *L. hyssopoides*
7. Flowers in axillary racemes ... *L. parviflora*

Lindernia anagallis (Burm. f.) Pennell in J. Arnold Arbor. 24 : 252. 1943 ; Philcox in Kew Bull. 17 : 484. 1964 ; Sivarajan & P. Mathew in J. Bombay Nat. Hist. Soc. 80 : 139. 1983. *Ruellia anagallis* Burm. f. Fl. Ind. 135. 1768. *Vandellia pedunculata* Bth. Scroph. Ind. 37. 1835 ; Hook. f. Fl. Brit. India 4 : 282. 1884 ; Cooke, Fl. Pres. Bombay 2 : 367. 1958 (Repr. ed.).

Herbs, 8-10 cm high, rooting at nodes. Leaves sessile, 1-2 × 0.5 cm, base truncate, apex acute, margins crenate. Flowers bluish white with yellow spot, solitary, axillary ; corolla : lower lip 3 lobed, upper notched. Capsules ca 1 cm long, 2 valved.

Fls. & Frts. : July November.

Illus. : Mathew, Fl. Tamilnadu Carnatic 3 : t. 80a & 82a. 1983.

Distrib. : Frequent in marshy places. Chaphal; Karanjewadi; Koyna; Marul; Punoli.

L. antipoda (L.) Alston in Trin. Handb. Fl. Ceylon 6 (Suppl.) 214. 1931 ; Philcox in Kew Bull. 22 : 57. 1968 ; Sivarajan & P. Mathew in J. Bombay Nat. Hist. Soc. 80 : 133. 1983. *Ruellia antipoda* L. Sp. Pl. 635. 1753. *Bonnaya veronicaefolia* (Retz.) Spreng. Syst. Veg. 41. 1824 ; Hook.

f. Fl. Brit. India 4 : 285. 1884 ; Cooke, Fl. Pres. Bombay 2 : 369. 1958 (Repr. ed.). *B. veronicaefolia* var. *grandiflora* (Retz.) Hook. f. op. cit. ; Cooke, op. cit. 370.

Herbs, ascending, 20–30 cm high, rooting at nodes; branches quadrangular. Leaves shortly petioled, 1.0–3.5 × 0.5–1.5 cm, margins serrate. Flowers purple with darker streaks on upper lip; calyx deeply divided, lobes linear-lanceolate. Capsules oblong, ca 1 cm long.

Fls. & Frts. : August.

Illus. : Wight, Ic. t. 1411. 1849 (*B. veronicaefolia*).

Distrib. : Common annual in grasslands and along river banks. Mahabaleshwar.

Lindernia crustacea (L.) F. Muell. Syst. Census. Austr. Pl. 1 : 97. 1882 ; Philcox in Kew Bull. 22 : 47. 1968 ; Sivarajan & P. Mathew in J. Bombay Nat. Hist. Soc. 80 : 136. 1983. *Capraria crustacea* L. Mant. Pl. 87. 1767. *Vandellia crustacea* (L.) Bth. Scroph. Ind. 35. 1835 ; Hook. f. Fl. Brit. India 4 : 279. 1884 ; Cooke, Fl. Pres. Bombay 2 : 366. 1958 (Repr. ed.).

Herbs, 25–70 cm high; stems angular, rooting at nodes. Leaves petiolate, 1.0–2.0 × 0.8–1 cm, base truncate, apex acute. Flowers in terminal racemes; calyx 5-ribbed, accrescent in fruit. Capsules ellipsoid, ca 0.6 cm long.

Fls. & Frts. : July.

Illus. : Wight, Ic. t. 863. 1845 ; Maheshwari, Ill. Fl. Delhi. f. 155. 1966.

Distrib. : Occasional near forest edges and along roadsides. Koyna.

L. hyssopioides (L.) Haines, Bot. Bihar & Orissa 635. 1922 [(2 : 666. 1961 (Repr. ed.)) ; Philcox in Kew Bull. 22 : 50. 1968 ; Sivarajan & P. Mathew in J. Bombay Nat. Hist. Soc. 80 : 136. 1983. *Gratiola hyssopioides* L. Mant. Pl. 174. 1771. *Hysanthes hyssopioides* (L.) Bth. in DC. Prodr. 10 : 419. 1946 ; Hook. f. Fl. Brit. India 4 : 283. 1883 ; Cooke, Fl. Pres. Bombay 2 : 368. 1958 (Repr. ed.).

Herbs, 8–25 cm high. Leaves paired, the lower oblong or oblong-lanceolate, upper linear. Flowers blue; pedicels deflexed in fruit; calyx deeply divided, lobes linear-lanceolate. Capsules oblong, ca 1 cm long.

Fls. & Frts. : October–November.

Distrib. : Rare annuals included on Woodrow's report from Mahabaleshwar.

Lindernia nummularifolia (D. Don) Wattst. in Engl. & Prantl, Pflanzenfam. 4 (3b) : 79. 1891 ; Gupta in J. Bombay Nat. Hist. Soc. 58 : 765. 1961; Sivarajan & P. Mathew, ibid 80 : 139. 1983. *Vandelia nummularifolia* D. Don, Prodr. Fl. Nepal. 86. 1825. *V. sessiliflora* Bth. Scroph. Ind. 37. 1835; Hook. f. Fl. Brit. India 4 : 282. 1884.

Herbs, 3 - 5 cm high ; stems quadrangular. Leaves opposite, sessile, serrate, 5 nerved. Flowers pinkish-purple, solitary or in few flowered terminal racemes. Capsules ca 0.9 cm long.

Fls. & Frts. : September October.

Distrib. : Frequent in open, moist grassland and along ghats. Fitzgerald ghat, old Mahabaleshwar road.

L. parviflora (Roxb.) Haines, Bot. Bihar & Orissa 635. 1922 [2 : 665. 1961 (Repr. ed.)]; Mukerjee in J. Ind. Bot. Soc. 24 : 132. 1945; Sivarajan & P. Mathew in J. Bombay Nat. Hist. Soc. 80 : 135. 1983. *Gratiola parviflora* Roxb. Pl. Cor. 3 : 3, t. 203, 1811 & Fl. Ind. (Carey & Wall. ed.) 1 : 141. 1820. *Ilysanthes parviflora* (Roxb.) Bth. in DC. Prodr. 10 : 419. 1846; Hook. f. Fl. Brit. India 4 : 283. 1884; Cooke, Fl. Pres. Bombay 2 : 368. 1958 (Repr. ed.).

Herbs, 5 - 10 cm high ; stems quadrangular. Leaves sessile, 0.8 - 1.0 × 0.4 - 1.0 cm, base rounded, apex acute, margin serrate, 3 - 5 nerved. Flowers blue ; pedicels ca 1 cm long, slender ; corolla : lower lip 3 lobed, upper lip shallowly 2 lobed. Capsules ovoid-oblong, ca 0.5 cm long.

Fls. & Frts. : May August.

Illus. : Roxb. op. cit. ; Matthew, Fl. Tamilnadu Carnatic 3 : t. 81g & 83g. 1983.

Distrib. : Occasional in wet places and near cultivated fields. Kelghar ghat, Mahabaleshwar.

L. procumbens (Krock.) Philcox in Taxon 14 : 30, f. 5/8. 1965 & in Kew Bull. 22 : 29. 1968 ; Sivarajan & P. Mathew in J. Bombay Nat. Hist. Soc. 80 : 138. 1980. *Anagalloides procumbens* Krock. Fl. Siles 2, 1 : 398, t. 26. 1790. *Vandellia erecta* Bth. Scroph. Ind. 36. 1835, p. p. ; Hook. f. Fl. Brit. India 4 : 281. 1884.

Herbs, ca 20 cm high, branches divaricate. Leaves sessile, oblong, 1.2 × 0.4 - 0.7 cm, 3-5 nerved, margins entire or obscurely crenate. Flowers white, pedicels twice as long as the leaves. Capsules ellipsoid, ca 0.4 cm long.

Fls. & Frts. : August.

Illus. : Philcox, *op. cit.*

Distrib. : Rare in wet grasslands. Koyna, Kochhar 158464.

Lindernia pusilla (Willd.) Bold. Zakfi. Landbowstr. Java 165. 1916 ; Philcox in Kew Bull. 22 : 41, t. 9, f. 6 9. 1968 ; Sivarajan & P. Mathew in J. Bombay Nat. Hist. Soc. 80 : 139. 1983. *Gratiola pusilla* Willd. Sp. Pl. 1 : 105. 1797. *Vandellia scabra* Bth. Scroph. Ind. 36. 1835 ; Hook. f. Fl. Brit. India 4 : 281. 1884.

Herbs, ca 20 cm long, hispid. Leaves sessile, ca 1.5 × 1.0 cm. Flowers purple with a yellow centre ; calyx glandular - hairy ; corolla upper lip entire, lower lip shallowly 2-lobed. Capsules globose, 0.2 cm across.

Fls. & Frts. : February.

Illus. : Philcox, *op. cit.*

Distrib. : Rare in marshy places. Koyna, Kochhar 154354.

MAZUS Lour.

Mazus pumilio (Burm. f.) Steenis in Nova Guinea N.S. 9 : 31. 1958 ; Shah in J. Bombay Nat. Hist. Soc. 66 : 233. 1969. *Lobelia pumila* Burm. f. Fl. Ind. 186, t. 60, f. 3. 1768. *Lindernia japonica* Thunb. Fl. Jap. 253. 1784. *M. rugosus* Lour. Fl. Cochinch. 385. 1790 ; Hook. f. Fl. Brit. India 4 : 259. 1884.

Herbs, 5-15 cm long. Leaves obovate-spathulate, ca 1.5 × 0.8 cm. Flowers purple in subsecund racemes ; calyx campanulate, ca 0.5 cm long, lobes 5, oblong ; corolla upper lip 2-lobed, the lower lip 3-lobed ; stamens didynamous ; stigma 2-lobed. Capsules globose.

Fls. & Frts. : February - November.

Distrib. : Common along grassy slopes in moist and partially shaded places. Koyna ; Mahabaleshwar.

PEDICULARIS L.

Pedicularis zeylanica Bth. Scroph. Ind. 54. 1835 ; Hook. f. Fl. Brit. India 4 : 317. 1884 ; Cooke, Fl. Pres. Bombay 2 : 381. 1958 (Repr. ed.) ; Puri & Mahajan in Bull. Bot. Surv. India 2 : 128. 1960.

Herbs, 15-30 cm high. Leaves : upper sessile, lower shortly petioled, oblong-lanceolate, 1.5-4.0 × 0.6-1.5 cm, glabrous above, pubescent beneath. Flowers in elongate, lax racemes, bracteate ; corolla tube cylindric ; upper lip entire, lower lip 3-lobed. Capsules ca 1 cm long.

Fls. & Frts. : October.

Illus. : Wight, Ic. t. 1419. 1849.

Distrib. : Rare, semi-parasite in grasslands. Mahabaleshwar, *Birdwood* (Cooke, *op. cit.*), *Puri & Mahajan* (*op. cit.*).

RHAMPHICARPA Bth.

Rhamphicarpa longiflora (Arn.) Bth. in Comp. Bot. Mag. 1 : 368. 1836 ; Hook. f. Fl. Brit. India 4 : 300. 1884 ; Cooke, Fl. Pres. Bombay 2 : 377. 1958 (Repr. ed.). *Buchnera longiflora* Arn. in Nov. Act. Nat. Cur. 18 : 358. 1836.

Herbs, 15–20 cm high. Leaves black on drying, 1.0–2.5 cm long, pinnatisect ; segments filiform. Flowers white ; calyx tube campanulate, lobes lanceolate, acuminate ; corolla lobes obovate, spreading, ca 1.5 cm long. Capsules ovoid, 0.8–1.0 cm long, beaked. Seeds minute, oblong.

Fls. & Frts. : August - September.

Illus. : Wight, Ic. t. 1415. 1849.

Distrib. : Common near cultivated fields in moist places. Koyna ; Tapola; Wada; below Mahabaleshwar.

SCOPARIA L.

Scoparia dulcis L. Sp. Pl. 116. 1753 ; Hook. f. Fl. Brit. India 4 : 289. 1884 ; Cooke, Fl. Pres. Bombay 2 : 383. 1958. (Repr. ed.).

Herbs, 30–50 cm high ; stems quadrangular. Leaves elliptic, 1.5–3.5 cm long, margin serrate, sparsely hairy. Flowers white, in axillary umbels ; calyx pubescent. Capsules globose, ca 0.3 cm across. Seeds pitted.

Fls. & Frts. : September July.

Illus. : Tad. & Venkatan. Handb. S. Ind. Weeds 302, f. 120. 1955 (Rev. ed.).

Distrib. : Common weed in waste lands. Koyna ; Mahabaleshwar ; way to Patan, Vajegaon.

SOPUBIA Buch.-Ham. ex D. Don

- | | | |
|---|-----|-------------------------|
| 1. Flowers purple ; calyx tube ribbed, lobes filiform | ... | <i>S. delphinifolia</i> |
| 1. Flowers yellow with a purple centre ; calyx tube not ribbed, lobes deltoid-ovate | ... | <i>S. trifida</i> |

Sopubia delphinifolia (L.) G. Don, Gen. Syst. 4 : 560, 1837 ; Hook. f. Fl. Brit. India 4 : 302. 1884 ; Cooke, Fl. Pres. Bombay 2 : 378. 1958 (Repr. ed.). *Gerardia delphinifolia* L. Cent. Pl. 2 : 21. 1756.

Herbs, 20 - 30 cm high ; stems grooved, sub-quadrangular. Leaves 1.0 - 2.5 cm long, lobes filiform. Flowers in terminal racemes ; bracteoles filiform, ca 1 cm long. Capsules 0.5 - 0.7 cm long. Seeds cuneate-oblong, striate.

Fls. & Frts. : September November.

Illus. : Roxb. Pl. Cor. t. 90. 1798 (*G. delphinifolia*).

Distrib. : Common in grasslands and along exposed slopes during post-monsoon season. Kelghar ghat ; Mahabaleshwar ; Panchgani ; Pratapgad ; Satara-Pune road.

S. trifida Buch.-Ham. ex D. Don, Prodr. Fl. Nepal 88. 1825 ; Hook. f. Fl. Brit. India 4 : 302. 1884 ; Cooke, Fl. Pres. Bombay 2 : 378. 1958 (Repr. ed.).

Herbs, 30 - 50 cm high. Leaves sessile, linear, 1.0 - 2.5 cm long, upper entire, lower 3-fid. Calyx woolly within ; corolla subrotate. Capsules ca 0.5 cm long. Seeds cuneate-oblong, striate.

Fls. & Frts. : October.

Illus. : Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 505. 1982.

Distrib. : Included on Woodrow's report from Panchgani.

STRIGA Lour.

1. Leaves reduced to scales	-	<i>S. gesneroides</i>
1. Leaves well developed, narrowly oblong-linear :		
2. Flowers yellow ; calyx 10-ribbed	-	<i>S. asiatica</i>
2. Flowers white ; calyx 5-ribbed	-	<i>S. densiflora</i>

Striga asiatica (L.) O. Ktze. Rev. Gen. Pl. 1 : 466. 1891 ; Sant. in J. Bombay Nat. Hist. Soc. 49 : 43. 1950 & in Rec. Bot. Surv. India 16(1) : 183. 1967 (3rd Rev. ed.). *Buchnera asiatica* L. Sp. Pl. 630. 1753. *S. lutea* Lour. Fl. Cochinch. 22. 1790 ; Hook. f. Fl. Brit. India 4 : 299. 1884 ; Cooke, Fl. Pres. Bombay 2 : 375. 1958 (Repr. ed.).

Herbs, 30 - 50 cm high, black on drying ; stems ribbed, hairy. Leaves opposite below, alternate above, sessile, 1 - 2 cm long, hairy. Flowers in lax, terminal spikes ; calyx tubular, hispid, 1 rib reaching the tip of lobe

with secondary ribs in between ; corolla tube puberulous without. Capsules oblong, *ca* 0.5 cm long.

Fls. & Frts. : August November.

Illus. : Matthew, Ill Fl. Tamilnadu Carnatic 2 : t. 507. 1982.

Distrib. : Rare among grasses in wet situations. Koyna, Kochhar 158991.

Striga densiflora (Bth.) Bth. Comp. Bot. Mag. 1 : 363. 1836 ; Hook. f. Fl. Brit. India 4 : 299. 1884 ; Cooke, Fl. Pres. Bombay 2 : 375. 1958 (Repr. ed.). *Buchnera densiflora* Bth. Scroph. Ind. 41. 1835. (Fig. 37).

Herbs, 15–50 cm high ; stems obtusely quadrangular, scabrid. Leaves sessile, *ca* 2–5 cm long, scabrid, upper modified into bracts. Flowers 3–5 cm long in terminal spikes ; corolla : upper lip 2-lobed, lower lip 3-lobed, lobes obovate. Capsules oblong-obovoid, *ca* 0.3 cm long.

Fls. & Frts. : September January.

Distrib. : Common along ghats among grasses. Koyna Valley; Pandavgad; Satara-Pune Road; Vardhangad.

S. gesneroides (Willd.) Vatke in Oest. Bot. 2. 11 : 1875 ; Sant. in Rec. Bot. Surv. India 16(1) : 182. 1967 (3rd Rev. ed.). *Buchnera gesneroides* Willd. Sp. Pl. 3 : 338. 1800. *S. orobanchoides* (R. Br. ex Endl.) Bth. Comp. Bot. Mag. 1 : 361. t. 19. 1836 ; Hook. f. Fl. Brit. India 4 : 299. 1884 ; Cooke, Fl. Pres. Bombay 2 : 374. 1958 (Repr. ed.).

Herbs, 20–30 cm high. Flowers pink in terminal spikes ; bracts ovate-lanceolate, acute ; calyx lobes narrowly lanceolate, bristle-tipped, one rib running to the apex of each calyx tooth ; corolla hairy in the throat. Capsules ellipsoid, *ca* 0.5 cm long. Seeds minute, oblong.

Fls. & Frts. : October November.

Illus. : Wight, Ic. t. 1414. 1849 (*S. orobanchoides*).

Distrib. : Common root-parasite on *Lepidagathis cuspidata*. Fitzgerald ghat; Mahabaleshwar; old Mahabaleshwar Road; Nauja; Panchgani.

SUTERA Roth

Sutera dissecta (Del.) Walp. Report. 3 : 271. 1844 ; Brace in Kew Bull. 1940 ; 63. 1940 ; Sant. in J. Bombay Nat. Hist. Soc. 49 : 28. 1950. **Capraria dissecta** Del. Fl. Egypte 95, t. 32, f. 2. 1812. **S. glandulosa** Roth. Nov. Pl. Sp. 291. 1821 ; Hook. f. Fl. Brit. India 4 : 258. 1884 ; Cooke, Fl. Pres. Bombay 2 : 356. 1958 (Repr. ed.).

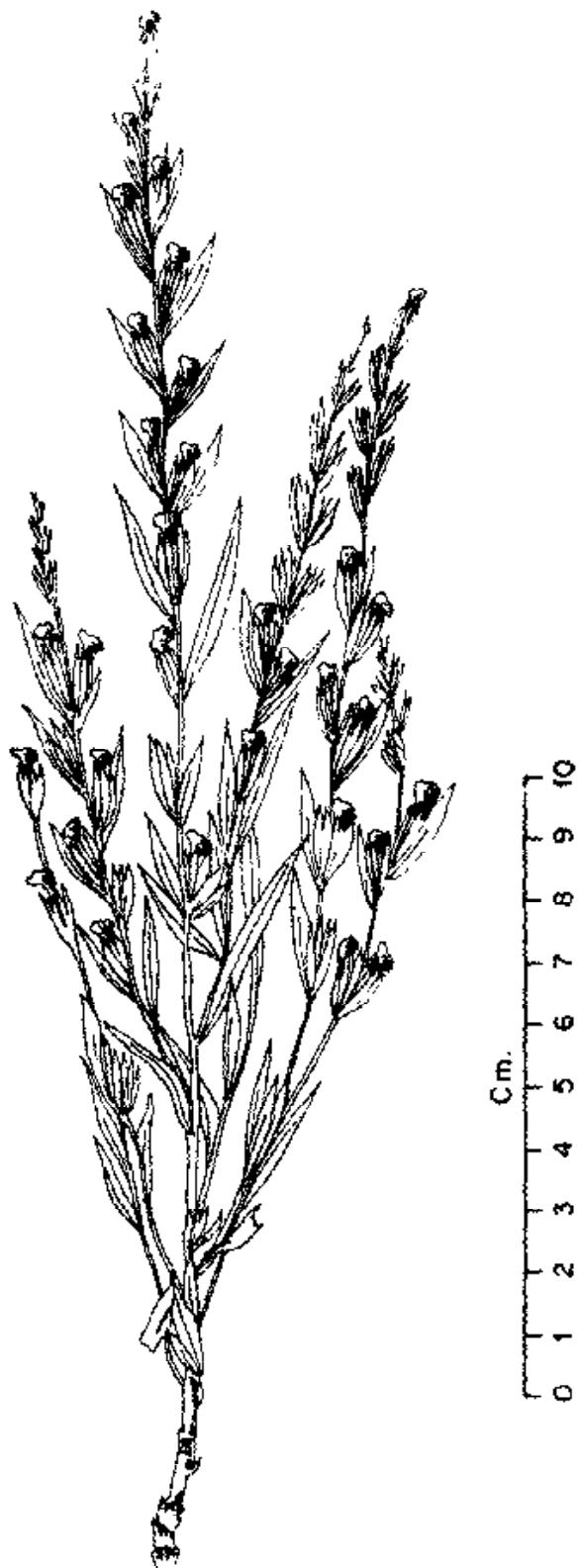


Fig. 37. *Striga densiflora* (Benth.) Benth.

Herbs, 13–20 cm high. Leaves ovate, 1–2 × 0.5–1.2 cm, base tapering into short petiole. Capsules oblong, ca 0.3 cm long, 2-valved.

Fls. & Frts. : February.

Illus. : Wight, Ic. t. 856. 1844.

Distrib. : Rare along river bank. Mahabaleshwar, Soman 157140.

TORENIA L.

Torenia indica Saldanha in Bull. Bot. Surv. India 8 : 126, f. 1, 1967.
T. cordifolia non Roxb. 1802 ; Hook. in Bot. Reg. t. 3715. 1839 ; Hook. f. Fl. Brit. India 4 : 276. 1884 ; Cooke, Fl. Pres. Bombay 2 : 364. 1958 (Repr. ed.).

Herbs, 10–20 cm high ; stems quadrangular, sparsely hairy. Leaves ovate-lanceolate, 2–3 × 1.0–1.5 cm, base cuneate, apex acute. Flowers at the end of branches ; calyx tubular, 0.8–1.2 cm long, winged on the ribs ; corolla : upper lip notched, lower lip 3-lobed. Capsules oblong, ca 1 cm long, with persistent calyx. Seeds truncate.

Fls. & Frts. : November.

Illus. : Saldanha, op. cit.

Distrib. : Rare annual in forest undergrowth. Koyna, Kochhar 158983 ; Punoli, Kochhar 157831.

VERBASCUM L.

Verbascum chinense (L.) Sant. in Rec. Bot. Surv. India 16(1) : 177, 1967 (3rd Rev. ed.). *Scrophularia chinensis* L. Mant. Pl. 2 : 250. 1771. *Celsia coromandeliana* Vahl, Symb. Bot. 3 : 79. 1794 ; Hook. f. Fl. Brit. India 4 : 240. 1884 ; Cooke, Fl. Pres. Bombay 2 : 352. 1958 (Repr. ed.).

Herbs, ca 1 m high. Leaves oblanceolate, 4–10 × 1.5–4.5 cm, base cuneate, apex acute, pubescent. Flowers yellow in 10–15 cm long racemes, capsules 0.5–0.8 cm across, 2-valved. Seeds oblong, rugose.

Fl. & Fr. : April–November.

Illus. : Wight, Ic. t. 1406. 1849 (*C. coromandeliana*).

Distrib. : Common weed in waste places. Chaphal; Kelghar ghat; Koyna; Mahabaleshwar; Medha; old Mahabaleshwar; Wai.

VERONICA L.

- | | |
|---|----------------------------------|
| I. Flowers in elongate racemes ; capsules oblong | ... <i>V. anagallis-aquatica</i> |
| I. Flowers in capitate racemes ; capsules obovate | ... <i>V. javanica</i> |

Veronica anagallis-aquatica L. Sp. Pl. 12. 1753 ; Pennell in Acad. Nat. Sci. Phil. 1 : 362. 1935. *V. anagallis* Bth. Scroph. Ind. 44. 1835 ; Hook. f. Fl. Brit. India 4 : 293. 1884 ; Cooke, Fl. Pres. Bombay 2 : 373. 1958 (Repr. ed.). (Fig. 38).

Herbs, 30 - 50 cm high. Leaves sessile, oblong-lanceolate, 2.5 - 5.0 × 0.6 - 2.0 cm, base amplexicaul, apex acute. Flowers white in axillary and terminal, 10 - 13 cm long racemes. Capsules ca 0.3 cm long. Seeds oblong.

Fls. & Frts. : May November.

Distrib. : Occasional in moist situations. Mahabaleshwar; Panchgani ghat.

V. javanica Bl. Bijdr. 742. 1826 ; Hook. f. Fl. Brit. India 4 : 296. 1884 ; Pennell in Acad. Nat. Sci. Phil. 1 : 87. 1935 ; Dutta in J. Bombay Nat. Hist. Soc. 57 : 594. 1960.

Herbs, viscid-pubescent. Leaves shortly petioled, ovate, apex obtuse, pubescent. Flowers pinkish-white ; calyx strigose. Capsules enclosed in calyx, pubescent.

Fls. & Frts. : April.

Distrib. : Weed along margins of cultivated fields and in waste-lands. Mahabaleshwar.

CULTIVATED SPECIES

Mecardonia procumbens (Mill.) Small, Fl. South-East U.S. 1065, 1338. 1903 ; Rani & Matthew in Matthew, Fl. Tamilnadu Carnatic 3 : 1097. 1983. *Erinus procumbens* Mill. Gard. Dict. ed. 8. 6. 1768. *M. dianthera* Pennell in Proc. Acad. Nat. Sci. Phil. 98 : 87. 1946.

Herbs, prostrate. Leaves opposite, subsessile, ovate-lanceolate, 1-2 × 0.5 - 0.8 cm. Flowers yellow, axillary, solitary. Capsules cylindric, ca 0.5 cm long, 2-valved.

Fls. & Frts. : April July.

Distrib. : Garden weed. Koyna, Kochhar 158625, M.P. Nayar 153108.

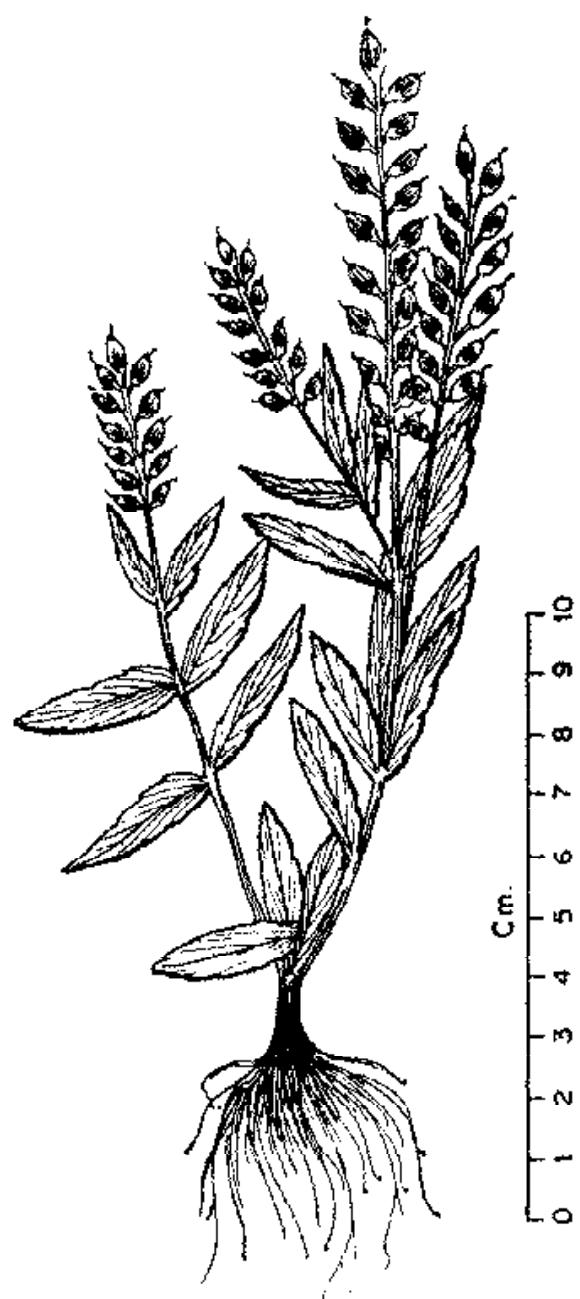


Fig. 38. *Veronica anagallis-aquatica* L.

Maurandia lophospermum Bailey, Man. Cult. Pl. 895. 1949 (2nd ed.).
M. scandens A. Gray in Proc. Amer. Acad. 7 : 377. 1868 *non* Pers. 1807 ;
 Cooke, Fl. Pres. Bombay 2 : 382. 1958 (Repr. ed.).

Climbers ; branches glandular-hairy. Leaves triangular hastate, hispid ; petioles twining. Flowers purple, axillary on long pedicels.

Fls. : November.

Distrib. : Cultivated in gardens as an ornamental plant, native of Mexico. Mahabaleshwar.

OROBANCHACEAE

AEGINETIA L.

Aeginetia indica L. Sp. Pl. 632. 1753 ; Hook. f. Fl. Brit. India 4 : 320. 1884 ; Cooke, Fl. Pres. Bombay 2 : 384. 1958 (Repr. ed.).

Herbs, leafless, dirty brown. Scapes branched, 7-16 cm long. Flowers purple, solitary ; calyx spathaceous, splitting to the base, 2.0-2.5 cm long, enclosing corolla. Capsules ovoid, 2.0 × 1.7 cm. Seeds minute, yellow.

Fls. & *Frt.s.* : October.

Illus. : Wight, Ic. t. 895. 1844-45 ; Ramamoorthy in Saldanha & Nicolson, Fl. Hassan Dist. f. 98, A-Ad. 1976.

Distrib. : Rare root parasite in moist places. Koyna, Kochhar 152558 ; Nauja, 167691.

LENTIBULARIACEAE

UTRICULARIA L.

- | | | |
|--|-----|-------------------------|
| 1. Flowering scapes leafy ; seeds glochidiate | ... | <i>U. striatula</i> |
| 1. Flowering scapes leafless ; seeds not glochidiate : | | |
| 2. Pedicels recurved in fruits : | | |
| 3. Spur conical, shorter than lower lip | ... | <i>U. albo-caerulea</i> |
| 3. Spur linear-subulate, equaling lower lip | ... | <i>U. arcuata</i> |
| 2. Pedicels not recurved in fruits : | | |
| 4. Scales and bracts medifixed | ... | <i>U. coerulea</i> |
| 4. Scales and bracts basifixed : | | |
| 5. Scapes twining | ... | <i>U. reticulata</i> |

5. Scapes erect :
- 6. Calyx as long as or longer than pedicel .. *U. uliginosa*
 - 6. Calyx shorter than pedicel :
 - 7. Calyx lobes narrowly ovate, acute .. *U. graminifolia*
 - 7. Calyx lobes broadly ovate, obtuse .. *U. proterita*

***Utricularia albo-coerulea* Dalz.** in Hook. J. Bot. Kew Gard. Misc. 3 : 279. 1851 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 330. 1884 ; Cooke, Fl. Pres. Bombay 2 : 391. 1958 (Repr. ed.).

Herbs, 7 - 12 cm high ; bladders orbicular, minute. Leaves spathulate. Scapes 1 - 3 flowered. Flowers purple ; calyx lobes 2, ovate, acute, enlarged in fruits ; corolla : upper lip suborbicular, notched at apex ; lower lip quadrangularly orbicular ; spur slightly curved or straight. Capsules globose, ca 0.5 cm across. Seeds oblong.

Fls. & Frts. : September November.

Distrib. : Rare, restricted to higher elevations, found on wet rocks. Mahabaleshwar, Acland 882, 956. Bole 273, 1670, 1813, 1837. Santapau 11740, 11859 (BLAT) ; Panchgani, Ansari 67721.

U. arcuata Wight, Ic. t. 1571. 1850 ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 330. 1884 ; Cooke, Fl. Pres. Bombay 2 : 391. 1958 (Repr. ed.) ; Sant. in J. Bombay Nat. Hist. Soc. 49 : 218. 1950. *U. ogmosperma* Blatt. & McC. in J. Ind. Bot. Soc. 3 : 123. 1931.

Herbs, 10 - 15 cm high, bladders minute. Leaves oblong-spathulate. Scapes 2 - 5 flowered ; bracts ovate, acute ; flowers bluish-purple ; calyx lobes ovate, acute, subequal ; corolla : upper lip obovate, lower lip orbicular ; spur ca 1 cm long. Capsules ca 0.3 cm across.

Fls. & Frts. : September.

Illus. : Wight, *op. cit.*

Distrib. : Jadholi, Mahabaleshwar, Nauja, Panchgani.

Notes : Blatt. & McC. (*op. cit.*) described *U. ogmosperma* allied to *U. albo-coerulea* Dalz. from Panchgani. According to Bole & Almeida (1985) the differentiating characters given by Blatt. & McC. agree with those of *U. arcuata*.

U. coerulea L. Sp. Pl. 18. 1753 ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 331. 1884 ; Cooke, Fl. Pres. Bombay 2 : 392. 1958 (Repr. ed.).

Herbs, 10–20 cm high; bladders globose, minute. Leaves 1–5 cm long, base attenuate. Flowers bluish-purple in lax racemes; bracts ovate, acuminate; calyx upper lobe ovate, lower narrower, 2-lobed. Capsules ovoid, enclosed in enlarged calyx.

Fls. & Frts. : October December.

Illus. : Wight, Ic. t. 1573. 1850.

Distrib. : Slender herbs in moist situations. Koyna; Mahabaleshwar

Utricularia graminifolia Vahl, Enum. Pl. 1 : 195. 1805. *U. coerulea* C.B.CI. in Hook. f. Fl. Brit. India 4 : 331. 1884 *non* L. 1753. *U. equiseticaulis* Blatt. & McC. in J. Ind. Bot. Soc. 10 : 122, t. 1 & 2. 1931.

Herbs, 10–15 cm high, often with matted, stout fibres. Scapes 2–6 flowered; flowers blue; bracts ovate, acuminate; spur short, conical. Capsules ovoid, enclosed in enlarged calyx.

Fls. & Frts. : August March.

Illus. : Wight, Ic. t. 1573 (*U. uliginoides*), t. 1575 (*U. conferta*), t. 1578 B (*U. pedicellata*) 1850.

Distrib. : Lingmala, Mahabaleshwar, Panchgani.

U. praeterita P. Taylor in Matthew, Fl. Tamilnadu Carnatic 3 : 1120, pl. 87. 1983.

Herbs, 5–15 cm high. Scapes 1–4 flowered; scales lanceolate; bracts ovate; bracteoles linear; flowers bluish purple; calyx lobes unequal, 0.2–0.5 cm; corolla 0.5–0.8 cm, upper lip obtuse-emarginate, lower lip orbicular, obtuse; spur 0.2–0.4 cm, acute, curved upwards. Capsules globose, ca 0.2 cm across, calyx much enlarged. Seeds ellipsoid.

Fls. & Frts. : October January.

Illus. : P. Taylor, op. cit.

Distrib. : Robust perennial on moist rocks, along stream banks. Panchgani, P. Taylor 18104 (K).

U. reticulata J.E. Sm. Exot. Bot. 2 : t. 119. 1805; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 331. 1884; Cooke, Fl. Pres. Bombay 2 : 393. 1958 (Repr. ed.).

Herbs, 10–15 cm high. Leaves linear-oblong, ca. 1 cm long. Flowers bluish-purple in lax racemes in upper half of the scape; bracts ovate, acute; pedicels suberect, 0.5–1.0 cm long; sepals ovate, acute, enlarged in fruits. Capsules ellipsoid, ca 0.5 cm long.

Fls. & Frts. : October November.

Distrib. : Rare near cultivated fields in water logged areas. Panchgani, Bhide 1105.

Utricularia striatula J.E. Sm. in Rees, Cyclop. 37, No. 17. 1819 ; Cooke, Fl. Pres. Bombay 2 : 393. 1958 (Repr. ed.) ; P. Taylor in Kew Bull. 18 : 91 & 92, f. 3. 1964. ; *orbiculata* Wall. ex A. DC. Prodr. 8 : 18. 1844 ; C.B.CI. in Hook. f. Fl. Brit. India 4 : 334. 1884.

Herbs ; stolons creeping, filiform. Leaves orbicular-reniform, small, petiolate. Scapes filiform, 2 - 3 cm long ; bracteoles oblong-lanceolate. Flowers purplish with yellow spot at base ; sepals orbicular, emarginate, unequal ; spur curved. Capsules subglobose, ca 0.2 cm across. Seeds ellipsoid.

Fls. & Frts. : July December.

Illus. : Wight, Ic. t. 1518. 1850 (*U. glochidiata*).

Distrib. : Common on wet rocks. Ambeghar; Mahabaleshwar; old Mahabaleshwar road; Panchgani ghat; Tapola.

U. uliginosa Vahl, Enum. Pl. 1 : 203. 1804. *U. affinis* Wight in Hook. J. Bot. Kew Gard. Misc. 1 : 373. 1849 & Ic. t. 1580, f. 1, 1850 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 330. 1884 ; Cooke, Fl. Pres. Bombay 2 : 392. 1958 (Repr. ed.).

Herbs, 3 - 8 cm long. Leaves oblong, 0.3 - 0.6 cm long. Flowers purple in erect racemes ; bracts ovate, acute ; calyx lobes ovate-obtuse, lower lobe shortly notched at apex ; spur conical, ca 0.5 cm long. Capsules globose. Seeds subglobose.

Fls. & Frts. : September November.

Illus. : Wight, *op. cit.*

Distrib. : Common aquatic herb on wet rocks. Ambeghar; Mahabaleshwar; Panchgani.

GESNERIACEAE

- | | | |
|--|-----|----------------|
| 1. Epiphytic under shrubs ; leaves opposite ; seeds tipped with long hairs | ... | AESCHYNANTHUS |
| 1. Terrestrial herbs ; leaves alternate ; seeds not as above | ... | RHYNCHOGLOSSUM |

AESCHYNANTHUS Jack. (*nom. cons.*).

Aeschynanthus perrottetii A. DC. in DC. Prodr. 9 : 261. 1845 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 339. 1884 ; Cooke, Fl. Pres. Bombay 2 : 395. 1958 (Repr. ed.).

Stems *ca* 1 m high, compressed, swollen and rooting at nodes. Leaves lanceolate, 6–9 × 1.5–2.5 cm, base acute or rounded, apex acuminate. Flowers scarlet, 2–4 together; calyx lobes linear, obtuse; corolla tube elongate, curved; mouth 2-lipped, upper lip 2-lobed; lower lip 3-lobed, lobes rounded, reflexed. Capsules many seeded.

Fls. & Frts. : October November.

Illus. : Wight, Ic. t. 1347. 1850 (*A. ceylanica*).

Distrib. : Rare, there is only one specimen of this species from Koyna valley, below Mahabaleshwar collected by Cooke at BSI.

RHYNCHOGLOSSUM Bl.

1. Calyx winged; stamens 4	...	<i>R. notonianum</i>
1. Calyx not winged; stamens 2	...	<i>R. obliquum</i> var. <i>parviflorum</i>

Rhynchoglossum notonianum (Wall.) Burtt in Notes R. B. G. Edinb. 24 : 170. 1962. *Wulfenia notoniana* Wall. Tent. Fl. Nepal. 46. 1826. *Klugia notoniana* (Wall.) A. DC. in DC. Prodr. 9 : 276. 1845 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 366. 1884 ; Cooke, Fl. Pres. Bombay 2 : 397. 1958 (Repr. ed.).

Herbs, slender, 9–12 cm high. Leaves ovate or oblong, 2–5 × 1.0–1.5 cm, base oblique, auriculate. Flowers purple in terminal racemes; bracts linear, subulate; corolla upper lip oblong; lower lip orbicular, emarginate. Capsules broadly ellipsoid, *ca* 0.4 cm long.

Fls. & Frts. : September October.

Illus. : Wight, Ic. t. 1353. 1848 (*K. notonianana*).

Distrib. : Common monsoon herb along ghats. Kumbharli ghat; Wada, below Mahabaleshwar; Pratapgad.

R. obliquum Bl. var. *parviflorum* C.B. Cl. in DC. Mon. Phan. 5 : 162. 1884 & in Hook. f. Fl. Brit. India 4 : 367. 1884 ; Cooke, Fl. Pres. Bombay 2 : 398. 1958 (Repr. ed.) ; Bole & Almeida in J. Bombay Nat. Hist. Soc. 82 : 73. 1985.

Herbs, ca 50 cm high. Leaves elliptic-oblong, 5-15 × 2-7 cm, base unequal, apex acuminate. Flowers blue in solitary or paired racemes. Capsules ovoid, ca 0.4 cm long. Seeds ellipsoid, minute.

Fls. & Frts. : October.

Distrib. : Occasional, slender herbs in moist situations. Mahabaleshwar; Pratapgad Fort.

BIGNONIACEAE

1. Leaves bipinnate ; stamens 5	...	OROXylum
1. Leaves unipinnate ; stamens 4 :		
2. Flowers white in large, dense, fulvous-tomentose panicles	...	HETEROPHRAGMA
2. Flowers dull purple in lax trichotomous, viscid panicles	...	STEREOSPERMUM

HETEROPHRAGMA DC.

Heterophragma quadriloculare (Roxb.) K. Schum. in Engl. & Prantl, Pflanzenfam. 4(3b) : 243. 1895. *Bignonia quadrilocularis* Roxb. Pl. Cor. 2 : 24, t. 145. 1798. *H. roxburghii* A. DC. Prodr. 9 : 210. 1845 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 381. 1884 ; Cooke, Fl. Pres. Bombay 2 : 404. 1958 (Repr. ed.). 'Varas'.

Trees, ca 9 m high. Leaves crowded at the tips of branches ; leaflets 5-7, elliptic-oblong, 4-9 × 3-5 cm, base unequal, apex acuminate, tomentose when young. Flowers fragrant ; pedicels short, stout, tomentose. Capsules linear, 20-30 cm long, tomentose when young.

Fls. & Frts. : January - February.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 2 : 311, f. 436. 1911.

Distrib. : Common in deciduous forests. Jangli Jaigad ; Mahabaleshwar ; Nauja ; Umarkanchan.

OROXylum Vent.

Oroxylum indicum (L.) Vent. Dec. Gen. Nov. 8. 1808 ; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 378. 1884 ; Cooke, Fl. Pres. Bombay 2 : 401. 1958 (Repr. ed.). *Bignonia indica* L. Sp. Pl. 625. 1753. 'Tetu'.

Trees, 6 - 8 m high. Leaflets 7, ovate or elliptic, 9 - 13 × 6 - 8.5 cm, base rounded, apex acuminate. Flowers purple in large racemes; calyx campanulate, lobes truncate, pubescent; corolla ca 7 cm long, lobes rounded, crisped, reflexed; stamens slightly exerted. Capsules linear, 30 - 50 cm long, tapering at both ends.

Fls. & Frts. : April September.

Illus. : Wight, Ic. t. 337 & 38. 1840.

Distrib. : Rare in deciduous forests with soft wood. Kusapur, Kochhar 154369 ; Nauja, Kochhar 154235.

STEREOSPERMUM Cham.

Stereospermum suaveolens (Roxb.) DC. Prodr. 9 : 211. 1845 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 382. 1884 ; Cooke, Fl. Pres. Bombay 2 : 406. 1958 (Repr. ed.). *Bignonia suaveolens* Roxb. Fl. Ind. (Carey ed.) 3 : 104. 1832.

Trees, 8 - 18 m high; young branches hairy. Leaves 30 - 50 cm long; leaflets 7 - 9, broadly elliptic, acuminate, pubescent beneath. Flowers fragrant. Capsules cylindric, 30 - 50 cm long, faintly ribbed.

Fls. & Frts. : March April.

Illus. : Wight, Ic. t. 1342. 1848.

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

CULTIVATED SPECIES

Jacaranda mimosifolia D. Don in Bot. Reg. 8 : t. 631. 1822 & in Edinb. Phil. J. 264. 1823 ; Steenis, Fl. Males. 1, 8. 183. 1977.

Trees, ca 10 m high. Leaves uni- or bi-pinnate, pubescent. Flowers blue in lax, ca 20 cm long axillary and terminal racemes. Fruits oblong.

Fls. & Frts. : March May.

Distrib. : Planted along roadsides and in gardens. Koyna.

Tecoma stans (L.) Kunth, Nov. Gen. Pl. 3 : 144. 1819 ; Bor & Raiz. in J. Bombay Nat. Hist. Soc. 41 : 683, f. 1. 1954. *Bignonia stans* L. Sp. Pl. ed. 2. 871. 1763. *Sienolobium stans* Seem. in J. Bot. 1 : 88. 1863 ; Cooke, Fl. Pres. Bombay 2 : 410. 1958 (Repr. ed.).

Shrubs, 1 - 4 m high; branches quadrangular. Leaves imparipinnate; leaflets ovate-lanceolate. Flowers bright yellow in racemes. Capsules linear, beaked.

Fls. & Frts. : Throughout the year.

Illus. : Bor & Raiz. *op. cit.*

Distrib. : Occasionally cultivated in gardens also found in open situations along ghats. Satara.

PEDALIACEAE

CULTIVATED SPECIES

Sesamum orientale L. Sp. Pl. 634. 1753 ; Backer & Bakh. f. Fl. Java 2 : 544. 1965. *S. indicum* L. *op. cit.* ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 387. 1884 ; Cooke, Fl. Pres. Bombay 2 : 413. 1958. (Repr. ed.). 'Til'.

Herbs, *ca* 1 m high ; stems quadrangular, hairy. Lower leaves opposite, 2–3 lobed ; upper alternate, 5–10 × 1–3 cm, sparsely hairy. Flowers pinkish-purple, solitary, axillary or fascicled. Capsules oblong, beaked, glandular-hairy.

Fls. & Frts. : August September.

Illus. : Wight, Ill. t. 163. 1850 (*S. indicum*).

Distrib. : Cultivated for seeds for oil extraction ; rarely found as an escape. Yavteshwar.

THUNBERGIACEAE

THUNBERGIA Retz. (*nom. cons.*).

Thunbergia laevis Nees in Wall. Pl. As. Rar. 3 : 77. 1832 ; Sant. in Rec. Bot. Surv. India 16(1) : 193. 1967 (3rd Rev. ed.), *Thunbergia fragrans* sensu Cooke, Fl. Pres. Bombay 2 : 417. 1958 (Repr. ed.), *non* Roxb. 1795. *T. fragrans* Roxb. var. *laevis* (Nees) C.B. Cl. in Hook. f. Fl. Brit. India 4 : 391. 1884.

Undershrubs, climbing. Leaves opposite, deltoid-ovate, hastate, 3–8 × 1–5 cm. Flowers white, solitary or paired ; bracts 2, leafy ; bracteoles ovate-lanceolate, acute, *ca* 1 cm long ; corolla lobes obovate, spreading. Capsules 1.5–2.5 cm long with a long beak, 2-valved. Seeds ovoid, rugose.

Fls. & Frts. : August December.

Distrib. : Common along ghats. Ambeghar; Gadoli; Gureghar; Kelghar Ghat; Mahabaleshwar; Nauja; Panchgani; Yavteshwar.

CULTIVATED SPECIES

Thunbergia alata Bojer ex Sims, Bot. Mag. t. 2591. 1825 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 391. 1884 ; Cooke, Fl. Pres. Bombay 2 : 418. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 10. 1952.

Slender twiners. Leaves ovate-cordate, 4–7 × 2.5–4.0 cm, villous; petioles 5–6 cm long, winged. Flowers orange-yellow, axillary, solitary. Capsules globose, pubescent.

Fls. & Frts. : August–December.

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

T. grandiflora (Roxb. ex Rottl.) Roxb. Fl. Ind. (Carey ed.) 3 : 34. 1832 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 392. 1884 ; Cooke, Fl. Pres. Bombay 2 : 418. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 9. 1952. *Flemingia grandiflora* Roxb. ex Rottl. Ges. Natur. f. Freunde Berlin Neue Schriften 4 : 202. 1803.

Climbers, pubescent. Leaves ovate, acute, 7.5–10.0 × 8.0–10.5 cm, shallowly 5–7 lobed, pubescent. Flowers blue in terminal racemes.

Fls. : July–April.

Illus. : Wight, Ic. t. 872. 1844.

Distrib. : Occasionally grown in gardens as an ornamental plant, Mahabaleshwar; Yavteshwar.

T. mysorensis (Wight) T. And. in J. Linn. Soc. 9 : 448. 1867 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 393. 1884 ; Cooke, Fl. Pres. Bombay 2 : 417. 1958 (Repr. ed.) ; Sant. in Univ. Bombay Bot. Mem. 2 : 9. 1952. *Hexacentris mysorensis* Wight, Ic. t. 871. 1844.

Twiners. Leaves elliptic-lanceolate, base rounded, apex acuminate, margins entire or shallowly lobed. Flowers in lax, axillary racemes; corolla tube purple, lobes bright yellow or orange.

Fls. : December–January.

Illus. : Wight, Ic. op. cit.

Distrib. : Common ornamental plant. Mahabaleshwar.