

## INTRODUCTION

There can be no two opinions about the need for a thorough revision of the Hooker's Flora of British India, which, with all its shortcomings, has occupied the position of the National Flora for India. Every country should have a flora based on the most upto-date researches. The difficulties encountered in this type of work are many; the greatest problem is to determine the correct identity and nomenclature of a number of plants, whose type materials are housed in various countries outside India. Again, according to the International Code of Botanical Nomenclature, many of the plants mentioned in various Indian floras do not possess scientifically correct names. Further, some of the plants described in the available literature are incorrectly identified. The large number of plants which are added to the Hooker's flora and various regional floras, from time to time indicates that our knowledge of the Indian flora is far from complete. The great need of the moment is to compile a truly national flora for India. But before this can be done there must be compiled regional floras on modern lines based on thorough explorations.

Many of the floristic workers in our country are at present concentrating their energies in working out the floras of big cities and well known hill resorts. There is thus a great need of thorough exploration of not easily accessible regions before we compile a regional or national flora. This is being neglected probably due to the hardships one has to face in undertaking such work.

The Flora of the Bombay Presidency was published by T. Cooke in 1908. W.A. Talbot published the Forest Flora of the Bombay Presidency and Sind, Vol. I in 1909 and Vol. II in 1911. Various other authors like Graham, Dalzell and Gibson, Nairne, Blatter, and Blatter and McCann, published Floras of the Bombay Presidency or its various regions. Gujarat then formed a part of the erstwhile Bombay.

From the distributional data available in all these works, it is evident that most of these workers have concentrated in Deccan, Western Peninsula and Southern parts of the Presidency and Gujarat has been poorly represented.

Only few works on the flora of various regions of Gujarat are worth mentioning. Jayakrishna Indrajī Thakar in 1910 published in Gujarati the Flora of Barda Hill in Kathiawar (Saurashtra). The work though very informative is of limited scope and not on modern lines. Fr.E. Blatter published the Flora of Cutch in 1908. This region was further explored by Puri, Jain and their associates. W.T. Saxton and L. J. Sedwick, surveyed some parts of Northern Gujarat and published "The Plants of Northern Gujarat" in 1918. In recent years Dr. H. Santapau has contributed to the flora of Dang Forests and of Saurashtra. Dr.Santapau and Prof. M.B. Raizada have ~~surveyed~~ surveyed and contributed to the Flora of Gir Forest in Saurashtra. Contribution to the Flora of Pavagadh has been made by many workers who have published their reports in various journals. Chavan and Oza have very recently published Flora of Pavagadh in book form. There are various papers on the vegetation and flora of different regions of Gujarat published by different authors in various journals.

In spite of all this, the forest flora of Gujarat State is poorly worked out, very scanty information being available about the distribution and abundance

of species available in these regions. The entire belt of hundreds of square kilometres on the eastern border of Gujarat is covered by hilly forests. Many of these regions, till to-day are not easily accessible and there are no transport facilities.

With a view to compiling a comprehensive flora of Gujarat State on the most modern lines, the Department of Botany of the Maharaja Sayajirao University of Baroda under the able leadership of the Late Prof. A.R. Chavan, launched a programme of floristic studies on the different areas of Gujarat. Unfortunately Prof. Chavan died in 1967, but the work has been continued by his colleagues.

Floristic studies on the Ratan Mahal and surrounding hills presented in this thesis are amongst the series of works started under the above project. It is hoped that this work will help to fill partly the lacuna in the knowledge of the forest flora of Gujarat State.

#### Description of the Area

The area under study includes Ratan Mahal which formed the whole of the then existing Kanjeta State and some hills surrounding it. It is situated in the



south-eastern part of the Panch Mahal District in the eastern border of Central Gujarat in western India. It is bounded by the Jabalpur District of Madhya Pradesh on its south-eastern sides. On its north and north-western sides, lies the Devgadh Baria Taluka and on the south-western side Chhota Udaipur Taluka. The area lies between  $22^{\circ}-30'$  to  $22^{\circ}-40'$  <sup>N</sup> latitude and  $74^{\circ}-0'$  to  $74^{\circ}-12'$  <sup>E</sup> longitude.

The area is approachable only by fair weather roads from Alirajpur in Madhya Pradesh and Devgadh Baria in Gujarat State. During monsoon and post monsoon the area is cut off from the adjoining regions, as there are no bridges on rivers and streams, and no other transport facilities. The area is densely infested with wild animals. It was reserved by the former rulers for Shikar, and is inhabited by Bhil tribes, who have not seen the light of modern civilization.

Physiographically the area is roughly divided into three broad belts - two hilly terrains separated by a rather narrow valley through which the river Panam flows north-westwards. The valley broadens towards the western side and forms almost a plain

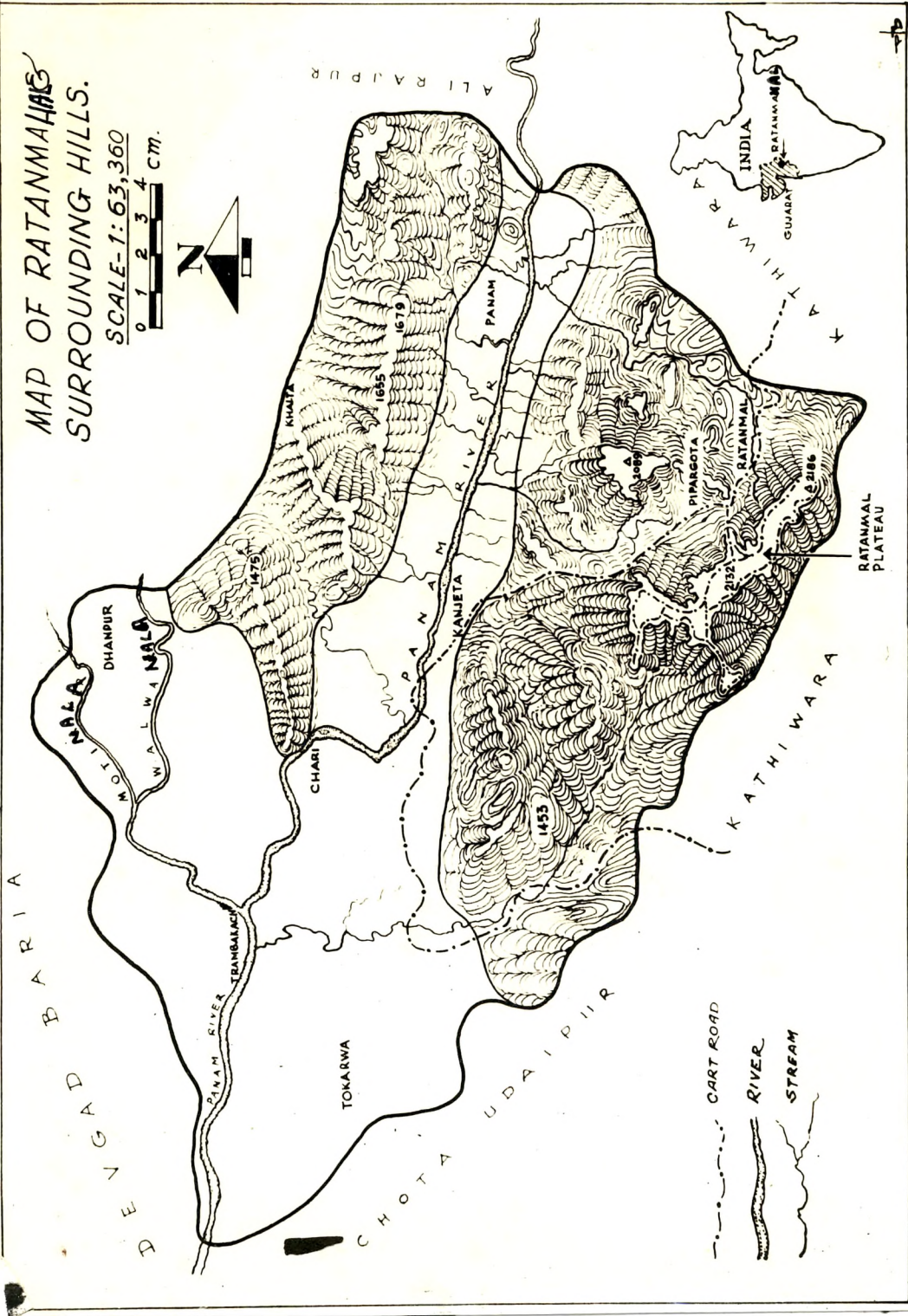
area in the north-western parts. A number of tributaries meet the river at various points from the north and south. The most noteworthy streams are Valva Nala and Moti Nala which flow south-westwards near Dhenpur, meet together near Vakasia and finally, after running southwards, meet the Panam river near Taramb Kach. There are many small river islands showing a characteristic vegetation during the dry season.

The hilly portion generally consists of a network of ridges with a rather east-west orientation forming the spurs of the Vindya ranges. The height of the ridges generally does not exceed 675 metres. The hilly areas to the south of Panam river valley is more rugged and its south-east corners attains a height exceeding 610 metres. The hilly ridges 630, 650 and 666 metres are rather flat topped and form very conspicuous topographical feature of the area. A large number of gullies and streams show that the hills are very much dissected due to the erosive forces. The catchment area of the Panam river is well developed on the west. As greater part of the area is covered by dissected hills and steeply sloping relief features, there is no great possibility

# MAP OF RATANMAHAL SURROUNDING HILLS.

SCALE-1:63,360

0 1 2 3 4 cm.



of agriculture except in small patches, plains in the N.W. areas and at few places in the Panam valley. The area is sparsely populated hence reducing the biotic factor to minimum. Plate No:1 (Map).

#### Climate

The climate is sub-tropical arid, which turns damp and humid during monsoon i.e. during July to October. Gradually it becomes exceedingly dry and cold during November to February followed by a long hot summer. The hottest months are May and June.

The climate of the forest interiors is more or less noxious and unhealthy. The unhygienic water contaminated with vegetable matter in its course through the jungles, especially during monsoon is supposed to be the cause for the notorious unhealthiness of the area. Conditions are malarious during and after monsoon.

The climatic factors of greater importance are described below.

### Rainfall:

The monsoon usually arrives every year in the last week of June and continues upto October, rarely till November. The mean annual rainfall comes to approximately 1604 mm. (Table I.A).

The maximum rainfall recorded during the past 10 years (1956-1965) was 2101.59 mm. during the year 1960 (Table I.B).

The minimum rainfall recorded during the past 10 years (1956-1965) was 957.58 mm. in the year 1965 (Table I.B).

### Temperature:

Among the important characteristic features of the climate of Ratan Mahal are the extremes of temperature. The heat during summer is intense. Average hot season is from March to May showing the average temperature of 41.3°C during May. The average minimum temperature during summer is 24.3°C. Hot summer season is followed by warm rainy season i.e.

from June to October. Average maximum rainy season temperature is  $35.6^{\circ}\text{C}$  and minimum during the same season is  $21.0^{\circ}\text{C}$ . Maximum average cold season temperature (November to February) is  $33.3^{\circ}\text{C}$  and average minimum during the same season is  $14.6^{\circ}\text{C}$  (Table II.A).

Maximum temperature recorded during (1960-63) was  $45.0^{\circ}\text{C}$  in the month of May, 1962. Minimum temperature recorded during (1960-1963) was  $11.9^{\circ}\text{C}$  during November and December 1960 (Table II.B).

Relative Humidity:

The relative humidity is minimum during the summer months of April and May and Maximum during monsoon.

(Meteorological data obtained from a Dispensary in Kathiwada, Madhya Pradesh, a place about 20 kms. from Kanjeta).

TABLE I.A : Showing monthly record of rainfall during 1960-1965  
in mm.

YEAR	M O N T H S					TOTAL
	June	July	August	September	October	November
1960	165.10	727.45	678.18	467.36	63.50	-
						<u>2101.59</u>
1961	190.50	677.67	467.36	419.10	203.20	-
						<u>1960.37</u>
1962	213.36	690.62	462.28	444.50	215.90	-
						<u>2026.66</u>
1963	149.86	511.81	411.48	185.42	55.12	-
						<u>1313.69</u>
1964	159.00	374.14	476.00	180.84	-	44.19
						<u>1234.17</u>
1965	101.60	518.16	274.32	63.50	-	-
						<u>957.58</u>

Maximum rain was noted in July in all the years except in 1964 where it was August.

**TABLE I.D:** Showing the rainfall (in mm.) during  
1956 to 1965.

YEAR	RAINFALL
1956	1929.64
1957	1381.00
1958	1848.87
1959	1288.80
1960	<u>2101.59</u>
1961	1960.37
1962	2026.66
1963	1313.69
1964	1234.17
1965	<u>957.58</u>

Average rainfall during last 10 years (1956 to 1965)  
was 1604.23 mm.

Minimum rainfall was 957.58 mm. in the year 1965.

Maximum rainfall was 2101.59 mm. in the year 1960.



**TABLE II. A: Showing the average seasonal temperature  
during 1960 to 1963.**

Seasons	1960		1961		1962		1963	
	Mini.	Max.	Mini.	Max.	Mini.	Max.	Mini.	Max.
Average hot season from March to May	21.46	41.43	21.40	40.50	26.80	42.16	19.60	40.70
Average rainy season from June to October	21.96	35.08	22.18	35.44	19.42	37.16	20.34	34.76
Average cold season from November to February	12.05	32.18	14.55	33.98	16.20	34.00	15.52	33.15

**TABLE II.B: Showing maximum and minimum temperature (in °C) during 1960 - 1963 in all the months.**

Month	1960		1961		1962		1963	
	Mini.	Max.	Mini.	Max.	Mini.	Max.	Mini.	Max.
January	12.2	27.7	13.3	33.3	16.6	34.4	15.5	33.3
February	<u>11.9</u>	34.4	13.3	32.7	16.1	35.0	16.1	35.0
March	16.6	38.8	15.5	34.4	16.6	37.7	16.1	36.1
April	21.1	42.2	22.1	43.8	17.2	43.8	16.1	42.7
May	26.7	43.3	26.6	43.3	26.6	<u>45.0</u>	26.6	43.3
June	24.4	40.0	26.1	38.3	27.2	42.7	26.1	35.0
July	23.3	33.3	15.5	38.3	21.1	42.7	20.5	33.8
August	23.3	34.4	22.7	36.1	16.1	34.4	20.5	35.0
September	21.1	33.3	25.5	33.1	16.1	32.7	15.5	36.6
October	17.7	34.4	21.1	37.2	16.6	33.8	16.1	34.4
November	12.2	36.6	16.6	36.1	16.6	33.3	15.5	33.8
December	<u>11.9</u>	30.0	15.0	33.8	15.5	33.3	15.0	33.5

Maximum temperature recorded during 1960-1963 was 45.0°C in the month of May, 1962.

Minimum temperature recorded during 1960-1963 was 11.9°C during November and December, 1960.

February

### Geology

Geologically the area is occupied by the rocks of Pre-cambrian age. A variety of metamorphosed and granite sedimentaries are exposed in the area, which together with varieties of granites and granite-gneisses, constitute very interesting rock assemblages. The area to the south of Panam river consists of a complex of granite-gneisses and granites with associated aptitic veins of pegmatites. North-westwards this granite appears to be gneissic again and ultimately across the Panam gradually merges into crystalline schists. The hilly region to the north of river Panam is made up of a complex of biotite-gneisses and hornblende rocks.

### Soil

The area under study is drained by Panam river and its various tributaries. Some of the seasonal streams end blindly. The composition of the soil varies very much from place to place. At various places soil is a sandy loam. There is a shallow

soil on the hill tops and the rocks are exposed at various places. On the slopes the soil is deep enough to support good vegetation. On the plains and along the streams and Panam river, the soil is fertile and rich. On the whole the soils are generally well-drained and poor in humus content in the sub-soil.

#### Previous Botanical Explorations

The area being not easily accessible, due to the total lack of transport facilities and natural barriers, especially rivers during monsoon, has remained totally unexplored so far.. These forests were reserved by the former rulers for Shikars and are heavily infested with wild animals. It is inhabited by equally wild Bhil tribes, who have not seen the light of modern civilization, and still stay like the people of the pre-historic time. In short, it is a botanically virgin area.

#### The Present Work

The present work is the outcome of very careful and active study during the past seven years starting

from July, 1960. Because of various factors already discussed, this area has always remained isolated and thus botanically unexplored. Such a botanically undisturbed state and the romance of plant hunting in these areas caught my imagination and induced me to undertake such a hazardous task of compiling information about the plants occurring in these areas, season after season in spite of the inclement climate and poor working conditions. Moreover, the idea of collecting data on the usefulness of the plants from the local Bhils also prompted me to launch on such a project.

Methods:

The area being 175 kms. away from Baroda, I had to stay for days together in these hilly forests, camping at Kanjeta and sometimes in the interior of the forest areas with tribal Bhils at Alindra, Pepargota, Banvaro, Khalta and Panam.

Monthly trips were made to the area. The summer trips were of a duration of one week each, while the monsoon and post monsoon trips usually lasted for

2-3 weeks. After 1963 the frequency and duration of trips was reduced.

Work in the field:

During the collection of specimens, observations on the plants, i.e. their habit, average size of the plants, actual state of the plant, colour or smell of the flower, or any other striking morphological characters which might prove to be useful in the identification were directly recorded in the rough field book. In addition, ecological notes on points, such as soil, clear associations, their relative abundance (depending upon the number of individuals present in a locality), the local name and uses if any, were also recorded. The observations on the plants season after season were recorded to study all the developmental stages of plants, which enabled me to understand more evidently the forest species and their influence on the undergrowth during different seasons. Large number of photographs of various association, of interesting plants and their underground parts were taken.

Work at the Base Camp (Kanjeta):

Specimens brought from the fields were carefully checked and the preliminary identifications were made with the help of Cooke's Flora, Manual of Forest Botany by N.L. Bor and some other regional floras. In some cases fresh flowers were dissected under field dissection microscope and all these observations along with the notes in the rough field diaries were transferred to the proper field books. Illustrations of some of the interesting and rare specimens were prepared from the fresh material. All the plants collected during each excursion were processed and preserved in the usual manner, following the instructions given by Lawrence in Plant Taxonomy and Santapau in his Botanical Collectors Manual, with certain modifications as and when necessary.

Work in the Herbarium:

All the identifications were checked and doubtful points cleared with the help of Cooke's Flora of the Presidency of Bombay or Hooker's Flora of the British India or Talbot's Forest Flora. The identification was confirmed by reference to various regional or state

floras. The range of distribution within the subcontinent and outside was also recorded. The data collected in the field was duly analysed and entered in the index cards.

The specimens were mounted on standard sized herbarium sheets and then stored in the herbarium steel cupboards. The families, genera and species were arranged according to Bentham and Hooker's system of classification, which is still in vogue in this country.

A few plants which defied all my efforts for proper identification and all other specimens with doubtful identity were either sent to various leading herbaria such as F.R.I. Herbarium, Dehra Dun, Central National Herbarium, Calcutta, Blatter's Herbarium, Bombay and the Royal Botanical Gardens, Kew or were personally carried to the F.R.I. Herbarium, Dehra Dun, Blatter's Herbarium, Bombay and Western Circle Herbarium of the Botanical Survey of India, Poona, where I did the matching of most of my specimens.



Difficulties encountered in Field Work:

The difficulties encountered are too numerous to mention. Some of them I have already discussed.

The most difficult problem in the beginning was how to mix with the tribal Bhils and their witch doctors "Badvas", to follow their language and to get from them the local uses of the plants. I could overcome this difficulty with the help of my host Bapu, through whom I could learn their language, could mix and stay with them and after giving all sorts of temptations I could get tribal uses of various plants.

Pythons and snakes are very common in the area. All these forests are heavily infested with wild animals and protection from them always posed a great problem.

During summer season most of the streams dry up and it is difficult to get even drinking water. Water could be made available only by digging holes in the sandy river-beds. Climate is very unhealthy and malarious and water is often dirty and unfit for drinking.

During monsoon the local inhabitants being afraid of the wild beasts refused to accompany me to the different forest areas in spite of all temptations. In such cases many a time I had to move alone. At times Dapu or forest guides used to accompany me.

#### A Brief Summary of Results

The seven years of intensive floristic study in the Ratan Mahal and surrounding hills has resulted in several research publications in some of the leading journals.

The observations on the plants, season after season enabled me to understand the forest species and their influence on the undergrowth during different seasons more clearly.

The area is sparsely populated hence reducing the effect of biotic factors to a minimum. The area being hilly, not easily accessible and was preserved for Shikar, has escaped repeated felling in the past, consequently the luxuriant growth of vegetation gave

ample opportunities to study the different aspects of vegetation in a least disturbed area.

Careful observations in the field, critical study of the fresh plant material at the base camp and then in the herbarium has yielded lot of valuable information which has helped me to put on record many new plants, for the erstwhile Bombay State and India. A large number of plants for which no locality from Gujarat has been cited by all the earlier workers, has been recorded here for the first time. Thus adding to our knowledge regarding the distribution of some plant species in this part of the country.

Observations hitherto unrecorded, neglected or wrongly observed, resulted in erroneous interpretations. This study helps to supplement or even correct the informations given in the standard works. Several species reported to be 'rare' or 'very rare' in the Cooke's Flora of the Bombay Presidency are fairly common in these hills. Many times flowering and fruiting time varied considerably than that mentioned in the different floras of this part of the country.

Some species mentioned endemic to southern parts of the Bombay Presidency or to Western India have also been recorded.

In certain parasitic plants, host parasite relationship has been studied and for Aeginetia indica the host has been traced for the first time.

In few plants some abnormalities have been observed, such as fusion or bifurcation of the vegetative or reproductive parts.

All these findings are described with due emphasis in the text, and so repetition of such findings is avoided here. Data on angiospermic plants from some other regions of Gujarat is also collected and the results of new findings are being published. It would be out of place to dilate on this topic in the present work.

The preparation of the thesis gave me an opportunity to work in the field, laboratory and in the herbarium. Moreover, it brought me in closer contact with luminaries in the field of taxonomy of angiosperms.

This training has put in me the confidence of tackling even more exacting jobs than the present one. This will enable me to work out the floras of the other parts of the country on the modern lines.

In spite of the best efforts on the part of the author, certain short-comings are sure to be there. After all, the compilation of a flora is a team work, but this work on the flora of a difficult and not easily accessible region like Ratan Mahal has been compiled with little assistance.

In the end, it is my humble claim that the data presented here, is first hand and thus reliable and it is hoped that this distinct contribution to the flora of Gujarat will be useful for students and foresters alike.

For all these reasons, this thesis is respectfully submitted to the Maharaja Sayajirao University of Baroda towards the degree of Doctor of Philosophy in Botany.

Statistical Synopsis of the Flora of  
Ratan Mahal and surrounding hills

Total number of species recorded in the present work are 645 belonging to 409 genera and 105 families. The ratio between Monocots and Dicots species i.e. 1:3.73. The ratio between Monocots and Dicots genera is 1:3.93 and the ratio between Monocots and Dicots families is 1:5.56. Thirty-four families are only represented by one species each. Monocotyledons are represented by 136 species out of which Gramineae and Cyperaceae are dominant representing 62 and 27 species respectively.

TABLE I.A:

DICOTYLEDONS

Group	No. of Families	No. of Genera	No. of Species
Polypetalae	51	153	256
Gamopetalae	28	135	188
Monoclamydeae	10	38	65
	<del>89</del>	<del>326</del>	<del>509</del>
<u>MONOCOTYLEDONS</u>	16	83	136
<u>TOTAL</u>	<u>105</u>	<u>409</u>	<u>645</u>

**TABLE I.B: Statistical Synopsis of the Flora.**

	<u>Dicots</u>		<u>Monocots</u>		<u>Total</u>
	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	
Families	84.76	89	15.22	16	105
Genera	79.60	326	20.40	83	409
Species	78.60	509	21.40	136	645

**TABLE II: Few Dominant Families in Ratan Mahal and their comparision with Hooker's order of Dominance of Families in India.**

Order	Family	No. of species in Ratan Mahal	Hooker's order for India
1	Leguminosae	93	2
2	Gramineae	62	3
3	Compositae	28	7
4	Cyperaceae	27	8
5	Acanthaceae	26	6
6	Euphorbiaceae	25	5
7	Convolvulaceae	21	-
8	Malvaceae	20	-
9	Cucurbitaceae	16	-
10	Labiatae	16	9
11	Amaranthaceae	16	-
12	Rubiaceae	11	4
13	Asclepiadaceae	11	-
14	Scrophulariaceae	11	-
15	Orchidaceae	10	1

It is interesting to note the proportion of genera to species in the whole of India, it is 1:7, in the Ratan Mahal it is <sup>1.55</sup>1:15. This shows the small proportion of species to the number of genera and families in this area. It further confirms to the general rule that, within the same floral regions, the smaller the flora, the smaller the genus-species ratio.

In order to get an insight into the relations of the Flora of Ratan Mahal Hills with that of India, a comparative list of dominant families is given and its position is compared with Hooker's ten dominant families for India (Table II).



### Vegetation of Ratan Mahal and Surrounding Hills

All along the eastern borders of Gujarat, there is a discontinuous chain of hills with a forest cover. These forests, according to Champion, fall in the dry teak forests of tropical dry deciduous types. Along with these main forest formations there are at few places, especially in the Central and Southern Gujarat, pockets of moist deciduous types depending upon the rainfall, soil and water retaining capacity of the soil. The north Gujarat is more arid and shows the presence of scrub jungles.

In Ratan Mahal, the major forest formation is the dry teak forest of tropical dry deciduous type. The dominant forest species are Tectona grandis, Butea monosperma, Terminalia crenulata, Anogeissus latifolia, Diospyros melanoxylon, Lagerstroemia lanceolata often associated with Bambusa arundinacea and Dendrocalamus strictus.

According to Hooker's Botanical Provinces of India, these hills fall <sup>near</sup> in the 26th Province i.e. Deccan, with some elements of Sind in the nearby plains. The Deccan

element is predominant. The constitution of these forests vary greatly depending upon the altitude, slope, soil and water retaining capacity of the soil. The associations and the percentage of the species varies with all these factors. In these major formations there are at few places pockets of moist deciduous forest. Such pockets are to be found at Pepargota and Bendol near Nalda na Pani. Few species often found in the tropical moist deciduous forest like, Oroxylum indicum Vent., Delichandrone crispum, Bauhinia racemosa, Celastrus paniculata, Dillenia pentagyna, Carvia callosa, Aerides crispum and various other ground Orchids and Curcumas are met with in these pockets.

The vegetation of these forests can be roughly divided into 3 main types depending upon the altitude, soil, water retaining capacity of the soil, steep slopes and the depth of soil, and accordingly the associations as well as frequency vary greatly from place to place. Plate No.2 (Map). Carvia callosa is the most common shrub in the hilly regions.

(1) Vegetation of Plains:

On plains Tectona grandis is the dominant tree species, sometimes representing 60% to 90% of the total tree species. It is often associated with Anogeissus latifolia, Terminalia crenulata, Diospyros melanoxylon, Lagerstroemia lanceolata, Alangium salvifolium, Milusa tomentosa, Combretum ovalifolium, Pongamia pinnata and Madhuca indica. The quality of these trees is not very good. Stems much branched and crooked of the size of a pole and does not attain a large girth.

(2) Vegetation on the Hilly Slopes:

The tree species are much healthier on the gentle slope and as we move towards higher altitude, the quality of the trees improve i.e. their girth <sup>&</sup> height and thus can be better exploited for commercial purposes. Soil is well drained and there is luxurious undergrowth of the Carvia callosa, the most common shrub often found in pure strands extending over a large area. Other common species as an undergrowth are Curcuma inodora, Curculigo orchoides, Habenaria marginata, H. digitata and at places Tacca Bontopetaloides is frequently seen. At higher altitudes climbers like Dioscorea hispida,

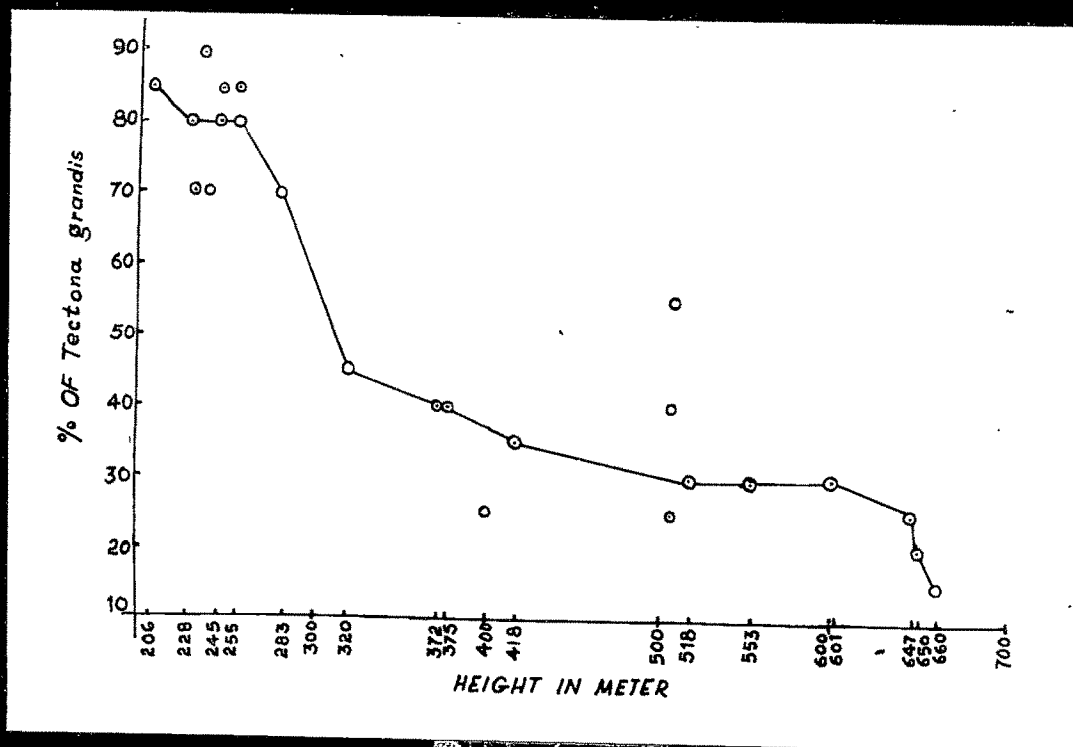


PLATE NO. - 22

D. pentaphylla, D. oppositifolia, D. bulbifera are mixed with the above mentioned associates. Common tree species are Tectona grandis, Anogeissus latifolia, Cassia fistula, Wrightia tinctoria and Holarrhena antidysentrica. The quality of the Tectona grandis and some other tree species is better though, their percentage reduces as the altitude increases (Plate No.3). Even Alangium salvifolium, Milusa tomentosa, fairly common tree species also reduce in frequency on the higher slopes. The number of miscellaneous plant species like Mitragyna parviflora, Millettia auriculata, Pterocarpus marsupium, Kydia calycina, Careya arborea and Ouginea<sup>e</sup> dalbergioides increases at the middle height.

The southern parts of the Ratan Mal 'plateau' is a steep slope. Such steep slopes are also met with near Patan Mata, Mandava and Raiengna hills. The tree species on these slopes are very much stunted, much branched and crooked. At places dense clumps of Euphorbia nerifolia are noted, or vegetation consists of Helicteres isora, Woodfordia fruticosa, Randia spinosa and Hamiltonia suaveolens.

**TABLE III : Showing the distribution of teak and miscellaneous tree species  
in relation to the altitude of the area studied.**

Sr. No.	Name of the village	Altitude (in metre)	% of Teak	% of Misce- llaneous tree species	General observation
1	2	3	4	5	6
1.	Simamoai	206	85	15	Scattered Bamboo clumps are found.
2.	Vadbhet	228	80	20	Bamboos are very poor.
3.	Kundavada	229	70	30	Trees are stunted, crooked and bent.
4.	Dungarpur	235	90	10	In miscellaneous tree species majority is of <u>Diospyrous melanoxylon</u> (Timbru).
5.	Charl	238	70	30	Bamboos are of small size and seen in patches.
6.	Ghada	245	85	15	Most of the tree species are stunted and much branched. <u>Diospyrous</u> <u>melanoxylon</u> is common.
7.	Taram Kach	245	80	20	-

Contd...

TABLE III (contd.)

1	2	3	4	5	6
8.	Tokarwa	254	85	15	In miscellaneous species <u>Diospyros melanoxylon</u> (Timbru) is common. Teak is much branched but stunted.
9.	Dumka	255	80	20	Bamboo clumps are noted near the village.
10.	Khalta	283	70	30	Bamboos and Timbru are major associates of teak.
11.	Kanjeta	320	45	55	Bamboo clumps are mostly near the streams and on the slopes of the hills.
12.	Andarpura	372	40	60	Area is riched with various tree species. Bamboos are very rare.
13.	Galvel	375	40	60	Teak trees are straight much branched. Bamboos are rare.
14.	Gumli	400	25	75	Teak sp. are rare, not healthy. Few Bamboo clumps are observed near Kubero boundary.

Contd....

TABLE III (Contd.)

1	2	3	4	5	6
15.	Bhindol	417	30	70	Most of the area is hilly and at few places stunted trees are found.
16.	Lemdimehdri	507	40	60	Teak and other tree species are healthy. <u>Dendrocalamus strictus</u> common in almost all over the forest. In places teak is replaced and its growth is vigorous.
17.	Udhalmhuda	507	25	75	Teak trees are healthy. Miscellaneous tree species are much branched. Dense Bamboo clumps are found near streams. Area rich in flora.
18.	Bhanpur	509	55	45	Bamboo clumps are rare. Other tree species on plains and slopes are straight and healthy. On plateau growth is stunted.
19.	Panam	518	30	70	Trees are tall much branched and healthy. Dense Bamboo clumps are found. Most common tree species is <u>Dendrocalamus strictus</u> .

Contd...



TABLE III (contd.)

1	2	3	4	5	6
20.	Bhuvera	553	30	70	Teak is comparatively less. Bamboo clumps are observed near the streams.
21.	Alindra	601	30	70	<u>Dendrocalamus strictus</u> is common tree species. Area consists of luxuriant flora.
22.	Pipargota	647	25	75	Trees are very healthy, tall with large girth. A dense clump of <u>Bambusa arundinacea</u> are found throughout the forest.
23.	Morai	650	20	80	<u>Terminalia</u> species are common along with <u>Dendrocalamus strictus</u> .
24.	Kubero	660	15	85	<u>Diospyros melanoxylon</u> and <u>Terminalia</u> species are common. Dense Bamboo clumps are also found near the streams.

General Remark:

- (1) Teak: The percentage of teak is more in plains than that of at higher altitude. At the top of the plateau the quality of the teak is very poor than observed on plains and slopes at the lower altitude.

contd....

General Remarks (contd.)

(2) Bamboos:

- (i) On plateau the growth is stunted when soil is rocky.
- (ii) In ravines along the banks of streams and near other moist situation Bambusa arundinacea is more common.

(3) Other tree species:

- (i) On plateau Terminalia tomentosa, Terminalia crenulata, Diospyros melanoxylon, Randia sps. are more common. In hilly region, slopes and plateau Carvia cullosa in dense clumps are observed, sometimes in pure stands.
- (ii) In ravines-heavy climbers like Combractum ovatifolium, Celastrus paniculatus, Ventilago denticulata are more common.

Note:- (i) All the records of height of the places are made by the author on his own observations and heights recorded on the map.

- (ii) Regarding the % of the tree species: It is rough figure based on the personal observation. At few places numbering of the forest department on the trees was helpful and at times local foresters helped for this.



(3) Vegetation on the Hill Tops:

Most of the hills are flat topped, of which the more conspicuous are the plateaus of Ratan Mal, Banvaro, Pepargota and Kanvara Dungar 'Bachelor Hill'.

The vegetation on all these is quite diverse.

(a) Ratan Mal 'Plateau' is the biggest of all these and is flat topped elongated hill, about 15 kms. long and 2-6 kms. broad at an altitude of 666 m. M.S.L. The soil layer is very thin, very few streams are there. The tree species are very much stunted (Plate No.4). Teak is very rare and large number of miscellaneous species such as Terminalia crenulata, Diospyros melanoxylon, Randia spinosa, R. ulignosa, Buchanania lanzan, Cassia fistula, Butea monosperma, Zizyphus rugosa and Z. xylopyra are commonly found. Common shrubs on the plateau are Hamiltoniana suaveolens, Desmodium latifolia, Indigofera cassoides, Azanza lampas and Helicteres isora. Major portion of the plateau is covered with Carvia callosa and grasses like Heteropogon contortus, Cymbopogon martinii and Themeda quadrivalis.

This is the only place where epiphytic Orchids such as Aerides crispum, Dendrobium bartul<sup>ba</sup>atum and





PLATE NO. 4

Ratan Mal 'plateau'

Trees species are stunted.

Common associates are Diospyros melanoxylon Roxb.  
Terminalia crenulata Roth. Anogeissus latifolia  
 Wall. ex Beddome.

Heteropogon contortus and Apluda mutica L., are  
 common as an undergrowth.

common ground Orchids are Habenaria digitata,  
Peristylus goodyearoides, P. lawii etc.

Near streams and springs Moghania strobilifer,  
Desmodium gangeticum, D. latifolium and Dendrocalamus  
strictus are fairly common.

(b) Pepargota and Banvaro plateaus: The plateaus  
are at the height of 650m. M.S.L. and 630 m. M.S.L.  
respectively. The soil layer is thick and of good  
quality, supporting healthy growth of Tectona grandis  
attaining the girth of 100 cms. at breast-height.  
Other common associates are Kydia calycina, Sterculia  
urens, Firmiana colorata, Celastrus paniculatus,  
Zizyphus rugosus, Z. xylopyra, Mangifera indica,  
Madhuca indica, Buchanania lanzan, Adina cordifolia,  
Schrebera swietenoides, Dalbergia latifolia, Woodfordia  
fruticosa, Lagerstroemia lanceolata, Borassus flabellifer  
(cultivated ?) and Dillenia pentagyna. While Garuga  
pinnata and Boswellia serrata are fairly common, only  
on the northern and north-eastern slopes of Pepargota  
and Bendol plateaus.



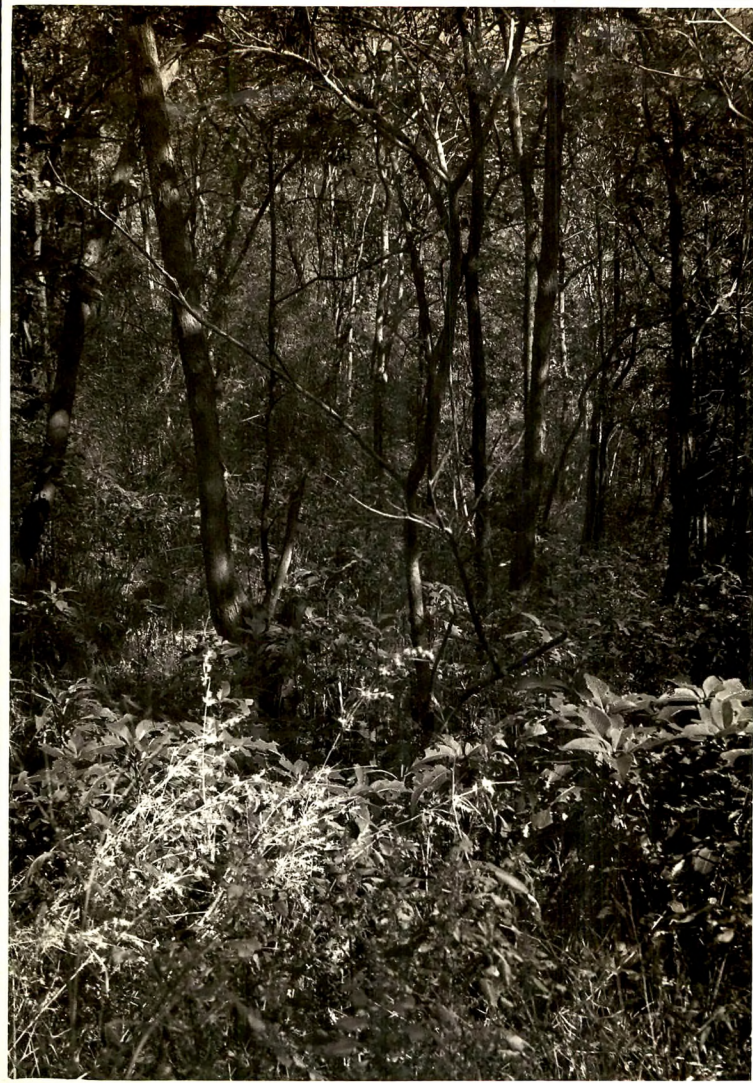


PLATE NO. 5

Large stands of Carvia callosa Brem.  
growing as an undergrowth of mixed dry deciduous  
forest near Banvaro (Ratan Mal).





PLATE NO. 6

Handva Hill (Ratan Mahal)

showing characteristic vegetation during dry months. A mixed dry deciduous forest.

Common associates are Tectona grandis Linn.  
Butea monosperma Taub.; Anogeissus latifolia Wall.  
Lagerostroemia lanceolata Wall. rarely with  
Cochlospermum religiosum (Linn.) Alst.



(c) Kanvara Dungar 'Bachelor Hill' in Bendol is also having an elongated flat top but not much broader. Tectona grandis, Garuga pinnata, Boswellia serrata, Zizyphus xylopyra, Adina cordifolia, Diospyros melanoxylon, Schrebera swietenoides are the common associates.

Carvia callosa found as a fairly common shrub as an undergrowth of forests, is the most common on slopes and on plateaus often noted in pure strands (Plate No.5).

Patan Mata, Mandava and Raiengna Hills:

These hills are not elongated flat topped type but culminates into a conical or rounded tops. On all such hills, at various places, rocks are exposed and rocky caves are heavily infested with wild beasts. The growth of vegetation is fairly dense during monsoon and is chiefly of Carvia callosa. The forest paths as such are not traceable and it becomes a problem to reach upto the hill tops.

During summer months, these hills exhibit characteristic vegetation of mixed dry deciduous forest. Common associates are Tectona grandis, Butea monosperma, Anogeissus latifolia, Alangium salvifolium, Dalbergia latifolia, Ehretia laevis and Cochlospermum religiosum (Plate No.6).



PLATE NO. 7

Vegetation on rocky escarpments  
near Patan Mata.

Tree species are stunted and tall slender  
grasses like Apluda mutica L., are common in  
rocky crevices.

Common tree species are Diospyros melanoxylon Roxb.;  
Anogeissus latifolia Wall. ex Beddome, Randia spinosa  
Bl. etc.





PLATE NO. 8

On hilly slopes, in ravines and near streams.  
Dense growth of Bambusa arundinacea Willd. often  
associated with Tectona grandis Linn.

At few places these hills show sharp escarpments. These escarpments are either naked or sometimes during monsoon *Canscoras* and *Exacums* are noted. On these hills trees and shrubs are stunted. Common species are *Diospyros melanoxylon*, *Anogeissus latifolia*, *Randia spinosa*, *Ehretia laevis* and *Holarrhena antidysentrica* etc. (Plate No. 7). A slender grass like *Apluda mutica* is common in rocky crevices.

(4) Vegetation along streams:

There are various streams either ending blindly or joining the Panam river from the north and south at various points (Plate No. 1 - map). Usually they are under the dense cover of trees. More common plant species along their banks are *Pongamia pinnata*, *Syzygium heyneana*, *Albizia procera*, *Trema orientalis*, *Baliospermum montanum*, *Kirganelia reticulata*, *Saccharum spontaneum*, *Polygonum plebeium*, *Bacopa monniera*, *Verbascum chinensis*, *Xanthium strumarium* and *Ageratum conyzoides*.

*Bambusa arundinacea* is fairly common near streams, in ravines and on lower slopes of the hills. This species is often associated with *Tectona grandis* (Plate No. 8).

(5) Vegetation along the banks of Panam River:

Panam river is a semi-perennial one. During dry months the continuity of the flow breaks at various points. There remains plenty of water at various places in the bed. At few places it forms small islands, where Lantana camara, Var. aculeata and Tamarix ericoides are fairly common at times associated with Xanthium strumarium.

(a) Vegetation near water (Lower storey):

Area near water is commonly occupied by Bacopa monnieri, Xanthium strumarium, Caesulia axillaris, Eclipta prostrata, Sphaeranthus indicus, Hygrophyla auriculata, Polygonum plebeium, <sup>Ludwigia</sup> ~~Jussiaea~~ perennis, Ammannia baccifera, Alternanthera sessilis, Murdan~~ia~~ malabaricum, Cyperus compressus, and C. iria.

(b) Vegetation on dry sandy river beds:

During dry season many plants come up on the dry sandy river beds. The commoner ones are Tamarix ericoides, Argemone mexicana, Polycorpea corymbosa, Cleome viscosa, Oldenlandia corymbosa, ~~and~~ Cassia auriculata, Echinops echinatus, Grangea maderaspatana, Solanum surattense, Digera alternifolia etc.





PLATE NO. 9

Vegetation along the banks of Panam river.

On the dry sandy beds and rocky crevices are seen clumps of Tamarix ericoides Rottl. On the slopes and along the banks common tree species are Pongamia pinnata Pierre; Butea monosperma Taub.; Tectona grandis Linn.; Anogeissus latifolia etc.





PLATE NO. 10

Leonotis nepataefolia (Linn.) R.Br.,  
in dense clumps is a common sight along the  
banks of Panam river.

(c) Vegetation along the banks (Upper storey):

The following species are usually noticed all along the banks of the river Panam: Pongamia pinnata, Bombax ceiba, Ailanthus excelsa, Acacia nilotica, Phoenix sylvestris, Alangium salvifolium, and Madhuca indica. Heavy climbers commonly found on these tree species are Combretum ovalifolium, Acacia pennata, Celastrus paniculata<sup>ab?</sup> etc. (Plate No. 9).

Leonotis nepataefolia is often noted in dense clumps at various places along the banks of Panam river (Plate No. 10).

(6) Vegetation of Ponds and semidried ditches:

In this area there are only few noteworthy ponds, viz. Bhanpur tank on Bendol-Pedelia plateau, Dhenpur and Paparia tanks on plains.

The Bhanpur tank is very small and is devoid of dense angiospermic plants except a few scattered plants of Cassia tora and Argemone mexicana, lining the fringes.

Dhenpur and Paparia tanks are comparatively much bigger than the previous one and show a distinct vegetation consisting of hydrophytic plant communities.



The water supports the growth of rooted hydrophytes like, Nymphaea nouchali, N. stellata, Nymphoides cristatum, Nymphoides indicum, Potamogeton nodosus, and free floating like Pistia stratiotes.

Near the margins of the tank are found marshy plant communities represented by Polycarpon prostratum, P. tetraphyllum, Bergia ammanniodes, Ammannia baccifera, A. multiflora, Rotala indica, <sup>Ludwigia</sup> Jussidea perennis, Caesulia axillaris, Stemodia viscosa, Limanophila indica and Bacopa monnieri.

In summer the water level goes down, exposing the banks, that may appear as dried or semidried ditches, showing the luxuriant growth of plants like Portulaca oleraceae, Bergia odorata, Crotalaria medicaginea, Desmodium triflorum, Aeschynomene indica, Trianthema portulacastrum, Eclipta prostrata, Grangea maderaspatana, Coldenia procumbens, Heliotropium scabrum, Chrozophora prostrata, etc., forming a carpet vegetation.

#### (7) Vegetation of Hedges:

Usually Euphorbia neriiifolia is used as hedge plant but at times Lantana camara Var. aculeata and Opuntia elatior (on extreme N.W. part of Ratan Mahal)

is also found in hedges. These hedge plants during monsoon, support a number of climber or twiners such as Cocculus hirsutus, Tinospora cordifolia, Cissampelos pareira, Abrus precatorius, Rhynchosia minima, Telosma pallida, Pergularia daemia, Ipomea sinensis, I. ericarpa, I. dichroa, I. sepiaria, I. obscura, I. pestigridis, Dioscorea bulbifera, Melothria maderaspatana, Coccinia cordifolia etc.

#### Climbers

A large number of plants have been recorded as climbing or twining on various shrubs, hedges and trees. Many of them are seasonal and are fairly common during or after monsoon. More commoner ones are Cocculus hirsutus, Tinospora cordifolia, Calastrus paniculatus, Ventilago denticulata, Abrus precatorius, Millettia auriculata, Acacia pennata, Combretum ovalifolium, Coccinia cordifolia, Melothria heterophylla, Rivea hypocrateriformis, Argyreia sericea<sup>e</sup> and various other members of the family Convolvulaceae, Asclepiadaceae and Dioscoreaceae.

### Parasites

Except Dendrophthoe falcata the other parasites are rare in these hilly forests. Dendrophthoe falcata has been recorded on a number of trees and shrubs. Rarely Viscum nepalense is also observed. Total root parasites are Aeginetia indica and Orobancha cernua Var. nepalensis and are localised or restricted in distribution. Striga euphrasoides, Buchnera hispida are often found as partial parasite on the roots of various plants.

### Epiphytes

Except few orchids, epiphytes are poorly represented in these hills. Common epiphytes are Aerides ~~crispum~~, Dendrobium barbatulum, Aerides crispum and Vanda tessellata; most of these plants are generally restricted to Ratan Mal 'plateau'.

### Cultivated Plants

The chief cultivated plants in the area are Zea mays, Oryza sativa, Cajanus cajan, Cicer arietinum, Arachis hypogaea, Sorghum halepense and Pennisetum typhoides.

Common Weed of Cultivated Crops

Weed are fairly common in cultivated fields, sometimes exceeding the actual crop plants in number. The common weeds are Blumea lacera, Amaranthus polygamus, Chenopodium album, Cleome gynandra, Cyperus iria, C. compressus, Digera alténifolia, Argemone mexicana, Leucas urticaefolia, Ocimum basilicum, O. americanum, Convolvulus arvensis, Commelina benghalensis etc.

Table showing the most conspicuous flowering plants during the different months of the year.

Name of the month	Name of the common flowering plants
January	<u>Milusa tomentosa</u> , <u>Soyimida febrifuga</u> , <u>Ailanthus excelsa</u> etc.
February	<u>Butea monosperma</u> , <u>Alangium salvifolium</u> , <u>Erythrina suberosa</u> etc.
March	<u>Bombax ceiba</u> , <u>Lagerstroemia lanceolata</u> , <u>Cassia fistula</u> , <u>Combretum ovalifolium</u> , <u>Euphorbia fusiformis</u> , <u>Meloptelea integrifolia</u> , <u>Madhuca indica</u> etc.

Name of the month	Name of the common flowering plants
April	<u>Randia spinosa</u> , <u>R. uliginosa</u> (on Ratan Mal), <u>Urginea indica</u> , <u>Crataeva nurvala</u> , <u>Zizyphus</u> different species, <u>Moringa oleifera</u> , <u>Pongamia pinnata</u> .
May	<u>Kydia calycina</u> , <u>Sterculia urens</u> , <u>Aerides crispum</u> , <u>Dendrobium barbatulum</u> , <u>Chenopodium album</u> (weed), <u>Terminalia crenulata</u> , <u>Combretum ovalifolium</u> .
June	<u>Firmiana colorata</u> , <u>Aegle marmelos</u> , <u>Ventilago denticulata</u> , <u>Indigofera cassioides</u> , <u>Terminalia bellirica</u> , <u>Anogeisus latifolia</u> .
July	<u>Ehretia levis</u> , <u>Impatiens balsamina</u> , <u>Celastrus paniculatus</u> , <u>Ampelocissus tomentosa</u> , <u>Acacia pennata</u> , <u>Albizia odoratissima</u> , <u>Hamiltonia suaveolens</u> , <u>Tylophora fasciculata</u> .
August	<u>Curculigo orchiodes</u> , <u>Curcuma inodora</u> , <u>Urginea indica</u> , <u>Embllica officinalis</u> , <u>Polygala chinensis</u> , <u>Desmodium neomexicanum</u> , <u>Uraria picta</u> , <u>Smithia conferta</u> , <u>Melothria heterophylla</u> , <u>Cissampelos pareira</u> , <u>Baliospermum montanum</u> , <u>Tacca leontopetaloides</u> .

Name of the month	Name of the common flowering plants
September	<u>Azanza lampas</u> , <u>Hibiscus vitifolia</u> . Almost all species of the genus <u>Dioscorea</u> of this region, <u>Careya arborea</u> , <u>Buchneria hispida</u> , <u>Trema orientalis</u> .
October	<u>Biophytum sensitivum</u> , <u>Moghania</u> <u>strobilifer</u> , <u>Milletia auriculata</u> , <u>Cassia pumila</u> , <u>Acacia leucophlaea</u> , <u>Argyreia serica</u> , <u>Sopubia delphinifolia</u> , <u>Neuracanthus sphaerostachys</u> , <u>Mallotus</u> <u>philipensis</u> , <u>Carvia callosa</u> (after 7 years).
November	<u>Dillenia pentagyna</u> , <u>Grewia tiliacifolia</u> , <u>Crotolaria juncea</u> , <u>Ougeinia dalbergiodes</u> , <u>Bauhinia purpurea</u> , <u>Diospyros melanoxylon</u> , <u>Cryptolepis buehanani</u> .
December	<u>Buchanania lanzan</u> , <u>Leonotis nepetaefolia</u> , <u>Argemone mexicana</u> , <u>Tamarix ericoides</u> , <u>Pterocarpus marsupium</u> , <u>Adina cordifolia</u> , <u>Echinops echinatus</u> , <u>Holarrhena antidys-</u> <u>sentrica</u> .

#### Minor Forest Products

The forest plants consist of varieties of species yielding various commodities of minor products, providing

raw materials for certain industries and opening new avenues for the development of cottage and other industries. But unfortunately the Government is not taking any step in this direction, if it is done, it will certainly improve the economic conditions of the poor people of this region. Important minor forest products are obtained from Cassia fistula, Madhuca indica, Sterculia urens, Boswellia serrata, Celastrus paniculata, Zizyphus xylopyra, Gutea monosperma, Pongamia pinnata, Suchanania lanzan, Terminalia crenulata, T. bellirica, Diospyros melanoxylon, Wrightia tinctoria, Holarrhena anti-dysenterica, Acacia chundra, Tacca leontopetaloides, different Dioscorea spp., Borassus flabellifer, Phoenix sylvestris, Cymbopogon martinii etc.

#### Plan followed in this Flora

The order followed in the Enumeration of the Families of Ratan Mahal is the same as that of Cooke in his Flora of the Presidency of Bombay. However, latest monographic works and Hutchinson's classification have been followed in splitting certain families. Full

description of the plant is avoided instead, detail critical observations, based on field diaries is given, which will help to correct or supplement the description given in different floras.

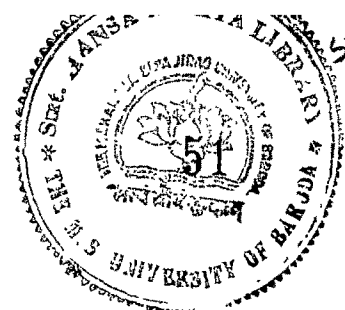
Nomenclature:

The scientific names of the plants mentioned in the present work have been corrected, to confer with the articles of the latest edition of the International Code of Botanical Nomenclature (1961).

In the references given after the name or synonyms of plants, guide to the citation of botanical literature of Code has been followed, with a little change, to suit the needs.

It is too difficult for botanists in India to find out the actual or correct author of various plant-names, in absence of type material and published monographs of such material. The usual nomenclature found in the authentic works has been followed and the nomenclature of Ratan Mahal plants has been brought upto date, so that the names adopted are in conformity with the rules of the Code. (Santapau (1953) has treated the subject in detail in the Indian Forester 79:611-613).





To comply with the recommendations of the Code,  
all the data are given in metric unit.

The local names of the plants differed with  
two Bhil tribes residing in these hills. In such  
case both the names are given. Regarding the useful-  
ness of the plants and their medicinal properties,  
no book or Ayurvedic practitioner has been consulted  
and the uses and local names mentioned here are purely  
based on the information gathered from the tribal Bhils  
and from their witch doctors "Badavas". My host and  
guide, Bapu Himat Singh was of great help to gather  
this data. I am grateful to all these persons for  
the help and co-operation in compilation of this data.  
Many of the wild plants or their parts used by the  
tribals as food, have been tasted by me.

The herbarium specimens, field diaries and index  
cards on which this thesis is based are deposited in  
the Herbarium of the Department of Botany, Maharaja  
Sayajirao University of Baroda, Baroda.

### ABBREVIATIONS

Below given are the more common abbreviations adopted and mentioned in the nomenclature of the plants. The titles of books, journals and names of the more commonly occurring authors have been abbreviated from the customary abbreviations to a single word or even mere initials for economy of space.

- |          |   |
|----------|---|
| ARBGC.   | - Annals of the Royal Botanic Garden,<br>Calcutta.  |
| *C       | - Cooke, Th.: <u>The Flora of the Presidency<br/>of Bombay.</u>                                 |
| D.       | - Dalzell, N.   |
| D. & G.  | - Dalzell, N. & A. Gibson. <u>The Bombay Flora.</u>   |
| FBI.     | - <u>Flora of British India</u> by Sir. J.D.Hooker<br>et al.                                    |
| *Fischer | - Fischer, C.E.C., joint author with Gamble<br>of the <u>Flora of the Presidency of Madras.</u> |
| *G.      | - Gamble, J.S.: <u>The Flora of the Presidency<br/>Madras.</u>                                  |
| Gr.      | - Graham, J.: <u>A Catalogue of the Plants<br/>growing in Bombay.</u>                           |
| HK. f.   | - Hooker, filius, i.e., Sir J.D.Hooker, the<br>editor of <u>Flora of British India.</u>         |
| JAA.     | - Journal of the Arnold Arboretum.  |
| JASB.    | - Journal of the Asiatic Society of Bengal.   |
| JBNHS.   | - Journal of the Bombay Natural History<br>Society.   |

- JIB. - Journal of Indian Botany or the Journal of the Indian Botanical Society.
- JLS. - Journal of the Linnean Society of London.
- Merr., Enum. - E.D. Merrill: An Enumeration of Philippine Flowering Plants.
- N. - Nairne, A.K.: The Flowering Plants of Western India.
- Pfam. - Engler, A. & K. Prantl, Die naturlichen Pflanzenfamilien.
- Pfireich. - Engler, A., Das Pflanzenreich.
- RBSI. - Records of the Botanical Survey of India.
- \*Sant. - Santapau, H.: The Flora of Khandala in RBSI. 16(1).
- Talb. - Talbot, W.A.: Forest Flora of the Bombay Presidency and Sind.
- TLS. - Transactions of the Linnean Society of London.
- Wall. - Wallich, N. Numerical List (usually cited as 'Wallich Catalogue').
- JMSU. - Journal of the Maharaja Sayajirao University of Baroda.
- Fl.Dli. - Flora of Delhi.

Meanings of certain Local Words

- Beedi, Bidi: Cigar prepared from Timbru or Bauhinia leaves after filling Tobacco.
- Bunds: Earthen margins or boundaries of the cultivated fields.
- Jhari & Kotar: Stream
- Kanvara: Bachelor.
- Dungar: Hill.
- Mal: Plateau.
- Badva: Witch Doctor.

\*References given here are to the reprinted editions or 2nd. Ed.

KEY TO THE FAMILIES OF ANGIOSPERMIC PLANTS OF  
RATAN MAHAL AND SURROUNDING HILLS

Classification

Embryo with two cotyledons; radicle elongated  
to form the primary root. Leaves usually  
reticulately veined. Flowers typically penta -  
or tetramerous. . . . . Class I DICOTYLEDONS

Embryo with one cotyledon; radicle not elongated  
to form the primary root. Leaves usually parallel  
veined. Flower typically trimerous. . . . .  
. . . . . Class II MONOCOTYLEDONS  
(See Vol.II)

CLASS I DICOTYLEDONS

Calyx and corolla both present:

Corolla of distinct petals. . .  
. . . . . Subclass I Polypetalae

Corolla of combined petals. Stamen  
few epipetalous. . . . . Subclass II Gamopetalae

Perianth single or reduced to a scale,  
generally calycine rarely petaline. . .  
. . . . . Subclass III Monochlamydeae  
(See Vol.II)

Subclass I Polypetalae

Calyx of distinct sepals. Ovary superior  
or immersed in a disc:

Torus small or elongated,  
not expanded. . . . . Series I Thalamiflorae

Torus thickened or expanded into  
a fleshy disc. . . . . Series II Disciflorae

Calyx of united sepals, enclosing or  
adnate to the ovary, petals and stamens  
inserted on the calyx rim or around the  
top of the ovary. . . . . Series III Calyciflorae

Series I Thalamiflorae

1. Plants aquatic. . . . . Nymphaeaceae

1. Plants not aquatic but terrestrial:

2. Gynaecium apocarpus:

3. Flowers unisexual. Climbing or  
trailing shrub. Stamens few. . . Menispermaceae

3. Flowers bisexual:

4. Flowers pentamerous. Large  
trees. Stamens many. . . . . Dilleniaceae

4. Flowers trimerous. Large  
shrubs or small trees. . . . . Annonaceae

2. Gynoecium syncarpus:

5. Flower irregular:

6. Petal spurred. . . . . Violaceae

6. Petals not spurred. . . . . Polygalaceae

5. Flower regular:

7. Stamens less than 10:

8. Plant with scale like  
alternate leaves.

Seeds winged. . . . . Tamaricaceae

8. Plant without scale leaves,  
leaves well developed:

9. Placentation parietal:

10. Stamens tetradyna-  
mous. . . . . Cruciferae

10. Stamens not  
tetradynamous. . . . Cappar<sup>^</sup>aceae  
(in part)

9. Placentation axile:

11. Stamens united near  
the base into one  
bundle. . . . . Sterculiaceae

11. Stamens distinct,  
not united:

12. Leaves alternate.  
Sepals valvate..Tiliaceae

12. Leaves opposite.  
Sepals imbri-  
cate. . . . . Elatinaceae

- 9. Placentation free
  - central:
    - 13. Sepals 2; petals
      - 4-5. Flowers pale
        - yellow or yellow... Portulac<sup>ca</sup>aceae
    - 13. Sepals and petals
      - 5 each. Flowers
        - white. . . . . Caryophyllaceae
- 7. Stamens 15 or more:
  - 14. Placentation parietal:
    - 15. Ovary raised on a
      - gynophore. . . . . Cappari<sup>da</sup>aceae
    - 15. Ovary not on a
      - gynophore:
        - 16. Plant herbaceous.. Papaveraceae
        - 16. Plants woody
          - trees. . . . . Cochlospermaceae
  - 14. Placentation axile:
    - 17. Stamens distinct. . . Tiliaceae
    - 17. Stamens variously
      - united:
        - 18. Stamens monadelphous:
          - 19. Anthers
            - unilocular. . Malvaceae
          - 19. Anthers
            - bilocular. . Sterculiaceae
        - 18. Stamens polya-
          - delphous. . . . . Bombacaceae

## Series II Disciflorae

1. Plants climbing:
  2. Fruit a berry. . . . . ~~Ampelidaceae~~ <sup>Vitaceae</sup>
  2. Fruit an inflated capsule. . . . . Sapindaceae  
(in part)
1. Erect or prostrate herbs:
  3. Fruits spiny. . . . . Zygophyllaceae
  3. Fruits not spiny:
    4. Leaves simple:
      5. Flowers blue, regular. . . Linaceae
      5. Flowers irregular, purple  
or of different colours. . Balsaminaceae
    4. Leaves compound; flowers  
yellow. . . . . Oxalidaceae
1. Trees or shrubs:
  6. Fruit much elongated, 3-valved,  
pod like capsule. . . . . Moringaceae
  6. Fruit not as above, dry or fleshy:
    7. Leaves gland dotted. . . . . Rutaceae
    7. Leaves not gland dotted:
      8. Stamens monadelphous. . . . Meliaceae
      8. Stamens free, distinct:
        9. Ovule usually 1 in  
each cell:



10. Leaves simple:

11. Plants usually armed  
with stipular  
spines. . . . . Rhamnaceae

11. Plants unarmed:

12. Fruit winged.. Sapindaceae  
(in part)

12. Fruit not  
winged. . . . . Anacardiaceae

10. Leaves compound:

13. Flowers regular;  
styles 2-5. . . . . Simaroubaceae

13. Flowers not regular,  
style simple, or  
sometimes divided  
above. . . . . .Sapindaceae

9. Ovules usually 2 in each  
cell, sometimes many:

14. Flowers unisexual;  
stamens obdiplosta-  
minous. . . . . . Burseraceae

14. Flowers bisexual;  
stamens not  
obdiplostaminous. . . . . Celastraceae

## Series III Calyciflorae

1. Pistil apocarpus or nearly so, or  
monocarpellary:

2. Flower irregular:

3. Corolla papilionaceous; posterior  
petal biggest and outermost. . . Papilionaceae

3. Corolla not papilionaceous,  
posterior petal smaller or  
inner most. . . . . Caesalpinaceae

2. Flower regular:

4. Plants succulent. . . . . Crassulaceae

4. Plants not succulent:

5. Inflorescence in heads or  
spike. . . . . Mimosaceae

5. Inflorescence not as above. . Rosaceae

1. Pistil syncarpus:

6. Plants with tendrils. . . . . Cucurbitaceae

6. Plants without tendrils:

7. Trees, soft-wooded with milky  
latex. . . . . Caricaceae

7. Trees, shrubs or herbs without  
milky latex:

8. Flowers regular; stamens  
definite:

9. Ovary usually superior  
free from the calyx:

- 10. Plants with sticky glands. . . . . Saxifragaceae
- 10. Plants not with sticky glands:
  - 11. Herbs only, branches not 4-gonous:
    - 12. Flowers concealed in a petiolar pouch; petals wanting; stamens inserted on calyx tube. . . Aizoaceae
    - 12. Flowers not as above; stamens hypogynous. . . Molluginaceae
  - 11. Herbs, shrubs or trees, branches 4-gonous. . . . . Lythraceae
- 9. Ovary inferior:
  - 13. Connective of anther appendaged near base by bristle or spur. . . . Melastomaceae<sup>to</sup>
  - 13. Connective of anther not as above, plants growing near water. . . Onagraceae
  - 14. Ovary 1 celled:
    - 15. Ovule 1, pendulous. . . Alangiaceae
    - 15. Ovules 2-6. . . Combretaceae

14. Ovary two celled,  
1 ovule in  
each. . . . . Umbelliferae  
(Apiaceae)

8. Flowers regular  
or irregular;  
stamens indefinite:

16. Armed, succulent  
spiny shrub  
with jointed  
phylloclades,  
leaves reduced  
or zero. . . . . Cactaceae

16. Unarmed shrub  
or trees;  
leaves well  
developed:

17. Leaves  
opposite,  
gland dotted. . . . . Myrtaceae

17. Leaves alternate,  
not gland dotted;  
flower much  
larger. . . . . Lecythidaceae

Enumeration of Plants

DILLENIACEAE

Dillenia Linn.

E  
F. Pl  
Rare

Dillenia pentagyna Roxb. Pl. Corom. 1:21, t.20, 1795  
& Fl. Ind. 2:652; FBI. 1:38; C. 1:7; Gr. 2;  
D. & G. 2; Talb. For. Fl. Bombay 1:10; Sant.2.

A large deciduous tree. In young plants leaves are very large, reaching upto 90 x 25 cm., with a serrate margin and prominent veins. Young leaves and branches with silky pubescence, old glabrous. Flowers bright yellow, 2-3 cm., in diameter, fascicled on naked branches.

Local name: Kail Sag, Gadh Sag.

Flowers: March to July.

Fruits: April to October.

Bedi 1389, 1390, 2451.

Rare; only few large trees observed at Pepargota and few young trees at Ratan Mal plateau, near Popat Ka Kunva.

Gujarat: Dang forest; common along the western face of the Ghats. Forests throughout India, from Oude and Behar to Assam.

ANNONACEAE

Flowers pale yellow, petals glabrous:

Petals thick and fleshy . . . . . Annona

Petals not thick and fleshy,  
linear, spreading from the base . . Polyalthia

Flowers purple coloured; petals  
pubescent, saccate at the base. . . . . Miliusa

Annona Linn.

Annona squamosa Linn. Sp. Pl. 537, 1753; FBI. 1:78;  
C. 1:15; D. & G. Suppl. 2; Talb. 5; Saur. 1:2.

cf.  
pt.  
c

A shrub or a small tree. Leaves oblong-lanceolate.  
Flowers greenish yellow. Fruit ovoid or globose, syncarp.  
Seeds brownish black smooth.

Local name: Sita phal.

Flowers: May to August.

Fruits: August to March.

Bedi 497, (6-8-62, P<sup>e</sup>pargota).

Fairly common on plains, often cultivated for its  
edible fruits. Rare in the hilly regions of Ratan  
Mahal. Often noted escaped near villages.

Cultivated and becoming naturalized throughout  
India, especially Western Peninsula.

Tropical America, Africa, Asia.

Polyalthia Blume.

Polyalthia longifolia (Sonner.) Thw. Enum. 398, 1864;  
FBI. 1:63; C. 1:13; Benthall, Trees Calc. 9;  
Saur. 1:3; Santapau and Wagh in Bull. Bot.  
Surv. India 5:108.

Uvaria longifolia Sonner. Voy. Ind. 2:233, t.131,  
782.

A medium sized evergreen tree. Leaves lanceolate,  
glabrous with wavy margin. Flowers greenish yellow in  
fascicles or shortly peduncled umbels. Fruit an etaerio  
of one-seeded berries.

Local name: Asopalo, Asopalav.

Flowers: March to April.

Fruits: April to June.

Bedi 1154, 2121.

Noted few trees near villages on plains only. Very  
rare in the hilly regions.

A native of Ceylon, cultivated throughout the hotter  
parts of India.

Cultigen.  
Pl. rare

The nomenclature of the plant has been a much debated topic. Refer to Santapau, in Ind. For. 79:611-613, 1953 and Santapau & Wagh, l.c.

Miliusa Lesch.

Miliusa tomentosa (Roxb.) Sinclair in Gardn. 14:378, 1955; Santapau, Saur 1:4, 1962; Sant. 2.

Uvaria tomentosa Roxb. Pl. Cor. 1:31, t. 35, 1795.

Saccopetalum tomentosum Hook. f. & Thom. Fl. Ind. 152, 1855; FDI. 1:88; C. 1:17; D. & G. 4; Talb. 5; King in ARBGC. 4(1):159, t. 207.

A medium sized tree; young branches tomentose, becoming glabrous afterwards. Flower reddish-green to purple, in 1-many flowered peduncles, petals exterior small, interior about 1 cm., long.

Local name: Umbh.

Flowers: March to April.

Fruits: April to May.

Bedl 1160, 1214, 1343, 2320.

Fairly common on plains N.E., to Panam river. Not common or rare on steep slopes and on flattened hill tops.

Western Ghats, from Konkan to Travancore. Terai of Nepal at Gorakhpore, Orissa and Behar.



## MENISPEIMACEAE

Carpel solitary; stamens connate, anther  
in a ring . . . . . Cissampelos

Carpel 3 or more; stamens free:

Leaves deeply cordate, glabrous . . . . Tinospora

Leaves subcordate, apex mucronate,  
hairy on both sides . . . . . Cocculus

Cissampelos Linn.

*var. hirsuta (Couch ex DC) Formo*  
Cissampelos pareira Linn. Sp. Pl. 1031, 1753; FBI,  
1:103; C. 1:24; D. & G. 5; N. 11; Sant. 5;  
Saur. 1:4, 1962; Chavan & Oza, Fl. Pavagadh  
30.

A slightly pubescent climbing shrub. Leaves peltate,  
orbicular, reniform, mucronate, cordate at the base.  
Male flowers in axillary cymes, peduncle slender. Female  
flowers in elongate, solitary or twin axillary racemes  
with foliaceous softly hairy bracts.

Local name: Phad.

Local uses: Root paste is used by the native  
Bhils to cure wounds.

Flowers & Fruits: August to November.

Bedl 318, 625, 1565.

Fairly common on hedges near villages both at plains and in hilly regions; not common in the forest interiors.

Gujarat; tropical and sub. trop. India from Sind & Punjab to Ceylon and Singapore.

Cosmopolitan in warm regions.

Cocculus DC. (nom. cons.)

Cocculus hirsutus (Linn.) Diel. in. Pfreich. 46:236, 1910; Sant. 5; Saur. 1:5; Chavan & Oza, l.c. 31.

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

Cocculus villosus DC. Syst. 1:525, 1818; FBI. 1:101; C. 1:22; N.11.

A villous, straggling, scandent climber. Leaves very variable in size and shape, mucronate, densely covered with hairs. Flowers yellowish green; petals larger in female than in male flowers. Fruit a small drupe.

Local name: Vavadi.

Local uses: Leaf juice is used to cure fever.

Leaf powder when mixed with water forms a jelly like substance.

Flowers & Fruits: August to March.

Bedi 320, 1432, 3685.

Fairly common in hedges near human inhabitation on plains. Rare in the hilly forest regions.

Throughout Trop. & Sub. Trop. India, from the base of Himalaya to Malabar & Pegu.

Tropical Africa.

Tinospora Miers

Tinospora cordifolia (Willd.) Miers in Ann. & Mag.

Nat. Hist. 7:38, 1851; FBI. 1:97; C. 1:20;  
D. & G. 8; N. 10.

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

Cocculus cordifolius DC. Syst. 1:518, 1818; Gr. 4;  
Wt. Ic. t. 486.

A large climber, usually seen on shrubs and trees. Leaves cordate with a broad sinus. Flowers pale-yellow to greenish-yellow in long racemes. Fruit biconvex red about the size of a pea.

Local name: Galo, Kali Phad, Kari Phad.

Local uses: Stem decoction is considered by the natives, as a good tonic.

Flowers: July to October.

Fruits: October to April.

Bedi 288, 1398, 2823.

Very common near Kanjeta and other forest areas,  
along the banks of Panam river.

Gujarat, Deccan, Konkan, Karnatak; throughout trop.  
India.

Ceylon.

Most of the floras mention March as the flowering  
season, but I have always observed it flowering, in  
different forest region during monsoon and fruiting  
during December-March.

This species has a great repute in the indigenous  
system of medicine, but due to lack of proper transport  
facilities, it is not being commercially exploited,  
though found in large abundance.

#### NYMphaeACEAE

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

Leaves glabrous on both sides; flowers smaller,  
blue to pale violet; anthers with appendages . . . .stellata

Leaves densely pubescent beneath; flower  
large, white to dark red; anthers without  
appendages. . . . . .nouchali

Nymphaea stellata Willd. Sp. Pl. 2:1153, 1797; ← This is true

FBI. 1:114; C.1:27; Gr.5; D. & G. 6.

N. stellata Willd. Var. parviflora Hook. f.

& Thom. Fl. Ind. 1:243.

N. nouchali Burm.f.

An aquatic herb. Leaves peltate, glabrous on both surfaces, often bloched with purple on the lower side. Flowers light blue, purple or pale-violet; petals linear, oblong-lanceolate, acute.

Local name: Neel Kamal.

Flowers: September to April.

Bedi 3640, 3641, 3642.

Rare, noted only around the banks of Dhenpur tank.

Common throughout the warmer parts of India.

Africa.

Nymphaea nouchali Burm. f. Fl. Ind. 120, 1768; Saur.1:8;

Subramanyam in Aquat. Angios. 6, Pl. I, f. 2.

N. pubescens Willd. Sp. Pl. 2:1154; Blatter in ← This name is  
JBNHS. 34:294, pro.parte; Sant. 6. correct.

N. lotus H.K. f. & Thoms. FBI. 1:114; C. 1:26(non Linn.)

N. lotus Var. pubescens H.K. f. & Thoms. loc. cit.

An aquatic herb. Leaves rounded, margin sinuate, entire or toothed, pubescent beneath. Flowers white pink or red.

Local name: Kamal.

Local uses: Roots, rhizome, peduncle and seeds are used as vegetable by the natives.

Flowers & Fruits: September to May.

Bedi 3644, 3645, 3646.

Fairly common in Dhenpur tank, also noted at Papario tank. I have not seen this plant anywhere else in our district.

Common throughout India in the warmer parts. Cultivated in Bombay State and at many other places.

Africa, Hungary, Java, Philippine Islands.

#### PAPAVERACEAE

##### Argemone Linn.

Argemone mexicana Linn. Sp. Pl. 508, 1753; FBI. 1:117;  
C. 1:29; Gr. 6; D. & G. Suppl. 3; N. 13; Wt. Ic.  
t. 11; Sant. 7; Saur. 1:10.

An erect, spiny herb with greenish-yellow or pale juice. Flower faint to dark yellow. Fruit capsular, priky, opening by apical pores; seed numerous black.

Local name: Dadrodi.

Local uses: Oil from the seeds is used to cure certain skin diseases.

Flowers & Fruits: Almost throughout the year, but more common during cold season.

Bedi 1179, 1217, 2034 (11-8-62. Dhenpur).

Fairly common on the plains, rare in hilly regions and forest interiors. Often noted as a weed in cultivated

fields, in pure strands in fallow fields, on the beds of Panam river and many other streams in the open areas.

Throughout India.

Trop. America, but naturalized in most warm countries.

(CRUCIFERAE) {BRASSICACEAE}

Brassica Linn.

Brassica juncea Cass. in. Bull. Soc. Bot. France 6:609, 1859; FBI. 1:157; C. 1:37; Saur. 1:12, 1962.

A small, erect herb with yellow flowers. Cultivated near Dhenpur bhil ashram, and as a weed in cultivated fields. Very rare or absent in hilly regions.

Local name: Rai.

Bedi 2080, 3360.

Cultivated in many parts of India, especially Northern India and Bengal. Leaves are used as a vegetable. Seeds yield oil.

Raphanus Linn.

Raphanus sativus Linn. Sp. Pl. 669, 1753; FBI. 1:166; C. 1:37.

Cultivated in Dhenpur Ashram for its edible roots. Not noted anywhere else.

(CAPPARIDACEAE) ~~(CAPPARACEAE)~~

Herbs; fruit a capsule. . . . . Cleome

Shrubs or trees; fruit capsular or berry:

Shrubs:

Stamens 4-6, inserted half way up  
the gynophore; stipular spines  
absent. . . . . Cadaba

Stamens 8 to many; inserted at the  
base of the gynophore; plants with  
stipular spines; leaves simple. . . . Capparis

Trees; unarmed; fruit a woody berry;  
leaves 3-foliate. . . . . Crataeva

Cleome Linn.

Leaves simple:

Stamens 6 or less than 6; leaves  
penninerved; bracts having distinct  
petiole; flowers pink. . . . . monophylla

Stamens 10-12; leaves trinerved;  
bracts leafy; flowers violet purple. . . . simplicifolia

Leaves compound:

Flowers yellow; stamens 10 to many. . . . viscosa

Flowers white; stamens 6 . . . . . gynandra

Cleome monophylla Linn. Sp. Pl. 672, 1753; FBL. 1:168;  
C. 1:38; Gr. 7; D. & G. 8; Trim. 1:55.



An erect hairy herb, about 10-30 cm., tall. Leaves simple oblong lanceolate. Flowers pinkish; stamens six or less than six.

Flowers & Fruits: August to January.

Bedi 308, 1441.

Commonly noted as a weed in cultivated fields. More common on plains near Kanjeta, Limidi-Mendhri, Chari; rare in the hilly regions.

Gujarat, Deccan, W. Peninsula from Behar and Konkan to Ceylon.

Tropical Africa.

Cleome simplicifolia Hook. f. & Thoms. in FBI. 1:169;  
C. 1:40.

C. monophylla Law in Graham, 7.

Polanisia simplicifolia Camb. in Jacq. Voy. Bot. 20,  
t. 20; D. & G. 8.

P. burtporensis Munro in Wt. Ic. t. 1072.

An erect, hairy, annual herb, 10-40 cm., high, having hairs from the glandular bases. Flower violet or purple blue with light purple veins. Fruit 2-5 cm., long, glabrous.

Flowers & Fruits: October to February.

Bedi 774, 1907, 2163, 3396.

Commonly seen as a weed in cultivated fields,  
both on plains and in hilly regions.

A common weed in the drier parts of Deccan, and  
northern India & Ceylon.

Cleome viscosa Linn. Sp. Pl. 672, 1753; FRI. 1:170;  
C. 1:41; N. 16; Wt. Ic. t.2; Sant. 8; Saur.  
1:15, 1962; Chavan and Oza, Fl. Pavagadh. 34.

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

Polanisia viscosa DC. Prodr. 1122, 1824.

P. icosandra Wt. & Arn. Prodr. 1834; Gr.8; D. & G.8.

An annual, erect, glandular, hairy herb 15-75 cm.,  
tall. Leaves compound 3-5 foliate. Flowers yellow, about  
1 cm., long. Capsule 5-10 cm., long, striate.

Local name: Kan Phuti.

Local uses: Leaf paste is used to remove pus  
from the wounds, especially from  
the ear as the local name indicates.

Flowers and Fruits: July to December.

Bedi 315, 1881, 2517, 2704.

Fairly common weed in the cultivated fields both on  
plains and in hilly regions. Often noted <sup>on</sup> ~~from~~ rocky places  
in the forest interiors. Rarely seen on dried sandy river

bed of Panam; specimens from this locality are much stunted in growth.

Gujarat, Deccan, Konkan.

Abundant throughout tropical and warm regions of India and the rest of the world.

Cleome gynandra Linn. Sp. Pl. 671, 1753; Iltis in Brittonia 12(4):279-294, 1960; Santapau and Wagh in Bull. Bot. Surv. India 5:106; Chavan & Oza, l.c. 34.

C. pentaphylla Linn. Sp. Pl. 983, 1762.

Gynandropsis pentaphylla (Linn.) DC. Prodr. 1:238; 1824; FBI. 1:171; C. 1:42; Gr.7; D. & G. 7; N. 16.

G. gynandra (Linn.) Briq. in Ann. Cons. Jard. Bot. Geneve 17:382; 1914; Sant. 10.

An erect, annual, pubescent, tall herb, 25-90 cm., tall. Leaves 5 foliate with long petiole. Flowers white; stamens inserted on gynophore. Fruit capsular striate 5-10 cm., long.

Local name: Tilwani, Tanmani.

Local uses: Leaf juice and oil is used for skin diseases.

Flowers & Fruits: August to March.

Bedi 2067, 2068.

Fairly common weed on plains, often noted in waste places near villages, especially in Tokerwa, Dhanpur, Nansalai, Ved Bedh etc. Rare in the hilly regions.

Gujarat, Deccan; Abundant throughout the warm parts of India and all tropical countries.

Cadaba Forskahl

Cadaba fruticosa (Linn.) Druce. in. Rep. Bot. Exch.

Cl. Brit. Isles 1913, 3:415, 1914; Chavan & Oza, l.c. 35; Raizada in Ind. For. 92(5):303, 1966.

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

Cadaba farinosa Forsk. Fl. Aeg.-Arab. 68, 1775;

FBI. 1:173; C. 1:46; Blatter in JONES. 31:901.

C. indica Lamk. Encycl. 1:544, 1783; FBI. 1:172;

C. 1:45; D. & G. 9; Gr. 8.

A much branched straggling shrub, 1-2 m., high.  
Flowers white; stamens 5, rarely 4 or 6, inserted about 1/2 the way up the gynophore.

Flowers & Fruits: October to April.

Bedi 2299, 2300.

Rare, on plains N.E. of Ratan Mahal Hills, only once observed near Sirpanch's house at Kundawala, no where else. I could observe these specimens.

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

Arabia, Trop. & Sub. trop. E. & W. Africa.

For the detailed nomenclature of the plant please  
see Raizada, l.c.

Capparis Linn.

Capparis sepiaria Linn. Syst. (ed.10) 1071, 1759; FBI.1:77;  
C. 1:51; Gr. 9; D. & G. 10; Talb. 61, f.40; N. 18;  
Sant. 9; Saur. 1:19.

C. incanescens DC. Prodr. 1:247, 1824; Hook. Ic.t.123.

An ascending or scandent shrub with recurved spines.  
Flowers white in many flowered sessile or shortly peduncled  
umbels.

Local name: Kanthod.

Flowers and Fruits: January to June.

Bedi 2504, 2505.

Noted only on the N.E. boarder of our district, near  
Kundawala, Vedbedh. Not observed from the hilly forest  
regions of Ratan Mahal.

Common in dry parts of Gujarat State, Sind, Punjab.

Burma, Pegu, Ceylon, Philippines.

Crataeva Linn.

*adansoni* (Sp. odora)  
Crataeva nurvala Buch.-Ham. in Trans. Linn. Soc. 15:121,  
 1827; Stearn in Blatt. & Millard, Beaut. Ind.  
 Tr. ed. 2, 47, t. 9; Saur. 1:17; Chavan and Oza,  
 l.c., 36.

C. religiosa Hook. f. et Thoms. (non Forst. f. Prodr.  
 35, 1786) in FBI. 1:172, 1897; C. 1:44; Talb. 64,  
 f. 43; Brandis For. Fl. 16.

A medium to a large sized tree. Leaves trifoliate,  
 leaflets ovate lanceolate. Flowers beautiful, faint pink  
 to whitish yellow, in terminal cymes.

Local name: Vavvarn.

Flowers: January to April.

Fruits: March to June.

Bedi 2117, 3736, 3737.

Rare, only noted few tall trees on the boundary of  
 Kanjeta and Limidi-Mendhri, also observed at Chari.

Gujarat, often cultivated in gardens or as a road-side  
 tree, Konkan, Malabar, Kanara; cultivated elsewhere in India.

Tropical Africa.

There has been a confusion in the past on the identity  
 and nomenclature of this plant; in FBI. l.c., it goes under

the name of C. religiosa but the real C. religiosa Forster is a Polynesian tree, quite different from the Indian one.

#### VIOLACEAE

##### Nybanthus Jacq (nom. cons.)

Nybanthus enneaspermus (Linn.) F. Muell. Fragm. 10:81, 1876 Var. enneaspermus; Tennant in Kew Bull. 16(3):431, 1963.

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

II V. suffruticosa Linn. Sp. Pl. 937, 1753.

Ionidium enneaspermum (Linn.) Vent, Jard. Malm. Sub. t.27, 1803; D. & G. 12.

I. heterophyllum Vent, Jard. Malm. in addn. Sub.t.27, 1803; C. 1:55.

I I. suffruticosum (Linn.) Roem. & Schultes, Syst. veg. 5:394, 1819; Ging. in DC. Prodr. 1:311, 1824; FBI. 1:185; Gr. 11; Woodr. in JBNHS. 11:124.

An erect or diffuse herb, 10-30 cm., tall. Flowers axillary solitary pink, purple or light violet or red. (Most of the floras mention the colour as red which is very rare). Petals unequal, the lowest much larger with a long claw. Capsule globose or subglobose.

Local name: Ratan paras.

Flowers & Fruits: July to November.

Bedi 712, 713.

Fairly common among grasses in all the areas of Ratan Mahal hills. Often noted as a weed in cultivated fields.

Gujarat, Konkan, Deccan; abundant from Bundal Kund to Agra, Bengal and Ceylon.

Tropical Asia, Africa and Australia.

#### COCHLOSPERMACEAE

##### Cochlospermum Kunth

Cochlospermum religiosum (Linn.) Alst. Fl. Ceyl. 6:14, 1931; Raizada in Ind. For Rec. (N.S.) Bot. 5(1):12, 1958.

Bombax religiosum Linn. Sp. Pl. 512, 1753

Cochlospermum gossypium DC. Prodr. 1:527, 1824; Gr. 22; Talb. 70, f.45; C. 1:56; Brandis, For. Fl. 17.

Bombax gossypium Linn. Sp. Pl. 552, 1753; Roxb. Fl. Ind. 3:169.

A small or a medium sized deciduous tree. Bark smooth ash coloured. Leaves scattered at the end of the branches, palmately 3-5 lobed, glabrous above tomentose beneath.



Leaves absent during flowering season. Flowers beautiful, attractive, large yellow, about 5 cm., across. Capsule obovoid 5 to 8 cm., long; seeds covered with dense white silky hairs.

Local name: Ganyari.

Leaves: July to December.

Flowers: February to April.

Fruits: April to June.

Bedi 1059, 1074, 3088, 3719 (fruit)

Not common, often seen near Kanjeta on Mandva hill, near Patan Mata, Kanwara dungar (Bachelor hill); rare in other forest regions.

Deccan, Satpura forests, Konkan, S.M. Country; Garwal, Bundel Kund, Behar, Orissa ~~and Deccan~~.

Cambodia, Siam and Ceylon.

FLACOURTIACEAE

*Flacourtia indica* (Burm.f.) Merrill.

POLYGALACEAE

Polygala Linn.

Wings obtuse, petaloid, membranous:

Leaves narrow-linear, wings with distinct green midrib; capsule not margined. . . . . .erioptera

Leaves lanceolate, broader; capsule margined. . . . . .persicariaefolia

Wings acuminate or acute, herbaceous:

Racemes condensed short. . . . . .chinensis

Racemes lax, few flowered. . . . . .chinensis

Var. brachystachya

Polygala erioptera DC. Prodr. 1:326, 1824; FBI. 1:203;  
C. 1:63; N. 21; Sant. 12; Saur. 1:22; Chavan  
& Oza, in Fl. Pavagadh. 38.

An erect or suberect hairy herb, branching near the base. Though in some of the floras colour of the flower is given yellow, but often, pink, rosy or onion coloured flowers are also seen.

Flowers & Fruits: August to November.

Bedi 3126, 3127.

Rare, only noted at few places on the plains, north-east of Ratan Mahal hills, near Ved Bedh.

Gujarat, Deccan, Konkan, W. Peninsula, Sind, Punjab, Behar.

Burma, Arabia, tropical Asia and Africa.

Polygala persicariaefolia DC. Prodr. 1:326, 1824; FBI. 1:202;  
C. 1:63; D. & G. 13; Woodr. in JBNHS. 11:124.

A small herb; young branches grooved. Leaves lanceolate, broader than any other species of Polygala of Ratan Mahal.

Flowers rosy, wings obtuse, petaloid, glabrous. Capsule margined.

Flowers & Fruits: August to September.

Hedi 1574, 1575, 1576.

Very rare, only noted at one spot on Ratan Mal plateau near Ratneshwar Maharaj temple.

Deccan, Konkan, Kanara; temp. and sub. trop. Himalaya, alt. 1700 to 3000<sup>m</sup> M.S.L.; from Simla to east Nepal.

Trop. Australia and Africa.

The identity of my specimens has been confirmed at F.R.I. Herbarium Dehra Dun.

This species so far has not been reported from Gujarat by the previous workers, hence is being reported for the first time from Gujarat State.

Polygala chinensis Linn. Sp. Pl. 704, 1753; FBI. 1:204; C. 1:64; Chodat. Monogr. Polygal. pt. 2:385, t. 29, fig. 45-46.

P. arvensis Willd. Sp. Pl. 3:876; Gr. 11; D. & G. 12.

An annual, erect, subglabrous herb, about 25 cm., high. Leaves 2-6 cm., long mucronate. Flowers yellow, sometimes fading to light pink. Capsule densely hairy.

Local name: Phuthi.

Local uses: Decoction from the leaves is used  
to reduce swellings on the feet.

Bedi 26, 532, 1982, 3671.

Fairly common as an under-growth of mixed dry deciduous forest, more so in the hilly regions.

Tolerably common throughout the Gujarat State; found throughout India, from Punjab to Pegu and Western Peninsula and Ceylon.

Tropical Asia and Australia.

Polygala chinensis Linn. Var. brachystachya Blume, Bijd.  
59(Sp.) not of DC.

An erect or suberect, slender herb. Leaves more narrow.  
Recemes lax, few flowered.

Flowers & Fruits: During monsoon.

Bedi 114, 115, (noted near a stream on Karari hill  
near Banvaro). Rare.

The identity of my specimens has been confirmed by Kew  
Herbarium, England.

This variety has not been reported from Gujarat by  
previous workers, hence is being mentioned here as a new  
record for Gujarat State.

## CARYOPHYLLACEAE

Erect herbs with thick, fleshy, narrow,  
linear leaves; sepals not keeled. . . . . Polycarpaea  
Prostrate or sub-erect herbs; leaves  
thin; sepals keeled. . . . . Polycarpon

Polycarpaea Lamk. (nom. cons.)

Polycarpaea corymbosa (Linn.) Lamk. Tabl. Encycl. 2:129,  
1791; FBI. 1:245; C. 1:70; Saur. 1:24.

Achyranthes corymbosa Linn. Sp. Pl. 205, 1753.

A small erect herb, 10-30 cm., high. Leaves thick,  
fleshy, narrow linear. Stipules scarious. Bracts and  
sepals silvery white. Fruit small, shining brown.

Flowers & Fruits: October to January.

Bedi 588, 1720, 3388.

Often noted as a weed in cultivated fields on plains,  
especially near Kanjeta and Chari. Rare in the hilly areas.  
Frequently recorded from the Panam river beds after monsoons.

Gujarat, Deccan, Konkan; S.M. Country; Sind; N.W. India  
and Central India.

Tropical Asia, Australia, Africa and America.

Polycarpon Linn.

Perennial, with thick short branches, flowers  
all sub sessile. . . . . prostratum

Annual, branches thin, slender, elongated,  
older flowers shorter than their pedicels. . . tetraphyllum

Polycarpon prostratum (Forsk.) Aschers. & Schweinf. in  
Oesterr. Bot. Zeitschr. 39:128, 1889 in Observ.;  
Sant. 12.

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

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

Polycarpon loeflingiae Benth. & Hook. Gen. Pl. 1:153,  
1862; FBI. 1:245; C. 1:69; Trim. 1:87.

P. indicum Merrill in Phil. Journ. Sci. Bot. 10:30,  
1905; Blatter in JBNHS. 34:304.

A prostrate or suberect hairy herb. Leaves linear-  
oblong, acute, spathulate. Flowers small, pale, sub-sessile,  
in dense dichotomous cymes. Capsule very thin.

Flowers & Fruits: November to March.

Bedi 2892, 2896, 3649, 3650.

Not common, noted around the margins of Dhenpur tank  
and as a weed in cultivated fields nearby.

Throughout the hotter parts of India in fields and  
semidried ditches, Deccan, S.M. Country, Kanara.

Cooke, loc. cit., mentions it to be a rare plant and has not cited any locality from Gujarat. But, from my personal observations in various forest areas of Gujarat, I feel that this species is fairly common and widely distributed in Gujarat State.

Polycarpon tetraphyllum Linn. Syst. ed. 10, 881; Hook f. Stud. Fl. Brit. Isles. 63; Gamble, 46; Chavan & Bedi, New Plant Records JBNHS. 63:779, 1966.

Annual, glabrous, slender, sub-erect herb. Leaves 7-15 mm. in opposite pairs or whorls of four. Stipules very small, narrowly triangular, acuminate, scarious. Inflorescence a much branched dichasium. Flowers 2-4 mm. in diameter, shortly pedicellate; sepals with broad white scarious margins; petals white, narrowly oblong; stamens 3-5. Capsule ovoid, about equalling the calyx. Seed brownish, finely papillose.

Plate No. 11

Flowering and fruiting: August-October.

Bedi 3048 (19.8.62) & (10.10.62)

The plants grew on moist soil near Dhanpur tank and Dhanpur village. The plant is rare and restricted to the plains on the northern part of Ratan Mahal hills. It has been mentioned as an introduced weed by Gamble in the Flora of the Presidency of Madras. In the Flora of the British

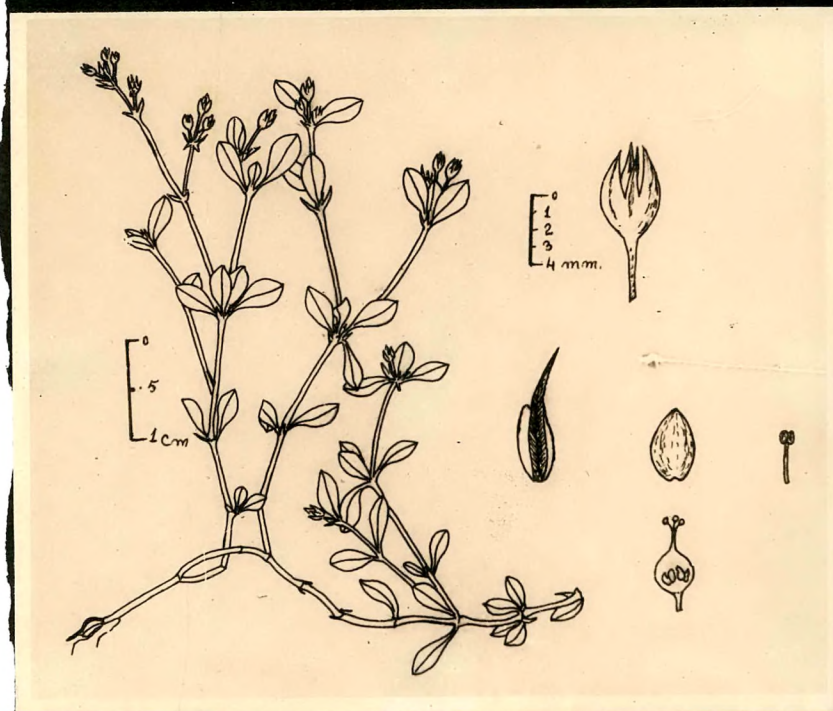


PLATE NO. 11

Polycarpon tetraphyllum Linn.



Isles this species is mentioned as a rare and local plant of sandy and waste places in Cornwall, south Mediterranean region and central Europe, but widely introduced elsewhere.

New record for Erstwhile Bombay State.

The identity of my specimens, has been confirmed, at Kew Herbarium, England.

#### PORTULACACEAE

#### Portulaca Linn.

Nodes with a ring of hairs. . . . . quadrifida

Nodes without hairs. . . . . oleracea

Portulaca quadrifida Linn. Mant. 1:73, 1767; FBI. 1:247;  
C. 1:72; Sant. 13; Saur. 1:26.

Prostrate succulent herb, rooting at nodes. Leaves fleshy, ovate to lanceolate. Flowers yellow, solitary surrounded by 4 involucreal leaves.

Local name: Luni.

Local uses: Leaves are used as vegetable.

Flowers & Fruits: Almost throughout the year.

Bedi (Wet preserved). Fairly common near villages.

Very common near human inhabitation.

N.W. and W. India, or more or less everywhere.

Tropical Asia and Africa.

Portulaca oleracea Linn. Sp. Pl. 445, 1753; FDI. 1:246;  
C. 1:72; N. 23; Sant. 13; Saur. 1:26.

An annual, prostrate or suberect, annual herb.  
Flowers yellow, few together, terminal surrounded by a  
whorl of leaves. Fruit a pyxidium.

Local name: Moti luni.

Local uses: Plant is used as a vegetable.

Flowers and Fruits: September to May.

Bedi 1684, 3515.

Fairly common weed in cultivated fields and grassy  
places near huts.

Throughout India. All warm countries.

#### TAMARICACEAE

Tamarix ericoides Rottl. in Gesel. Naturf. Fr. Berl.

Neue. Saur. 4, 214, 1803; FDI. 1:249; C. 1:76;  
Saur. 1:28; Talb. 87, t. 56.

Trichaurus ericoides Wt. & Arn. Prodr. 40; Gr. 11;  
D. & G. 14.

A gregarious shrub 1-2 m. tall. Branches purple shining. Leaves minute scale like. Flowers beautiful, rosy pink, .5 cm. across. Capsule dull whitish yellow. Plant gives a very pleasant appearance when in full bloom.

Flowers: September to November.

Fruits: October to December.

Bedi 742, 743.

Gregarious shrub, often noted at various places on the sandy river beds of Panam, sometimes forming pure ~~stands~~ ~~association~~ or mixed with Lantana camara.

Gujarat, Madhya Pradesh, W. Peninsula, Deccan, Konkan, N. Kanara; Sind. Ceylon.

#### ELATINACEAE

#### Bergia Linn.

Flowers faint pink or white; stamens 10. . . odorata

Flowers red; stamens 3 to 5. . . . . ammannioides

Bergia odorata Edgew. JASB. 7:765, 1838; FBI. 1:251;

C. 1:77; Blatter in JBNHS. 34:623; Saur. 1:29.

A decumbent herb. Leaves elliptic, obtuse, serrate, very variable in size. Flowers axillary or solitary or in fascicles, faint pink. Stamens 10.

Local name: Runvund, Runvand.

Local uses: Plant paste is used in scorpion sting.

Flowers & Fruits: March to December.

Bedi 1126, 1905, 2922, 3566.

Common weed on plains surrounding Ratan Mahal hills;  
rare in the hilly region.

Gujarat, Sind, hotter parts of Punjab.

Tropical Africa, Persia, Egypt.

Bergia ammannioides Heyene ex Roth, Nov. Pl. Sp. 219,  
402, 1821; FBL. 1:251; C. 1:77; N. 24; Wt. Ic.  
t. 25; Blatter in JBNHS. 34:623; Sant. 13;  
Saur. 1:30.

Elatine ammannioides Wt. & Arn<sup>m</sup>. Prodr. 41, 1832; Gr. 12.

A small, erect, glandular hairy herb. Flowers red  
in dense sub-verticillate fascicles. Stamen 3-5. Capsule  
5 - celled, seed ovoid.

Flowers & Fruits: October to January.

Bedi 3627, 3628.

Not common, only noted near Dhaupur.

More or less throughout India on plains.

Ceylon, Afghanistan, Persia, Tropical Asia, Africa and  
Australia.

The plant resembles Ammania <sup>n</sup>baccifera Linn. in habit and general appearance, but can easily be separated by a critical look.

MALVACEAE Ref. Blumea 14 (1) 1-25, 1966.

1. Ripe carpels separating from the axis; fruits schizocarpic:
  2. Staminal tube antheriferous at the apex; stigmatic branches as many as carpels:
    3. Involucral bracts absent; shrubs:
      4. Carpels 5-10, dehiscing irregularly, 1-seeded. . . . . Sida
      4. Carpels 5-many; dehiscing regularly, forming a flat topped fruit with radiating points; 2-seeded. . . . Abutilon
    3. Involucral bracts 4-6, persistent, forming spreading wings; trees. . . . Kydia
  2. Staminal tube antheriferous outside (not at the top); stigmatic branches twice as many as carpels:
    5. Ripe carpels glochidiate. . . . . Urena
    5. Ripe carpel not glochidiate, but aristate or naked. . . . . Pavonia
1. Ripe carpel not separating from the axis; (fruits capsulars):
  6. Calyx cupular, truncate. . . . . Azanza  
(Thespesia)
  6. Calyx not cupular or truncate:

7. Involucral bracts not spreading, not  
fimbriate:

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

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

7. Involucral bracts 3, large, spreading  
and fimbriate.....Gossypium

Sida Linn.

Prostrate, spreading or straggling, slender  
herb. . . . . veronicifolia

Erect or sub-erect herbs or undershrub:

Branches and leaves glutinous or  
viscously hairy. . . . . glutinosa

Branches and leaves stellately hairy:

Leaves glabrous, lanceolate with  
acute apex; awn long. . . . . acuta

Leaves hairy, rhomboidal,  
awns short or 0. . . . . orientalis

Leaves glabrous on upper side  
hairy on lower, obovate, cuneate. . rhombifolia

Var. retusa

s. cordata (Burroug) Benth.

Sida veronicifolia Lamk. Encycl. 1:5, 1783; Blatter in  
JDNHS. 34:627; Saur. 1:37; Santapau & Wagh in  
Bull. Bot. Surv. India 5:108.

S. humilis Cav. Diss. 5:277, t. 134, f.2, 1788;  
FBI. 1:322; D. & G. 17.

A prostrate, procumbent or straggling herb. Leaves thin, slender, large, ovate cordate with serrate margins. Flowers yellow solitary or fasciculate.

Local name: Bhoyabala, Bhonyabala.

Flowers and Fruits: July to March.

Bedi 4, 560, 1257, 3661.

Very common everywhere. Often noted among the undergrowth of forest or in hedges.

Gujarat, Konkan, S.M. Country; almost throughout the hotter parts of India.

Tropical and sub-tropical regions of the globe.

Sida glutinosa Cav. Diss. 1:16, t.3, f.8, 1785; C. 1:97;

G. 1:64; Blatter, loc.cit. 628; Chavan and Oza,

Fl. Pavagadh, 42.

S. mysorensis Wt. & Arn. Prodr. 1:59, 1834; <sup>This is considered by some as distinct from S. glutinosa Cav.</sup> FBI. 1:322.

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

An erect herb, about 30 cm., tall. Young branches and leaves densely covered with glutinous hairs. Flower yellow.

Flowers & Fruits: October to December.

Bedi Noted near Dhenpur Ashram Aug., 62.

Not common, recorded from Kanjeta, Dhenpur and  
Tokerwa.

Gujarat: Pavagadh, Maharashtra, South India.

Bhotan, Ceylon.

Cooke has not cited any locality from Gujarat.

Sida acuta Burm. Fl. Ind. 147, 1768; C. 1:98; Wt. Io.  
t. 95; Blatter, l.c., 628; D. & G. 17; Sant.15.

S. carpinifolia Masters in FBI. 1:323, 1874 (non Linn.).

A suberect or erect rigid herb. Leaves glabrous or  
rarely with few scattered hairs near the petiole, acute  
with serrate margins. Flower yellow.

Flowers & Fruits: August to February.

Bedi 977, 1721, 2193.

Fairly common in the N.E. parts of our district i.e.  
on plains, near Dhenpur, Vadbedh, Taramb Kach. Less frequent  
in the hilly regions.

Almost throughout the erstwhile Bombay State. Generally  
distributed throughout the hotter parts of India.

Ceylon, Malaya, Philippines, Formosa and China.



Sida orientalis Cav. Diss. 1:21, t. 12, f.1, 1785;

Santapau & Wagh in Bull. Bot. Surv. India

5:108; Chavan & Oza, Fl. Pavagadh. 44.

S. rhomboidea Roxb. ex Flem. in Asiat. Res. 6:178, 1810.

S. rhombifolia Linn. Var. rhomboidea (Roxb. ex Flem.)

Masters in FBI. 1:324, 1874; Blatt. l.c., 629;

Sant. 16.

An erect or sub-erect herb. Leaves rhomboid, hoary.

Flowers yellow. Carpellary awns very short or zero.

Flowers & Fruits: September to March.

Bedi 762, 899, 3749.

Noted near Banvaro, Pepargota, Alindra and on plains surrounding Ratan Mahal.

Gujarat, widely distributed throughout India.

Tropics of both the hemispheres.

This species has not been reported by Cooke in his Flora of the Bombay Presidency.

For variants, see, Blatt., l.c.

Sida rhombifolia Var. retusa Masters in FBI. 1:324, 1874;

C. 1:99; D. & G. 17; Sant. 16.

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

D. & G. 17.

S. rhombifolia Linn. forma retusa Blatter, l.c., 629,

1930.

A small shrub. Leaves obovate, retuse, cuneate; glabrous on upper side hairy beneath. Flowers yellow. Carpels 9-10, reticulated with two short awans. Seeds smooth black.

Flowers & Fruits: October to November.

Bedi 746.

Rare, in Ratan Mahal and surrounding hills, noted growing near Kanjeta village.

Gujarat, Deccan, S.M. Country; widely distributed throughout India.

Abutilon Linn.

Abutilon indicum (Linn.) Sweet, Hort. Brit. 54, 1827; FDI. 1:326; C. 1:102; Blatter, l.c., 629; Gr. 15; D. & G. 18; Santapau & Wagh in Bull. Bot Surv. India 5:105; Saur. 1:40; Chavan, Sabnis & Bedi, "Current Science" 30:402, 1961.

Sida indica Linn. Cent. Pl. 2:26, 1756 & Sp. Pl. (ed. 2) 964, 1763.

S. asiatica Linn. Cent. Pl. 2:26, 1756 & Sp. Pl. (ed. 2) 964, 1763.

Abutilon asiaticum (Linn.) Sweet, Hort. Brit. 53, 1826; FDI. 1:326; C. 1:102.

A small hairy undershrub .5 to 2 m. tall. Flowers bright yellow to orange. Carpels 15-20, forming a flattened

top, mucro-pointed outside, densely hairy when young. When old dense brown hairs fall down. Seed glabrous, smooth dark brown.

Flowers & Fruits: October to December.

Bedi 1669, 1670.

Rare on plains in the N.E. boarder of our district, often noted near Vedbedh, Kundwala, Dhenpur. I have not observed this species occurring in the hilly forest regions of Ratan Mahal.

Gujarat, Deccan, Konkan, S.M. Country, Sind; Tropical India.

A tetramerous flower of this species is reported which is just a freak of nature normally flowers are pentamerous.

Kydia Roxb.

Kydia calycina Roxb. Hort. Beng. 51, 1814, nom. nud. & Pl. Corom. 3:12, t.215, 1819, et Fl. Ind. 3:188; FBI. 1:348; C. 1:100; Gr.20; N. 33; Talb. 1:127, t. 78; D. & G. 24; Blatt. & Mill. Beaut. Ind. trees, 97, t. 20.

A moderate sized deciduous tree, sometimes attaining greater height when growing in moist ravines. Flowers white; bracteoles persistent. Capsule small globose. Seed reniform, dark brown.

Local name: Varang.

Local uses: Leaf paste is applied to the  
body to get relief from pain.

Flowers: August to December.

Fruits: November to June.

Bedi 211, 639, 1309.

Fairly common in the hilly forest regions especially  
at higher altitudes near Banvaro, Pampargota and Alindra.

Common on Western Ghats, Deccan, N. Kanara, Konkan  
in the deciduous forests.

Tropical regions of Himalaya. Burma.

Cooke, l.c. has not reported this species from Gujarat.  
Chavan and Oza have not recorded from Pavagadh, though fairly  
common in Gujarat forests.

#### Urena Linn.

Urena lobata Linn. Sp. Pl. 692, 1753; FDI. 1:329 (excl.

Syn. U. palmata); C. 1:106; N. 29; Sant. 17;

Saur. 1:54.

U. sinuata Linn. ibid; FDI. 1:329; C. 1:106; Blatt.

in JBNHS. 34:631.

An erect, much branched shrub, about 75 cm. tall.  
Leaves very variable, toothed, cordate, lobes obtuse.  
Flowers rosy in colour. Ripe carpels glochiate.

Local name: Vagado Bhindo.

Flowers & Fruits: September to March.

Bedi 460, 608, 1177, 1624.

Fairly common in most of the hilly areas and on plains. Usually inhabits moist localities along streams and forest paths.

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

Tropics of both the hemispheres.

From the available information and wide variability in the specific character, Santapau, loc. cit. has merged U. lobata and U. sinuata in accordance with the article 57 of the International Code of Botanical Nomenclature (1961).

Pavonia Cav. (nom. cons.)

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

FBI. 1:331; C. 1:108; D. & G. 21; Blatter in

JBNHS. 34:631; Saur. 1:52; Maheshwari, Fl.Dli.77.

An erect, much branched, glandular hairy undershrub, 50-150 cm., tall. Leaves small entire or lobed. Flowers pink, on long pedicels Carpels downy on outer surface, slightly winged, pale brown.

Flowers & Fruits: October to December.

Bedi 3617, 3618, 3619.

Rare, noted near Dhenpur Asiram.

Gujarat, N.W. Provinces, Deccan, Sind, W. Peninsula  
to Ceylon.

Tropical Africa, Mauritius.

I suspected the identity of my specimens to be  
intermediate between P. zeylanica Cav. and P. arabica  
Steud, as the carpels are hairy. With this remark the  
specimens were sent to the Kew Herbarium, for their  
expert comments, but they have reported my specimens to  
be P. zeylanica Cav.

*Azanza Alef.*

Azanza lampas (Cav.) Alef. in Bot. Zeit. 19:299, 1861;

Exell in Fl. Zambes. 1:434, 1961; Raizada in  
Ind. For. 92(5):303, 1966.

Hibiscus lampas Cav. Diss. 3:154, t. 56, f. 2, 1787;

Wt. Ic. t.5; Gr. 13; Saur. 1:47.

Thespesia lampas Dalz. & Gibs. Bomb. Fl. 19, 1861;

FBI. 1:345; Talb. 124, f. 75; Sant. 19.

\* T. macrophylla Bl. Bijdr. 73; C. 1:121.

A small to a large, much branched shrub. Leaves  
lower 3-lobed, upper entire, glabrous. Flowers light  
yellow to a bright yellow, attractive, about 5 cm., across,  
having a purple center. Capsule ovoid 3-5 valved.

Local name: Manedo.

Local used: Leaves boiled in water are used to reduce swellings.

Flowers & Fruits: August to February.

Bedi 222, 2205, 2771 (preserved in museum).

Common only on the upper heights i.e. in the hilly forest regions of Ratan Mahal hills; often noted on Kanvara Dungar, less frequent on N.E. plains.

Very common along the Western Ghats, Deccan, Konkan, Kanara, trop. Himalaya, Bengal.

Burma, Ceylon, Java and Tropical East Africa.

Once on Kanvara Dungar "Bachelor Hill" a plant (Bedi 2771 preserved wet in museum) was recorded having two buds arising from a single pedicel and having common calyx which were 8 in number. This is just a freak of nature and as far as could be ascertained from the available literature, such a case has not been reported earlier in this species. Plate No. 12

The occurrence of this species from Gujarat has not been reported by Cooke, Talbot, Graham, Dalziel & Gibson, the major works on the Flora of the Bombay Presidency. Even Chavan and Oza in their Flora of Pavagadh Hill, have not enlisted this plant. As far as I am aware this species



PLATE NO. 12

Azanza lampas (Cav.) Alef.

Abnormal flower bud showing fasciation  
of two pedicels and other floral parts.



has not been recorded earlier from this part of the country, hence is being mentioned as a new record. Plant is fairly common in Ratan Mahal Hills and few other deciduous forest regions along the eastern boarder of Gujarat State.

Hibiscus Linn.

Involucral bracts present, without appendage:

Seeds with long cottony hairs:

Leaves acute, over 6 cm. long,  
often 3 lobed; flowers light  
purple. . . . . hirtus

Leaves not lobed under 4 cm.  
long; flowers white. . . . . micranthus

Seeds not cottony, muricated; Invol.  
bracts linear flat..... punctatus

Seeds covered with setulose scales;  
bracteoles adnate to the base of the  
purple and fleshy calyx. . . . . sabdariffa

Seeds glabrous:

Shrubs; capsule with 5 wing; Invol.  
bract linear, free. . . . . vitifolius

Capsule without wings; Invol.  
bracts linear; calyx lobe with  
a gland at the base. . . . . cannabinus

Involucral bracts 0; capsule without wing... lobatus

Hibiscus hirtus Linn. Sp. Pl. 694, 1753; FBL. 1:335;  
C. 1:113; Gr. 14; D. & G. 14; Wt. Ic. t. 41;  
Blatter 34:632; N. 30; Sant. 17; Saur. 1:44.

A perennial undershrub. During summer small twigs noted coming out from old root stock. Leaves hairy on both sides. Involucral bracts 6-9, subulate, shorter than calyx. Corolla 2-3 cm. long, white or faint pink. Capsule globose. Seeds densely covered with dense cottony hairs. (I could not find a distinct gland on the underside of the mid rib. Cooke, l.c., has also failed to observe in his specimens).

Local name: Bopario Channa.

Flowers & Fruits: October to April.

Bedi 1236, 1386, 2403.

Common as an undergrowth of forest on dry rocky hilly slopes near Pepargota, Morai, Kubera and Kanjeta, not so frequent in other areas.

Saurashtra, Western Peninsula, Deccan, Konkan, N.W.  
India. Java.

Cooke, loc. cit. mentions this plant as "very common all along the lower Ghats". Recently Santapau reported from Saurashtra but so far it has not been reported from this part of the country.

H. *ovalifolius* (Forsk.) Vahl

Hibiscus micranthus Linn. f. Suppl. 308, 1781; FBI. 1:335;  
C. 1:113; Blatter 34:632; N. 30; Sant. 17; Saur.  
1:44.

An erect hairy undershrub. Leaves scabrid and hairy with serrate margins. Flower white or faint pink. Fruit a globose, loculicidal capsule.

Flowers & Fruits: September to December.

Bedi 3653, 3654 (Pepargota).

Rare, noted growing at few places in the hilly regions near Alindra, Panam and Pepargota. This species is fairly common in various forest regions as well as on plains.

Gujarat, Deccan, Konkan; almost throughout the hotter parts of India, from N.W. provinces to eastwards and southwards to Ceylon.

Tropical Africa and Arabia.

Hibiscus punctatus Dalz. Dalz. & Gibs. Fl. Bombay 20, 1861; FBI. 1:340; C. 1:116; Blatter l.c., 34:633; Saur. 47; Chavan & Oza, Fl. Pavagadh, 47.

An erect tall undershrub, .5 to 1.5 m., tall. Leaves hastate, pellucid, punctate with serrate margins. Leaves lower 3-lobed, the middle lobe larger than the lateral ones. Flowers white or light pink. Seeds muricate not cottony.

Flowers & Fruits: September to January.

Bedi 781.

Very rare, noted few plants on the hilly slopes near Alindra village.

Gujarat: Broach, Surat; Sind, in the drier parts of Northern and N.W. India.

Hibiscus sabdariffa Linn. Sp. Pl. 695, 1753; FBI. 1:340;  
C. 1:117; Woodr. in JBNHS. 11:127; Watt. Dict.  
Econ. Prod. 4:243; Saur. 1:45.

A cultivated undershrub or shrub, epicalyx and calyx purple red.

Local name: Ambodi.

Local uses: Fleshy calyx is used as a vegetable.

Fibre is obtained from the stem.

Flowers & Fruits: September to January.

Bedi 1908, 1909.

Cultivated on the N.E. boarder of our district, on plains near Vakesia, Nansali, Tokerwa, Kundawala.

Throughout Gujarat and Maharashtra; in almost all the hotter parts of India.

Java, West Indies and other warm tropical countries.

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Sped

ON THE OCCURRENCE OF *FISSENDOCARPA LINIFOLIA* (VAHL)  
BENNET AND *THECAGONUM OVATIFOLIUM* (CAV.)  
BABU FROM GUJARAT STATE

by

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During the course of extensive botanical explorations of Ratanmahal hills, an essentially unexplored area in Panchmahal district, Gujarat State, the following two rare and noteworthy plants were collected. The occurrence of these plants has not been previously recorded from Gujarat State. Cooke's Flora of the Presidency of Bombay and other important published works of this region do not mention these plants. So, as far as can be ascertained from the available literature, they seem to be new records for the erstwhile Bombay State.

*Fissendocarpa linifolia* (Vahl) Bennet, *J. Bom. nat. Hist. Soc.* 61(1): 126, 1970.

*Jussiaea linifolia* Vahl Ecology Am. 2: 32, 1798. *J. fissendocarpa* Haines, *J. As. Soc. Bengal.* n.s. 15: 313, 1919; Haines, Botany of Bihar and Orissa, Vol. 2 : 399, 1961 (Rep. ed.).

A much-branched undershrub, 30-100 cms. high. Stem glabrous, often with raised decurrent lines from the leaf bases. Leaves sub-sessile, glabrous, lanceolate or upper linear-lanceolate. Flowers sessile, more common in upper axils. Capsule minutely pubescent, 15-30 mm. long, terete, 4-celled. Seeds in upper part of the capsule small, with prominent raphe, many-seriate, in lower part of the capsule seeds are one-seriate, large and each enclosed in a two-valved, corky portion of the endocarp.

Flowering and fruiting: November to January.

Herbarium Specimen No.: Bedi 2432.

Rare, the plants were found growing in a shady place along the banks of a stream near Alindra.

*Thecagonum ovatifolium* (Cav.) Babu, in *Bull. Bot. Surv. India* 11(1 and 2): 214, 1969.

*Hedyotis ovatifolia* Cav. Icon. 6: 52, 1801.

*Oldenlandia nudicaulis* Roth Nov. Pl. Sp. 95, 1821; Hook. f., in Fl. Brit. India 3: 70, 1880.

*Gonothea ovatifolia* (Cav.) Sant. and Wagh, in *Bull. Bot. Surv. India* 5: 107, 1963.

An annual, sparsely hairy, erect herb, 5-15 cms. tall. Leaves 15-30 × 20-50 mm. membranous, elliptic or ovate; rarely one pair of leaves smaller and upper two pairs which are sometimes separated by such a short internode as to appear whorled. Cymes long-peduncled, fascicled, terminal repeatedly dichotomously branched, branches capillary. Fruit 4 angled. Seeds globose or sub-globose, dark brown, slightly pitted.

Flowering and Fruiting: August to October.

Herbarium Specimen Nos.: Bedi 1125; Bedi 232.

Not common, noted under the shade of the trees and as a weed in moist cultivated fields in the forest interiors at Banvaro.

Critical notes: Nomenclature of this plant is much debatable, for details please see Babu *loc. cit.* This species, especially the inflorescence is likely to be confused with *Mollugo nudicaulis*.

The author is indeed grateful to Dr. G. Taylor, Director, Royal Botanic Gardens, Kew, England and F.R.I., Herbarium staff, Dehra Dun for confirming the identification of the plants. My thanks are also due to Dr. S. D. Sabnis for critically going through the manuscript of this note.

Hibiscus vitifolius Linn. Sp. Pl. 696, 1753; FBI. 1:338;  
C. 1:109; Gr. 13; D. & G. 20; G. 70.

An erect, undershrub, 1-2 m. high. Leaves 3-7 lobed.  
Flowers yellow with its center purple coloured. Capsule  
winged.

Local name: Jangli Kapas. Jangli bhindo.

Flowers & Fruits: August to February.

Bedi 976, 1958, 3120.

Noted in the hilly regions of Ratan Mahal, more  
frequently seen at higher altitudes near Alindra, Pepargota  
and Banvaro. Less common on plains.

Gujarat, Deccan, Konkan; hotter parts of India from  
N.W. India to Ceylon. Australia.

Hibiscus cannabinus Linn. Syst. ed. 10, 1149, 1759; FBI.  
1:339; C. 1:116; Gr. 13; D. & G. 20; Santapau,  
Pl. Saur. 65 & Saur. 1:46.

A prickly branched shrub. Leaves 3-7 lobed with  
serrate margins. Flowers yellow with a purple center.  
Capsule without wings, hairy, beaked.

Local name: Ambodi.

Local uses: Fibre is prepared from the stem.

Flowers & Fruits: September to December.

Bedi 1930, 3569.



Not common, found at few places in a wild state near the edges of the forest areas (probably an escape), often cultivated on plains for its fiber.

Said to be wild on the Ghats.

Cultivated in most tropical countries.

Hibiscus lobatus (Murr.) O. Kuntze, Rev. Gen. 3:519, 1898;  
Santapau in Pl. Saur. 68 & Saur. 1:43; Maheshwari,  
Fl. Dli. 80; Chavan and Oza, Fl. Pavagadh. 46.

An annual herbaceous, 15-35 cm., tall. Leaves very variable, usually lower palmately lobed upper unlobed. Flower white or pale. Involucral bracts absent. Seeds glabrous.

Flowers & Fruits: August to December.

Bedl 205, 1610, 3269.

Fairly common as an undergrowth of forest, especially on the south of Panam river.

Gujarat, Bombay and many other hotter parts of India.

Ceylon, Burma, Tropical Africa.

#### Abelmoschus Medic.

(For discussion on the validity of the genus Abelmoschus and the reasons to separate it from Hibiscus, please refer to Santapau's Flora of Saurashtra 1:48, 1962).

Involucral bracts 3-6 generally 5, broad leafy;  
capsule less than 5 cm., long, plants wild.....manihot  
Involucral bracts more than 5, linear, ripe  
capsule more than 6 cm., long, plants cultivated...esculentus

Abelmoschus manihot (Linn.) Medic. Malv. Fam. 46, 1787;  
Sant. 18; Saur. 1:50.

Hibiscus manihot Linn. Sp. Pl. 696, 1753; G. 1:69.

Hibiscus tetraphyllus Roxb. Hort. Beng. 52, 1814,  
nom. nud. & Fl. Ind. 3:211, 1832; Fl. 1:341;  
C. 1:118; Talb. 1:123, t. 74; N. 31.

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

An erect undershrub about 1 m. high. Leaves variable,  
entire or lobed. Flowers yellow to orange with a dark  
purple throat. Involucral bracts generally 5 (Roxburgh,  
loc. cit. due to 4 bracts of the epicalyx named his plant  
as Hibiscus tetraphyllus but I have often seen in my Ratan  
Mahal specimens, the bracts of the epicalyx to be 3-6,  
though, generally 5).

Local name: Ran Bhindi, Jangli Bhindi.

Flowers and Fruits: October to December.

Bedi 3572, 3573.

Rare, found in Khalta in Garbari range, north of Panam  
river.

Common in Gujarat, Bombay, Deccan, Konkan, Kanara  
and Bengal.

Abelmoschus esculentus (Linn.) Moench. Method 617, 1794;

Gr. 14; Saur. 1:49; Sant. 18.

Mibiscus esculentus Linn. Sp. Pl. 696, 1753;

FBI. 1:343; C. 1:119.

A tall hairy shrub .5 to 1.5 m. Commonly cultivated  
every where, for its fruits which are used as a vegetable.

Local name: Bhindi.

Flowers and Fruits: October to April.

Bedi 478, (28-11-61, Dhenpur).

Cultivated more frequently on plains rarely in the  
hilly regions.

Cultivated throughout India.

Cultivated in all tropical countries.

Gossypium Linn.

Gossypium herbaceum Linn. Sp. Pl. 693, 1753, pro parte;

C. 1:123.

An erect hairy undershrub. Leaves palmately divided.  
Bracteoles large, cordate, foliaceous, entire, toothed or  
fimbriate. Flowers large yellow with purple throat.

Local name: Kapas.

Flowers & Fruits: September to December.

Only cultivated on the north-eastern part of our district. Not observed in the hilly regions.

Extensively cultivated throughout Gujarat, Maharashtra and many other warmer parts of India.

#### BOMBACACEAE

##### Bombax Gaertn.

Bombax ceiba Linn. Sp. Pl. 511, 1753, p.p. quoad plantas asiaticas, Excl. Syn. Bauhin; id., Sp. Pl. (ed.2) 959, 1763, p.p. quoad plantas asiaticas, Excl. Syn. Jacquin, Bauhin, Sloane; Robyns in Taxon 10:160, 1961; Chavan & Oza, Fl. Pavagadh, 48.

B. heptaphyllum Linn. Syst. Nat. (ed.12) 2:457, 1767 non Linn. (ed. 2) 960, 1763.

B. malabaricum DC. Prodr. 1:479, 1824; FBI. 1:349; C. 1:127.

Salmalia malabarica (DC.) Schott & Endl. Melet. Bot.35, 1832; Sant. 19; Blatt. et Mill. Beaut. Ind. Trees 22, t. 26; Saur. 1:59.

A large deciduous tree, with sharp conical prickles on trunk and branches. Leaves palmately compound. Flowers large, red, in clusters at the end of the branches. Capsule 8-16 cm. long, 5-valved; seeds densely covered by white silky hairs.



PLATE NO. 13

Bombax ceiba Linn.

A deciduous tree, heavily parasitized  
by Dendrophthoe falcata (Linn.) Ettings.

Local name: Simlo.

English name: Silk cotton tree.

Local uses: Soft silky cotton obtained from the capsule is used for filling cushions and pillows.

Flowers: January to March.

Fruit: February to April.

Bedi 1056, 1169, 1170.

Common though not abundant sparsely distributed, both on plains and in hilly areas, rare on the elongated flattened hill tops. Often noted along the banks of Panam river. Sometimes heavily parasitized by Dendrophthoe falcata (Linn.)

Ettings.

(Plate No. 13)

Gujarat, Maharashtra, and almost all the hotter forest regions of India; Burma and Ceylon. Java and Sumatra.

#### STERCULIACEAE

Herbs or undershrubs:

Flowers pink to purplish, in dense crowded terminal clusters; fruit 5 valved..... Melochia

Flowers yellow, in globose or subglobose axillary clusters. Capsule 2-valved..... Waltheria

Large shrubs or small tree; petals deciduous, fruit spirally twisted follicles..... Helicteres

**Trees:**

Flowers unisexual; petals wanting:

Stamens 10; follicles thick woody,  
with stinging hairs; flowers  
yellow..... Sterculia

Staminal column 2-3 cm. long,  
bearing at its top about 30 sessile  
anthers; follicle thin, not covered  
with stinging hairs; flowers orange  
red to purple red..... Firmiana

Flowers bisexual; petals deciduous..... Eriolaena

Melochia Linn.

Melochia corchorifolia Linn. Sp. Pl. 675, 1753; Fl. 1:374;  
C. 1:142; G. 79; Trin. 1:170; N. 36; Blatter in  
JBNHS. 34: 383; Saur. 1:163; Chavan & Oza, Fl.  
Pavagadh, 50.

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

An erect annual herb, 20-50 cm. high. Leaves ovate  
oblong serrate. Flowers pink to purple in dense crowded  
terminal clusters. Fruit a hairy capsule.

Flowers & Fruits: September to January.

Hedi 3195, 3196, 3197.

Not common, noted as a weed in cultivated fields and some other moist grassy places, fairly common in the rest of Panch-Mahal district, and in other parts of Gujarat. Generally found in the hotter parts of India; Ceylon.

A wide diffuse tropical weed.

Waltheria Linn.

Waltheria indica Linn. Sp. Pl. 673, 1753; FBI. 1:374;  
C. 1:144; Gr. 246; D. & G. 23; N. 36; Sant. 22;  
Saur. 1:64; Chavan & Oza, Fl. Pavagadh, 49.

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

An erect, much branched hairy herb or an undershrub, 30-75 cm. high. Leaves elliptic-ovate with crisped margins. Flowers yellow in dense axillary heads. Fruit a 1-seeded capsule.

Flowers & Fruits: August to January.

Bedi 461, 590, 981, 2996.

Not common, often noted in the hilly regions as a weed in cultivated fields and along roadsides.

Common in the hotter parts of India.

Ceylon and tropical warmer regions of the world.

The name W. indica Linn. is retained in accordance with the article 57 of the Int. Code of Botanical Nomenclature. For explanation the examples are given in the



code, of which the one given below refers to our plant.  
 "Robert Brown (in Tuckey, Narr. Exp. Congo. 5:484, 1818)  
 appears to have been the first to unite Waltheria  
americana Linn. (Sp. Pl. 673, 1753) and W. indica Linn.  
 (Sp. Pl. 673, 1753). He adopted the name W. indica for  
 the combined species, and this name must accordingly be  
 retained".

On the subject, see also Santapau, loc. cit.

Santapau in Fl. Saurashtra, says that very often  
 this plant is confused with Melochia corchorifolia Linn.  
 To me, they are quite distinct both in the field as well  
 as in the herbarium and can be easily separated from the  
 colour of the flower and nature of the inflorescence.

#### Helicteres Linn.

Helicteres isora Linn. Sp. Pl. 963; FBI. 1:365; C. 1:136;  
 Gr. 17; D. & G. 22; Talb. 1:146, t. 89; Wt. Ic.  
 t. 180; G. 77; Sant. 21.

A much branched large shrub or a small tree, about  
 3 m. tall. Leaves hairy on both sides. Flowers purple-red  
 to orange-red. Fruit a spirally twisted capsule with dense  
 brown tomentum.

Local name: Muruda seong; Maror phali.

Local uses: Fiber is prepared from the bark.

Seeds are used in the local medicine.

Flowers: August to November.

Fruits: October to February.

Bedi 210, 721, 1567, 3122.

Common in the hilly forest regions of Ratan Mahal and surrounding hills.

Almost throughout Gujarat forests, Maharashtra and Madhya Pradesh.

Fruits are collected by the Bhils and exported through Borhas and Banyas to nearby markets of Dohad, Godhra and Devgadbaria, used in medicine.

Sterculia Linn.

Sterculia urens Roxb. Pl. Cor. 1:25, t. 24, 1795; FBI. 1:355;  
C. 1:131; Gr. 18; D. & G. 23; Talb. 134, t. 83;  
Trim. 1:164; N. 34; Sant. 20; Saur. 1:60.

A deciduous tree, about 10 m. tall, with white papery bark exocorticating in patches. Inflorescence densely covered with shining brown hairs; flowers yellow. Fruit with long purple coloured stinging hairs.

Local name: Kado; Kadio.

Local uses: Gum is eaten by the natives and also used in local medicines.

Timber is soft, used as fuel only.

Bedi 931, 1097, 2147.

Not abundant, but common in the hilly regions of Ratan Mahal hills, especially on the southern parts. Rare on plains.

Common in western and eastern Peninsula; N.W. India, Assam, Behar. Ceylon.

Firmiana Marsigli

Firmiana colorata (Roxb.) R. Br. in Bennett & Brown,

Pl. Jav. Rar. 235, 1844; Blatter and Mill. Beaut.

Ind. Trees (ed.2) 79; G. 1:76; Sant. 21; Saur.

1:61.

Sterculia colorata Roxb. Pl. Cor. 1:26, t. 25, 1795;

FBI. 1:359; C. 1:133; D. & G. 23; N. 35; Talb.

1:140, f.f. 85-86.

Erythropsis colorata Burkill in Gardn. Bull. Straits

Settl. 5:231, 1931; Sant. in RBSI (ed.I) 16(1):26,

Fl. Khandala, (ed. II) 21.

A moderate sized, deciduous tree. Plants are leafless during flowering. Flowers very attractive, giving a beautiful look to the forest; calyx orange red to brown in colour.

Local name: Paroli.

Local uses: Timber soft used as fuel.

Flowers: February to April.

Fruits: March to May.

Bedi 2455, 2456, 2457.

Not common, noted few trees near Ppargota and Banvaro, usually inhabits higher altitudes.

Western Peninsula, Bengal. Ceylon, Pegu.

Cooke, Talbot, Dalziel & Gibson and many others have not mentioned any locality for this species from Gujarat.

Eriolaena DC.

*hookeriana* W. & A.  
Eriolaena quinquelocularis (?) Wight, Icon. 3:7, 1847;  
 FBI. 1:371; C. 1:132; D. & G. 24; Gr. 20; Talb.  
 1:151, f.f. 92-93; G. 110; Blatter 34:881;  
 Sant. 22.

A small or a medium sized tree. Younger parts with whitish pubescence. Leaves orbicular, cordate acuminate, stellately hairy above, softly tomentose beneath. Flowers about 4 cm. across, involucre bracts minute with toothed margins, very caducous. Petals and sepals about 2.5 cm. long, hairy; corolla pale yellow to orange.

Local name: Gadh Sagi.

Flowers: July to August.

Fruits: August to January.

Bedi 3788, 3789, 3790.

Very rare, only few trees noted in Pipargota and Alindra forests.

Deccan, Konkan, S.M. Country.

None of the four species mentioned by various authors (loc.cit.) has been reported from Gujarat State. Hence this is for the first time that this Genus is being reported here.

For much debated nomenclature and validity of all the four species mentioned by Cooke, I am inclined to quote Talbot in the Forest Flora of the Bombay Presidency and Sind, page 152. "I am unable to satisfactorily distinguish between the four usually accepted species E. candollei, E. stocksii, E. Hookeriana and E. quinquelocularis, which are founded I think on no constant differentiating characters of importance. The shape of the caducous, involueral bracteoles and other minor differences such as the size of the flowers, fruit, and leaves, position of the anther on the staminal column and more or less pointed form of fruit are not in my opinion of specific value. Graham in his

catalogue gives Hookeriana, W. & A. as the Bombay species and thinks, it is probably identical with E. candolii, Wall. Dalzell and Gibson only mention one species E. candolii Wall in the Bombay Flora. Cooke, who has had opportunity for examining the original type specimens at Kew, states his opinion in the Flora of Bombay Pres. loc.cit., that E. stocksii Hook f. is scarcely if at all distinguishable from E. Hookeriana, W. & A. Beddome distinguishes 2 species in his Flora Sylvatica viz. E. Hookeriana W. & A. and E. quinquelocularis Wight on slender grounds and finally Sir D. Brandis, For. Fl. 36, is of opinion that E. Hookeriana, E. flavescens Gracke and E. Stocksii are probably one and the same. As there is probability that all the above mentioned closely allied species, if not identical species may eventually be united, I have for practical purposes described only E. candollei". Gamble in his Flora of the Presidency of Madras has described 3 species, viz. E. lushingtonii, E. quinquelocularis and E. hookeriana, depending upon not very conspicuous characters. Santapau loc. cit. has described only E. quinquelocularis, without commenting upon the fate of the other species in the Western India. Till then nobody has taken up this complex problem. Various botanists inspite of referring to the

Type Sheets, and having a good literature could not arrive at any definite conclusion. I, in absence of Type specimens and scanty literature available hesitate to come to a definite conclusion, but the problem is being persued with the help of Indian as well as Foreign experts.

So for the time being I mention only E. quinquelocularis(?) Wight.

Wight Icon. loc.cit. describes the plant under Microchlaena but in the Index to the Icones page 36, he cites his plate 882, as representing Eriochlaena.

#### TILIACEAE

Herbs or undershrubs:

Fruit a prickly capsule. . . . . Triumfetta

Fruit not prickly, smooth, much  
elongated. . . . . Corchorus

Trees or large erect shrubs. . . . . Grewia

#### Triumfetta Linn.

Fruits including bristles 2-3 cm. across,  
upper 1/2 part of the spine or prickle is  
glabrous. Leaves ovate, acute, dentate;  
stamens 10. . . . . pilosa

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Fruits including bristles .5 to .75 cm.  
long, minutely pubescent. Leaves orbicular;  
stamens 15-25. . . . . rotundifolia  
Fruit including bristles about 1 cm. long,  
bristles glabrous. Lower leaves 3-5 lobed;  
stamens 8 to 15. . . . . rhomboidea

Triumfetta pilosa Roth. Nov. Pl. Sp. 223, 1821; FBI. 1:394;  
C. 1:156; D. & G. 25; Trim. 1:79; G. 1:86; Sant. 24.  
T. tomentosa Noronha in Verh. Batav. Gen. 5:ed.1,  
Act. 4:27, 1790 (nom.nud.); Blatter 34:889.

A branched somewhat hairy herb. Leaves ovate, acute,  
dentate. Flowers yellow. Fruit 2-3 cm. across including  
the spines. Spines slightly tomentose at the base, glabrous  
above, much larger than the other two species of Ratan Mahal.

Flowers & Fruits: August to December.

Bedi 2732, 3264, 3441.

Not common, localised to few hilly regions. Often  
noted at Patan Mata and Raiaenga hills.

Gujarat, Maharashtra, Kanara, S.M. Country. Almost  
throughout Tropical India, from Nepal and Kumaon to Ava  
and Malacca, Travancore and Ceylon.

Abyssinia, Western tropical Africa.

T. tomentosa Noronha is 'nomen nudum', the oldest  
valid name is that of Roth.



Standard floras on the Bombay Presidency have not cited its occurrence in Gujarat.

Triumfetta rotundifolia Lamk. Encycl. 3:421, 1739;  
FDI. 1:395; C. 1:157; D. & G. 25; G. 1:86;  
Saur. 1:73; Chavan & Oza, Fl. Pavagadh, 53.

A herb or an undershrub. Leaves orbicular or sub-orbicular, toothed, sparsely hairy above tomentose beneath. Flowers yellow; stamens 15-25. Bristles of the capsule slightly hairy.

Local name: Jhapato; Jhanpato.

Flowers and Fruits: August to January.

Bedi, 26-11-61 fields near Alindra.

Not common, noted near a stream at Nalwani, P&Pargota and Alindra.

Gujarat: Pavagadh and elsewhere, Deccan, Konkan, W. Peninsula and Madhya Pradesh.

From Bundel Kand to Pegu.

Triumfetta rhomboides Jacq. Enum. Pl. Carbi. 22, 1760;  
FDI. 1:395; C. 1:156; Saur. 1:79; Santapau, in  
Bull. Bot. Surv. India 3(1):21, 1962; Raizada,  
in Ind. For. 92(5):325, 1966.

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

Triumfetta bartramia Linn. Syst.(ed.10) 2:1044,  
1759 (nomen illegit); Raizada, in Ind. For.  
Rec.(N.S.) Botany 5(1):47; Sant. 24.

T. angulata Lamk. Encycl. 3:421, 1789; D. & G. 25.

An erect hairy herb or an undershrub. Leaves very  
variable, lower 3-5 lobed upper entire. Flowers yellow.  
Capsule with glabrous spiny bristles.

Local name: Jupli.

Flowers: August to March.

Fruits: October to April.

Bedi 207, 641, 663.

Fairly common on plains and in hilly regions. Often  
noted along the banks of streams, along roadside ditches,  
amongst grass near hedges and rarely as a weed in cultivated  
and fallow fields.

Gujarat, Deccan, Kanara, S.M. Country; tropical and  
sub-tropical countries ascending upto Himalaya.

Ceylon, Malay Islands, China, trop. Africa and America.

For detailed discussions on the nomenclature of the plant,  
please see, Raizada loc.cit.

### Corchorus Linn.

Capsule 3-8 cm. long, beak entire:

Capsule 10 ribbed, cylindric, glabrous,

5-valved, beak long erect.....olitorius

Capsule 3-4 angled, 3-4 valved,  
somewhat pubescent, beak short  
erect. . . . . trilocularis

Capsule 2-5 cm. long, beak trifid:

Capsule cylindric, not winged, about  
2 cm. long. . . . . tridens

Capsule 6 angled, 3 winged, about  
5 cm. long. . . . . aestuanis

Corchorus olitorius Linn. Sp. Pl. 529, 1753; FBI. 1:397;  
C. 1:158; Gr. 20; D. & G. 25; Trim. 1:182;  
Sant. 25; Saur. 1:71.

An erect much branched herb or undershrub 30-70 cm.  
tall. Leaves ovate, lanceolate with serrate margins.  
Flowers yellow. Capsule glabrous, 3-6 cm. long, ribbed  
and beaked.

Local name: Bor chunchi.

Local uses: Fibre is rarely produced from  
this plant.

Flowers & Fruits: August to December.

Bedi 240, 3198.

Noted as a weed in cultivated fields, in waste  
places near villages. More common on plains.

Gujarat, Deccan, Konkan, Sind. Indigenous in many  
parts of India.

All tropical regions.

Corchorus trilocularis Linn. Mantiss 77, 1767; FBI.1:397;  
C. 1:158; Gr. 20; D. & G. 25.

An erect rigid hairy herb or an undershrub. Leaves ovate to elliptic. Flowers yellow. Capsule 4-8 cm. long, with a short beak; seeds black.

Local name: Kadavo Chundri.

Flowers & Fruits: July to December.

Bedi 163, 422, 1614.

Fairly common in most of the areas, especially on plains N.E. of Panam river.

Gujarat, Nilghiris; N.W. India.

Afghanistan, Tropical Africa.

Corchorus tridens Linn. Mant. 566, 1771; FBI. 1:398;  
C. 1:159; G. 1:87; Maheshwari, Fl. Dli. 89;  
Chavan & Oza, Fl. Pavagadh, 53.

An annual, much branched, glabrous herb 30-50 cm. high. Capsule neither angled nor winged, about 2 cm. long, cylindric.

Flowers & Fruits: September, 1960.

Bedi 247 (Kanjeta, 9-9-1960).

Rare, only noted once near Kanjeta village, at a point where Nalwani stream meets the Panam river.

This species appears to be rare in the Bombay Presidency. Cooke has only cited Sind as the locality. Recently it has been recorded by Chavan & Oza, l.c. and subsequently by me.

Corchorus aestuans Linn. Syst. (ed. 10) 1079, 1759  
(non. Forsk.); Blatter, 34:892; Sant. 25;  
Saur. 1:72; Chavan & Oza, Fl. Pavagadh, 53.

C. acutangulus Lamk. Encycl. 2:104, 1786; FBI.1:398;  
C. 1:160; Gr. 20; D. & G. 25.

An erect or ascending herb about 30 cm. tall.  
Leaves ovate, hairy with serrate margins. Flowers yellow.  
Capsule 6 angled, 3 winged; beaks 3, bifid.

Local name: Chedhari Chunch.

Flowers & Fruits: August to February or  
sometimes even upto April near  
moist localities.

Bedi 458, 459, 1682.

Fairly common on plains, as well as in the hilly regions. Often noted as a weed in cultivated fields, along the banks of streams, and at other moist places.

Gujarat, Maharashtra, Konkan; throughout the hotter parts of India and Ceylon.

Australia, Tropical Africa, West Indies.

Grewia Linn.

A much branched shrub, petals orange

inside. . . . . .hirsuta

A medium sized tree; petals yellow

inside. . . . . .tiliaefolia

Grewia tiliaefolia Vahl, Symb. Bot. 1:35, 1790;

FBI. 1:386, pro parte; C. 1:150; Gr. 21;

D. & G. 26; Talb. 1:160, t. 98; N. 37;

Blatter in JBNHS. 34: 887; Sant. 23;

Chavan & Oza, Fl. Pavagadh, 54.

Microcos lateriflora Linn. Sp. Pl. 514, 1753

(non Grewia lateriflora, G. Don, 1831).

A medium sized tree. Leaves ovate, acuminate, crenate or serrate, subcordate hairy. Flowers yellow; petals about half as long as the sepals, having a conspicuous gland at about 1/3 the length of the petal. Drupes about the size of a pea, black when ripe, globose or slightly lobed.

Local name: Dhaman.

Local uses: Fruits are eaten by the natives, which are considered to be cool and refreshing.

Flowers: April to June.

Fruits: June to December.

Bedi 1311, 1326, 2357.

Common on flattened hill tops, especially near Ratan Mal and on its southern slopes.

Throughout Western India, Deccan, Konkan; Himalaya.

Burma, Ceylon, East tropical Africa.

Grewia hirsuta Vahl, Symb. 1:34, 1790; FBI. 1:391;

C. 1:153; Gr. 21; Wt. Ic. t. 76; Talb. 166;

Saur. 1:69.

A much branched hairy shrub, 1-2 m. tall. Leaves, distichous, ovate or lanceolate, acute with serrate margins. Flowers in axillary cymes; petals orange inside and densely hairy outside, having a distinct gland at about  $1/2$  the length. Drupes 1 - 1.5 cm. in diameter, dark purple when ripe.

Local name: Gangarazi; Gangerasi.

Local uses: According to the natives, a root paste is the best remedy for cuts and wounds.

Flowers: July to November.

Fruits: August to December.

Bedi 165, 1755, 2567, 3262.

Fairly common as an undergrowth of forest, especially on the south of Panam river, near Kanjeta, Alindra and Bendol.

Western Ghats, Deccan, Konkan, S.M. Country. Ceylon.

So far the plant was not recorded from any locality in Gujarat. But only recently Santapau records its occurrence in Saurashtra.

LINACEAE

Linum Linn.

Slender erect herbs; flowers yellow, about  
.7 cm. in diameter. . . . . .mysorense

Erect rigid herbs; flowers blue,  
2-3 cm. in diameter. . . . . .usitatissimum

Linum mysorense Heyne ex Wt. et. Arn. Prodr. 134, 1834;  
FBI. 1:411; C. 1:164; Gr. 33; D. & G. 16; Sant.26;  
Chavan & Oza, Fl. Pavagadh, 54.

An erect slender herb, 10-30 cm. high; extensively  
branched only in the upper quarter of the plant. Leaves  
sessile, linear, mucronate. Flowers yellow in corymbose  
cymes.

Flowers & Fruits: September to November.

Bedi 507, 3098, 3234.

Subgregarious in habit, localised to certain areas  
only. Often noted near Banvaro, Malaingna, and on Mandva  
hill. Usually associated with grasses.

Exposed hills of Western Peninsula, from Konkan,  
Khandala and Deccan to the Nilghiries; Western Himalayas,  
Garhwal. Ceylon.

Linum usitatissimum Linn. Sp. Pl. 277, 1753; FBI. 1:410;  
C. 1:164; Sant. 26; Saur. 1:74; Bailey, Man Cult.  
Pl. 604.



An annual much branched herb, about 30 cm. tall.  
Leaves linear or lanceolate. Flowers large, blue, 2-3 cm.  
across, very attractive. Capsule yellow, glabrous, with  
dark brown shining ellipsoid seeds.

Hindi name: Alsi.

English name: Flex plant.

Flowers & Fruits: December to March.

Bedi 2107 to 2111, Bedi 2112 is loaned to  
Science Club Devgadhi Baria for exhibition,  
as a model for colour preservation.

Only once noted as a weed in cultivated fields, along  
the banks of Panam river near Kanjeta village. It seems  
that the plant has been recently introduced as a weed in  
wheat (Triticum vulgare) fields. The natives are not at  
all aware about its occurrence, its name and uses, though  
it is cultivated in other parts of Gujarat and many other  
parts of India for its oil.

Westwards to the Atlantic, Egypt.

#### ZYGOPHYLLACEAE

#### Tribulus Linn.

Tribulus terrestris Linn. Sp. Pl. 367, 1753; FBI. 1:423;  
C. 1:170; D. & G. 45; Trim. 1:194; Blatter, in  
JBNIS. 34:394; Saur. 1:76; Chavan & Oza, Fl.  
Pavagadh, 55.

T. labuginosus Linn. Sp. Pl. 387, 1753; Gr. 35;  
Wt. Ic. t. 98.

A prostrate herb. Leaves hairy, abruptly pinnate.  
Flowers yellow. Fruit consists of 5 woody cocci each with  
a sharp spine.

Local name: Gokharu.

Flowers & Fruits: August to November.

Bedi 1375, 2264, 3049, 3624.

Rare in the hilly regions of Ratan Mahal, often  
noted on plains N.E. of Panam river, especially at  
Kundawala, Dhenpur, Limidi-Mendri, Chari and Tokerwa.

Gujarat, Deccan, S.M. Country, Sind. Throughout India.

Ceylon and many other warm regions of the globe.

BALSAMINACEAE

Impatiens Linn.

Leaves less than 10 cm. long; flower much  
smaller, less than .7 cm. across; white or  
faint pink. . . . . kleinii

Leaves more than 12 cm. long, often about  
15 cm.; flowers much larger, more than  
1.5 cm. across, purple rarely rose  
coloured. . . . . balsamina

Impatiens kleinii Wight & Arn. Prodr. 140, 1834;  
FBI. 1:445; C. 1:181; Gr. 34; D. & G. 43,  
Wt. Ic. t. 884; Blatter in JBNHS. 36:311;  
G. 100; Sant. 29.

A small, soft, slender, annual herb, 15-30 cm. tall.  
Flower small, white or faint pink. Pedicel long filiform,  
1-2 cm. long, deflex in fruit. Spur slender usually longer  
than the flower. Seeds few, black, shining.

Flowers & Fruits: August to November.

Bedi 429, 1489, 3012.

Common on the southern most part of Ratan Mahal hills,  
especially on slopes south of Banvaro and Alindra. Localized  
in distribution, very rare on the hills, North of Panam  
river. I have not observed this species on plains, N.E. of  
our district.

Deccan, Konkan, S.M. Country, N. Kanara.

As far as could be ascertained from the available  
literature, the plant has not been reported from Gujarat  
and hence is being recorded here for the first time.

Impatiens balsamina Linn. Sp. Pl. 938, 1753, Var. rosea  
Hook f. in FBI. 1:554, 1874; Blatter in JBNHS.  
36:314; Sant. 29.

I. balsamina Var. brevicalcarata Cooke, Fl. Pres.  
Bombay, 1:185, 1901.

Herbs 30-50 cm. tall. Leaves 10-15 cm. long.

Flower purplish or pink to rosy, lip spurred; seed smooth.

Flowers and Fruits: August to November.

Bedi 158, 1597, 3010.

Very common, and most conspicuous plant in the undergrowth of the forest, especially during the month of October and November. Often found on hilly slopes. Rare in the open places on plains.

Gujarat, W. India; W. Himalaya.

Tropical and subtropical India; Malaya, China.

#### OXALIDACEAE

Leaves palmately trifoliate; capsule

valves cohering with the axis. . . . . Oxalis

Leaves pinnate; capsule valves

detaching from the axis. . . . . Biophytum

#### Oxalis Linn.

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

C. 1:177; D. & G. 42; Calder in R.B.S.I. 6(8):331,  
t. 5, 1919; Sant. 27; Saur. 1:79; Chavan & Oza,  
Fl. Pavagadh, 56.

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

A small slender herb, with creeping or subterranean stem and ascending shoots. Leaves palmately 3 foliate; leaflets obcordate broader than long. Flowers yellow on long peduncles. Capsule elongate, hairy.

Flowers & Fruits: October to May.

Bedi 2077, 2078 (12-2-62, Dhenpur).

Rare, noted as a weed in Dhenpur Ashram and along the moist banks of Valva river.

Common at various places in Gujarat, almost throughout the warmer parts of India.

Cosmopolitan in distribution.

#### Biophytum DC.

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

FBI. 1:436; C. 1:177; D. & G. 42; Sant. 27;

Saur. 1:79; Chavan & Oza, Fl. Pavagadh, 56.

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

An annual erect herb, 10-25 cm. high, resembling a miniature palm. Leaves abruptly pinnate, crowded at the top, sensitive. Flowers yellow. Capsule ellipsoid slightly longer than the sepals.

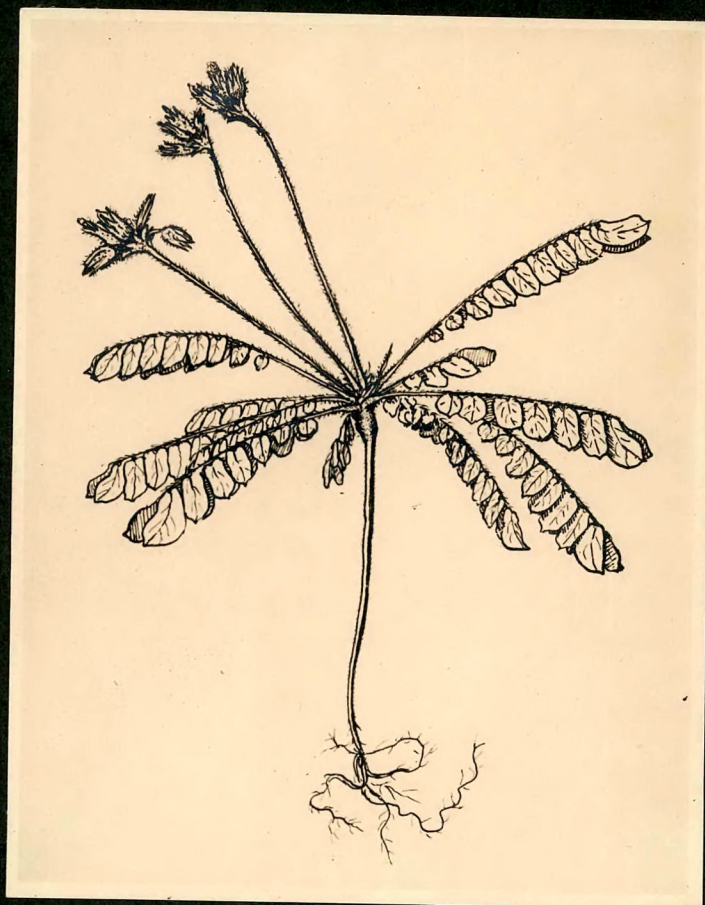


PLATE NO. 14

Biophytum sensitivum (Linn.) DC.

Local name: Lajjamani.

Local uses: It is a common belief among the natives that if dried leaves are smoked along with Tobacco, renders a man impotent. It is worth conducting scientific research on this and it may prove to be a good source for birth control, which is a burning problem in India and many other countries.

Flowers & Fruits: August to January.

Bedi 108, 203, 485.

(Plate No. 14)

Fairly common in all the hilly forest regions, especially in moist localities under the shade of the trees. Rare on plains.

Gujarat, Deccan, Konkan, Kanara; throughout hotter parts of India, Himalaya.

Ceylon, Tropical Asia, Africa and America.

#### RUTACEAE

Leaves unifoliate, pericarp leathery. . . . . Citrus

Leaves multifoliate, pericarp woody:

Leaflets 3, stamens many. . . . . Aegle

Leaflets more than 3; rachis winged;

stamens 10-12. . . . . Limonia

Citrus Linn.

Citrus limon (Linn.) Burm. f. Fl. Ind. 173, 1768;

Hailey, Man. Cult. Pl. 609.

C. medica Var. limon Linn. Sp. Pl. 2:782, 1753.

A small tree, often cultivated for its fruits.

Leaves 1-foliate, with winged rachis, alternate. Flowers white. Fruit oblong or globose berry, fleshy. Pulp acidic.

Local name: Limbu.

English name: Lemon.

Hedi 533, 3128.

Cultivated for its acidic juice, which is refreshing and a good source of vitamin C. Noted few trees at Kanjeta and few other villages on plains. Rarely cultivated by the tribals in the hilly regions.

Tropical and subtropical Asia & Malayan Archipelago.

Aegle Correa (nom. cons.)

Aegle marmelos (Linn.) Correa in TLS. 5:223, 1800; FBL.

1:516; C. 1:204; Gr. 24; D. & G. 31; Talb. 1:206, t. 125; G. 161; N. 48; Blatter in JBNHS. 36:320; Saur. 1:81; Maheshwari in Fl. Oli. 95; Chavan & Oza in Fl. Pavagadh, 57.



Small to a medium sized, glabrous, thorny tree.  
Leaves trifoliate, having an axillary thorn. Flowers  
white or greenish white, scented. Fruit a globose  
amphisarca.

Local name: Bili.

Local uses: Leaves are offered to Lord Shiva  
during monsoon.

Flowers: February to June.

Fruits: May to July.

Bedi 2439, 2440.

Sparsely distributed in all the areas except on hill  
tops, where it is very rare.

Gujarat, Deccan, Konkan, S.M. Country.

Throughout India.

Limonia Linn.

Limonia acidissima Linn. Sp. Pl. (ed.2) 554, 1762;

Airy-Shaw in Kew Bulletin 293, 1939; Chavan &  
Oza, Fl. Pavagadh, 58.

Schinus limonia Linn. Sp. Pl. 339, 1753.

Feronia elephantum Corr. in TLS. 225, 1800;

FBI. 1:516; C. 1:203; Wt. Ic. t. 15.

F. limonia (Linn.) Swingle in Journ. Wash. Acad. Sc.

4:328, 1914; Saur. 1:81.

A large tree armed with spines. Leaves imparipinnate with winged rachis. Flowers dull red or orange in lateral and terminal panicles. Fruit a woody, globose amphisarca about the size of a cricket ball when ripe.

Local name: Khathu.

Local uses: Pulp is eaten by the natives.

Often Chatni is prepared out of its pulp.

Flowers: February to April.

Fruit: May to December.

Bedi 2081, 2082 (Dhenpur 12-2-62)

Seen only few plants at Dhenpur, Kundwala and Vakasia. Cultivated or wild. I have not observed any plant in the hilly forest regions, especially south of Panam<sup>a</sup> river.

Throughout India in dry situations, from Panjab eastwards and southwards to Ceylon.

#### SIMAROUBACEAE

Large trees; leaves large, pinnate; fruit samaroid. . . . . Ailanthus  
 Spiny small or large shrub; leaves much smaller, 2-foliate; fruit not samaroid. . . . Balanites

Ailanthus Desf.(nom. cons.)

Ailanthus excelsa Roxb. Pl. Cor. 1:24, t. 23, 1795;  
FBI. 1:518; C. 1:205; Gr. 37; D. & G. 46;  
Talbot. 1:208, f.f. 126 & 127; Saur. 1:83;  
Chavan & Oza, Fl. Pavagada, 58.

A large tree. Leaves large, alternate, imparipinnate;  
leaflets alternate or subopposite 7-14 pairs. Flowers in  
much branched terminal and axillary panicles. Fruit a  
samara.

Local name: Ardusa.

Local uses: Bark decoction is used to cure  
wounds.

Flowers: February to March.

Fruits: March to April or mid May.

Bedi 1181, 2105, 2106.

Fairly common on plains especially along the banks  
of Panam river near Bendol, Kanjeta, Limidi-Mendhri, Chari,  
Vakesia and Vadhbedu. Not common in the hilly forest  
regions.

Gujarat, W. Peninsula, N.W. India and Behar.

Queensland; can be grown in tropical regions.

Balanites Delile (nom. cons.)

Balanites aegyptiaca (Linn.) Del. Ill. Fl. d'Eg. 263,  
t. 28, f. 1, 1813; Saur. 1:84.

Ximenia aegyptica<sup>a</sup> Linn. Sp. Pl. 1194, 1753.

Balanites roxburghii Planch. in Ann. Sc. Nat.  
(Ser. 4) 4:258, 1854; FRI. 1:522; C. 1:207;  
Talbot. 210, f. 128; Brandis For. Fl. 59.

A large much branched thorny shrub (most of the  
floras mention it as a tree); I have not seen it in a  
tree form. Branches ending in thorns. Leaves bifoliate,  
having thorn in their axil.

Local name: Hingod.

Flowers & Fruits: April to June

Bedi 2726.

Very rare on plains N.E. of Panam river. Once few  
specimens were observed at Kanjeta. I have not seen this  
species growing in the hilly forest regions of Ratan Mahal.

Gujarat, Deccan, Khandesh.

Drier parts of India.

Arabia, Egypt, Burma, Trop. Africa.

## BURSERACEAE

Drupe indehiscent, globose or ovoid. . . . Garuga

Drupe dehiscent, trigonous, pyrenes. . . . Boswellia

Garuga Roxb.

Garuga pinnata Roxb. Hort. Beng. 33, 1814, & Pl. Cor.

3:5, t. 208, 1819; FMI. 1:528; C. 1:211;

Gr. 43; Talb. 1:217, f. 131; Sant. 32.

Medium sized to a large deciduous tree. Leaves large with 6-10 pair of leaflets, often infected by insect galls. Flowers yellowish in much branched panicle. Fruit a drupe, fleshy globose. Leaves, flowers and fruits at the end of the branches. Leaves absent when the plants are flowering.

Local name: Mal Kakad.

Flowers: January to April.

Fruits: April to August.

Bedi 1248, 2103, 2780.

Bendol hills, fairly common along a stream from Popat Ka Kunva to Kanjeta; Kanvara Dungar.

Gujarat, Deccan, Konkan, S.M. Country, Kanara, Nilgiris, Himalayas, almost throughout India.

Burma, Malaya Archipelago, Philippines.

Boswellia Roxb.

Boswellia serrata Roxb. ex Colebr. As. Res. 9:379, t.5,

1807; FMI. 1:528; C. 1:210; Talb. 1:215, f. 130;

Saur. 1:35.

A medium sized tree, generally gregarious in habit. Leaves large, crowded near the end of the branches; leaflets 8-15 pairs, crenate-serrate. Bark whitish brown or ash coloured. Flowers yellowish white with orange tinge, crowded at the end of the branches. Leaves absent during flowering season.

Local name: Gugal.

Local uses: Resin extracted from the stem gives a pleasant odour and is used as disinfectant and to repell insects like mosquitoes.

Flowers: October to December.

Fruits: December to April.

Bedi 1222, 2010, 2423, 2614.

Fairly common on hilly slopes of Kanvara dungar, Chari, Alindra and Bendol.

Madhya Pradesh, southwards to Deccan, and from Behar to Rajputana, Khandesh, Satpuda forests.

#### MELIACEAE

Leaflets less than 3 cm. broad; disc un conspicuous; staminal tube oblong; seeds not winged. . . . . Azadirachta

Leaflets more than 4 cm. broad; disc  
conspicuous; staminal tube cup shaped;  
seeds winged. . . . . Soymida

Azadirachta A. Juss.

Azadirachta indica A. Juss. in Mem. Mus. Par. 19:221,  
1930; C. 1:220; Gr. 30; D. & G. 36; G. 1:177;  
Parker, For. Fl. 71; Talb. 1:229, f. 136;  
Saur. 1:87.

Melia azadirachta Linn. Sp. Pl. 385, 1753; F.B.I. 1:544.

A large tree. Leaves pinnate; leaflets serrate,  
oblique at the base. Flowers white, in axillary panicles.  
Drupe 1-seeded, ellipsoid or subovoid. Seeds without wings.

Local name: Limado.

Local uses: Leaf juice is used to cure boils.

Leaves are burnt to expell mosquitoes  
and flies.

Flowers: March to May.

Fruits: April to June.

Bedi, common at Kanjeta, Alindra and at various  
other places on the plains.

Usually cultivated and found near human inhabitation.  
Gujarat, Deccan, Madhya Pradesh, Konkan; cultivated  
throughout India, wild in sub Himalayan tracts.  
Persia, China.

Soymida Adr. Juss.

Soymida febrifuga Adr. Juss. Mem. Mus. Paris 19:251,  
t.22, fig. 26, 1830; FBL. 1:567; C. 1:228;  
D. & G. 38; Talb. 1:245, t. 146.

Swietenia febrifuga Roxb. Cor. Pl. 1:18, t. 17,  
1795; Gr. 32.

A tall tree about 15 m. high. Leaves crowned  
towards the end of the branches, 20-40 cm. long. Leaflets  
3-6 pairs, opposite or subopposite with inequilateral  
base. Flowers white or pale yellow. Capsule smooth,  
black when ripe, seeds winged.

Local name: Roheni, Rohni.

Local uses: Timber is used for furniture.

Flowers & Fruits: March to July.

Bedi 1229, 1230, 3709.

Not common, noted few trees along the banks of  
Nalwani and Pipar Ka Pani streams, near Kanjeta.

Gujarat, Deccan; hilly districts of North, Western,  
Central and South India. Ceylon.

## CELASTRACEAE

Fruit capsular and dehiscent:

A large climber or scandent; inflorescence  
paniculate or racemose. . . . . Celastrus



An erect shrub, often thorny;  
 inflorescence cymose. . . . . Maytenus  
 Fruit indehiscent and drupaceous; small  
 to a medium sized tree or shrub without  
 thorns and spines. . . . . Elaeodendron

Celastrus Linn.

Celastrus paniculatus Willd. Sp. Pl. 1:1125, 1798;  
 FBI. 1:617; C. 1:245; Gr. 38; D. & G. 47;  
 Wt. Ic. t. 158; Talb. 1:276, f. 163; Sant. 48;  
 Saur. 1:89.

Large climbing shrub; branches pendulous. Leaves  
 ovate - obovate, alternate, crenulate. Flowers greenish  
 yellow in pendulous panicles. Capsule globose, bright  
 yellow to orange; 1-6 seeded

Local name: Mal Kangani.

Local uses: Vegetable is prepared from the  
 young flower, which I have often  
 tasted. Oil from the seeds is  
 used to cure certain body pains.

Flowers: April to June.

Fruits: May to October.

Bedi 155, 2346, 2360.

Fairly common in hedges, on various shrubs, especially  
 in the hilly forest region south of Panam river.

Gujarat, Deccan, Konkan, S.M. country; Tropical and sub-tropical Himalaya, Punjab. Throughout the hilly districts of India.

Ceylon, Malay Archipelago and Philippine Islands.

Maytenus Molina

Maytenus emarginata (Willd.) Ding Hou in Fl. Males.  
(Ser.1) 6(2):241, 1962; Raizada, Ind. For.  
92(5):316, 1966.

Celastrus emarginatus Willd. Sp. Pl. 1:1128, 1798.

Gymnosporia montana Benth. Fl. Austr. 1:400, 1863;  
FBI. 1:621; C. 1:247; Talb. 1:281, f.166, p.p.  
(non Roxb.).

Gymnosporia spinosa (Forsk.) Fiori, Bos. Pianta  
Legn. Erit. 225, 1909; Santapau, Fl. Saur. 144  
(non Merrill & Rolfe, 1908); Santapau, Fl.  
Purandhar 32.

✱ Maytenus senegalensis (Lamk.) Exell. in Bol. Soc.  
Drot. (Ser.2) 26:223, 1952.

A large glabrous shrub. Leaves thick, obovate or oblanceolate, with crenate margin, with or without axillary thorn. Branches sharp, pointed at the tips. Cymes on short axillary, sharp tipped branches. Capsule small globose about .8 mm. in diameter. Seeds brown.

Flowers: October to December.

Fruits: November to March.

Bedi 905, 1663.

Rare, only noted at few places on the plains, north-east of Ratan Mahal hills near Dhenpur and Tarambkach.

Gujarat, throughout the drier parts of central, south-western and north-western India.

Afghanistan, Central Africa, Malay Archipelago, Australia.

x Elaeodendron Jacq. f.

Elaeodendron roxburghii Wight & Arn. Prodr. 157, 1834;  
Gr. 38; D. & G. 48; Wight, Illustr. 178, t.71;  
Sant. 71.

Elaeodendron glaucum auct. non Pers.: FBL.1: 623;  
C. 1:248.

Small to a medium sized tree, 5-10 m. high. Leaves glabrous, very variable in size and shape, generally elliptic, margin serrate-crenate. Flowers small, white, in dichotomously branched cymes. Drupe ovoid.

Local name: Bhutri.

Flowers: June to October.

Fruits: August to December.

Bedi 727, 3604.

P/TH  
3/1/3



Not common, restricted only to Bendol hilly forest areas, especially adjoining areas of Alindra and Panam villages.

Deccan, Konkan, Kanara, S.M. country; throughout the hotter parts of India and Ceylon.

This species has not been mentioned from Gujarat by the previous worker, so is being recorded here for the first time.

Santapau, loc.cit. has not observed it from Khandala and he mentions it to be very rare.

#### RHAMNACEAE

Climbing shrubs, unarmed; fruit indehiscent, dry, 1 celled, 1 seeded, prolonged above into a linear oblong broad wing. . . . . Ventilago

Trees or climbing shrubs, usually armed; fruit dry or fleshy drupe with 1-4 seeded stone. . . . . Zizyphus

#### Ventilago Gaertn.

Ventilago denticulata Willd. in Ges. Naturf. Fr.

Neue Sohr. 3:417, 1801; Chavan & Oza, Fl. Pavagadh, 63.

V. maderaspatana Roxb. Pl. Corom. 1:55, t. 76, 1796-98; Wt. & Arn. Prodr. 164 (non Gaertn 1798).

V. calyculata Tulasne in Ann. Sc. Nat. (Ser. 4)  
8:124, 1857; FBI. 1:631; C. 1:254.

V. maderaspatana Gaertn. Var. calyculata King  
in JASB. 65(2):378-379, 1896.

An extensive, huge climber on tall trees. Flowers  
yellowish green, bad smelling, in terminal panicles.  
Fruit 1 seeded, winged.

Local name: Kali Dhamas.

Local uses: Natives prepare ropes from the  
bark.

Flowers: October to January.

Fruits: January to April.

Bedi 3521 to 3523 and on 25-3-63 noted  
fruiting near Bendol.

More common on the southern parts of Ratan Mahal  
Hills, rare on the northern parts.

Gujarat, western Peninsula, throughout hotter parts  
of India; from Kumaon Himalaya and Nepal to Bhotan. Java.

Zizyphus Tourn. ex Miller

(The spelling of the generic name seems to have  
caused some confusion in the past, on the subject see  
Santapau in JBNHS. 51:801-804, 1953)..

Petals 0; climbing shrubs. . . . . rugosa

Petals 5; stone hard and thick:

Styles 2, connate to the middle:

Leaves tomentose beneath; drupe  
oblong or subglobose, over  
1.25 cm. in diameter. . . . . mauritiana

Leaves gray-pubescent on both  
sides; 1-2 cm. in diameter;  
drupe less than 1 cm. in  
diameter. . . . . nummularia

Leaves glabrous or pubescent on  
nerves beneath and petiole;  
fruit globose, yellow. . . . . glabarata

Leaves very oblique, silky  
pubescent, drupes less than  
1 cm. in diameter. . . . . oenoplia

Style 3 or 2, distinct or nearly so;

drupe more than 2 cm. in diameter. . . . xylopyra

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

C. 1:258; Gr. 39; D. & G. 49; Talb. 1:298,  
f. 177; Sant. 40; Saur. 1:95; Chavan & Oza,  
Fl. Pavagadh, 61.

A large, straggling shrub; younger parts hairy.

Leaves 5-15 cm. long. Spine solitary, recurved,  
tomentose, except the tip. Drupes pyriform rarely globose,  
white when ripe.

Local name: Turni.

Local uses: Ripe fruits are relished by the natives.

Flowers: November to January.

Fruits: February to April.

Bedi 1026, 1095.

Fairly common on flattened hill tops and on hilly forest slopes. Rare on the plains.

Gujarat, Deccan, Western Peninsula, Sind, Tropical Himalaya from Kumaon and Sikkim to Assam and Burma.

Zizyphus mauritiana Lamk. Encycl. 3:319, 1789; Santapau in JBNHS. 51:802; Sant. 39; Saur. 1:92.

Z. jujuba Lamk. Encycl. 3:318, 1789 (non Z. jujuba Miller, Gard. Diet. (ed.8) no.1, 1768); FBI. 1:632; C. 1:256; Gr. 39; D. & G. 49; Talb. 1:294, f. 175.

Much branched thorny trees. Leaves softly hairy and somewhat whitish on the lower side. Flowers greenish yellow. Fruit a drupe, globose or oblong.

Local name: Bor.

Local uses: Fruits edible, relished by the natives.

Flowers: July to October.

Fruits: September to January.

Bedl 13, 156, 157.

Fairly common on plains, often noted along the banks of Panam river. Usually cultivated, often runs wild. Rare in the forest interiors.

Extensively cultivated throughout India for its edible fruits; also runs wild.

Throughout India. Malacca, Ceylon, Afghanistan, Trop. Africa, China, Australia.

The name Z. jujuba Lamk. (1789) is preoccupied by Millers name of 1768 and Lamark's name is therefore illegitimate being a later homonym in accordance with the Art 64 of Montreal Code of Botanical nomenclature, the matter has been discussed by Santapan, l.c.

Zizyphus nummularia (Burm. f.) Wight, et Arn. Prodr. 162, 1834; FBI. 1:633; Gr. 247; D. & G. 49; Brandis, For. Fl. 88; G. 1:158; Saur. 1:93.

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

Zizyphus rotundifolia Lamk. Encycl. 3:319, 1789; C. 1:257.

An armed, much branched, small shrub. Leaves hairy on both sides, silky, whitish beneath, orbicular. Stipular



spines, one long straight and the other short hooked, somewhat compressed.

Local name: Jeeni Bor.

Local uses: Eaten by the natives, acidic in taste.

Flowers: October to December.

Fruits: November to February.

Dedi 1726, 1727.

Not common, occasionally noted along the banks of Panam river, in open wastelands in hedges near villages.

Very common on plains of Gujarat and Western Peninsula, Deccan, Punjab. Persia.

Zizyphus glabrata Heyne ex Roth, Nov. Pl. Sp. 159, 1821; Fl. 1:633; Saur. 1:92.

Z. trinerva Roxb. Hort. Beng. 17, 1814 (nom.nud.) & Fl. Ind. 1:606, 1832 (non. Poir. 1813); C. 1:256.

A large shrub with twin stipular spines; one straight and the other hooked downwards. Leaves glabrous above, yellow tomentose on the veins below. Young branches covered with brown hairs.

Flowers & Fruits: November to January.

Bedi 1934, 1935.

Not common, noted only on plains near Dhenpur.

Gujarat plains, western Peninsula, eastern Bengal  
and Bhotan.

Zizyphus oenoplia Mill. Gard. Dict. (ed.8) no.3,1768;  
FBI. 1:634; C. 1:257; Talb. 1:296, f.176;  
Sant. 40; Saur. 1:93; Chavan & Oza, Fl. Pavagadh,  
62.

Rhamnus oenoplia Linn. Sp. Pl. 194, 1753.

A subscandent straggling shrub with rusty pubescent  
branches. Leaves ovate or ovate-lanceolate with silky  
hairs beneath, oblique at the base. Flowers greenish.  
Drupe less than 1 cm., black.

Flowers & Fruits: January to June.

Bedi 3525, 3526.

Rare, few shrubs noted near Bendol village, along  
the banks of Panam river.

Gujarat, Deccan, Konkan; almost throughout the hotter  
parts of India.

Tropical Asia and Australia.

Zizyphus xylopyra (Retz.) Willd. Sp. Pl. 1:1104, 1797;  
Roxb. Fl. Ind. 1:611; FBI. 1:634; C. 1:258;  
Gr. 39; D. & G. 49; Chavan & Oza, Fl. Pavagadh,  
62.

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

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

A large straggling shrub or sometimes a small tree. Branches and leaves densely pubescent. Branches armed or unarmed. Fruit hard woody about 2 cm. in diameter, globose, covered with grey tomentum, hairs falling with age.

Local name: Ghat Bor.

Local uses: It forms an important minor forest product. Fruits are exported in large quantities and are used in tanning.

Flowers: November to January.

Fruits: January to June.

Bedi 886, 2363.

Fairly common on almost all flattened hill tops and in other hilly forest regions. Rare on plains.

Gujarat, western Peninsula; north western India, Behar and Nepal.

Santapau, loc.cit. is of the opinion that Z. xylopyrus Willd. is not found in this part of India. In other parts of Bombay State it is replaced by Z. glaberrima Sant. I have examined a large number of specimens at Blatter's

herbarium, many of them labelled as E. glaberrima, the leaves and fruits (the character on which he based his new species) bears hairs. I feel this character is not very distinct and many intermediates are met with, the hairiness of the leaves and fruit decreases with age. So I have reduced the new species into synonymy.

#### AMPELIDACEAE

Scandent and cirriferous shrubs:

Leaves 3-5 foliolate, flowers 4 merous.... Cayratia

Leaves simple, 3-5 lobed; flowers

5 merous. . . . . Ampelocissus

Erect shrubs; leaves simple or pinnate. . . . Leea

#### Cayratia Juss. (nom.cons.)

Leaves 3-foliolate; seeds trigonous;

berry black. . . . . carnosa

Leaves digitately 5-foliolate; berry red;

seeds obovate; stipules large ear shaped. . . auriculata

C. trifolia (L.) Benth

Cayratia carnosa (Lamk.) Gagnep. Lecomte. Not. Syst.

t. 347, 1911; G. 1:169; Saur. 1:98; Chavan & Oza, Fl. Pavagadh, 64.

Cissus carnosa Lamk. Encycl. 1:31, 1783; D. & G. 40.

Vitis carnosa Wall. Cat. 6018, 1831-32, nom.nud.,  
 FBI. 1:654 (excl. Syn. Cissus auriculata Roxb.)  
 N. 62; Wt. Ic. t. 171.

V. trifolia non Linn. C. 1:271, 1902.

A fleshy twining shrub; tendrils slender. Leaves  
 3-foliolate, pubescent, ovate lanceolate, with dentate  
 or serrate margins. Flowers greenish white. Berry  
 white. Seeds trigonous.

Local name: Teen pankholi.

Flowers: August to November.

Fruits: September to December.

Bedi 153, 154, 2741.

Very common on hedges near villages, especially on  
 plains.

Gujarat, Western Ghats, Konkan, Deccan.

Throughout India, Ceylon, Malacca.

For identity of this species see Cooke, l.c.

Cayratia auriculata (DC.) Gamble. Fl. Mad. Pres. 237,  
 1918 & (Rep.ed.) 1:170; Raizada in Ind. For.  
 Rec.(N.S.) Bot. 5(1)10, 1958.

Cissus auriculata DC. Prodr. 1:632; D. & G. 40.

Vitis auriculata Wall. Cat. 6031, nom. nud. 1828,  
 non Roxb. Fl. Ind. 1:411; FBI. 1:588; Talb.  
 1:321, f. 191.

A large climber on trees and shrubs. Leaves palmately 5-foliolate; tendrils long 2-3 fid, soft succulent. Younger parts softly pubescent. Leaves with serrate or dentate margin, glabrous above, pubescent below. Stipules broad, ear shaped. Berries red.

Flowers: August to October.

Fruits: September to November.

Bedi 2605, 2627.

Rare, noted only at few places, climbing on trees and shrubs. Recorded from Panam and Bendol.

Deccan, Western Ghats, Bombay.

Throughout India and Burma.

Standard floras on the Presidency of Bombay have not mentioned this species from Gujarat, hence is being reported here for the first time.

Ampelocissus Planch. (nom.cons.)

Ampelocissus tomentosa Planch. in Journ. Vign. Amer.  
375, 1884; G. 1:165.

Vitis tomentosa Heyne in Roth. Nov. Pl. Sp. 157,  
1821; FHM. 1:650; C. 1:268; Talb. 1:314,  
f. 186.

A large climber on trees and shrubs. Leaves simple 3-5 lobed. Leaves, young branches and inflorescence covered with reddish brown tomentum. Flowers in clusters.

Local name: Dukar Vel.  
Flowers: October to February.  
Fruits: November to April.  
Bedi 1253, 1254, 2392.

Very common along the banks of streams and Panam river. Often seen spreading on rocks in Raiengna. Western Peninsula, Deccan, Kanara, S.M. Country. Ceylon.

This species has not been recorded earlier from this part of the country, hence is being recorded.

Leea Linn.

Leaves simple, very large. . . . . macrophylla  
Leaves usually simple pinnate. . . . . edgeworthii

Leea macrophylla Roxb. ex Hornem. Hort. Hafn. 1:231,  
1813; Roxb. Fl. Ind. 1:653; FBL. 1:664, in part  
(excluding Syn. L. latifolia); Wt. Ic. t.1154;  
C. 1:276; Gr. 247; D. & G. 41; Talb. 1:326.

A common undershrub. Leaves very large, often reaching upto 75 cm. in length. Branches grooved. Flowers white or slightly pinkish. Fruit depressed globose, black .6 mm. to .9 mm. across, 4-6 lobed; 4-6 seeded.

Local name: Mota dana.

Local uses: Root infusion is given to animals in the form of a solution, for expelling worms.

Flowers: August to October.

Fruits: September to December.

Bedi 170, 220, 455.

Fairly common at lower altitudes; often noted near Nalwani stream, Kanjeta and Bendol.

Deccan, Western Peninsula, Konkan, Kanara.

Almost throughout the hotter parts of India.

This species has not been reported from Gujarat in various regional standard floras, so is being mentioned here for the first time.

Leea edgeworthii Santapau in RBSI. 16(1):54, 1953; Sant.43.

Leea aspera Edg. in TLS. 20:36, 1841; FBI. 1:665;  
C. 1:277; Talb. 1:327; G. 1:171 (non Wall in  
Roxb. Fl. Ind. 2:468, 1824).



A shrub .5 to 1.5 m. high. Leaves usually simple pinnate. Sometimes lower pair of leaflets or one of them compound. Flowers small white. Fruit 4-6 lobed, depressed globose berry, purple-black when ripe.

Local name: Dana.

Flowers & Fruits: August to October.

Bedi 432, 2750.

A fairly common shrub in the undergrowth of deciduous mixed teak forest, often associated with Curculigo orchnioides, Curcuma etc. Often noted near Patan Mata, Malwani stream and in Bendol. Usually inhabits the shady places.

Deccan, Konkan, Kanara, Western tropical Himalaya, Oude, W. Peninsula.

#### SAPINDACEAE

Herbs, climbing by tendril; fruit a membranous inflated capsule. . . . . Cardiospermum

Trees:

Petals 4-5. . . . . Sapindus

Petals 0 . . . . . Schleichera

Cardiospermum Linn.

Flower small; capsule winged at the  
angles. . . . . halicacabum

Flower about double the size of that of  
the preceding species; capsule not winged  
at the angles. . . . . canescens

Cardiospermum halicacabum Linn. Sp. Pl. 366, 1753;

FBI. 1:670; C. 1:280; Gr. 28; D. & G. 34;

Wt. Ic. t. 508; G. 1:175; Saur. 1:100.

A slender, tendril climbing herb. Leaves biternate;  
leaflets acuminate. Flowers white. Fruit glabrous, inflated  
membranous capsule. Seeds black with white heart shaped  
hilum.

Local name: Kogdallo.

Flowers & Fruits: August to February.

Bedi 128, 420, 920, 1703.

Fairly common in hedges and on the forest near Kanjeta  
and Bendol.

Throughout India.

Malacca, Ceylon, Tropical and subtropical countries.

Cardiospermum canescens Wall. Pl. As. Rar. 1:14, 1830;

FBI. 1:670; Wt. Ic. t. 74; C. 1:281; G. 1:175.

A slender climber; stem shrubby below. Flower faint yellow, about double the size of the preceding species. Capsule hairy, 3-angled, not winged at angles.

Flowers & Fruits: July to September.

Bedi 25, 47, 48.

Rare, only noted near Banvaro and Pepargota.

Western Peninsula, Konkan.

This species has not been reported earlier from Gujarat State.

Sapindus Linn.

Sapindus emarginatus Vahl, Symb. 3:54, 1794; C. 1:284; Gr. 29; D. & G. 35.

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

Large trees; bark greyish in colour. Leaves paripinnate. Leaflets emarginate at the apex. Flower pinkish white. Fruit of 3 drupes, wrinkled.

Local name: Aritha.

Flowers: October to December.

Fruits: December to March.

Bodi 1689, 1690, 3061.

Rare, noted near Kanjeta and one tree near Limidi-Mendhri.

Konkan, S.M. Country, Kanara, South India and  
Bengal.

Schleichera Willd.

Schleichera oleosa (Lour.) Oken, Allg. Naturgesh.  
(3)2:1341, 1841; Sant. 44; Saur. 1:101.

Pistacia oleosa Lour. Fl. Coch. 2:615, 1790.

Schleichera trijuga Willd. Sp. Pl. 4(2): 1096,  
1805; FBl. 1:681; C. 1:283 (Excl. Sapindus  
trifoliata Linn.); D. & G. 35; Trim. 1:304;  
Talb. 1:335, f. 198; G. 1:177.

A large, beautiful tree, especially when the  
leaves are young, it is distinguishable from a long  
distance. Leaves red when young, later red beneath  
dark green above, at length brightly and uniformly  
green, densely tomentose. Flowers greenish yellow in  
spikes. Fruit ellipsoid, seeds 1-2, enclosed in an  
edible pulpy arillus.

Local name: Kosimb.

Local uses: Fruit is eaten by the natives.

Usually lac is formed by insects,  
on old branches.

Flowers: February to April.

Fruits: April to June.

Bedi 1284, 1285.

Fairly common in almost all the hilly forest region. Young red leaves give a very beautiful appearance to the forest.

Common throughout Western, Central and Southern India; N.W. Himalaya.

India, Ceylon, Java, Timor.

#### ANACARDIACEAE

Leaves simple; leaves present during flowering season:

Stamens 1-5; drupes large fleshy.....Mangifera

Stamens 10; drupes small.....Buchanania

Leaves pinnate; leaves absent during flowering period..... Lannea

#### Mangifera Linn.

Mangifera indica Linn. Sp. Pl. 200, 1753; FBI. 2:13;  
C. 1:291; Gr. 41; D. & G. 51; Talb. 1:348;  
Sant. 46.

Large tree with spreading branches. Flowers in dense panicles yellowish white. Fruit a large fleshy drupe with a fibrous stone. Cultivated.

Local name: Ambo.

Local uses: Fruits are extensively eaten by the natives; unripe fruits are used in the preparation of Pickles and Jams.

Flowers: December to March.

Fruits: March to June.

Bedi Fairly common near human inhabitation, cultivated.

Fairly common on plains and in <sup>hilly</sup> regions often noted as escapes near villages. The presence of some old trees at Kubera and Morai (old deserted villages) is a clear indication of human habitation at these places in the past.

Cultivated throughout India and generally in the tropics. Tropical Himalaya, from Kumaon to Bhotan hills and valleys of Behar and W. Peninsula from Khandesh southwards. Almost everywhere.

Burma, tropical east Asia.

Buchanania Spreng.

Buchanania lanzan Spreng. in Schrader. Journ. 4:234, 1801; C. 1:293; Raizada, in Ind. For. Rec.(N.S.) Botany 5(1):8, 1958.

Buchanania latifolia Roxb. Hort. Beng. 32, 1814  
nom.nud. & Fl. Ind. 2:385; FBL. 2:231; Gr.41;  
D. & G. 52; Talb. 1:349; G. 1:184.

A small tree, with conspicuous rough bark. Leaves thick, coriaceous hairy below, often infected with fungus. Flowers greenish white in terminal axillary panicles of rusty brown colour. Drupes black.

Local name: Charoli.

Local uses: It forms an important minor forest product of this region. Fruits and seeds are often eaten by the natives. Exported in large quantities. Seeds are considered to be a good tonic and are used in confectionary. Oil is extracted from the kernels.

Flowers: December to February.

Fruits: February to May.

Bedi 943, 1061, 2391, 2437.

Very common in almost all the hilly forest region of Ratan Mahal; in much larger abundance near Patan Mata and Mandva hills.

Gujarat: Baria and Dang forests; Deccan, Western Peninsula, Konkan, Kanara.

Hot and drier parts of India.

Lannea A. Rich. (nom.cons.)

Lannea coromandelica (Houtt.) Merrill in JAA. 19:353,  
1939; Santapau and Raizada in Ind. For. Rec.  
4(6):128; Santapau, in JIB. 34(2):167-168;  
Sant. 47; Chavan & Oza, Fl. Pavagadh, 66.

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

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

Odina wodier Roxb. Hort. Beng. 29, 1814, nom. nud.  
& Fl. Ind. 2:293, 1832; FBL. 2:29; C. 1:296;  
Gr. 42; D. & G. 51; Wt. Ic. t. 60; Talb. 1:353,  
f. 207; G. 1:187.

A medium sized deciduous tree; young parts hairy.  
Leaves with 3-5 pairs of leaflets and a terminal odd  
one. Leaves absent during flowering season. Drupe  
reniform, compressed, red when ripe.

Local name: Moina.

Flowers: December to April.

Fruits: March to June.

Bedi 1252, 1976, 2275, 2420.

Common in Bendol and in some other adjoining forest  
regions. Rare on plains.

Gujarat: Pavagadh, Rajkot; Maharashtra.

India and Ceylon.



MORINGACEAE

Moringa Adans.

Leaves usually 3-pinnate; leaflets elliptic or obovate, rounded at the apex, 1-2 cm; flowers white; pods sweet, edible. . . . . oleifera

Leaves usually 2-pinnate; leaflets somewhat orbicular, emarginate at the apex 2-3 cm. long; flowers pale yellow; pods bitter not edible. . . . . concanensis

Moringa oleifera Lamk. Encycl. 1:398, 1785; G. 1:192;  
Blatter in JBNHS. 31:907; Bailey, Man. Cult.  
Pl. 451; Maheshwari, Fl. Dli., 106.

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

Moringa pterygosperma Gaertn. Fruct. 2:314, 1791;  
FBI. 2:45; C. 1:301; Talb. 1:364, f. 212; N.70.

A small tree; bark greyish in colour. Leaves 3 - pinnate, the pinnae imparipinnate. Leaflets rounded at the apex obovate. Flowers whitish. Fruits about 40 cm. long. Seeds 3-angled, winged.

Local name: Sargavo.

English name: Drumstick tree.

Local uses: Fruits edible, used as a vegetable and in the preparation of pickles.

Bedi 2115, 2116.

Cultivated by the villagers near their huts ;  
rare in the hilly regions.

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

Indigenous in N.W. India.

Moringa concanensis Nimmo, in Graham, Cat. Bom. Fl. 43,  
1839; FBL. 2:45; C. 1:301; Talb. 1:365; Brandis,  
For. Fl. 130; Hook. Ic. Plant. Ser. 4, Vol. 6,  
t. 2596, 1899. G. 1:192; Saur. 1:106.

A medium to a tall tree. Leaves usually 2-pinnate,  
larger than M. oleifera Lamk. Flowers faint yellow. Pods  
30-50 cm. long, constricted, bitter in taste, not edible.

Local name: Kadva Sargva.

Flowers: February to March.

Fruits: March to July.

Bedi 1105, 3711, 3712.

Fairly common in Kanjeta and near some other villages  
on plains. Rare in the hilly regions.

Sind, Konkan, Rajputana.

India (Rajputana); Beluchistan.

Cooke, loc.cit. writes, "Somewhat rare plant".  
I found it to be a fairly common plant in this area  
and in various other forest regions on the eastern  
border of Gujarat State.

This species has not been reported so far from  
this part of the country.

## PAPILIONACEAE (FABACEAE)

1. Leaves bifoliolate. . . . . Zornia
1. Leaves simple; or trifoliolate:
  2. Stamens monadelphous:
    3. Prostrate herbs; leaves simple;  
pod flattened. . . . . Heylandia
    3. Suberect or erect herbs, undershrubs  
or shrubs. Leaves simple except  
(Crotalaria medicagenea); pods  
turgid. . . . . Crotalaria
  2. Stamens diadelphous 9 & 1:
    4. Pods completely concealed by a  
large leafy bract. . . . . Moghania
    4. Pods not concealed by leafy bract:
      5. Pods turgid. . . . . Alysicarpus
      5. Pods flattened. . . . . Desmodium
1. Leaves trifoliolate:
  6. Trees:
    7. Trees having prickles; corolla bright-  
red to purple, about 3-5 cm. long. . . . . Erythrina
    7. Trees without prickles:
      8. Corolla saffron coloured, more  
than 5 cm. long. . . . . Butea
      8. Corolla pale, white or pink,  
less than 2 cm. long. . . . . Ougeinia
  6. Herbs, undershrubs or shrubs:

- 9. Leaflets not gland dotted:
  - 10. Leaflets toothed; pod short rounded  
or ovoid; 1 seeded. . . . . Melilotus
  - 10. Leaflets entire:
    - 11. Pod one seeded, boat shaped. . . . Eleiotis
    - 11. Pod long more than one seeded:
      - 12. Fruits geocarpic i.e. maturing  
underground. . . . . Arachis
      - 12. Fruits aerial:
        - 13. Stamens monadelphous:
          - 14. Erect or twining herb;  
flowers white, pink  
or yellow, without  
stinging hairs . . . . Teramnus
          - 14. Large climbing shrubs;  
flowers violet, with  
stinging hairs. . . . Mucuna
        - 13. Stamens diadelphous:
          - 15. Stigma oblique. . . . Phaseolus
          - 15. Stigma terminal. . . . Clitoria
  - 9. Leaflets gland dotted beneath:
    - 16. Erect undershrubs, cultigen species. . Cajanus
    - 16. Twining herbs; species Willd:
      - 17. Pods 1-2 seeded. . . . . Rhynchosia
      - 17. Pods 3-5 seeded. . . . . Atylosia

1. Leaves imparipinnate; leaflets usually many (rarely 3 - 1):

15. Herbs, undershrub and shrubs:

19. Anthers apiculate; hairs medifixed;  
leaves simple or pinnate. . . . . Indigofera

19. Anthers muticous; hairs basifixed:

20. Pods woody; late dehiscing; a  
large climber. . . . . Millettia

20. Pods not woody, soon dehiscing:

21. Erect herbs or undershrubs;  
pods short, flattened,  
continuous:

22. Leaflets dimorphic,  
lower rounded upper  
linear oblong, bloched  
with white spots. . . . Uraria

22. Leaflets not dimorphic;  
leaves imparipinnate  
rarely simple  
(T. strigosa). . . . . Tephrosia

21. Large shrubs rarely small  
tree; pods long rounded  
septate. . . . . Sesbania

18. Trees:

23. Leaflets alternate:

24. Leaflets not more than 4 cm.  
long; flowers small whitish  
or bluish pink. . . . . Dalbergia

24. Leaflets more than 5 cm. long;  
flowers larger yellow. . . . . Pterocarpus

23. Leaflets opposite. . . . . Pongamia

1. Leaves abruptly pinnate rarely

(Aeschynomene) imparipinnate:

25. Stamens in two bundles of 5 each:

26. Pod twisted enclosed in the calyx...Smithia

26. Pod straight, exerted from the  
calyx; leaflets many impari-  
pinnate. . . . . Aeschynomene

25. Stamens 9, the 10th suppressed or  
abortive. . . . . Abrus

25. Stamens diadelphous 9 & 1:

27. Erect hairy herb; leaflets  
toothed, rachis not ending in  
a tendril or bristle. . . . . Cicer

27. Climbing herbs; rachis ending  
in a tendril or bristle:

28. Flowers large; pod more  
than 2 cm. long. . . . . Lathyrus

28. Flowers much smaller; pod  
less than 1 cm. long. . . . . Lens

Zornia Gmel.

Zornia gibbosa Span. in Linnaea 15:192, 1841; Moehlenbrock  
in Webbia 16(1):112, f.f. 44 & 76, 1961; Wagh in  
JBNHS. 61:214, 1964; Raizada, in Ind.For. 92(5):  
326.

Z. graminea Span in Linnaea 15:192, 1841.

- Z. angustifolia Smith in Rees. Cycl. 34:1, 1819  
pro majore (nom. illegit.); D. & G. 62.
- Z. diphylla auct. plur (non Perm. 1807); FBI.  
2:147; C. 1:355; G. 1:229.

A branched, prostrate or ascending herb. Leaves bifoliate. Flowers in 2-6 cm. long raceme; corolla yellow. Legume with distinct joints, densely prickly.

Local name: Samar pani.

Flowers & Fruits: August to December.

Bedi 98, 3065.

Fairly common weed in cultivated fields and in open grassy places at plains. Less common in hilly regions.

Gujarat, Deccan; S.M. country.

Everywhere in the tropics.

For nomenclature please see Mohlenbrock or Raizada, l.c.

Heylandia DC.

*Goniogono* Link/Winkl. Ali

- Heylandia latebrosa DC. Mem. Leg. 201, 1825; FBI. 2:65;  
C. 1:310; Gr. 44; D. & G. 54; Sant. 48; Saur.  
1:111; Chavan & Oza, Fl. Pavagadh, 85.

A much branched, prostrate hairy herb. Flowers yellow, axillary, solitary. Pod flat, silky, pale brown.



Flowers: August to January.

Fruits: September to February.

Bedi, often noted on the sandy river banks  
of Panam and as a weed in cultivated  
field.

Commonly noted in open grassy places near Bendol,  
Pepargota and Kanjeta.

Gujarat, very common in Deccan and throughout tropical  
India.

Crotalaria Linn.

Leaves simple:

Pod glabrous:

Stipules absent:

Diffuse hairy herb; stem

prostrate or ascending;

racemes few flowered. . . . . prostrata

Low undershrub, stem erect;

racemes capitate. . . . . nana

Stipules present:

Pods not longer than the calyx;

stipule minute, subulate. . . . . calycina

Pods much longer than the calyx;

stipule and bract large:

Herbs; branches slender;

Pods 2-3 cm. long. . . . . mysorensis

Undershrubs; branches erect

rigid; pods 3-5 cm. long. . . retusa

Pods hairy or velvety:

Suberect or trailing herbs; stem and  
branches triquetrous or quadrangular. triquetra

Erect undershrubs or shrubs:

Corolla blue or white; leaves  
3-7 cm. broad. . . . . verrucosa

Corolla yellow; leaves less  
than 3 cm. broad:

Stem acutely quadrangular;  
pod 2 cm. long. . . . . leptostachya

Stem terete; pod 2-3 cm.  
long. . . . . junceae

Leaves trifoliate. . . . . medicaginea

Crotolaria prostrata Rottl. in Willd. Enum. Hort.

Berol. 747, 1809; Roxb. Hort. Beng. 54, 1814

nom. nud. & Fl. Ind. 3:270; FBL. 2:67; C. 1:312;

Trim. 2:9; G. 206; Saur. 1:114.

An annual suberect or ascending herb. Stem and  
leaves covered with small brown hairs. Leaves sub-sessile  
stipules absent. Flower yellow. Pod glabrous.

Flowers: August to October.

Fruits: October to December.

Bedi 531, 610.

Common herb under the shade of the trees in the hilly forest areas. Often noted near Banvaro, Bendol, Alindra and Pepargota.

Deccan; S.M. Country.

Drier parts of India, Ceylon and Java.

Crotalaria nana Burm. Fl. Ind. 156, t. 48, f.2, 1768;

FBI. 2:71; C. 1:315; D. & G. 56; Trin. 2:13.

C. umbellata Wight, in Wall. Cat. 5383; D. & G. 56.

An annual, erect, diffuse, hairy herb. Flowers small yellow, enclosed in calyx. Fruit globose glabrous. Seeds 5-10.

Flowers & Fruits: 9th September 1960.

Bedi 241.

Rare, only noted once in these hills, inhabiting in a semidried ditch near Kanjeta village.

Deccan, Konkan, S.M. Country.

India (W. Peninsula); Ceylon.

This species has not been recorded by the previous workers from Gujarat State.

Crotalaria calycina Schrank, Pl. Rar. Monac. t. 12, 1819;

FBI. 2:72; C. 1:317; G. 1:209; Trin. 2:14.

C. anthyllodes Don. Prodr. 241; Gr. 44; D. & G. 54

(not of Lamk.)

An erect hairy herb, 25-70 cm. tall. Stipules minute, subulate. Flowers yellow; calyx about 2½ cm. long, densely covered with long brown hairs. Pods glabrous shorter than the calyx.

Flowers & Fruits: October to January.

Bedi 887.

Not common, noted on the outskirts of the hilly forest regions near Bendol village. Also once collected from Pepargota plateau.

Deccan, Konkan.

Tropical regions from Himalaya to Ceylon and Tropical Africa.

Standard floras of the Presidency of Bombay, have not mentioned any locality for this species from this part of the country.

Crotalaria mysorensis Roth, Nov. Pl. Sp. 338, 1821;

FBI. 2:70; C. 1:314; G. 1:208; Sant. 48;

Chavan & Oza, Fl. Pavagadh, 82.

Herbs or undershrubs 30-100 cm. tall. Stem and branches covered with long spreading hairs. Flowers yellow in racemes. Pods glabrous, much longer than the calyx, 2-5 cm. long.

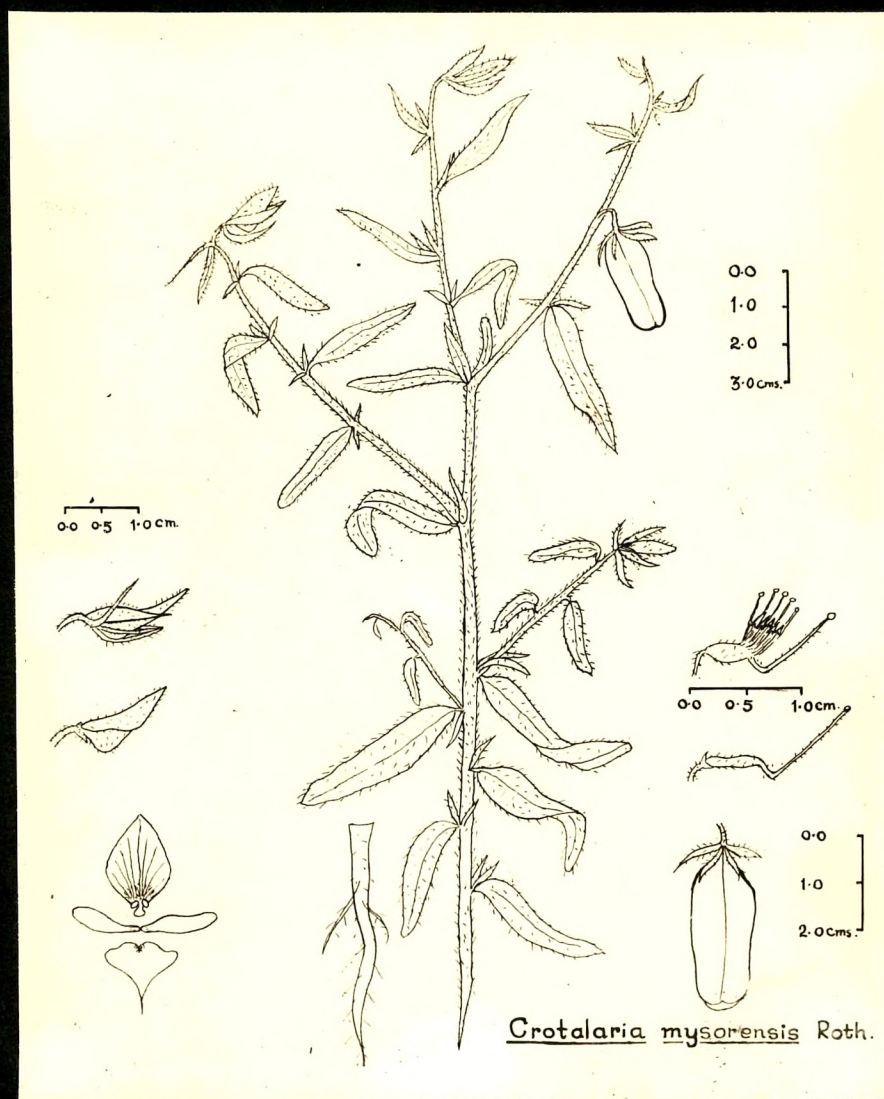


PLATE NO. 15

*Crotalaria mysorensis* Roth.

Plate No. 15

Flowers & Fruits: August to November.

Bedi 1592, 3544.

Not common, seems to be restricted to certain hilly forest areas near Pepargota and Bendol. Often noted on the outskirts of Carvia callosa plants.

Gujarat, Deccan, Konkan.

Throughout India, Ceylon.

This species is likely to be confused with C. calycina but can be very well differentiated by its calyx much shorter than the fruit.

Crotalaria retusa Linn. Sp. Pl. 715, 1753; FBI. 2:75  
(excl. Syn. Dalz. & Gibs); C. 1:318; Indrajit  
179; Santapau, Pl. Saur. 303; Saur. 203;  
Chavan & Gza, Fl. Pavagadh, 83.

C. leschenaultii Graham, Cat. 44, 1939.

A shrub about 1 m. high. Stem fluted, usually glabrous. Leaves oblanceolate, obtuse or retuse, mucronate, glabrous above pubescent beneath. Flowers yellow, large and showy, in terminal racemes. Pods turgid, brown at maturity, glabrous.

Local name: Dudra.

Flowers & Fruits: September to January.

Bedi 1761, 2131.

Not common, often noted near Pepargota, Bendol, Panam, Padalia and along the banks of Panam river near Kanjeta.

Gujarat, Deccan, Konkan; S.M. Country.

India, Ceylon, China, Malaya, N. Australia.

Tropical Africa and America.

Crotalaria triquetra Dalz. in Hook. Kew Journ. Bot.

2:34, 1850; FBI. 2:71; C. 1:314; D. & G. 56;  
G. 209; Sant. 49; Saur. 1:116; Chavan & Oza,  
Fl. Pavagadh, 83.

A suberect or a scandent herb, much branched from the base. Stem triquetrous or quadrangular. Leaves sub-sessile with conspicuous bracts. Flowers yellow. Pod about 2 cm. long with small brown hairs.

Flowers & Fruits: September to December.

Bedi 542, 921.

Common in the undergrowth of forest, often associated with grasses, also noted in open grassy places near Padalia and Khalta.

Gujarat, Deccan, Konkan.

India (Rajputana to Tinnevalley).

Crotalaria verrucosa Linn. Sp. Pl. 715, 1753; FBI.

2:77; C. 1:319; Gr. 45; D. & G. 55; Wt. Ic.

t. 200; G. 1:210.

A much branched, hairy undershrub. Branches angled. Flowers in terminal and lateral racemes, corolla faint blue to greenish white. Pods hairy.

Flowers & Fruits: December to March.

Bedi 2072.

Rare, noted as a weed in cultivated fields and in open grassy places near Dhenpur.

Deccan, Konkan.

Tropical India, Ceylon, China, tropical Africa and America.

On 12th February 1962, collected an interesting specimen (Herbarium Sheet no. Bedi 2072) having twin fruits. This is a rare observation and has not been reported earlier. It may be just a freak of nature.

Crotalaria leptostachya Benth. in Hook. Lond. Journ.

Bot. 2:562, 1843; FBI. 2:78; C. 1:320;

Saur. 1:117.



A rigid, erect, hairy shrub. Stem acutely quadrangular. Entire plant covered with light brown to golden yellow shining hairs. Corolla yellow. Pods about 2 cm. long densely covered with shining light brown hairs.

Flowers: September to November.

Fruits: October to January.

Bedi 1991.

Rare, noted only few plants at the foot of Kanvara Dungar and Padalia.

Deccan, Kanara - Apparently endemic in erstwhile Bombay State.

The identity of my specimens has been confirmed at Blatter's herbarium, Bombay.

Standard floras of the Bombay Presidency have not recorded this species from this part of the country, recently Santapau has reported it from Saurashtra.

Crotalaria juncea Linn. Sp. Pl. 714, 1753; FBL. 2:79;  
C. 1:320; G. 1:210; Sant. 50; Saur. 1:118.

Erect shrubs, 1-2 m. tall; stem terete or fluted. Flowers yellow, interterminal and axillary many flowered racemes. Pods 2-3.5 cm. long hairy.

Local name: Sonii; Shun.

Local uses: Usually cultivated for its  
fibers, "Sun Hemp"; young flowers  
are cooked as vegetable.

Cultivated in some of the villages on plains, often as an  
escape or wild(?) near villages.

Cultivated throughout India. Ceylon, Burma,  
Pegu, Malay islands, Australia.

Crotalaria medicaginea Lamk. Var. neglecta Baker in

FBI. 2:81; C. 1:322; G. 212; Saur. 1:119;

Chavan & Oza, Fl. Pavagadh, 84.

An erect much branched herb. Leaflets retuse or  
rounded. Flowers yellow in terminal and leaf apposed  
raceme.

Flowers & Fruits: July to December.

Bedi 3615.

Fairly common near Limidi-Mendhri, Taramb Kach,  
Vekeshia, Vedbedh and at various other places on plains.  
Rare in the hilly region. Often noted as a weed in  
cultivated fields.

Gujarat: Baroda; Sind; Konkan.

Tropical India.

Moghania St. Hill.

Moghania strobilifera (Linn.) St. Hill. ex Jackson  
in Ind. Kew. 2:252, 1894; Sant. 66; Mukerjee  
in Bull. Bot. Soc. Bengal 6:10, 1953; Li in  
Am. Journ. Bot. 31: 227, 1944; Chavan & Oza,  
Fl. Pavagadh, 88.

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

Flemingia strobilifera R. Br. ex Ait. Hort.

Kew (ed.2) 4:350, 1812; FRI. 2:227  
(excl. vars.); Wt. Ic. t. 267; Gr. 51;  
D. & G. 75; C. 1:416; G. 1:226.

Large shrubs 2-3 m. high, erect, much branched.  
Flowers white or pink enclosed in large leafy bracts.  
Pods turgid, mucronate densely pubescent, completely  
enclosed in leafy bracts.

Flowers: September to December.

Fruits: November to January.

Bedi 2202.

Fairly common along the banks of streams, in hilly  
areas only. Often noted near Banvaro, Gelvel, Nalwani,  
Karari stream.

Throughout India; Himalayas from Simla and Kumaon  
to Assam, Khasia.

Siam, Malacca, Ceylon, Malayan Islands, Philippines,  
Timor.

Recently B.A. Abeywickrama in Taxon 8:29, 1959,  
proposed Moghania Faume St. Hilare, 1813, for  
conservation against Lourea Jaume St. Hilare.

Alysicarpus Desv. (nom. cons.)

(On the subject of the synonymy of Alysicarpus and  
Desmodium, please see the remark of Santapau in Flora  
of Khandala, 55).

Calyx much longer than the 1st Joint of Pod:

Pods moniliform, transversely ribbed:

Pods exerted, 4 angled. . . . . tetragonolobus

Pods not exerted, 2 angled. . . . . styracifolius

Pods slightly moniliform not  
transversely ribbed or veined; nor  
rugose:

Joints of pod smooth, glabrous;  
leaflets linear or linear oblong  
2-10 cm. long, narrow; racemes  
6-14 cm. long, very slender. . . . . bupleurifolius

Joints of pod reticulate,  
puberulous; leaflets linear-  
lanceolate 6 to 15 cm. long;  
racemes 12-25 cm. long, rather  
stout. . . . . longifolius

Calyx shorter, equalling or very slightly longer than the first joint of the pod:

Pod moniliform, veinless. . . . . monilifer

Pod not moniliform, veined:

Calyx equal to or slightly longer than the first joint of the pod... vaginalis

Calyx shorter than first joint of the pod. . . . . procumbens

Alysicarpus tetragonolobus Edgew. in Journ. Asiat.

Soc. Beng. 21:169, 1853; FBI. 2:159; C. 1:372; Saur. 1:150.

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

A procumbent herb. Leaves 1 foliolate; stipules lanceolate with a broad base. Flowers in a lax terminal or axillary racemes. Pods beaded or moniliform, transversely ribbed; calyx much longer than the 1st joint of the pod.

Flowers & Fruits: September to January.

Bedi 3753, 3754.

Common as a weed in cultivated fields, in open grassy places, often noted near a stream on the way to Patan Mata hill.

Gujarat, Konkan, Deccan, S.M. Country, Sind; plains of Bundel Khand.

Alysicarpus styracifolius DC. Prodr. 2:353, 1825;

Schindler in Fedde. Rep. Beih. 49:257;

Saur. 1:150.

A. rugosus Var. minor Baker in FBI. 2:159, 1876;

C. 1:371.

A. rugosus Var. heneyanus Baker ibid.

A glabrous, diffuse, prostrate or suberect herb.  
Bracts and calyx glabrous with bluish tips. Flowers  
light blue to purple blue. Pods included.

Flowers & Fruits: August to November.

Bedi 1608, 3340, 3658.

Fairly common along grassy paths, bunds around  
the fields, often noted in the undergrowth of forest.

Gujarat, Deccan, Western India.

Throughout the tropics of the old world. Ceylon,  
W. Indies.

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

1825; FBI. 2:158; C. 1:370; Gr. 50; D. & G. 64;

G. 1:239; Sant. 55; Saur. 55; Chavan & Oza,

Fl. Pavagadh, 71.

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

Erect or ascending herb; branches glabrous. Flowers  
red, usually in distinct pairs on a 10-20 flowered spike  
like lax raceme. Pods slightly moniliform.

Flowers & Fruits: September to December.

Bedi 714, 798, 3133.

More common in the hilly forest regions, often associated with grasses. Less frequent on plains.

Gujarat, Deccan, Konkan, S.M. Country.

India: Himalaya to Kumaon; Burma, Ceylon, Malay Islands, China, Philippines, Mauritius, Polynesia.

Alysicarpus longifolius Wight & Arn. Prodr. 233, 1834;

FBI. 2:159; C. 1:370; D. & G. 63; Wt. Ic.

t. 251; G. 1:239; Sant. 55; Saur. 1:148;

Chavan & Oza, Fl. Pavagadh, 72.

An erect, rigid, glabrous herb, reaching upto 1 m. or more in height. Stipules long acute, scarious. Leaflets linear lanceolate, 6-15 cm. long. Flower on a long thicker racemes. Pod slightly moniliform, reticulately veined.

Local name: Moto Savaro.

Flowers: July to December.

Fruits: August to January.

Bedi 492, 1675, 1676.

Fairly common as an undergrowth of forest especially on plains. Often noted in open grassy places, and as a weed in cultivated fields, more frequently in maize crop.

Gujarat, Deccan, Konkan; throughout plains of India.

Alysicarpus monilifer (Linn.) DC. Prodr. 2:353, 1825;  
FBI. 2:157; C. 1:368; G. 1:238; Santapau,  
Pl. Saurashtra, 172; Saur. 1:147; Chavan &  
Oza, Fl. Pavagadh, 70.

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

A small prostrate or suberect herb. Leaflets oblong, elliptic to suborbicular, rounded at the apex. Flower in 4-12 flowered, axillary raceme. Pod moniliform, vein less.

Flowers & Fruits: August to November.

Bedi 164, 2842, 2931.

Common everywhere, often noted in open grassy places and as a weed in cultivated fields.

Gujarat, Deccan, S.M. Country; Himalaya.

Throughout India, Burma, Tenassarim, Nubia, Abyssinia.

Alysicarpus vaginalis (Linn.) DC. Prodr. 2:353, 1825;  
FBI. 2:158, (excl. Var. stocksii); C. 1:369;  
D. & G. 64; Trim. 2:44; G. 1:238; Sant. 55;  
Saur. 1:148.

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



A prostrate herb with large scarious stipules. Flowers pink, along an elongated axis, sometimes in pairs. Pod not moniliform, somewhat compressed or subterete.

Flowers & Fruits: October to January.

Bedi 1242, 1512, 1513.

Common in open grassy places, along the paths and on escarpments along the banks of river Panam.

Gujarat, Deccan, Konkan; throughout India.

Ceylon, Afghanistan, Malacca, tropics of old world introduced in America.

Alysicarpus procumbens (Roxb.) Schindler in Fedde, Report. 21:11, 1925; Saur. 1:147; Chavan & Oza, Fl. Pavagadh, 71.

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

Alysicarpus hamosus Edgew. in JASB. 21:171, 1853; FBI. 2:157; C. 1:368; G. 1:238.

An erect or suberect or prostrate herb, with long spreading brown hairs. Leaves one foliolate; leaflets broadly ovate or suborbicular. Flowers usually in pairs, in axillary and terminal racemes.

Flowers & Fruits: September to February.

Bedi 3152, 3270, 3451.

Fairly common everywhere, more frequent in open grassy places.

Gujarat, Konkan, W. Peninsula, S.M. Country; plains of Bundel Khand.

Desmodium Desv. (nom. cons.)

Leaves unifoliolate:

Stem angular; leaflets ovate or lanceolate, acute, membranous, upper surface glabrous. . . . . gangeticum

Stem terete; leaflets broadly ovate, obtuse or sub acute, densely pubescent. . . . . velutinum

Leaves trifoliolate:

Wiry, trailing herb; leaflet about 1 cm. long, obovate, emarginate. . . . triflorum

Straggling rigid herbs; leaflets more than 3 cm. long, ovate lanceolate. . . neomexicanum

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

FBI. 2:168; C. 1:379; D. & G. 66; Wt. Ic.

t. 271; G. 1:244; Sant. 57; Saur. 1:156.

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

Erect herb or undershrub, about 1 m. high. Stem angled. Leaves unifoliolate, upper surface glabrous, lower slightly hairy, membranous. Flowers pinkish rarely white.

Local name: Sesodi.

Flowers: August to January, rarely upto April near moist spots.

Fruits: September to March.

Bedi 199, 660.

Fairly common as an undergrowth of forest especially near streams. Very common in almost all the areas of our district.

Gujarat, Deccan, Konkan; S.M. Country; Kanara; Himalaya to Pegu.

Ceylon, Tropical Africa, Malay Islands, Philippines, China and introduced in W. Indies.

Desmodium velutinum DC. Prodr. 2:328, 1825; Schind. in Fedde. Rep. Beih. 49:307; Saur. 1:157.

Desmodium latifolium DC. Prodr. 2:327, 1825, FHI. 2:168 (excl. Syn. D. virgatum Zoll.); Gr. 49; D. & G. 66; C. 1:380; G. 1:244.

Erect or straggling undershrub 75-150 cm. high. Branches and leaves are densely clothed with brown

pubescence. Leaflets 8-15 x 6-12 cm. Flowers on long terminal and axillary racemes; racemes sometimes up to 30 cm. long. Corolla pinkish blue to purple blue.

Flowers & Fruits: July to October.

Bedi 541, 3377.

Common on Mandva and Ralengna hills near Kanjeta. Also noted in hedges on plains north of Panam river.

Deccan, Konkan, N. Kanara; Himalaya to Burma.

India, Ceylon, Burma. Tropical Africa, Malay Islands, Phillipines.

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

FBI. 2:173; C. 1:378; Gr. 49; D. & G. 67;

Wt. Ic. t. 292; G. 1:245; Sant. 57; Saur.

1:155; Chavan & Oza, Fl. Pavagadh, 73.

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

A prostrate or trailing, much branched, wiry herb. Leaflets obovate, truncate or emarginate, 5-15 mm. long. Flowers bluish purple, pink or often white during dry season.

Flowers & Fruits: August to June.

Bedi 99, 1522, 3378.

Subgregarious in habit, sometimes noted among grasses, along paths and margins of the cultivated fields. Often noted along the dry banks of streams and Panam river. Commonest of all the species of Desmodium of Ratan Mahal.

Gujarat, Deccan, Konkan, S.M. Country; common throughout India.

Cosmopolitan in Tropics.

Desmodium neomexicanum A. Gray. Pl. Wright, 1:53, 1852; Schubert, in Contrib. Gray Herb. 129:13, 1940; Chavan, Sabnis & Bedi, Kew. Bull. 17(2), 1963; Chavan, Bedi & Sabnis, Add. to Flora Pavagadh, JBNHS. 63(3):786, 1966.

A straggling herb, about 30 cm. or more; branching from the base. Stem and branches slender slightly hairy. Leaves trifoliate, membranous, the terminal leaflets largest, ovate lanceolate. Flowers in axillary and terminal lax racemes or panicle; petals white with bluish tinge. Bracts minute, setaceous. Pods 2-3 cm. long, reticulately veined, indented deeply on both the sutures, with sinuate margin, not spirally twisted, 3-4 seeded.

Flowers: August to October.

Fruits: September to November.

Bedi 172, 355, 3224.

(Plate No. 16)

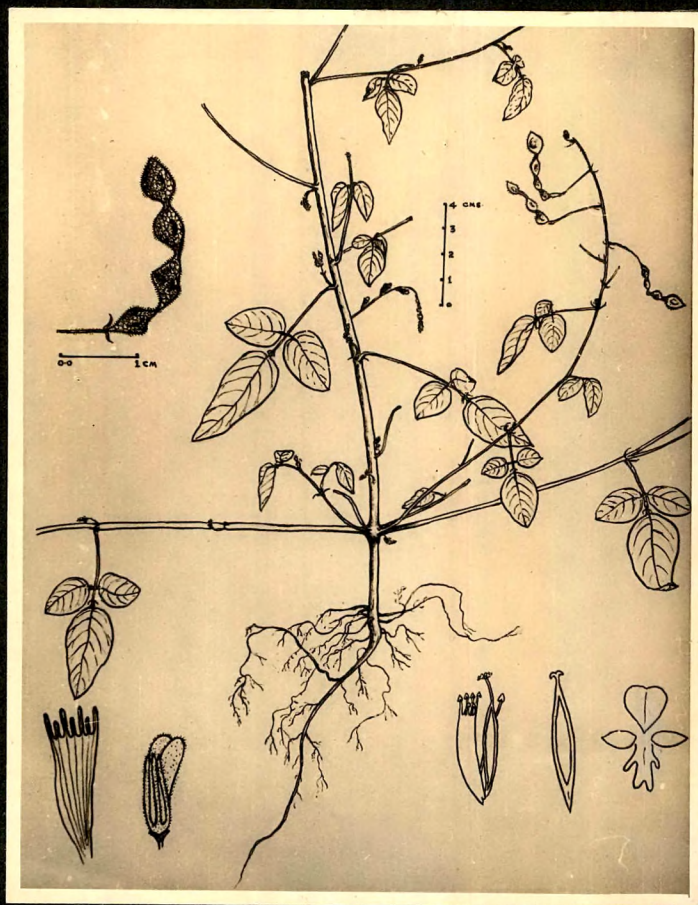


PLATE NO. 16

Desmodium neomexicanum A. Gray.

A fairly common herb in Panam valley, especially near Kanjeta. Usually found as an undergrowth of forest along the banks of Panam river. I have also collected the specimens from Khedbrahma, North Gujarat and Pavagadh, Central Gujarat.

Native of dry regions of Tropical America.

Our specimens have been identified at the Royal Botanical Gardens, Kew by Dr. F.M. Jarrett, following Dr. B.G. Schubert's treatment of the species complex to which it belongs. We are grateful to him for the help.

This species has been reported as a New Record for India (Chavan, Sabnis & Bedi l.c.).

Erythrina Linn.

Erythrina suberosa Roxb. Hort. Beng. 53, 1814, nom.  
nud. & Fl. Ind. 3:253; 1832; FBI. 2:189;  
C. 1:392; Gr. 54; D. & G. 70; Blatt. & Mill.  
Beaut. Ind. Trees. 72; Saur. 1:162.

A small tree. Stem whitish, smooth or armed with yellowish prickles. Leaflets rhomboid ovate, obtuse, tomentose beneath. Flowers in small racemes towards the end of the branches; corolla scarlet red. Pods 10-20 cm. long.

Flowers & Fruits: January to May.

Bedi 2136, 2397.

Sparsely distributed in almost all the hilly areas, generally on plateaus. Not common. Rare on plains. Few trees noted near Kanjeta village.

Gujarat, Deccan, Khandesh.

Throughout India.

Butea Roxb. ex Willd. (nom. cons.)

Butea monosperma (Lamk.) Taub. in Engl. & Prantl.

Pfam. 3(3):366, 1894; Stearn. in Blatt. & Mill. Some Beaut. Ind. Tr. (ed.2) 12, 1955; Sant. 60; Saur. 1:163; Chavan & Oza, Fl. Pavagadh, 88.

Erythrina monosperma Lamk. Encycl. 1:391, 1783.

Butea frondosa Koenig ex Roxb. in Asiat. Res. 3:469

& Pl. Cor. 1:21, t. 21, 1795; FBl. 2:194; C. 1:371; Gr. 54; D. & G. 71; Talb. 1:409, f. 231.

Large trees. Leaves 3-foliolate; leaflets stiff, the terminal largest. Leaves absent during flowering season. Flower large, saffron coloured, rarely pale yellow (observed near Panam village). Fruit densely covered with brown tomentum.



Local name: Khakhro.

Local uses: Eye lotion is prepared after  
distilling flowers.

English name: Flame of the forest.

Flowers: January mid to March.

Fruits: March to June.

Bedi 1362, 2279.

Fairly common along the banks of Panam river and  
in almost all the forest areas, forms one of the major  
components of the vegetation.

Gujarat, Deccan, Konkan; throughout the plains of  
India. Burma, Ceylon.

The case presented here comes under Article 33(2)  
of the International Code of Bot. Nom. 1961; and  
accordingly combination B. monosperma must be attributed  
to Taub. and not to O. Kuntze.

Ougeinia Benth.

Ougeinia dalbergioides Benth. Pl. Jungh. 216, 1851-55;  
FBI. 2:161; C. 1:373; Talb. 390, f. 221,  
Brandis, For. Fl. 146, t. 23; G. 1:240.

Dalbergia ougeinensis<sup>s</sup> Roxb. Hort. Beng. & Fl. Ind.  
3:220; Wt. Ic. t. 391, D. & G. 78.

A large, deciduous tree. Leaves trifoliolate, coriaceous, terminal largest. Flowers in large racemes, white or pale coloured.

Local name: Tanach.

Local uses: Timber is hard and is used for agricultural implements.

Flowers: December to March.

Fruits: February to May.

Bedi 999, 1238.

Not common, but sparsely distributed in various hilly regions.

Gujarat: Dang; Decoan, Konkan, Kanara.

India: (northern parts and Konkan).

Melilotus Juss.

Melilotus indica All. Fl. Pedem. 1:308, 1785; C. 1:326; G. 1:215; Sant. 50.

M. parviflora Desf. Fl. At. 2:192, 1800; FBI. 2:89; Gr. 46; D. & G. Suppl. 21.

Erect herb, 20-40 cm. tall. Leaves trifoliolate. Flowers pale yellow in dense racemes. Pods glabrous, 1 seeded.

Flowers & Fruits: November to May.

Bedi 1022.

Rare, noted as a weed in cultivated field; especially on plains. Once noted on Pepargota plateau.

Gujarat, Deccan, Sind.

Afghanistan, S. Persia, Europe and introduced in many other regions.

Eleiotis DC.

Eleiotis monophylla (Burm. f.) DC. Mem. Legum. 7:350, 1825; Raizada in Ind. For. 92(5):309, 1966.

Glycine monophylla Burm. f. Fl. Ind. 161, t. 50, f. 2, 1768.

Eleiotis sororia DC. Mem. Legum. 7:350, 1825 & Prodr. 2:348; FBl. 2:153; C. 1:364; G. 1:235.

A much branched, prostrate or ascending herb. Stem triquetrous, almost glabrous. Leaves large, ovate with two small lateral leaflets at the base. Flowers in simple, lax, axillary racemes, covered with long spreading hairs. Pods .7 cm. long, .4 cm. broad, glabrous when ripe.

Flowers & Fruits: September to November.

Bedi 1771, 3552, 3662.

Rare, localised in distribution, noted near a stream 'Nalda Na Pani' on the border of Bendol and Alindra.

Cooke, writes 'A very rare plant in the Bombay Presidency'. Badami in S.M. Country.

India (Plains of Bundel Khand and W. Peninsula); Ceylon.

The identity of my specimens has been confirmed at P.R.I. Herbarium, Dehra Dun.

This species has not been reported from Gujarat by previous workers.

Arachis Linn.

Arachis hypogaea Linn. Sp. Pl. 741, 1753; FRI. 2:161; C. 1:435; Bailey, Man. Cult. Pl. 554; Saur. 181.

A hairy, suberect annual herb. Flowers yellow. Pods indehiscent, 1-3 seeded. This is well known. Groundnut or Monkeynut cultivated extensively in the western parts of India for the oil.

Local name: Seeng; Mungphali.

Local uses: Kernels are eaten raw or after roasting. Oil is extracted from the seeds.

Bedi 737, 2629.

Commonly cultivated in Ratan Mahal and surrounding areas.

Cultivated in the warmer parts of India.

Teramnus Sw.

Teramnus labialis (Linn. f.) Spreng. Syst. 3:235, 1826;  
FBI. 2:184; Trim. 2:60; C. 1:387; G. 1:249;  
Sant. 58.

Glycine labialis Linn. f. Suppl. 325, 1781;  
D. & G. 68; Wt. Ic. t. 168.

G. warensis Dalz. in Kew. Journ. Bot. 3:210, 1851;  
D. & G. 68.

Climbing herbs, often seen in hedges. Leaves trifoliate, glabrous or slightly hairy. Flowers in axillary few flowered lax racemes; Corolla pink to purple, rarely whitish yellow. Pods 3-6 cm. long, hairy when young, almost glabrous when mature.

Local name: Jangli Urad.

Flowers & Fruits: September to December,  
even upto April near moist  
spots.

Bedi 2272, 3576.

Common as an undergrowth of forest, often noted as a weed in cultivated fields and in hedges.

Gujarat, Deccan, Konkan, S.M. Country; throughout the plains of India. Burma, Ceylon, Cosmopolitan in the tropics.

Mucuna Adans. (nom.cons.)

Mucuna prurita Hook. Bot. Misc. 2:348, 1831; Gr. 53;  
D. & G. 70; G. 1:251; Sant. 59; Saur. 1:160;  
Chavan & Oza, Fl. Pavagadh, 85.

A climber in hedges. Leaves trifoliolate. Flowers very attractive, violet in colour. Pods 5-20 cm. long, covered with brown bristles which cause great irritation when touched. Plants should be handled with a great care to avoid trouble. Ammonia reduces the burning sensation produced by this plant. Natives use cow-dung to reduce its burning sensation.

Local name: Kavach.

Local uses: Seeds after properly roasting  
are eaten by the natives.

Flowers: August to December.

Fruits: September to April.

Bedi 895.

Fairly common near a stream at Pepargota. Sparsely distributed in other areas.

Gujarat, Deccan, Konkan; throughout the plains of India. Cosmopolitan in the tropics. FBI. l.c. often cultivated.

Phaseolus Linn.

Stem and pod densely hairy:

Stipules subacute, ciliate. . . . . radiatus

Stipules ovate oblong, much broader

at the base. . . . . mungo

Var. roxburghii

Stem and pod glabrous. . . . . Dalzellii

Phaseolus radiatus Linn. Sp. Pl. 725, 1753; Sant. 63;

Saur. 1:169; Chavan and Oza, Fl. Pavagadh, 78.

P. sublobatus Roxb. Hort. Beng. 54, 1814 (nom.

nud.) & Fl. Ind. 3:288, 1832; C. 1:402.

P. trinervis Heyne: FBI. 2:203; Indrajai 249.

Erect or suberect when young, later becomes a climber. Entire plant covered with long brown hairs. Flowers pale yellow. Pods 4-8 cm. long, densely covered with long brown hairs.

Local name: Jangli urad.

Flowers & Fruits: August to November.

Bedi 423, 3540.

Fairly common in all the hilly forest regions.

Gujarat, Deccan, S.M. Country.

India (from Behar to S. India) and Ceylon.

Phaseolus mungo Linn. Mantiss, 101, 1767; Var. roxburghii

Prain in JASB. 66:423, 1898; C. 1:403.

P. mungo Var. radiatus Linn. l.c.; FBI. 2:203.

Branched trailing or suberect annual. Flowers pink or pale. Pods densely hairy. Seeds usually black, rarely dark brown.

Local name: Urad.

Local uses: Cultivated for its seeds.

Flowers & Fruits: September to November.

Bedi 3301, 3539.

Commonly cultivated in almost all the villages, in and around Ratan Mahal hills.

One of the most important of the pulses cultivated in India.

There has been some confusion as to the nomenclature of P. mungo and P. radiatus, owing chiefly to Roxburgh having transposed the original Linnean name. Prain l.c. has quite cleared up the matter.



Phaseolus dalzellii Cooke in Fl. Pres. Bomb. 1:376,  
1902 & 1:401 (Rep. ed.); Sant. 62; Saur. 1:170.

P. pauciflorus Dalz. in Kew Journ. Bot. 3:209,  
1851; FBI. 2:202; D. & G. 72 (non. Benth 1840).

A prostrate or suberect annual herb. Entire plant  
glabrous. Leaves 3 foliolate. Flowers in capitate  
2-3 flowered racemes; corolla pale yellow or light violet.  
Pods 8-10 seeded.

Flowers & Fruits: September to December.

Bedi 467.

Not common, noted along the paths in the hilly  
forest areas on the way to Pepargota.

Gujarat, Saurashtra, Konkan.

For nomenclature, please see Cooke, loc.cit.

"The name P. pauciflorus having been given in 1838 by  
Bentham, Ann. Wien. Mus. 2:140, 1840, to a Texan plant  
has priority over to that given to a different plant  
in 1851 by Dalzell". So Cooke has changed the name to  
P. Dalzellii.

Clitoria Linn.

Stems twining or climbing; flowers solitary....ternatea

Stems erect; flowers in pair.....biflora

Clitoria ternatea Linn. Sp. Pl. 753, 1753; FBL. 2:208;  
C. 1:405; Gr. 47; D. & G. 68; G. 1:258; Saur.  
1:171; Chavan & Oza, Fl. Pavagadh, 80.

Twining herb. Leaflets 5-7. Flowers solitary  
axillary with foliaceous bracts; colour blue, also  
noted once pure white with yellowish center. Pods  
5-15 cm. long.

Local name: Gharni.

Flowers & Fruits: November to March.

Bedi 1163, 2088, 2256.

Often noted in hedges near Tokerwa, Dhenpur, Vakesia  
and at various other places on the plains. Not common  
in the hilly regions.

Gujarat, throughout Bombay and Tropical zone;  
Himalaya, Burma, Malacca, Ceylon.

Cosmopolitan in the tropics.

Clitoria biflora Dalz. in Kew. Journ. Bot. 2:35, 1850;  
FBL. 2:208; C. 1:406; Sant. 64.

An erect annual herb 20-50 cm. high. Leaves  
imparipinnate with 5-7 leaflets. Flowers geminate;  
corolla blue. Seeds 2-4 less commonly 5-6.

Flowers & Fruits: August to November.

Bedi 515, 1464, 3280, 3449.

Fairly common as an undergrowth of forest, near Kanjeta, Bendol and Panam.

Gujarat, Deccan, Konkan.

Apparently endemic in Western India.

Cajanus DC. (nom. cons.)

Cajanus cajan (Linn.) Millsp. in Field Columb. Mus.

Bot. 2:53, 1900; Sant. 69; Saur. 1:181.

Cytisus cajan Linn. Sp. Pl. 739, 1853.

Cajanus indicus Spreng. Syst. 3:248, 1826;

FBI. 2:217; C. 1:435.

An erect shrub 100 to 250 cm. high. Flowers yellow in corymbose racemes.

Local name: Tur, Tuvár.

Local uses: Seeds are used as food.

Bedi 1826, 1827.

Extensively cultivated on plains near Ratan Mahal hills, often seen in hilly regions also.

Cultivated throughout India.

Rhynchosia Lour (nom.cons.)Rhynchosia minima (Linn.) DC. Prodr. 2:385, 1825;

FBI. 2:223; C. 1:414; G. 1:264; Indraj1 176;

Saur. 1:176.

Dolichos minimus Linn. Sp. Pl. 726, 1753.Rhynchosia medicaginea DC. Prodr. 2:388, 1825;

D. &amp; G. 74.

Trailing or twining annuals. Leaflets 3, emarginate  
or acuminate, 1-3 cm. long, gland dotted beneath. Flowers  
faint pink to pinkish yellow, 5-15 flowered/ raceme. Pods small,  
compressed about 2 cm. long.

Flowers &amp; Fruits: August to January.

Bedl 143.

Common in hedges at Kanjeta, Bendol and at various  
other places on plains. Often noted on the outskirts of  
forest areas.

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

Distributed throughout India. Ceylon, Tropics  
generally, United States.

Rhynchosia minima (Linn.) DC. Prodr. 2:385, 1825;Var. laxiflora Baker in FBI. 2:223; C. 1:414;

G. 1:264; Saur. 1:177.

Leaflets about 6 cm. long. Raceme more lax than that of the preceding species. More common, as an undergrowth of forest. Often noted as weed in cultivated fields, in hedges, especially on plains.

Bedi 307.

Fairly common.

Poona, Deccan, Sind.

Atylosia Wight & Arn.

Atylosia scarabaeoides Benth. Pl. Jungh. 3:243, 1852;

FBI. 2:215; C. 1:409; Trim. 2:79; Saur. 1:175.

Cantharospermum pauciflorum Wight & Arn. 225;

D. & G. 73.

Prostrate or twining hairy herbs. Leaves 3-foliolate; stipels absent. Flowers yellow. Pod covered with pale-brown silky hairs; pods transversely constricted between the seeds. Seeds 2-6.

Flowers & Fruits: October to April.

Bedi 1751, 1752, 2206.

Common among grasses, often noted as an undergrowth of forest especially on Pepargota and Ratan Mal plateaus.

Gujarat, Deccan, Konkan; plains throughout India; Western Himalayas.

China, Malaya, Mauritius, Madagascar.

The identity of my specimens has been confirmed  
at Kew Herbarium, England.

Indigofera Linn.

Leaves simple:

- Pods 1-seeded, spherical; leaves narrow....linifolia
- Pods 2-seeded, oblong; leaves broadly  
ovate. . . . . cordifolia

Leaves compound, imparipinnate:

Flowers in axillary sessile or shortly  
peduncled heads:

- Leaves 3-foliolate; leaflets gland  
dotted beneath; pods 1-2 seeded..... glandulosa
- Leaves 5-11 foliolate; leaflets not  
gland dotted beneath pods 2-4 seeded..linnaei

Flowers in axillary racemes, not in heads:

- Leaflets 3; racemes 5-10 flowered. . . . . prostrata

Leaflets 5:

- Pods deflexed, obscurely tetragonal,  
5-6 seeded (leaflets rarely three)... marginulata
- Pods not deflexed, subcylindric;  
8-12 seeded. . . . . glabra

Leaflets 7-11:

- Racemes short 3-6 flowered; hairs  
on the stem not gland tipped  
8-10 seeded. . . . . tenuifolia

Racemes slender 6-12 flowered;  
hairs on the stem viscoous gland  
tipped; 10-20 seeded. . . . . colutea

Racemes more than 15 flowers;  
rigid densely flowered. . . . . astragalina

Leaflets 13-21; flower large, pods  
glabrous. . . . . cassioides

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

& 6:33, t. 2, 1791; FBI. 2:92; C. 1:330;  
Gr. 46; Wt. Ic. t. 333; Sant. 50; Gillett in  
Kew. Bull. (Add. Ser. 1) 35; Ali in Botan.  
Notis 111:546, 1958; Saur. 1:124.

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

Prostrate or suberect, much branched herb. Leaves  
simple, linear. Flowers bright red, in 2-10 flowered,  
short racemes.

Flowers & Fruits: August to March.

Bedi 1799, 3083.

Fairly common in Kanjeta, Chari, Limidi-Mendhri.  
Often noted along the banks of Panam river, on dry fallow  
fields and in open grassy places.

Gujarat, Deccan, Konkan, S.M. Country; throughout  
India.

Ceylon, Abyssinia, Afghanistan, Malay Isles,  
N. Australia.

Indigofera cordifolia Heyne ex Roth, Nov. Pl. Sp.

357, 1821; FBI. 2:93; C. 1:331; G. 1:218;  
Gillett, loc.cit. 35; Saur. 125; Chavan &  
Oza, Fl. Pavagadh, 75.

A diffuse, branched, prostrate herb, sometimes  
forming dense mats in semidried ditches. Entire plant  
is densely covered with white hairs. Leaves ovate, cordate.  
Flowers red in small sessile heads. Pods 1-2 seeded.

Flowers: August to January.

Fruits: September to February.

Bedi 898, 2075.

Common on plains and at Pepargota. Rare in the  
forest areas.

Gujarat, Deccan, Konkan, S.M. Country, in the plains;  
throughout India.

Afghanistan, Baluchistan, Nubia, Malay Isles,  
N. Australia.

Indigofera glandulosa Roxb. ex Willd. Sp. Pl. 3:1227,

1800; Roxb. Fl. Ind. 3:372, 1832; FBI. 2:94;  
D. & G. 58; C. 1:332; Wt. Ic. t.330; Sant. 51;  
G. 1:218; Saur. 1:125.



A branched erect hairy herb or sometimes an undershrub. Leaves 3-foliolate, distinctly nigropunctate below. Flowers red in axillary sessile or shortly peduncled heads.

Local name: Bardi.

Flowers & Fruits: July to March.

Bedi 94, 489.

More common on the plains north of Panam river. Often noted as a weed in cultivated fields and in open grassy places.

Gujarat: Saurashtra, Deccan, Konkan, S.M. Country; Western Peninsula and Bundel Khand.

Indigofera linnaei Ali in Botan. Notis 111:549, 1958;  
Saur. 1:126; Chavan and Oza, Fl. Pavagadh, 75.

I. enneaphylla Linn. Mant. 2:272, 177; FBI. 2:94;  
C. 1:332; D. & G. 58; G. 1:218; Wt. Ic. t.403;  
Gillett, loc.cit. 35.

A prostrate, hairy herb. Leaves 5-11 foliolate. Leaflets rounded or emarginate at the apex, densely covered with white appressed hair. Flowers red in dense heads. Pods hairy, cylindric 2-seeded.

Flowers & Fruits: July to December.

Bedi 15-9-1960 Kanjeta, a very common herb  
in open grassy places.

Fairly common everywhere on plains during monsoon.  
Often noted in grasses.

Gujarat, Deccan, Konkan, S.M. Country; throughout  
plains of India.

Burma, Ceylon, Angola, Malay Isles, N. Australia.

Indigofera prestatata Willd. Sp. Pl. 3:1226, 1803;  
G. 1:219; Sant. 51.

I. trifoliata Baker in FBI. 2:96 pro parte.

I. trifoliata Linn. Amoen. Acad. 4:327, 1759;  
C. 1:335; Saur. 1:128.

A suberect plant with slender stem, about 30-60 cm.  
long. Leaflets 3, having black gland dots on the lower  
surface. Flowers red. Pods filiform, 4-8 seeded.

Flowers & Fruits: August to November.

Bedi 3447.

Rare, only noted at few places, growing in dense  
clumps along with other tall grasses on Patan Mata Hill.

Gujarat, Deccan: Khandala, Western Coast and hills  
of Western Ghats.

I. trifoliata Linn. is a plant with a much stouter and rigid stem.

Indigofera marginulata Grah. in Wall. Cat. 5467,  
1828, nom. nud. : FBI. 2:97; C.1:336; G. 1:220.

An undershrub 50-150 cm. high. Stem slightly angled. Entire plant covered with grey appressed hairs. Flowers on elongated racemes; corolla pink. Pod straight.

Flowers & Fruits: September to November.

Hedi 3444, 3548.

Observed few plants near a stream on the way to Kanvara dungar (Bendol.).

Cooke loc.cit., very rare.

Konkan, Nilghiris.

Carnatic, Dindigul hills, Madras.

Indigofera glabra Linn. Sp. Pl. 751, 1753; C. 1:337;  
Trim. Fl. Ceyl. 2:23; G. 1:219.

I. pentaphylla Murr. Syst. Veg. 13:564, 1774  
(not of Burch.); FBI. 2:95.

An annual much branched glabrous or having deciduous hairs. Leaflets 5, slightly hairy on both the sides. Flowers 2-4 in short axillary racemes; corolla pink-red.

Pod glabrous, sub-cylindric, 2-3 cm. long with 10-15 seeds.

Flowers and Fruits: August to November.

Bedi 1977, 1978.

Noted on rocky soil at the foot of Kanvara dungar.  
It appears to be rare in this area.

Cooke mentions it as a "rare plant". S.M. Country, Carnatic and Travancore coast.

Throughout India; Ceylon; Tropical Africa.

Indigofera colutea (Burm. f.) Merrill, Phil. J. Sci. 19:355, 1921; Gillett, loc.cit. 65-67; Saur. 131; Chavan & Oza, Fl. Pavagadh, 76; Raizada in Ind. For. 92(5):312, 1966.

Galea colutea Burm. f. Fl. Ind. 172, 1768 non  
Sensu Willd. Sp. Pl. 3:1246, 1803.

Indigofera viscosa Lamk. Encycl. 3:247, 1799;  
FBI. 2:95; C. 1:337; Trim. 2:24.

An annual erect plant, 30-60 cm. high. Branches densely clothed with simple and gland tipped, viscous white hairs. Flowers purple or violet, (Cooke, l.c. pink) in 6-10 flowered racemes. Pods 2-4 cm. long clothed with white, gland tipped and appressed hairs.

Flowers & Fruits: September to October.

Bedi 3091, 3277.

Restricted to Raiengna and Mandwa hills. Noted among grasses on rocky soil.

Cooke, l.c. "A rare plant in the Bombay Presidency", he has not mentioned any locality from erstwhile Bombay State, except Sind.

Sparingly throughout India; Ceylon.

On the subject of typification of Gales colutea and Merrill's combination in place of Lamark's long established name, please see Gillett, loc. cit.

Indigofera tenuifolia Rottl. ex Wt. & Arn. Prodr. 200, 1834; FBl. 2:95; C. 1:337; D. & G. 58; Trin. 2:24; Saur. 1:129.

Erect, annual herb, 25-50 cm. high. Leaflets 7-11. Flowers small, red, in shortly peduncled racemes. Pods subcylindric or slightly compressed.

Flowers & Fruits: September to November.

Bedi 1810, 3158.

Restricted in distribution to certain localities only. Often noted in grasses at Alindra, Panam and Tokerwa, not common.

Gujarat: Ankleshwar, Konkan, S.M. Country.

India (W. Peninsula); Ceylon.

Indigofera astragalina DC. Prod. 2:228, 1825; Gillett,  
loc. cit. 110, 1958 et in Kew Bull. 14(2):290-295,  
1960; Chavan & Oza, Indian Forester, 87:63-64,  
1961; Chavan & Oza, Fl. Pavagadh, 78.

I. hirsuta Linn. Sensus Baker, FBI. 2:98, 1879, pro parte  
non Linn.; C. 1:399; D. & G. 60; G. 1:221.

An erect, much branched undershrub 50-100 cm. high.  
Leaflets 5 to 11 rarely 13. Racemes dense, many flowered  
5-25 cm. long. Flowers pink. Fruits 3-6 seeded, densely  
covered with white hairs.

Local name: Bugli.

Local uses: Root decoction is given to the  
cattles for the early cure of  
bone fracture.

Flowers & Fruits: August to December,  
sometimes upto late March.

Bedi 398, 3299, 3373.

Common on plains on the N.E. boundary of our district.  
Rare in the hilly regions. Often noted on edges of forest  
areas, on wastelands near Kanjeta and Bendol. Rarely seen  
as a weed in cultivated fields.

Gujarat, Konkan, S.M. Country; throughout the plains of India, Himalaya.

Ava, Ceylon, Tropical Africa, Tropical America, Java, Philippines, N. Australia.

There seems to be a lot of confusion over Linnean plant. For detailed discussion on the subject, please refer to Gillett or Chavan & Oza loc. cit.

Indigofera cassioides Rottl. ex DC. Prodr. 2:255, 1825;  
All in Botan. Notis. 3(3):556; Raizada in Ind.  
For. 92(5): 312.

I. pulchella Roxb. Hort. Beng. 57, 1814, nom. nud.  
& Fl. Ind. 3:382; FBL. 2:101; C. 1:341; D. & G.  
60; Wt. Ic. t. 367; Talb. 1:382, f. 217; G. 1:221.

An erect, much-branched, glabrous or slightly hairy shrub, 1-2 m. high. Leaflets more than 13, the largest number amongst the species of Indigofera of Ratan Mahal Hills. Racemes 3-15 cm. long. Corolla purple to violet-blue (Cooke, l.c. bright red). I have never observed bright red corolla anywhere. Pods cylindric, straight turgid and glabrous, 6-12 seeded.

Local name: Vadelo.

Flowers & Fruits: February to May.

Bedi 1091, 2292, 2480.

Fairly common on Ratan Mal plateau, especially near Ratneshwar Maharaj temple. Rare in other localities.

Deccan, S.M. Country, N. Kanara, in most of the forests along the Ghats.

Throughout the hills of India.

This species has not been recorded from Gujarat by the previous workers.

Millettia Wight & Arn.

Millettia auriculata Baker in Fl. Brit. India 2:108, 1876; Brandis For. Fl. 138; G. 1:227; Chavan & Bedi in JBNHS. New Plant Records for erstwhile Bombay State (Pt.III) 63(3):780, 1966.

A large woody climber. Leaflets 7-9, glabrescent, 10-25 x 5-12 cm. Flowers in axillary racemes near the end of the branches; corolla pale-yellow, densely covered with soft hairs on the outer side; standard, distinctly auricled at the base on both sides of the claw. Pod hard, 8-20 x 2-5 cm. covered with brown velvety tomentum. Seed dark brown, rounded and compressed.

Plate No. \7

Flowers: July to September.

Fruits: October to March.



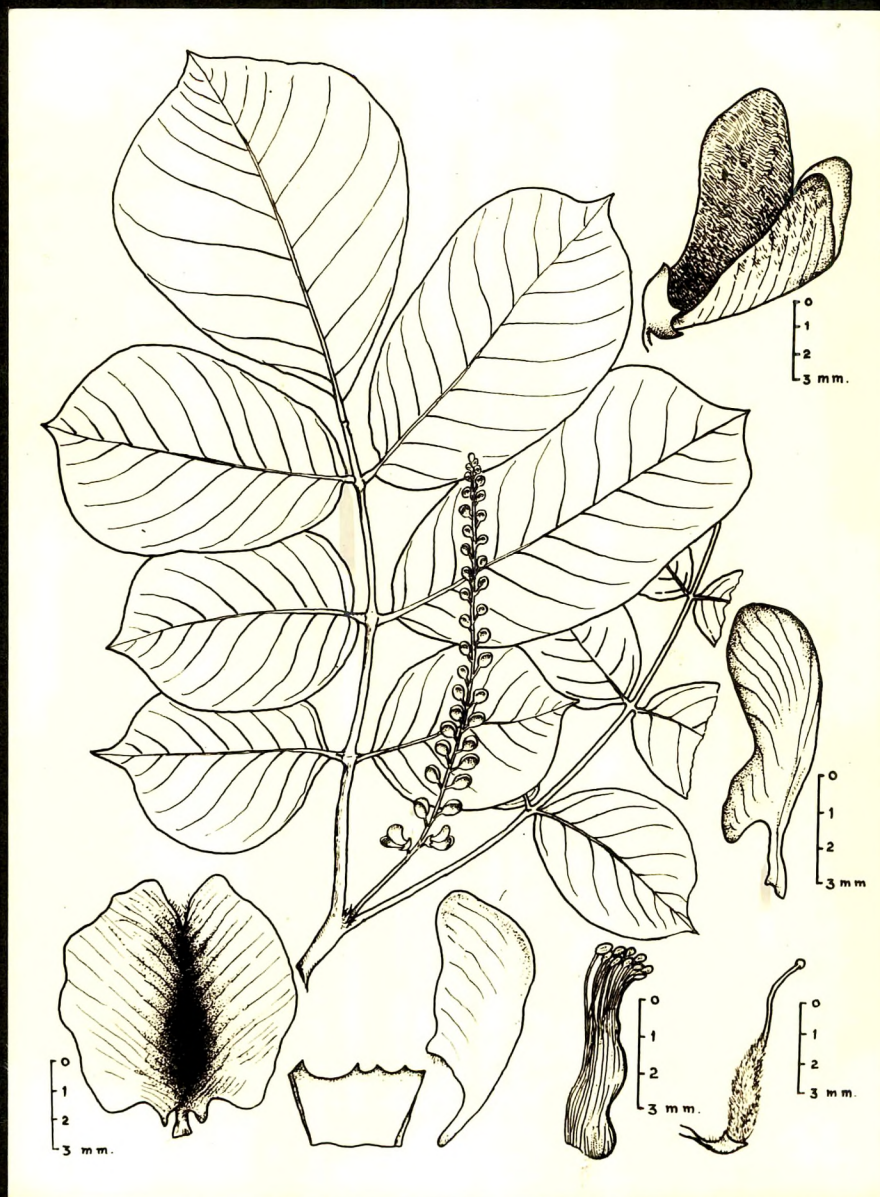


PLATE NO. 17

Millettia auriculata Baker.

Bedi 775, 2729, 2806.

Fairly common on the hilly forest slopes between Kanjeta and Pepargota. Rarely noted on the plains north of Panam valley.

Ganjam, Vizagapatnam(south India); Rohilcund and Kumaon to Sikkim; also on Parasnath in Behar.

I am grateful to Dr. S.K. Mukerji of Central National Herbarium for confirming the identity of my specimens.

This species is not mentioned in any of the Floras of Bombay Presidency, hence is a new record for erstwhile Bombay State.

Uraria Desv.

Uraria picta Desv. Journ. Bot. 1:123, t.5, f.19, 1813;  
FBI. 2:155; C. 1:367; D. & G. 65; G. 1:237;  
Saur. 1:145.

An erect perennial undershrub, 50-160 cm. tall. Leaves dimorphic, imparipinnate. Upper leaves 5-9 foliolate, leaflets 10-20 cm. long, oblong lanceolate, blotched with white; lower leaves with few leaflets, which are rounded suborbicular. Flowers on long cylindric raceme; corolla violet-blue to purple.

Local name: Kavario.

Local uses: Leaf infusion is used to  
cure fever.

Flowers: July to October.

Fruits: September to December.

Bedi 245, 285, 2562.

Common in the Panam valley, especially near Bendol,  
Kanjeta and Panam. Rare in the hilly forest region and  
in north and north-east plains. Usually noted under the  
shade of trees in open areas.

Konkan, Salsette, Bombay Island.

Throughout India; Ceylon, Tropical Africa, China,  
Malaya.

Cooke, l.c. 'Rare', but is fairly common in our  
district. Plant was not reported earlier. Recently  
Santapau reported from Saurashtra and subsequently by  
me from this part of the country.

Tephrosia Pers. (nom.cons.)

Leaves simple. . . . . strigosa

Leaves compound, imparipinnate:

Racemes long, lax 5-25 flowered:

Pods densely tomentose. . . . . hirta

Pods glabrescent or slightly hairy....hamiltonii

Racemes short, axillary, 1-3 flowered.....senticosa

Tephrosia strigosa (Dalz.) Santapau & Maheshwari  
in JBNHS. 54:804, 1957; Saur. 1:134; Chavan  
& Oza, Fl. Pavagadh, 80; Raizada in Ind.  
For. 92(5):324, 1966.

Macronyx strigosum Dalz. in Hook. Journ. Bot.  
2:35, 1850.

Tephrosia tenuis Wall. ex Dalz. & Gibs. Bombay  
Fl. 61, 1861; FBL. 2:111; C. 1:344; G. 1:244.

A small, annual, much-branched, slender herb.  
Leaves simple. Flowers pinkish blue, solitary or two,  
in the axil of a leaf. Pods 10-20 x 4 mm.; seeds 5-10.

Flowers: August to October.

Fruits: September to November.

Bedi 3346.

Not common, noted on plains as an undergrowth of  
forest.

Gujarat, Deccan, S.M. Country; Punjab.

India (Punjab); Burma.

Tephrosia tenuis mentioned in most of our national  
and regional floras, is nomen nudum in Wallich's Catalogue  
and is therefore invalid. The oldest valid name is  
Dalzell's Macronyx strigosum.

Tephrosia hirta Ham. in Trans. Linn. Soc. 13:546,  
1822; G. 1:225; Saur. 1:135; Chavan & Oza,  
Fl. Pavagadh, 81.

T. villosa Wt. & Arn. Prodr. 212, 1834; FBI.  
2:113 excl. some synonyms.

T. argentea W. & A. 212 excl. synonyms.

T. incana W. & A. 212.

A much branched undershrub, entire plant covered  
with white, greyish or pale brown hairs. Racemes  
10-30 cm. long. Flowers showy, dark pink to red or  
red to purple. Pods 2-4 cm. long, densely villose.

Flowers: July to October.

Fruits: September to February.

Bedi 1515.

Rare in the hilly regions, common on plains near  
Vedbedh, Vakesia, Tokerwa, Kundawala etc.

Gujarat, S.M. Country; throughout the plains of  
India.

Tephrosia hamiltonii J.R. Drumm. in Gamble, Fl. Pres.  
Madras 320, 1918 and (Rep. ed.) 1:226; Saur.  
1:138; Chavan & Oza, Fl. Pavagadh, 81.

T. purpurea (Pers) Baker in FBI. 2:112, in part  
(Galega tinctoria Roxb. Fl. Ind. 3:386 not  
of Linn.); C. 1:346, in part.

A branched undershrub, 25-75 cm. tall, glabrous or minutely hairy. Flowers in extra axillary racemes, purple or purple blue rarely white. Pods 2-3 cm. long.

Local name: Sarapankhado.

Local uses: Natives smoke the leaves along with Tobacco to cure cough.

Flowers: August to December.

Fruits: September to March.

Bedi 3191, 3547.

Common in open areas on plains, especially near Limidi, Mendhari, Chari, Bendol, Kanjeta and all along the banks of Panam river. Less frequent in hilly regions.

Gujarat, Deccan, Konkan, S.M. Country.

Ceylon, Malacca, Siam, everywhere in the tropics.

Tephrosia senticosa Pers. Syn. Fl. 2:330, 1807; PBI.

2:112; Saur. 1:137; Chavan & Oza, Fl. Pavagadh, 81.

T. pauciflora Grah. (in Wall. Cat. no. 5635, 1928

nom. nud.) ex Baker in PBI. 2:114; C. 1:346; Indrajit 294.

A small prostrate or suberect herb with short appressed hairs. Leaves 2.5 to 5 cm. long; leaflets 5-9, oblanceolate. Flower 1-3 axillary, rarely at the

end of the branches; corolla purple, standard densely hairy on the back. Pods about 3 cm. long, hairy.

Flowers & Fruits: July to November.

Bedi 1528, 1550.

Commonly noted along the forest paths, in open grassy places and around the margins of cultivated fields.

Gujarat, Deccan, Western Peninsula.

Burma, Ceylon.

Sesbania Scop. (nom.cons.)

Prickly shrubs or undershrubs. . . . . bispinosa

Unarmed shrubs or small trees. . . . . sesban

Sesbania bispinosa (Jacq.) Fawcett & Rendle, Fl. Jam.

4:24, 1920; Ber; Man. In. For. Bot. 92; Sant. 52;  
Saur. 1:140; Raizada, in Ind. For. 92(5):323,  
1966.

Aeschynomene bispinosa Jacq. Icon. Pl. Rar. 3:13,  
t. 564, 1793.

Sesbania aculeata Pers. Syn. 2:316, 1807; FBI. 2:114;  
Gr. 48; D. & G. 62; C. 1:350; G. 1:229.

An erect, rapid growing undershrub or shrub. Stem weak, often reaching upto 2.5 m. in height; branches and

rachis glabrous, prickly. Flowers yellow in 2-6 flowered, drooping racemes. Pods not or slightly torulose.

Flowers & Fruits: September to November.

Bedi 448, 3376.

Often noted as a weed in cultivated and fallow fields. Common in Banvaro, Kanjeta, Simamoai and various other localities on the plains north of Panam river.

Fairly common in Gujarat, Deccan and Konkan.

Cosmopolitan in the tropics of old world.

Sesbania sesban Merr. Var. picta Santapau, Pl. Saur. 14, 1953; Saur. 1:139.

Sesbania aegyptica Pers. Var. picta Prain in JASB. 66:367, 1898; FBI. 2:114, pro parte (not of Pers.); C. 1:349; Gr. 47.

An erect, tall shrub or sometimes of the size of a small tree, reaching upto 4 m. tall. Flower yellow with purple dots or streaks.

Local name: Savari.

Flowers & Fruits: October to March.

Bedi 3689.



Very rare in the hilly regions of Ratan Mahal.  
Common on the plains, especially near Dhenpur, Vakasia,  
Tokerwa, Vedbedh etc.

Cultivated and more or less naturalized in Bombay  
State.

Throughout tropics of the old world.

Sesbania sesban Merr. Var. bicolor (Wt. & Arn.)

F.W. Andr. in Kew Bull. 93, 1953.

S. aegyptica Pers. Var. bicolor Wt. & Arn. Prodr.

214, 1834; C. 1:350; FBI. 2:114, pro parte.

A small, soft tree about 5 m. tall. Calyx and  
standard maroon coloured, dark purple or blackish outside,  
not mottled.

Flowers & Fruits: During Winter season.

Bedi 3692.

Noted only few trees near Dhenpur Ashram, not recorded  
from elsewhere.

Cultivated in Bombay.

Throughout the tropics of the old world.

The plants have been introduced into Baroda Botanical  
Garden, where they are growing very well and rapidly  
multiplying. Seeds from this locality have been taken by

Sub-D.F.O., S.A. Chavan and are cultivated in Dang forest, South Gujarat.

Dalbergia Linn. f. (nom. cons.)

Stamens 9, in one bundle, (rarely 10 in D. sympathetica):

Tall trees:

Leaflets 5-7, obtuse or emarginate....latifolia

Leaflets 3-5, acuminate-cuspidate.....sissoo

Scandent large shrubs; leaflets about

1/2 the size of the above mentioned

species; leaflets ovate-oblong..... sympathetica

Stamens 10, iso-diadelphous(5+5):

Trees; flowers in loose panicles..... lanceolaria

Climbing shrubs; flowers in dense,

corymbose cymes..... volubilis

Dalbergia latifolia Roxb. Pl. Cor. 2:7, t. 113, 1798 &

Fl. Ind. 3:221, 1832; FDI. 2:231; Gr. 55;

D. & G. 77; C. 1:422; Prain ARBGC. 10(1):80,

t. 62; Wt. Ic. t. 1156; Talb. 423, f.239.

Large tree with greyish bark. Leaves 5-7 foliolate; leaflets rounded with obtuse or emarginate apex. Flowers white or pale yellow, in lax axillary panicles.

Local name: Sesum.

Flowers: August to October.

Fruits: November to March.

Local uses: Timber is durable and is used  
in agricultural implements.

Bedi 469, 3612.

Though not common, it is evenly distributed in  
various forest areas, usually on the outskirts.

Gujarat, Deccan, Konkan, S.M. Country; Kanara;  
common throughout the W. Peninsula; Behar, Sikkim  
and Bundel Khand.

Dalbergia sissoo Roxb. Hort. Beng. 53, 1814 nom. nud.

& Fl. Ind. 3:223, 1832; FBI. 2:231; C. 1:421;

Talb. 422, f. 238; G. 1:270.

A medium sized tree. Leaflets alternate, 3-5,  
cuspidate-acuminate. Flowers yellowish white. Pods  
strap shaped, 1-3 seeded.

Local name: Sissu.

Local uses: Timber used commercially.

Bedi 2370.

Not common, noted few trees near Patan Mata plateau  
and rarely on plains.

Often planted in Bombay Presidency; said to be wild in Gujarat. Plains throughout India.

Afghanistan, Belochistan.

Dalbergia sympathetica Nimmo ex Graham, Cat. 55, 1839;  
FBI. 2:234; C. 1:424; Talb. 1:426, f. 240;  
Sant. 68.

D. multiflora Heyne ex Wall. Cat. Sub. 5848, 1832  
nom. nud.; Prain 43, t. 18, 1904.

A large scandent shrub, rarely also noted as a thin weak tree, resembling somewhat D. volubilis Roxb., but the arrangement of the stamens is monadelphous and not 5+5 or iso-diadelphous.

Flowers & Fruits: March to July.

Bedi 1052, 3730.

Rare, only noted in the hilly regions north of Panam in Bendol area.

Konkan, Khandala, Kanara.

Hills of the Western Peninsula.

Standard floras have not mentioned any locality from Gujarat.

Dalbergia lanceolaria Linn. f. Suppl. 316, 1781; FBI.  
2:235; C. 1:425; Prain, loc. cit. 93, t. 76;  
Talb. 1:428; Sant. 68.

D. frondosa Roxb. Hort. Beng. 53, 1814 & Fl. Ind.

3:236, 1832.

Large tree, with smooth greyish bark. Leaflets elliptic or oblong, obtuse or emarginate, glabrous above, slightly pubescent below. Flowers white or bluish pink.

Local name: Tanach.

Flowers: March to April.

Fruits: May to November.

Bedi 1381, 2384.

Not very common, occasionally seen in almost all the hilly forest regions.

Gujarat, Deccan, Konkan, Kanara.

Throughout the plains of India. Ceylon.

Dalbergia volubilis Roxb. Pl. Corom. 2:48, t. 191, 1798;

FBI. 2:235; C. 1:426; Talb. 1:429, f. 241;

Prain, loc.cit. 100, t. 85; Sant. 68.

A large woody climber on bamboos, shrubs and trees. Flowers in terminal axillary panicles; corolla blue; stamens in two bundles of 5 each. Pods 1-2 seeded, conspicuously veined.

Local name: Kamla Soti.

Flowers: November to December.

Fruits: December to January.

Bedi 10.

Noted near a stream in Pepargota. I have not observed this species from any other locality of Ratan Mahal.

Deccan: Khandala, Konkan.

Central and eastern Himalaya to Pegu and Ceylon.

This species has not been recorded from Gujarat by the earlier workers.

Pterocarpus Linn.

Pterocarpus marsupium Roxb. Var. acuminatus Prain in

JASB. 66:455, 1898; FBI. 2:239 pro parte;

C. 1:428; Talb. 1:431, f. 242; Sant. 68;

Saur. 1:179.

P. marsupium Graham 56, 1939; D. & G. 76 (non Roxb.).

A large, deciduous tree. Leaves glabrous, 15-25 cm. long, with 5-7 leaflets. Leaflets distinctly acuminate. Fruit 3-6 cm. in diameter, with thick wings, distinctly veined.

Local name: Beo.

Local uses: Timber is hard and durable and is used in construction of buildings and for agricultural implements.

Flowers: September to November.

Fruits: November to April.

Bedi 1054, 3597.

Not common, but is evenly distributed in almost all the hilly forest regions. Often noted on Ratan Mal 'plateau' near Vagh ni machi 'Tiger path' and on Kanvara dungar 'Bachelor hill' , Bendol.

Gujarat, Deccan, Konkan, Kanara.

India (Rajmahal hills, Rajputana).

Pongamia Vent. (nom. cons.)

Pongamia pinnata (Linn.) Pierre, Fl. For. Cochinch.

Sub t. 385, 1900; Sant. 68; Saur. 1:180;

Chavan & Oza, Fl. Pavagadh, 87.

Cytisus pinnatus Linn. Sp. Pl. 741, 1753.

Pongamia glabra Vent. Jard. Malm. 28, 1803;

FBI. 2:240; C. 1:429; Talb. 1:432, f. 243;

D. & G. 77; G. 1:272; Wt. Ic. t. 59.

A moderate sized tree, with 5-7 ovate-acuminate, glabrous leaflets. Flowers white in short axillary racemes; corolla white with pink or pinkish blue tinge. Pods compressed, thick, unequal sided.

Local name: Karanj.

Local uses: Oil extracted from the seeds  
is used in skin diseases and  
as burning oil in the lamps.

Bedi 1157, 1176, 2336.

Very common near the streams in almost all the  
hilly regions and along the banks of Panam river.

Gujarat, Deccan, Konkan; Central and East Himalaya;  
throughout India - banks of rivers and streams especially  
near the coast.

Malay Isles, N. Australia, Polynesia.

Smithia Ait. (nom. cons.)

Smithia conferta Smith, in Rees. Cycl. 33:No.2, 1816;  
C. 1:358; G. 1:232; Sant. 53; Saur. 1:143;  
Chavan & Oza, Fl. Pavagadh, 68.

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

S. geminiflora Var. Conferta Baker in FBI. 2:149,  
1876.

A suberect or straggling herb, 50 to 150 cm. long.  
Leaves abruptly bipinnate; leaflets sub-sessile with  
long white hairs on the margin and midrib. Flowers  
yellow, in pairs in the axil of the leaves. Pods 3-6  
jointed, the joints folded inside the calyx.



Local name: Bohay lajja meni.

Flowers & Fruits: September to December.

Bedi 689, 1733.

Fairly common as an undergrowth of forest in the hilly regions. Less common or rare on plains.

Gujarat, Deccan, Konkan, S.M. Country.

Throughout India, Ceylon, Java, N. Australia.

Aeschynomene Linn.

Aeschynomene indica Linn. Sp. Pl. 713, 1753; FBI.

2:151; C. 1:363; Gr. 48; D. & G. 62; G. 1:234.

A marsh loving undershrub, reaching upto 100 cm. or more in height. Flowers pale yellow, often with purple veins. Pods 4-10 jointed, joints smooth.

Flowers & Fruits: September to January.

Bedi 206, 1510, 3150, 3300.

Commonly noted in ditches and as a weed in cultivated fields.

Gujarat, Deccan, Konkan; Himalayas to Ceylon.

Siam, Japan and everywhere in tropics of old world.

Abrus Linn.

Abrus precatorius Linn. Syst. Nat. (ed.12) 472, 1767;

FBI. 2:175; C. 1:382; D. & G. 76; G. 1:247;

Chavan & Oza, Fl. Pavagadh, 82.

Glycine abrus Linn. Sp. Pl. 753, 1753.

A large perennial climber. Leaves abruptly pinnate. Leaflets 10 to 20 pairs. Flowers crowded in many flowered racemes, pink. Seeds usually shining red or scarlet with a black spot at one end.

Local name: Chanoti.

Flowers: August to November.

Fruits: September to January.

Fairly common in hedges, especially on plains. Somewhat rare in the hilly forest regions.

Gujarat, Deccan, Kanara, Himalayas; and throughout India. Siam, Ceylon; Cosmopolitan in the tropics.

Near Bapu's house I have observed a plant with pure white seeds without any black spot on it.

Cicer Linn.

Cicer arietinum Linn. Sp. Pl. 738, 1753; FBI. 2:176;

C. 1:435; Saur. 1:181.

A branched, glandular-pubescent annual herb. Flowers pink, blue rarely white. Pods 1-3 seeded, generally 2.

Local name: Channa.

English name: Gram.

Flowers & Fruits: During winter season.

Bedi 2238.

Commonly cultivated on plains and in hilly regions for its edible seeds. Vegetable is prepared from the green young leaves.

Extensively cultivated throughout India.

Lathyrus Linn.

Lathyrus sativus Linn. Sp. Pl. 730, 1753; FBI. 2:179;  
D. & G. Suppl. 22; C. 1:384.

An annual, much branched, tendrill climber. Stem winged. Leaflets 2. Flowers pinkish blue.

Gujarati name: Lang.

Flowers and Fruits: 20-2-62 Kanjeta.

Bedi 2227, 2228.

Noted as a weed, in wheat fields, along the banks of Panam river near Kanjeta.

Though it is often cultivated in many parts of Gujarat, natives are not aware of this plant. It is quite probable that the plant has been recently introduced. Here, only noted once.

Wide spread throughout northern parts of India,  
often cultivated.

Europe, Tropical Africa.

Note: It is said that the constant use as a food, by the  
human beings, causes paralysis of the lower extre-  
mities.

Cyamopsis DC.

Cyamopsis tetragonoloba (Linn.) Taub. in Engl. & Prantl.  
Nat. Pfam. 3(3):259, 1894.

Psoralea tetragonoloba Linn. Mant. 104, 1767.

Cyamopsis psoraloides DC. Prodr. 2:216, 1825;  
FBI. 2:92; C. 1:328; D. & G. Suppl. 21, Wt. Ic.  
t. 248.

An annual erect herb. Leaves trifoliate. Stem  
grooved. Flowers pinkish-purple in axillary racemes.

Local name: Govar.

Local uses: Pods and seeds are used as  
vegetable.

Bedi 1524, 1525.

Commonly cultivated, both on plains and in the hilly  
regions.

Cultivated in many parts of India from Himalayas to  
Cape Comorin. Afghanistan.

## CAESALPINIACEAE

Leaves simple, deeply or shallowly 2-lobed.. Bauhinia

Leaves compound:

Leaves once pinnate:

Corolla with 5 perfect petals;

fertile stamens 5-10. . . . . Cassia

Corolla with 3 perfect petals;

the two lower reduced to scales;

fertile stamens 3. . . . . Tamarindus

Leaves twice pinnate:

Trees; stamens included; plants

without prickles. . . . . Delonix

Straggling or scandent shrubs;

stamens exerted; plants with

hooked prickles. . . . . Caesalpinia

Bauhinia Linn.

Fertile stamens 10; pods indehiscent. . . . racemosa

Fertile stamens 3, sometimes 4 or 5;

Pods dehiscent. . . . . purpurea

Bauhinia racemosa Lamk. Encycl. 1:390, 1783; FBI. 2:276;

C. 1:459; Gr. 64; D. & G. 82; Sant. 73; Saur.

1:197; Chavan & Oza, Fl. Pavagadh, 91.

Small to a middle sized tree. Leaves small, deeply clefted, about 6 cm. long and 8 cm. broad, clothed beneath

with grey pubescence. Flowers whitish yellow. Pods  
15-30 cm. long, indehiscent.

Local name: Asundro; Ausatri; Kaliar.

Local use: Leaves are eaten by the cattles  
and are used in the preparation  
of 'bidis' (country cigarettes).  
Petals are used as a vegetable.

Flowers: April to June.

Fruits: July to December.

Bedi 3009.

Not common, noted near Bapu's house at Kanjeta;  
Bendol and some other forest regions, near Seemamoal,  
Chari, Limidi-Mendhri.

Common throughout Gujarat, Maharashtra in deciduous  
forest; Kanara; Punjab, Garwal.

Ceylon, Pegu, China, Malay Isles, Timor.

Bauhinia purpurea Linn. Sp. Pl. 375, 1753; FBI. 2:284;  
C. 1:461 Gr. 64; D. & G. Suppl. 30; Talb. 1:466;  
G. 288; Blatter & Millard, Beaut. Tr. 80 &  
t. opp. p. 80; Sant. 74; Saur. 1:198.

Small to a medium sized tree. Leaves divided upto  
1/3, 8 cm. long and 12 cm. broad. Petals long clawed  
rose purple. Fertile stamens 3, rarely 4 or 5, other  
reduced to staminodes.

Local name: Kachnar.

Local uses: Young petals are used as  
a vegetable.

Flowers: September to December.

Fruits: December to March.

Bedi 1039, 1047, 3727.

Fairly common near human inhabitation, as well as  
in the deep interior of forest areas, especially on the  
southern parts. Less frequent or rare on plains.

Cultivated throughout Gujarat and Maharashtra.

Sparingly throughout India; Ceylon.

Cassia Linn.

Herbs:

Pods compressed:

Leaflets 2 pairs; pod about  
5 cm. long. . . . . absus

Leaflets 3-5 pairs; pod about  
10 cm. long. . . . . occidentalis

Pods cylindric or subcylindric;  
leaflets 3 pairs; pod about 20 cm. long. tora

Undershrubs or shrubs:

Leaflets 8-12 pairs, erect shrubs. . . . auriculata

Leaflets 20-40 pairs, suberect  
rarely erect undershrub. . . . . pumila

Trees; pod indehiscent, more than  
30 cm. long. . . . . fistula

Cassia absus Linn. Sp. Pl. 376; 1753; FBI. 2:265;  
C. 1:451; Sant. 72; Saur. 1:192; Chavan  
& Oza, Fl. Pavagadh, 91.

An erect herb, 20-60 cm. high. Stem and branches  
glandular hairy. Leaves with two pairs of leaflets;  
leaflets glabrous on upper surface hairy beneath.  
Flowers yellowish red in small erect, leaf opposed  
or terminal racemes. Pods flattened, about 5 cm. long.

Local name: Chimundi.

Flowers & Fruits: August to December.

Bedi 395, 1461.

Very common, after monsoon, along the paths in  
almost all the forest areas. More common in hilly region.

Gujarat, Deccan, Konkan; throughout India.

Ceylon, Tropical Africa, Asia, Australia.

Cassia occidentalis Linn. Sp. Pl. 377, 1753; FBI. 2:262;  
C. 1:445; Gr. 63; G. 1:284; Indrajī 272;  
Saur. 1:188.



Senna occidentalis Roxburgh, Fl. Ind. (ed. Carey. 2)  
343, 1832.

A sub-glabrous erect herb, 50-150 cm. high.  
Leaflets 3-5 pairs, ovate lanceolate. Flowers yellow  
in short peduncled few flowered racemes. Pod about  
10 cm. long.

Local name: Kasundi.

Local uses: Leaf paste is used to cure  
skin diseases.

Flowers & Fruits: August to December.

Bedi: Fairly common along the banks of Panam  
river, especially on plains, near Vedbedh, Dhenpur,  
Vekashia etc. Rare in the hilly regions.

Throughout India. Cosmopolitan in the tropics.

Cassia tora Linn. Sp. Pl. 376, 1753; FBI. 2:263  
pro parte; C. 1:447; Gr. 63; D. & G. 81  
pro parte; G. 1:284; Sant. 71; Saur. 1:189.

C. obtusifolia Linn. Sp. Pl. 377, 1753.

Erect herb, 20 to 70 cm. tall. Leaflets 3 pairs,  
the lowest smaller, glabrous or slightly hairy. Flowers  
yellow, in sub-sessile pairs in the axil of the leaves.  
Pods 15 to 20 cm. long, subcylindric; seeds 20 to 30.

Local name: Kunvadio.

Local uses: Leaf infusion is given to  
cattles to expel worms.

Flowers & Fruits: July to March.

Bedi 426.

Fairly common during and after monsoon, often  
noted along the roadside ditches, waste places and  
on open lands. Less frequent in the hilly regions.

Throughout India. Ceylon, Cosmopolitan in the  
tropics, probable a native of Asia only.

Cassia auriculata Linn. Sp. Pl. 379, 1753; FBI.2:263;  
C. 1:448; Gr. 63; D. & G. 81; G. 1:284;  
Saur. 1:190; Chavan & Oza, Fl. Pavagadh, 92.

An erect much branched shrub, 50 to 150 cm. high.  
Branches covered with small soft yellow hairs. Flowers  
yellow, large showy, in terminal and axillary corymbose  
racemes. Pod flat, papery, 10-20 seeded.

Local name: Avalo.

Flowers & Fruits: July to March.

Bedi 3675 (Kundawala).

Very rare in the hilly forest regions. Often noted  
near Kundawala and Dhenpur.

Gujarat, Konkan, Deccan, Khandesh, S.M. Country.

Dry regions of Madhya Pradesh and the Western Peninsula.

Cassia pumila Lamk. Encycl. 1:651, 1784; FBI. 2:266;  
C. 1:452; D. & G. 82; Indrajit 286; Sant. 72;  
Saur. 1:193; G. 1:285.

Erect, suberect or at times procumbent undershrub.  
Leaflets 20-40 pairs. Flower small, yellow, solitary  
or 2-3 together. Pod flat, more or less glabrous,  
5-10 seeded.

Flowers & Fruits: July to November.

Bedi 102, 506.

Very common, often found in the undergrowth of  
forest, along the paths, in open grassy places and as  
a weed in cultivated fields.

Gujarat, Konkan, Deccan, S.M. Country, Kanara;  
throughout India.

Ceylon, Malay Isles; Tropical Australia.

Cassia fistula Linn. Sp. Pl. 377, 1753; FBI. 2:261;  
C. 1:444; Gr. 62; D. & G. 80; Talb. 1:448,  
f. 253; Blatt. & Mill. Beaut. Ind. Tr. 20  
& t. opp. p.20; Sant. 71; Saur. 1:187,  
Chavan & Oza, Fl. Pavagadh, 93.

C. rhombifolia Roxb. Hort. Beng. 31, 1814 nom.  
nud. Wt. Ic. t. 269.

A medium sized deciduous tree 5-15 m. high.  
Flowers in long pendulous racemes, yellow. Pods cylindric  
20-40 cm. long, brownish-black in colour.

Local name: Garmalo.

Flowers: January to May.

Fruits: Till the next flowering season.

Leaves: Absent when flowering.

Bedi 1166.

Fairly common in almost all the areas. Trees much  
stunted on Ratan Mal 'plateau'; once a tree about 100 cm.  
tall was observed flowering.

Common throughout Bombay in deciduous forest, Deccan,  
Konkan, throughout India.

Ceylon, China, Malaya.

### Tamarindus Linn.

Tamarindus indica Linn. Sp. Pl. 34, 1753; FBI. 2:273;  
C. 1:457; Gr. 62; D. & G. 82; Talb. 1:459,  
f. 260; G. 1:290; Saur. 1:196.

A popular "Tamarind" tree; often planted for its  
shade and pods. Middle sized or a large tree with a

dense crown. Flowers in few flowered racemes at the end of the branches; corolla yellow striped with red.

Local name: Amlī, Ambli.

Local uses: Fruit is sour, used as a condiment.

Flowers: April to July.

Fruits: Almost throughout the year or till the next flowering season.

Bedi Chari (18-11-61); Kanjeta (16-2-62).

Danvaro plateau, Kanjeta, Bendol. More common, in and around most of the villages on plains, rare in the hilly regions.

Cultivated and self sown throughout India and the Tropics generally. Probably indigenous to Africa.

Delonix Raf.

Delonix regia (Boj.) Raf. Fl. Tell. 2:92, 1836;

G. 1:280; Benth., Trees Calc. 170; Blatt. & Mill. Beaut. Ind. Tr. 52, t.10; Sant. 71; Saur. 1:184.

Poinciana regia Bojer ex Hook. in Bot. Mag. t.2884, 1829; FBL. 2:260; D. & G. Suppl. 27; C. 1:442.

A medium sized magnificent tree with an umbrella-shaped crown. Leaves bipinnate. Flowers red or orange red, sometimes with white patches.

Local name: Gulmohar.

Flowers: March to June.

Fruits: June to the next flowering  
season.

Bedi 2345.

A road side tree in Kanjeta village. Very rare  
or absent in the other regions of Ratan Mahal Hills.  
Noted few trees on plains near Tokerwa, Dhenpur and  
Vakeshia villages.

Commonly planted as an ornamental tree in gardens  
and as a roadside tree, in many parts of India.

Caesalpina Linn.

Caesalpina crista Linn. Sp. Pl. 380, 1753, pro majore  
parte, excl. Fl. Zeyl. 157; G. 1:278; Maheshwari,  
Fl. Dli. 144.

Guilandia bounducella Linn. Sp. Pl. ed.2, 545, 1762.

Caesalpina bonduc Roxb. Hort. Beng. 32, 1814 nom.  
nud. & Fl. Ind. 2:362, 1832.

C. bonducella Fleming in Asiat. Res. 11:159, 1810;  
FBI. 2:254; C. 1:437.

A scandent shrub with dense sharp straight and curved  
prickles, throughout its body. Flowers yellow, in dense

spicate racemes. Pods oblong, covered with wiry prickles. Seeds 1-2, greyish in colour.

Local name: Kacheka; Kachko.

Flowers: April to August.

Fruits: August to October.

Bedi 2459.

Rare, noted few plants on Banvaro plateau (27-4-62), near Punjala's house.

Gujarat, Deccan, Kanara; throughout India.

Cosmopolitan in the tropics.

MIMOSACEAE

Stamens definite; flowers in spikes; upper flowers of spikes bisexual, the lower neuter. . . . . Dichrostachys

Stamens indefinite:

Stamen free; flowers in spikes or in globose heads. . . . . Acacia

Stamens monadelphous:

Pods straight. . . . . Albizia

Pods curved or twisted. . . . . Pithecellobium

Dichrostachys (DC.) Wight & Arn.(nom.cons.)

Dichrostachys cinerea (Linn.) Wt. & Arn. Prodr. 271,  
1834; FBL. 2:288; C. 1:468; Gr. 57; D. & G.  
84; Talb. 1:473, f. 269; Saur. 1:201.

Mimosa cinerea Linn. Sp. Pl. 520, 1753.

A much branched thorny shrub or a small tree.  
Flowers crowded in cylindric, axillary spikes. Spikes  
2-5 cm. long; upper half of the spike is yellow with  
bisexual flowers, lower half is pink with neuter flowers.

Flowers: Noted on 20th April 1962 near  
Tokerwa and Anderpura on 20-7-60.

Bedi 2958.

Rare, on plains on the north-eastern border of our  
district. I have not seen this species in the hilly  
forest regions.

Gujarat, Deccan, S.M. Country, Kanara, W. Peninsula;  
Madhya Pradesh, Rajputana.  
Ceylon, Malay Isles, N. Australia.

Acacia

Erect trees:

Flowers in globose heads:

Pods moniliform; heads on  
axillary peduncles. . . . . nilotica



Pods not moniliform; heads on  
 large terminal panicles. . . . . leucophaea  
 Flowers in cylindric spikes; leaves  
 bipinnate; pinnae 20-40 pairs. . . . . chuandra  
 Climbing shrub. . . . . pennata

Acacia nilotica (Linn.) Del. Fl. Aegypt, Ill. 79, 1813;  
 Saur. 1:204; Chavan & Oza, Fl. Pavagadh, 96.

Mimosa nilotica Linn. Sp. 521, 1753.

Acacia arabica auct. ind. non Willd; FDI. 2:293;  
 C. 1:472; Talb. 1:480, f. 272; Maheshwari,  
 Fl. Dii. 148.

A medium sized tree, armed with stipular white  
 spines. Bark dark brown, much cracked. Flowers yellow  
 in globose heads, peduncles axillary. Fruits moniliform,  
 deeply grey tomentose.

Local name: Baval.

Flowers: July to December.

Fruits: December to March.

Bedi 119, 152.

Rare in the hilly forest regions, fairly common on  
 plains and along the bank of Panam river.

Gujarat, Deccan, W. Peninsula; throughout the greater  
 parts of India.

Ceylon, Arabia, Egypt, Tropical Africa, Natal.

Acacia leucophlaea Willd. Sp. Pl. 4:1083, 1805;

FBI. 2:294; C. 1:475; Gr. 59; D. & G. 86;

Talb. 1:485, f. 275; G. 1:302; Saur. 1:207.

Mimosa leucophlaea Roxb. Pl. Cor. 2:27, t. 150,  
1800.

Small tree with stipular spines, sometimes  
attaining large size. Flowers in large terminal  
panicles, yellow, heads globose. Pods 10-15 cm. long,  
flat, yellowish brown in colour, densely tomentose.  
Seeds 8 to 15.

Local name: Range.

Local uses: Leaves are used as a fodder  
by goats.

Flowers: August to November.

Fruits: December to May.

Bedi 2794, 3813.

Not common, sparsely distributed near Kanjeta,  
Pepargota and Tokerwa.

Gujarat, Deccan, S.M. Country; N.W. India.

Ceylon, Burma, Malay Isles, Timor.

Acacia chundra (Roxb.) Willd. Sp. Pl. 4:1078, 1806;

Sant. 75; Saur. 1:207.

Mimosa chundra Roxb. ex Willd. l.c., 1079, 1806.

M. sundra Roxb. Fl. Cor. 3: t. 225, 1819 & Fl.

Ind. 2:562, 1832.

Acacia sundra DC. Prodr. 2:458, 1825; Fl. 2:295;

D. & G. 86.

A. catechu Var. sundra Prain in Journ. As. Soc.

Beng. 66:508-510, 1898; C. 1:477.

A medium sized tree armed with stipular spines. Leaves bipinnate, pinnae 10-20 pairs; main rachis with gland between most of the pair of pinnae and a larger one on the petiole. Flowers pale yellow in axillary sessile spikes. Pods flat, thin, 5-10 cm. long, dark brown, 5-10 seeded.

Local name: Kher.

Flowers: May to July.

Fruits: August to December.

Bedi 51, 1118, 3581.

Often planted by the forest department near Chari, Kanjeta, Bendol and various other forest areas. Deer is very fond of the young leaves, so it is difficult to raise the plantation. Natural regeneration is poor. It forms an important forest product.

Common throughout Gujarat, Rajputana, W. Peninsula.

Burma, Ceylon.

For the spelling of the specific name, see Chatterjee in Sci. & Cult. 14:290-291, 1949. The species is often confused with the true A. catechu Willd. from which it can be distinguished by the glabrousness of calyx, petals and rachis.

Acacia pennata (Linn.) Willd. Sp. Pl. 4:1090, 1805;  
FBI. 2:297; C. 1:490; Gr. 59; Indrajai, 321;  
Santapau, Pl. Saur. 303; Sant. 76; Saur.  
1:204; Chavan & Oza, Fl. Pavagadh, 96.

Mimosa pennata Linn. Sp. Pl. 522, 1753 (excl. Syn.).

A large climbing shrub, armed with sharp scattered prickles on stem, branches and leaf rachis. Leaves bipinnate with a large gland on the petiole. Flowers white in large terminal panicles; when young or flesh, they are yellow. Pods thin, flat, strap-shaped.

Local name: Seejal, Chiyal.

Flowers: August to November.

Fruits: October to January.

Bedi 1120, 2672.

Fairly common in Kanjeta, Pepargota, Banvaro, Alindra and in various other localities of the hilly forest regions. Usually grows along the banks of streams and Panam river. Rare on plains.

Gujarat: Pavagadh, Saurashtra; Deccan, S.M. Country,  
Kanara; Central and Eastern Himalayas, Behar.

Ceylon, Burma, Malay Isles, Tropical Africa, Natal.

Albizia Durazz.

Pods straw-coloured; flowers stalked..... lebbeck

Pods brown or reddish brown; flowers  
sessile:

Calyx 1 to 1.5 mm. long, pubescent;  
teeth obsolete. . . . . odoratissima

Calyx 2 to 3 mm. long, glabrous;  
teeth distinct. . . . . procera

Albizia lebbeck (Linn.) Benth. in Hook. Lond. Journ.

Bot. 3:87, 1844; FBI. 2:298; C. 1:481;

Talb. 1:496, f.281; G. 1:306; Sant. 77;

Saur. 1:210.

Mimosa lebbeck Linn. Sp. Pl. 516, 1753.

Acacia speciosa Willd. Sp. Pl. 4:1066, 1806; Gr.58.

A large tree 15-25 m. high. Leaves bipinnate, main  
rachis with a large gland on the petiole near the base  
and one below the highest pair of pinnae. Flowers  
pedicelled, in large globose, umbellate heads. Pod  
15-30 x 3-5 cm. pale yellow or straw coloured when dried.

Local name: Saris.

Flowers: April to June.

Fruits: June till the beginning of next  
flowering season.

Bedi 1122.

Rare, noted few trees in Kanjeta village, planted.  
Almost absent in the hilly forest regions.

Throughout India; but usually planted.

Ceylon, tropical and sub-tropical Asia and  
Africa.

The spelling of the specific name is to be noted.  
Linneaus used lebbeck; in the literature one often reads  
lebbek.

Albizia odoratissima (Linn. f.) Benth in Hook. Lond.  
Journ. Bot. 3:88, 1844; FBI. 2:229; C. 1:482;  
Talbot. 1:497, f. 283; G. 1:306; Sant. 77;  
Saur. 1:209; Chavan & Oza, Fl. Pavagadh, 97.

Mimosa odoratissima Linn. f. Suppl. 437, 1781.

Acacia odoratissima Willd. Sp. Pl. 4:1063, 1806.  
Gr. 58.

A very large tree about 25 m. tall, with white bark;  
young parts pubescent. Leaves abruptly bipinnate, pinnae  
4 pairs; leaflets 10 to 15 pairs, dark green. Flowers

in large terminal panicles, whitish. Pods 10-25 cm. long, 2-4 cm. broad, thin glabrous.

Local name: Gadad.

Local uses: I have often seen natives using bark as a fish poison.

Flowers: April to May.

Fruits: Upto November.

Bedi 2400.

Occasionally on the beds of streams and along their banks in the hilly forest regions. Not common.

Gujarat, Deccan, Konkan, Kanara.

Almost throughout India. Ceylon.

Albizia procera (Roxb.) Benth in Hook. Lond. Journ.

Bot. 3:89, 1844; FBL. 2:299; C. 1:482; Talb.

1:499; G. 1:306; Sant. 77.

A large deciduous tree 20-25 m. tall; bark smooth white. Leaflets glabrous above, grey-pubescent beneath, especially when young. Flowers sessile, white in many flowered heads; peduncles slender, fascicled, arranged in large, terminal or axillary panicles. Pods dark brown, thin strap shaped, faintly veined. Seeds 5 to 15, ovoid, flattened, pale brown.

Local name: Kali Saris.

Flowers: March to May.

Fruits: April to November.

Bedi 2332.

Fairly common along the banks of a stream at Nalwani and Pepar ka Pani. Also noted near various other streams in the hilly forest regions.

Western Peninsula, Deccan; Central and Eastern Himalayas, Behar.

Durma, Malay Isles, Philippines.

Pithecellobium Mart. (nom. cons.)

Pithecellobium dulce (Roxb.) Benth in Hook. Lond.

Journ. Bot. 3:199, 1844; FBI. 2:302; C. 1:485;  
Talb. 1:502; G. 1:308; Sant. 78; Chavan & Oza,  
Fl. Pavagadh, 97.

Mimosa dulcis Roxb. Pl. Cor. 1:67, t. 99, 1795.

Inga dulcis Willd. Sp. Pl. 4:1105, 1806; Gr. 56;  
D. & G. Suppl. 25; Wt. Ic. t. 198.

A middle sized tree, with short stipular spines.

Leaves with one pair of pinnae, each pinna with two leaflets. Flowers whitish, in dense heads on elongated branches. Pods twisted-coiled. Seeds brownish or black embed in white edible pulp.



Local name: Goras imli.

Local uses: Cultivated near villages  
for its edible fruit.

Common on plains. Rare in the hilly regions.

Cultivated throughout India, but not indigenous.

A native of Mexico (Tropical America).

Correct generic spelling is Pithecellobium and not Pithecolobium, as is often given in our floras. The correct spelling has been conserved in the list of Nomina Conservanda of the Int. Code. of Bot. Nomenclature (1961).

#### ROSACEAE

Rosa sp.

Cultivated roses of polypetalous varieties were observed at Dhenpur Ashram, Tokerwa, Kanjeta and at few other places on the plains.

#### SAXIFRAGACEAE

Vahlia Thunb.

Vahlia digyna (Retz.) O. Kuntze, Rev. Gen. Pl. 227, 1891;  
Sant. 78; Saur. 1:212; Chavan & Oza, Fl. Pavagadh,  
97.

Oldenlandia digyna Retz. Observ. 4:23, 1786.

Vahlia viscosa Roxb. Hort. Beng. 86, 1814, nom.  
nud. & Fl. Ind. 2:89, 1832; FBL. 2:399;  
C. 1:493; D. & G. 90; Wt. Ic. t. 563;  
G. 1:317.

A small erect or suberect herb with glandular hairs. Flowers axillary solitary or in pairs, subsessile; corolla white or pale yellow in colour. Fruit a subglobose capsule, seeds many.

Flowers & Fruits: December to April.

Bedi Observed on 30-4-1962 in a dried fallow field in Chari.

The specimens observed at Chari on 30-4-1962 are much stunted. Plant is rare, found as a weed in cultivated field.

Gujarat, Konkan, Sind; throughout India in dry localities.

Persia, Egypt, Tropical Africa.

#### CRASSULACEAE

Kalanchoe Adans.

Kalanchoe pinnata (Lamk.) Pers. Syn. 1:446, 1805.

Cotyledon pinnatum Lamk. Encycl. 2:141, 1786.

Bryophyllum calycinum Sabishb. Par. Lond. t. 3,  
1805 & Bot. Mag. t. 1409, 1811; FRI. 2:413;  
C. 1:494.

A succulent potted herb. Leaves thick with  
crenate margin. Flowers purple with yellowish tinge,  
pendulous in large panicle on a large scape.

Local name: Kukdo dhana.

Local uses: Leaves are used for curing  
poultry diseases.

Flowers: January to March.

Bedi 1107.

Cultivated everywhere as a pot herb.

Deccan, Konkan. Supposed to be native of Tropical  
Africa, but naturalized everywhere throughout the tropics  
of the world.

#### COMBRETACEAE

Trees; petals 0:

Flowers in capitate heads.....Anogeissus

Flowers in spikes or racemes.....Terminalia

Climbers; petals 4 or 5; leaves opposite:

Calyx tube short, not or slightly  
produced beyond the ovary..... Combretum

Calyx tube long, more than  
1 cm. produced beyond the ovary;  
flowers much longer than all the  
above mentioned genera..... Quisqualis

Anogeissus Wall.

Anogeissus latifolia Wall. ex Beddome, Fl. Sylv. t.15,  
1869; F.B.I. 2:450; C. 1:512; Talb. 2:22, t.301;  
G. 1:330; Sant. 82; Saur. 1:220.

Conocarpus latifolia Roxb. Hort. Beng. 34, 1814  
nom. nud. & Fl. Ind. 2:442, 1832; Gr. 70;  
D. & G. 91; Wt. Ic. t. 994.

A medium sized to a tall tree. Bark whitish brown,  
exfoliating in thin strips. Leaves alternate to sub  
opposite. Flowers in small heads, usually in cymes;  
petals 0. Fruit small, ovate, compressed, winged, pale  
yellow in colour.

Local name: Dhavda.

Local uses: Root paste or decoction is used  
by the natives to cure stomach  
ache.

Flowers: April to August.

Fruits: July to March.

Bedi 928, 20-12-60 Banvaro.

Evenly distributed in most of the forest areas, on  
plains and in hilly regions.

Common throughout Gujarat, Western Peninsula  
and in most of the other parts of India.

Ceylon.

Terminalia Linn. (nom. cons.)

Fruit winged, glabrous, coriaceous..... crenulata

Fruits without wings, tomentose..... bellirica

Terminalia crenulata Roth, Nov. Fl. Sp. 380, 1821;

Santapau, in JBNHS. 50:305-307; Sant. 81;

Saur. 1:216; Chavan & Oza, Fl. Pavagadh, 99.

Pentaptera crenulata Roxb. Hort. Beng. 34, 1814,

nom. nud. & Fl. Ind. 2:438, 1832.

Terminalia tomentosa Var. crenulata Clarke in

FBI. 2:448, 1878.

T. tomentosa Cooke, Fl. Pres. Bombay 1:479, 1902

& Rep. ed. 1:510; Talb. 2:18, f. 297 (non

Wt. & Arn. nisi partim, nec Mart).

. Large deciduous tree; young parts more or less  
pubescent. Leaves alternate or sub opposite, glabrous,  
with one or more usually two turbinate or stalked  
glands. Flowers hermaphrodite, pale yellow, in erect  
terminal and axillary panicles. Fruit glabrous, with  
five broad wings.

Local name: Sadad.

Local uses: It yields a valuable timber.

Flowers: April to July.

Fruits: June onwards, till the next  
flowering season.

Bedi 897, 2470.

Fairly common on Ratan Mal 'plateau', but the trees  
on plateau are much stunted. Also noted in various other  
hilly forest regions.

Gujarat, Deccan, Konkan, jungles at the foot of the  
Western Ghats; Sub Himalayan tracts.

Nepal, Sikkim, Burma, Ceylon.

For the identity of T. tomentosa and T. crenulata  
which have been often confused, please see Santapau,  
l.c. and Ind. For. Rec. 4(6):138.

Terminalia bellirica (Gaertn.) Roxb. Fl. Cor. 2:54,  
t. 198, 1798; FBL. 2:445; C. 1:508; Gr. 69;  
D. & G. 91; Talb. 2:13, t. 294; Blatter in  
JIB. 8:251; Sant. 80; Saur. 1:217; Chavan  
& Oza, Fl. Pavagadh, 99.

Myrobalanus bellirica Gaertn. Fruct. 2:90, t. 97,  
1791.

A large deciduous tree. Leaves coriaceous, broadly  
elliptic, crowded at the end of the branches. Flowers

greenish yellow with a peculiar bad smell, often in axillary spikes. Fruit a subglobose drupe covered with brownish tomentum.

Local name: Bhedo; Bheda.

Flowers: February to May.

Fruits: March to August.

Bedi 1341, 2490.

It forms an important minor forest product, but it is not being exploited commercially. Tannin is extracted from fruits. Fruits have a great repote in indigenous medicine. Fairly common in hilly forest regions.

Gujarat, Deccan, S.M. Country, Konkan; throughout India.

Ceylon, Malaya.

Roxburgh l.c., describes and figures the plant with 2 glands at the apex of the petiole, but it is not seen in my specimen. Cooke, l.c., has also not observed these glands.

Combretum Loeffling (nom. cons.)

Combretum ovalifolium Roxb. Hort. Beng. 28, 1814 nom. nud. & Fl. Ind. 2:226, 1832; FBI. 2:458; C. 1:515; Gr. 70; D. & G. 90; Talb. 2:26, f. 303; Sant. 82; Saur. 1:219.

A large climber on hedges and trees, even on dense bamboo clumps. Leaves opposite, elliptic or elliptic-lanceolate. Flowers yellowish green, in axillary spikes, at times forming large terminal panicles. Fruit pale yellow to golden yellow, sometimes red, about 2-3 cm. long with four broad stiff papery wings.

Local name: Dhamen.

Flowers: February to April.

Fruits: March to June.

Bedi 1135, 1371.

Very common in almost all the hilly forest regions. Often noted along the banks of streams and Panam river.

Gujarat, Deccan; W. Peninsula; S.M. Country. Ceylon.

Quisqualis Linn.

Quisqualis indica Linn. Sp. Pl. (ed. 2) 556, 1762;

FBI. 2:459; C. 1:517; Talb. 2:27, f. 304;

N. 113; G. 1:332; Bailey, Man. Cult. Pl. 724;

Bor & Raizada, 178, Pl. 66; Sant. 82.

A large climbing or scandent shrub. Flowers in long drooping spikes or panicles; corolla white then turning red; petals 5.



Local name: Baramasi ni vel.

Flowers: February to November.

Bedi 3699 (27-3-1963 Dhenpur Ashram).

Cultivated as an ornamental plant in Dhenpur Ashram. Often planted in some other places on the plains. Not seen in hilly regions.

Cultivated throughout India; generally in the tropics.

Native of Java and Malay Peninsula.

#### MYRTACEAE

Large trees; flowers small about 1 cm.  
across; fruit 1 or few seeded..... Syzygium  
Small trees; flowers large more than  
2 cm. across; fruit many seeded..... Psidium

#### Syzygium J. Gaertner (nom. cons.)

Large trees; leaves more than 3 cm.  
broad..... cumini  
Large shrubs or small trees; leaves  
less than 2.5 cm. broad..... heyneana

Syzygium cumini (Linn.) Skeels in U.S. Dept. Agric.

Bur. Pl. Ind. Bull. 248:2, 1912; Alston in

Trim. Hand. Fl. Ceylon, 6:116, 1931; Merrill

& Perry in JAA. 19:108; Benthall, Trees Calc.

242; Sant. 83.

Myrtus cumini Linn. Sp. Pl. 471, 1753.

Eugenia jambolana Lamk. Encycl. 3:198, 1789;  
FBI. 2:499; C. 1:523; Wt. Ic. t. 535;  
G. 1:340.

A large tree; with gland dotted leathery leaves.  
Flowers white, fragrant, in short, compact cymes,  
arising from branches below the leaves. Fruit ovoid,  
a juicy purple-black berry.

Local name: Jambu.

Local uses: Berries relished by the natives.

Flowers: January to March.

Fruits: March to May.

Bedi 1224.

Not common, noted few trees near Kanjeta, Bendol  
and in few other places on the plains.

Gujarat, Deccan, Konkan, Kanara; throughout India.

Cylon, Malay Archipelago, Australia.

According to Merrill "the real Eugenia is not found  
in this part of India".

Syzygium heneanum <sup>Jambale</sup> Wall. ex Duthie ~~Bedi~~ Comb. Nov.

Eugenia heyneana Wall. Cat. 3599 (Syzygium) nom.  
nud. ex Duthie in Hook. f. FBI. 2:500, 1878;  
C. 1:524; Talb. 2:43.

Syzygium salicifolia Grah. Cat. 73, 1839; D. & G.  
94 (not Wall. Cat. 3597).

Eugenia salicifolia Wight Ill. 2:16, 1860 & Wt. Ic.  
t. 539; Bedd. For. Man. in Fl. Sylv. p. cix  
(not E. salicifolia DC. Prodr. 3:278, 1828;  
nor of Berg. in Mart. Fl. Bras. 14(1):312).

A large shrub or a small tree, subgregarious on  
stream beds. Leaves lanceolate or oblong-lanceolate,  
less than 3 cm. broad. Flowers small, sessile in small  
loose heads, arranged in compound trichotomous cymes.  
Fruit oblong 1-2 cm. long, curved.

Local name: Jangli Jaman; Jal Jaman; Jal jambu.

Flowers: January to March.

Fruits: March to May.

Bedi 2315.

Very common on and along the beds of streams in  
the hilly forest regions, subgregarious in habit.

Western Peninsula, Deccan, Konkan, Berar and Central  
India.

Psidium Linn.

Psidium guajava Linn. Sp. Pl. 470, 1753; FBI. 2:468;  
C. 1:529; Talb. 2:30; G. 1:334; Benthall,  
Trees Calo. 244; Sant. 84.

A small much branched tree with whitish brown exocorticate bark. Flowers large, white. Fruit globose, ovoid or pyriform with many seeds.

Local name: Jamphal.

Local uses: Fruits eaten by the natives.

Flowers: March to May.

Fruits: April to December.

Bedi Often noted near the huts, Kanjeta,  
20-7-1960.

Not common, cultivated near the huts. Rare in the hilly regions and common on plains.

Cultivated throughout India and in most of the tropical countries. Possibly a native of Mexico and other parts of Tropical America.

#### LECYTHIDACEAE

##### Careya Roxb.

Careya arborea Roxb. Cor. Pl. 3:14, t.218, 1819; FBL.  
2:511; Gr. 74; D. & G. 95; C. 1:528; Witt 117;  
Talbot 48-49, t. 316; G. 1:345; Sant. 84.

A medium sized tree, sometimes attains a large size. Young leaves appear in April, red, giving an attractive look to the forest. Flower large about 8 cm. across; corolla white; stamens numerous, Fruit globose, green, 5-8 cm. in diameter.

Local name: Kumbi.

Local uses: Dried persistent calyx used by the natives to cure cold and cough.

Flowers: February to April.

Fruits: May to August.

Bedi 1276, observed on 28-4-1962 on Tiger path (Vagh ni madi).

Occasionally found on the hilly forest slopes at higher altitudes i.e. above 400 m.M.S.L. Common on Ratan Mal 'plateau', Alindra.

Common throughout Deccan, Western India, in deciduous forests and almost throughout India upto 1400 m.

Santapau (loc. cit.) writes, "The fruit is supposed to be strongly poisonous, and this may explain why the fruit is not touched by the animals", but D.O. Witt (loc. cit.) writes, "The leaves and young fruits are eaten in Berar". On inquiring from the Dheel tribes of Ratan Mahal, I learnt that the bear and other wild animals are fond of the young fruits.

Collection of specimens caused a great difficulty, as the plants were heavily raided by brown ants. It is most probable that the flowers excrete certain juice which is liked by ants.

## MELASTOMACEAE

Sonerila Roxb.

Sonerila tenera Royle, Illustr. Bot. Himal. 215, t.45,  
f. 2, 1839; FBY. 2:530, 1879; G. 1:352; Chavan  
& Bedi, JBNHS. 61(3):716, 1965.

A small delicate herb. Stem erect, glandular-pilose,  
slightly winged. Leaves thin, membranous, ovate, entire,  
less than 1.5 cm. long, with a few scattered lax hairs.  
Inflorescence scorpioid. Flower small; calyx tube slightly  
trigonus, with few scattered lax hair. Petals 3, 2x4 mm.  
ovate acute, rose purple; stamens equal. Capsule about  
5 mm. long, trigonus. Seed ovoid, smooth, dark-brown.

Plate No. 18

Flowers & Fruits: August to October.

Bedi 2767, 2768, 2769, 2770.

The plants were found growing in moist dense shady  
places in the rocks on the way to Patan Mata Hill, Ratan  
Mahal Hills, Panch Mahal District, Gujarat State. The  
plant seems to be restricted in distribution.

Sub-tropical Western Himalaya (Royle, Edgeworth);  
Chota Nagpore alt. 1000-2000 ft. (305 m. to 610 m.),  
abundant (C.B. Clarke); N. Circars, in Ganjam (Gamble);  
W. Ghats in Wynad at 1220 m. on rocks; occasionally  
South to Tinnevely.

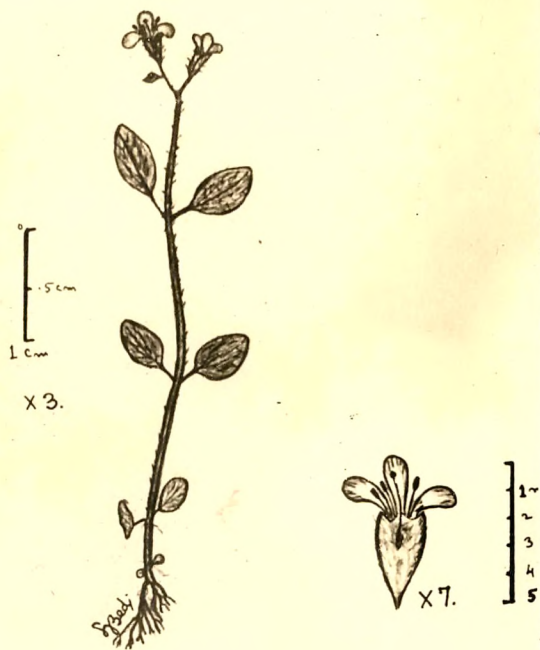


Fig. 1.

*Sonerila tenera* Royle.

PLATE NO. 18

Sonerila tenera Royle.

Hooker includes this plant among the species not of Ceylon or south Deccan peninsula, but later Gamble records it from Madras Presidency. The specimens collected from Ratan Mahal Hills though much shorter in height (2-8 cm.) tally in all essential details with description mentioned in various Indian floras and specimens housed in the F.R.I. herbarium.

My specimens have been checked at F.R.I. Herbarium, Dehra Dun and were later confirmed by Kew Herbarium, England, for which <sup>I am</sup> ~~we~~ are grateful to Dr. G. Taylor, Director, Royal Botanic Gardens, Kew, England for confirming the determination. This species has been recorded by us for the first time from the erstwhile Bombay State; loc. cit.

# LYTHRACEAE

## Herbs:

Fruits indehiscent, opening irregularly,  
the walls not striate. . . . . Ambannia

Fruits dehiscent, opening in valves,  
the walls striate. . . . . Rotala

## Shrubs:

Stamens 8; flowers regular; calyx  
tube straight. . . . . Lawsonia



Stamens 12; flowers irregular, calyx  
 tube slightly curved. . . . . Woodfordia  
 Trees, stamens indefinite. . . . . Lagerstroemia

Ammannia Linn.

Petals 0, or very small. . . . . baccifera  
 Petals 4, obovate, very caducous. . . . . multiflora

Ammannia baccifera Linn. Sp. Pl. 120, 1753; FBI. 2:569;  
 C. 1:541; G. 1:360; Sant. 87; Blatter & Hallberg  
 in JBNHS. 26:215; Saur. 1:226; Chavan & Oza,  
 Fl. Pavagadh, 102.

A. vesicatoria Roxb. : Gr. 67.

A. salicifolia Miern. in Oliv. Fl. Trop. Afr. 2:278,  
 1871 (excl. Syn.; non Montl); FBI. 2:569;  
 D. & G. 97; C. 1:542.

A small herb, very variable in size and form;  
 sometimes reaching 30 cm. or more in height. Stem 4  
 gonous. Flowers in dense axillary clusters. Capsules  
 globose, reddish forming dense clusters round the stem.

Local name: Jal jambi.

Flowers & Fruits: October to March.

Bedi 1200, 2777.

Fairly common along the banks of streams and Panam river. Often noted as a weed in cultivated fields.

Gujarat, Deccan, Kanara; throughout tropical India. Ceylon, Afghanistan, Malaya, China, Australia. Tropical Africa, Europe (where it is probably introduced).

Ammanca multiflora Roxb. Fl. Ind. 1:447, 1820; FBI. 2:570; C. 1:541; Blatter & Hallberg in JBNES. 26:212; Koehne in Pfreich. 17:48, t. 5A; D. & G. 97; Sant. 87; Saur. 1:225; Chavan & Oza, Fl. Pavagadh, 102.

An erect herb about 25 cm. tall. Leaves opposite, sessile. Flowers axillary, solitary or in 3 to many flowered peduncled cymes. Petals 4 red or purple, very caducous, often wanting. Fruit a globose, reddish-purple capsule.

Flowers & Fruits: October to December.

Bedi 903.

Common near streams and other moist grassy places. Often noted as a weed in cultivated fields.

Gujarat, Deccan, Konkan, S.M. Country; throughout the plains of India.

Afghanistan, Persia, Australia, Tropical Africa.

Rotala Linn.

Plants light green; stem stout, rigid,  
quadrangular; leaves 12x6 mm. obovate..... indica

Plants pink to light purple, stem  
slender, thin, rounded; leaves 8x4 mm.  
linear lanceolate..... serpyllifolia

Rotala indica (Willd.) Koehne in Bot. Jahrb. 1:172,  
1880; & in Pfreich. 17:40; Sant. 88.

Peplis indica Willd. Sp. Pl. 2:244, 1799.

Ammaannia peploides Spreng. Syst. 1:444, 1825;  
FBI. 2:566; C. 1:538.

A small rigid herb; light green to yellowish green  
in colour. Branches sub-quadrangular. Flowers small  
solitary in the axil of reduced leaves. Capsule ellipsoid,  
opening by two valves.

Flowers & Fruits: October to December.

Bedi 1884 (28-11-1961, Chari).

Common only at few places on the moist sandy river  
beds of Panam on the border of Mendhri and Chari.

Gujarat, Konkan; throughout India in rice fields  
and other moist places.

Ceylon, Malaya, China, Afghanistan.

Rotala serpyllifolia (Roth) Bremek. in Acta Bot.

Neerland 3(1):149, 1954; Saur. 1:224.

Micranthus serpyllifolius Roth, Nov. Pl. Sp.

282, 1821.

Ammannia tenuis Clarke in FBI. 2:567, 1879;

C. 1:538.

Rotala tenuis (Wight) Koehne in Bot. Jahrb.

1:177, 1880 & in Pfreich. 17:42, t. 4c;

Sant. 89.

Ameletia tenuis Wight Icon. t. 257, 1840;

D. & G. 96.

A much branched, suberect, slender annual herb,  
5-20 cm. tall. Leaves linear lanceolate. Entire  
plant pink or light purple. Flowers purplish in long,  
terminal, spike-like racemes.

Flowers & Fruits: (5-10-1962, Panam).

Bedi 3384.

Plant is very rare, though locally abundant and  
gregarious in habit. Noted only once on the moist rocky  
escarpment along the banks of a stream.

Gujarat: Dangs, Deccan, Konkan, W. Peninsula,  
Central India, Behar and Bengal.

Lawsonia Linn.

Lawsonia inermis Linn. Sp. Pl. 349, 1753; Koehne in  
Pfreich. 17:270, t. 59; C. 1:544; G. 1:363;  
Sant. 89.

L. alba Lamk. Encycl. 3:106, 1789; FDI. 2:573;  
Gr. 67; D. & G. 97; Talb. 2:60.

A much branched shrub. Leaves opposite, elliptic,  
lanceolate. Flower whitish or yellowish green, rarely  
with pink to purple tinge.

Local name: Mendhi.

Flowers & Fruits: Almost throughout the  
year.

Bedi Common hedge plant at Kanjeta.

Tribals use the leaf paste for dyeing their hairs  
which gives a bright red dye.

In hedges on the plains. Common near Kanjeta.  
Very rare in the hilly regions.

Cultivated throughout India.

Kabul, Persia, cultivated in many tropical and warm  
temperate regions.

Woodfordia Salisb.

Woodfordia fruticosa (Linn.) Kurz in JASB. 40:56, 1871;  
Koehne in Pfreich. 17:79, t. 12A; G. 1:361;  
Sant. 89.

Lythrum fruticosum Linn. Sp. Pl. (ed. 2) 641, 1762.

Woodfordia floribunda Salisb. Parad. Lond. t. 42,  
1806; FBI. 2:572 (excl. Syn.); C. 1:543. Talb.  
2:58, t. 322.

A shrub, 1-3 m. high. Leaves lanceolate, rounded or cordate at the base, nigro punctate beneath. Flowers in few to many flowered cymes. Calyx and stamens red in colour. Petals very small. Capsule ellipsoid, enclosed by the persistent calyx tube.

Local name: Phool Dhavado.

Flowers & Fruits: March to September.

Bedi 1046, 1428.

Fairly common on the slopes of Dhamdhama hill between Pepargota and Banvaro. Rare on the plains.

Gujarat, Deccan, Kanara; throughout India.

Ceylon, Baluchistan, Tropical Africa, Madascar, China, Japan, Sumatra, Java.

The subject of the valid name of this species has been discussed by Santapau in Journ. of Sci. Ind. Res. 10B:49, 1951.

Lagerstroemia Linn.

Lagerstroemia lanceolata Wall. Cat. 2120, 1829,  
nom. nud., Wt. & Arn. Prodr. 309, 1834  
pro parte; FHI. 2:576; C. 1:545; Talb.  
2:62, t. 324.

Lagerstroemia parviflora Dalz. Gibs. Bomb.  
Fl. 98, 1861 (non Roxb.).

A medium sized tree, 5-15 m. tall. Leaves  
elliptic, lanceolate, glabrous above whitish  
beneath. Flowers in compound panicles. Petals clawed,  
white. Capsule 2-4 cm. long, hairy with persistent  
calyx. Seeds winged.

Local name: Kakad.

Flowers: March to May.

Fruits: May to December.

Bedi 996, 2488.

Fairly common, almost in all the areas of Ratan  
Mahal and surrounding hills. Often noted on plains  
north of Chari and Tokerwa.

Gujarat: Dang; Konkan, Kanara, S.M. Country,  
Malabar Coast; from Bombay to Travancore.

## ONAGRACEAE

Jussiaea Linn.

Jussiaea perennis (Linn.) Brenan in Kew Bulletin 163,  
1953; Saur. 1:235; Maheshwari, Fl. Dli. 164.

Ludwigia perennis Linn. Sp. Pl. 119, 1753.

L. parviflora Roxb. Fl. Ind. 1:440, 1820; FBl.  
2:588; C. 1:550; Sant. 91; G. 1:365.

An erect, glabrous herb, 20-60 cm. tall. Stem  
more or less angular, purple or reddish. Flowers small,  
axillary, yellow. Capsule 10-15 mm. long, crowded by  
the sub-persistent calyx.

Flowers: August to March.

Fruits: November to April.

Bedi 453, Danvaro 14-9-1960.

Fairly common along the banks of streams and as a  
weed in cultivated fields during monsoon.

Gujarat, Deccan; throughout India.

Ceylon, Malaya, N. Australia, Persia, Abyssinia.

## CARICACEAE

Carica Linn.

Carica papaya Linn. Sp. Pl. 1036, 1753; FBl. 2:599;  
C. 1:557; Saur. 1:236; Maheshwari, Fl. Dli.  
164; Chavan & Oza, Fl. Pavagadh, 104.



A small, soft-wooded and fast growing tree, with milky juice. Leaves large palmately lobed, petiole long and hallow. Flowers pale yellow on axillary panicles. Fruit large, succulent, indehiscent, 1-celled, many seeded; seeds black.

Local name: Papayo.

Flowers & Fruits: Almost all the year round.

Often planted by the natives, near their huts, for its edible fruit. Rare in the hilly regions.

A native of West Indies, now widely cultivated throughout the tropics.

The Papaya, its Botany, culture and uses, please see Kumar & Abraham in JBNHS. 44, 252-256.

#### CUCURBITACEAE

Several cultigens of this family are grown by the natives for their fruits which are either eaten raw or after cooking. They are common during monsoon months.

1. Anther cells not flexuose; straight or curved:

2. Style with an annular disc at  
the base. . . . . Melothria

2. Style without or obscure disc at the  
base; bracts stipuliform in the axil  
of the leaves. . . . . Blastania

1. Anther cells flexuose or conduplicate:
  3. Corolla 5, divided near to the base, rotate or campanulate:
    4. Petals white, fimbriate on the margin. . . . . Trichosanthus
    4. Petals entire:
      5. Stamens inserted on the mouth of the calyx tube; male flowers usually with a large bract. . . . . Momordica
      5. Stamens inserted below the mouth of the calyx tube:
        6. Male flowers in racemes; tendrils 2-5 fid; fruit fibrous dry when ripe. . . . Luffa
        6. Male flowers solitary or fascicled:
          7. Calyx lobes subulate, entire, erect:
            8. Rudimentary ovary 0; Seeds pyriform, surrounded by a thick crenulate ring. . . . Diplocyclos
            8. Rudimentary ovary glanduliform, seeds compressed usually smooth:

9. Connective of the  
anthers produced  
beyond the cells;  
tendrils simple. . . . Cucumis
9. Connective of the  
anthers not produced  
beyond the cell;  
tendrils 2-3 fid.... Citrullus
7. Calyx lobes serrate,  
reflex. . . . . Benincasa
3. Corolla gamopetalous, bell shaped;
10. Tendrils simple; flowers white. . Coccinia
10. Tendrils branched; flowers  
yellow. . . . . Cucurbita

Melothria Linn.

Flowers monoecious; seeds rugose on the  
faces. . . . . maderaspatana

Flowers dioecious; seeds smooth on the  
faces. . . . . heterophylla

*Mukia maderaspatana* (Linn.) Roem.  
= Melothria maderaspatana (Linn.) Cogniaux in DC. Mon.

Phaner. 3:623, 1881; C. 1:573; G. 1:381;  
Chakravarty, Mon. Ind. Cucur. in RBSI. 17(1):  
141, 1959; Saur. 1:244, 1962.

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

Bryonia scabrella (Linn. f.) Suppl. 424, 1781;  
Gr. 78; Wt. Ic. t. 501.

Mukia scabrella (Linn. f.) Arn. in Hook. Lond.  
Journ. Bot. 3:276, 1844; FBI. 2:623;  
D. & G. 100.

A monoecious, scabrous, scandent annual climber.  
Leaves variable in size and shape; ovate-subdeltoid,  
3-5 lobed, cordate, denticulate. Flowers small,  
yellow. Peppo about 5 mm. in diameter, greenish variegated  
with yellow, afterwards turning complete red.

Local name: Chenik chibdi; Kuthumbri.

Flowers & Fruits: July to November.

Bedl 11, 692.

Fairly common throughout Katan Mahal, especially  
near villages. Often seen climbing on hedges, in semidried  
ditches in Kanjeta.

Gujarat, Western Peninsula; Bengal, Assam, Sikkim.

Ceylon, Malaya, Africa, Australia.

Melothria heterophylla (Lour.) Cogn. in DC. Mon. Phaner.  
3:316, 1881; C. 1:575; G. 1:380; Sant. 94;  
Chakravarty, loc. cit. 159.

Solena heterophylla Lour. Fl. Cochinch. 2:629,  
1793.

Bryonia umbellata Klein in Willd. Sp. 4:618,  
1805; Gr. 78; D. & G. 101.

Zehneria umbellata Thwait. Enum. 125, 1858;  
FBI. 2:625, in part.

A dioecious large climber. Leaves polymorphic  
(Cogniaux in Pfreich. 66:121-124, t. 28, distinguishes  
12 forms of leaves): ovate or 3-5 lobed. Flowers  
pale yellow to whitish; male flowers umbellate with  
slender pedicel. Fruit oblong, ribbed 4-5 cm. long,  
red when ripe. Seeds smooth.

Local name: Jangli Galodi.

Flowers & Fruits: July to November.

Bedi 1459, 1616, 3063.

Very common in almost all the regions. Often noted  
on shrubs, hedges, trees and in dense bamboo clumps.

Gujarat, Deccan, Konkan, throughout India.

Ceylon, China, Cochinchina, Java, N. Australia.

Blastania Kotschy & Peyr.

B. - *Cerastiformis* (Loch) H.K.F.  
Blastania fimbriatipula (Fenzl.) Kotschy & Peyr. Pl.  
Tinn. 15, t.7, 1865-1866; C. 1:576; Chakravarty,  
loc. cit. 174; Saur. 1:240.

Bryonia fimbristipula Fenzl. in Kotschy, It. Nub.  
no. 205 & 231, 1841.

Ctenolepis cerasiformis (Stocks) Hook. in Oliv.  
Fl. Trop. Afr. 2:588, 1871; FBI. 2:630, 1879.

A sub-glabrous climber with branched, sub-filiform stem. Leaves thin, membranous, variously lobed. Stipular bracts with long fimbriate or ciliate hairs. Fruit globose, purple-red to scarlet when ripe.

Flowers & Fruits: September to December.

Bedi 539, 1932, Dhenpur 26-11-1961.

Not common, only restricted to Northern and N.E., limits of Ratan Mahal. Often noted on hedges and shrubs.

Gujarat, Deccan.

Sind, Arabia, Africa.

Trichosanthes Linn.

Trichosanthes cucumerina Linn. Sp. Pl. 1008, 1753;  
FBI. 2:609; C. 1:561; Gr. 79; D. & G. 102;  
G. 1:373; Indraj, 345; Chakravarty, loc.cit.  
31; Saur. 1:241.

T. pachyrrhachis Kundu & T. brevibracteata Kundu  
in Journ. Bot. 77:9-10, 1939.

An annual climbing herb. Leaves thin, membranous, broadly ovate in outline, angled or deeply lobed, base deeply cordate. Tendrils 2-3 fid. Flowers white, with fimbriate margined petals. Pepo fusiform.

Local name: Ban parval; Ban parval.

Flowers: August to November.

Fruits: October to December.

Bedi 100, 1923, 3556.

Not common, only noted in Kanjeta, Bendol and in few other places on the plains, north of Panam river.

Gujarat, Deccan, Western India.

Throughout India. Ceylon, Malaya, Java, N.Australia.

Momordica Linn.

Flowers monoecious:

Bracts of male flowers about the middle or below the middle of the peduncle;

fruit tubercled. . . . . charantia

Bracts of male flowers at the apex of the peduncle; fruit smooth or muricate. . balsamina

Flowers dioecious; bracts large just below the male flowers and enclosing it; fruit

spinose. . . . . dioica

Momordica guarantia Linn. Sp. Pl. 1009, 1753;  
FBI. 2:616; C. 1:562; Wt. Ic. t. 504;  
G. 1:375; Chakraverty, loc. cit. 88;  
Saur. 1:243, 1962.

A much branched, pubescent or hairy herb, climbing in the hedges. Leaves orbicular or sub-reniform, 5-7 lobed. Flowers monoecious, yellow. Pepo oval or fusiform, deeply tubercled.

Local name: Karela.

Flowers & Fruits: September to December.

Bedi 3580.

Commonly cultivated by the natives during monsoon, for its fruits, which is used as a vegetable. More common on plains.

Cultivated throughout India, Ceylon, Malaya, China, Tropical Africa.

Momordica balsamina Linn. Sp. Pl. 1009, 1753; FBI. 2:617;  
C. 1:562; Indrajī, 353; Chakravarty, loc. cit.  
90; Cogniaux & Harms in Pireich. 88:28; Saur.  
1:243.

A monoecious, slender, branched climber on shrubs and hedges. Tendrils simple. Male peduncle: 1-flowered;



bracts of the male flower at the apex of the peduncle.  
Fruit orange-red, broadly ovoid or subglobose. Seed  
ash coloured, ovoid, compressed.

Local name: Jangli Karela.

Flowers & Fruits: September to November.

Bedi 312.

Rare, noted at few places on hedges and shrubs  
near Bendol.

Gujarat, Deccan; Punjab, N.W. India.

Sind, Africa, Malaya, Australia, W. Asia.

Momordica dioica Roxb. ex Willd. Sp. Pl. 4:605, 1805;  
FBI. 2:617 (excl. Syns.); C. 1:563; G. 1:375;  
Wt. Ic. tt. 505-506; Indrajī, 355; Cogniaux  
& Harms in Pfeich. 88:32; Chakravarty, l.c.  
91; Saur. 1:244.

A dioecious, glabrous climber. Leaves thin, membranous,  
ovate, entire or deeply 3-5 lobed. Tendrils simple. Male  
flowers: peduncle, solitary, bracts inserted a little below  
the flower and enclosing it. Pepo small rounded or ellip-  
soid, echinate or with soft spines.

Local name: Kantola.

Local uses: Fruit is used as a vegetable.

Flowers & Fruits: July to October.

Bedi 1457.

Cultivated by the natives for its edible fruit,  
often noted wild ? or escape. in the forest interiors!

Gujarat, Deccan; throughout India.

Ceylon, Malaya.

Luffa Cav.

Stamens 3; fruit sharply ridged. . . . . acutangula

Stamens 5; fruit not ridged. . . . . cylindrica

Luffa acutangula (Linn.) Roxb. Hort. Beng. 70, 1814,  
nom. nud. & Fl. Ind. 3:714, 1832; FDI. 2:615;  
C. 1:566; G. 1:377; Chakravarty, loc. cit. 79;  
Chavan & Oza, Fl. Pavagadh, 106.

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

A trailing or a climbing herbaceous plant. Leaves  
angled or palmately 5 to 7 lobed. Flowers pale yellow.  
Male flowers in erect axillary raceme. Stamens 3.  
Fruit fusiform or obovoid, acutely 10 ribbed, 15-30 cm.  
long.

Local name: Turi.

Local uses: Cultivated by the natives for its fruit which is used as a vegetable. Dried fruits form a good bath sponge.

Flowers & Fruits: August to November.

Bedi 2950, Limidi 15-8-1962.

Cultivated, more frequently on plains.

Gujarat, S.M. Country, Kanara; N.W. India, Assam, Bengal.

Ceylon, Malaya, China, Australia, Africa,  
Extensively cultivated in many regions.

Luffa cylindrica (Linn.) Roem. Syn. Mon. 2:63, 1846;  
Chakravarty, loc. cit. 75; Jeffrey in Kew  
Bull. 15:355, 1962; Saur. 1:246; Chavan &  
Oza, Fl. Pavagadh, 106.

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

Luffa aegyptica Mill. Dict. 4:500, 1785; FBL.  
2:614; C. 1:532; G. 1:376.

A common cultivated climber. Stem angled and twisted. Leaves palmately 5 lobed, scabrid on both sides. Flowers large, yellow, monoecious; stamens 5. Fruit without ridges, smooth. Seeds winged.

Local name: Galki.

Local uses: Fruit is used as a vegetable.

Flowers & Fruits: September to March.

Bedi 547, 2441.

Cultivated throughout Ratan Mahal and surrounding areas for its edible fruits.

Doubtfully indigenous. Cultivated throughout India and the tropics. Native country uncertain.

Naudia, China, Japan, Australia, Africa.

Diplocyclos (Endl.) Von Post & Kun

(Bryonopsis Linn.)

Diplocyclos palmatus (Linn.) C. Jeffery in Kew Bull.

15: 352, 1962; Chavan & Oza, Fl. Pavagadh, 107.

Bryonia palmata Linn. Sp. Pl. 1012, 1753, excl. Syn.

B. laciniosa sensu Linn. Sp. Pl. 1013, 1753, pro parte; FBL. 2:622; Roxb. Fl. Ind. 3:728; Wt. Ic. t. 500; Gr. 78; D. & G. 101.

A much branched slender climbing, annual. Leaves palmately 5 lobed, the upper surface is scabrous. Tendrils bifid. Flowers greenish yellow. Fruit globose, green streaked with broad vertical lines.

Local name: Shiv lingi.

Flowers and Fruits: September to December.

Bedi 966 (22-12-1960 Banvaro), 1707.

Rare in the hilly regions, fairly common on plains near Tokerwa and Dhenpur. Often noted on shrubs and in hedges.

Gujarat, Deccan, S.M. Country.

Tropical Africa, Australia.

Cucumis Linn.

Annual; leaves 5 angled or slightly lobed;  
ovary hispid; plants cultigen; fruit  
edible. . . . . sativus

Perennial; leaves deeply 5-7 lobed,  
scabrid, ovary hispid; plants wild;  
fruit bitter; not edible. . . . . callosus

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

An annual hispid climber. Leaves usually 3-5 angled or slightly 3-5 lobed; cordate. Flowers yellow with long white hairs; male ones in axillary clusters and female solitary or fascicled. Pepo cylindric, oblong, very variable in size. Seeds numerous white.

Local name: Kakadi.

Local uses: Fruits are eaten by the natives,  
both as raw or after cooking.

Flowers & Fruits: July to November.

Bedi 550, 551.

Cultivated by the natives for its edible fruit.

Cultivated throughout India; China, Africa and  
America.

Cucumis callosus (Rottl.) Cogn. ex Cogn. & Harms. in  
Pflazenreich 88:129, 1924; Sant. 93; Chakravarty,  
loc. cit. 100; Saur. 1:249; Chavan & Oza, Fl.  
Pavagadh, 109.

Bryonia callosa Rottl. in Neue Schrift Ges. Nat.  
Freund. Berl. 4:210, 1803.

Cucumis trigonus Roxb. Hort. Beng. 70, 1814, (nom.  
nud.) & Fl. Ind. 3:722, 1832; FDI. 2:619  
(excl. Syn.); D. & G. 103; C. 1:569; Wt. Ic.  
t. 497; G. 1:378.

A suberect or prostrate, scabrous herb. Leaves  
suborbicular, often deeply 5-7 lobed; Tendrils simple.  
Flowers monoecious, yellow. Male flowers often solitary,  
occasionally in small clusters. Female flowers solitary,  
on a peduncle. Fruit obovoid; pulp bitter, not edible.

Flowers & Fruits: September to December.

Bedi 1890.

Rare, noted near Chari, on the sandy beds of  
Panam river.

Gujarat, Deccan, throughout India.

Ceylon, Malaya, N. Australia, Afghanistan.

Citrullus Schrader (nom. cons.)

C. *Colocynthis* (Linn.) Schru

Citrullus vulgaris Schrader in Ecklon & Zeyher,

Enum. Pl. Afr. Austr. Extra-trop: 279, 1836;

FBI. 2:621; C. 1:571; D. & G. 102; Oza in

Taxon 11:255, 1962.

Colocynthis citrullus (Linn.) O. Kuntze Rev. Gen.

1:256, 1891; Chakravarty in Sc. & Cult.

15:31, 1948 & l.c. 114.

A trailing scabrid herb. Leaves deeply lobed,  
lobes sinuately pinnatifid. Flowers yellow. Fruit  
globose, greenish with darker green strips, about  
8 cm. in diameter.

Flowers & Fruits: 17-3-62 Pepargota.

Bedi 2983; fruit preserved wet in the Botanical  
Museum of the M.S. University of  
Baroda.

Rare, only once noted near Pepargota village.

Gujarat, Deccan, Konkan; throughout India.

Ceylon, W. Asia, Arabia, Africa, Spain and Europe.

Dr. John W. Thieret in Taxon 12:36, 1963, as an addendum to the Oza's note, l.c., has pointed out that according to the late Dr. Mansfield the correct name of this species is Citrullus lanatus (Thunb.) Mansf.

Benincasa Savi

Benincasa hispida (Thunb.) Cogn. in DC. Mon. Phan. 3:513, 1881; Chakravarty, loc. cit. 84; Maheshwari, Fl. Dli. 168.

Cucurbita hispida Thunb. Fl. Jap. 322, 1784.

Benincasa cerifera Savi in Bibl. Ital. 9:158, 1818; FHL. 2:616; C. 1:582.

A large climbing or trailing herb. Leaves 5-7 lobed, densely hairy. Flowers large, pale coloured. Fruit large fleshy white with a waxy bloom on the surface, oblong or ovoid, cylindric.

Local name: Bhuro Kolu.

English name: White gaurd.

Local uses: Used as a vegetable.



Flowers & Fruits: August to December.

Bedi 537.

Rare, cultivated on plains especially in Chari village.

Cultivated more or less throughout India.

According to De Candolle, a native of Japan and Java.

Coccinia Wight & Arn.

C. *grandis* (Lam.) Veigt  
Coccinia cordifolia (Linn.) Cogn. in DC. Mon. Phan.  
3:529, 1881; Chakravarty, l.c. 117; Saur.  
1:242.

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

Coccinia indica Wt. & Arn. Prodr. 347, 1834;  
C. 1:572; Gr. 78; D. & G. 103; G. 1:379.

Cephalandra indica Naud. in Ann. Sc. Nat. (Ser. 5)  
5:16, 1866; FBI. 2:621.

A common climber on hedges and shrub. Leaves  
3-5 lobed, gland dotted. Tendril simple. Flowers  
white. Fruit ovoid or oblong, fleshy, bright red  
when ripe.

Local name: Gilodi, Tandori.

Local uses: Leaf and root juice is said to  
be useful for the cure of diabetes.

Flowers: August to January.

Fruits: December to March.

Bedi 1501.

Fairly common both on plains and in the hilly regions.

Gujarat, Deccan, S.M. Country; throughout India.

Ceylon, Malaya, China, Africa

Once specimens with unlobed leaves were recorded.

Cucurbita Linn.

Cucurbita maxima Duch. in Lamk. Encycl. 2:151, 1786;

FBI. 2:622; C. 1:582; Sant. 95; Chakravarty,

I.c. 123; Saur. 1:252.

An annual prostrate hairy herb. Leaves lobed.

Tendrils branched. Flower large, yellow. Fruits large; pulp yellowish-orange when ripe.

Local name: Lal Koloo.

Local uses: Fruits are used as a vegetable.

Flowers & Fruits: September to December.

Bedi 534.

Commonly cultivated for its fruit which is used as a vegetable; less frequently in hilly regions.

Cultivated throughout India and in most of the warm and temperate region of the world. China, Java, Philippines, Congo, Tanganyika.

CACTACEAE

Opuntia Mill.

Opuntia elatior Mill. Gard. Dict. ed.8, no.4, 1768;  
G. 1:548; Burkill in RBSI. 4:313; 1911;  
Sant. 96; Saur. 1:253.

O. dillenii Graham, Cat. 546, 1839; FDI. 2:657,  
pro parte; D. & G. Suppl. 39.

O. nigricans Woodrow in RBSI. 1:89, 1895; C.1:587.

A tall, much branched, cactus; phylloclades obovate, flattened, with jointed branches. Leaves deciduous, Spines dark coloured, arising from a cushion. Flowers yellow, then changing to pink.

Local name: Chapto or Phapado Thor.

Bedi Preserved wet in Botanical Museum of  
M.S. University of Baroda.

Rare, noted only few plants in hedges near Tokerwa on the N.E. border of our district.

Throughout Bombay and Southern India.

## AIZOACEAE (FICOIDACEAE)

Trianthema Linn.

Trianthema portulacastrum Linn. Sp. Pl. 223, 1753;

G. 1:389; Backer in Fl. Males. (Ser.1)

4(3):274, 1951; Saur. 1:229; Chavan & Oza,

Fl. Pavagadh, 113.

? T. monogyna<sup>L.</sup> Mant. 69, 1767; FBL. 2:660; C. 1:589.

T. obcordata Roxb. Hort. Beng. 34, 1814; D. & G.

14; Wt. Ic. t. 288.

A prostrate or suberect, fleshy herb. Leaves obliquely opposite. Flowers sessile, solitary, pinkish or white. Capsule 6x4 mm., almost concealed in the petiolar pouch. Seeds reniform, dull black.

Flowers & Fruits: August to December.

Bedi 2599.

Rare, noted near Kanjeta village and as a weed in cultivated field in Panam.

A common weed throughout India. Ceylon, Malaya, Western Asia, Africa, Tropical America.

On the subject of the typification of T. portulacastrum, the generic limits of Trianthema Linn., and the splitting of Trianthema sensu stricto into two sub-genera, please refer to C. Jeffrey (Notes on Tropical African Aizoaceae) in Kew Bull. 14(2):235-238, 1960.

## MOLLUGINACEAE

- Flowers in axillary fascicles; seeds  
 appendaged. . . . . Glinus
- Flowers in terminal cymes; seeds not  
 or minutely appendaged. . . . . Mollugo

Glinus Linn.

- Plants densely stellate-hairy. . . . . lotoides
- Plants glabrous. . . . . oppositifolius

Glinus lotoides Linn. Sp. Pl. 463, 1753; Gr. 82;  
 D. & G. 16 and 311; Backer in Fl. Males.  
 4(1):269, 1951; Sant. 97.

Mollugo lotoides O. Kuntze, Rev. Gen. Pl. 264,  
 1891; G. 1:390.

M. hirta Thunb. Prodr. Pl. Cap. 24, 1794; FRI.  
 2:662; C. 1:593.

Prostrate or suberect herbs. Leaves obovate-  
 orbicular, stellately hairy. Flowers in axillary  
 fascicles, pink-white, on short pedicles. Fruit ovoid  
 capsule.

Flowers & Fruits: March to June.

Bedi 2496, 2852.

Fairly common in dry fallow fields, in semidried or dried ditches. Noted in Banvaro and on Ratan Mal 'plateau'.

Gujarat, Deccan, Konkan, S.M. Country; throughout India. Ceylon; all warm regions of the world.

Glynnus oppositifolius (Linn.) DC. in Bull. Herb.

Boiss. (Ser.2) 1:559, 1901; Backer, loc. cit. 270; Sant. 97; Saur. 1:233; Maheshwari, Fl. Di. 174; Chavan & Oza, Fl. Pavagadh, 114.

Mollugo oppositifolia Linn. Sp. Pl. 89, 1753; C. 1:593; G. 1:552.

M. spargula Linn. Syst. 881, 1759; FBL. 2:602.

A diffuse, branched glabrous herb. Flowers white, on a slender pedicel, about 5 mm. across. Flowers arising in axillary fascicles. Capsule 3 celled, a little shorter than the sepals.

Flowers & Fruits: July to March.

Bedi 3, 910.

Sub gregarious in habit. Common in open moist grassy places, especially on plains. Noted along the margins of Dhenpur tank. Rare in the hilly forest regions of Ratan Mahal.

Gujarat, Deccan, Western Peninsula.

Burma, Ceylon, Tropical Africa, Australia.

Mollugo Linn.

Mollugo pentaphylla Linn. Sp. Pl. 89, 1753; Gr. 12;  
D. & G. 16; C. 1:594; Gamble, 1:390; Sant.  
97; Backer, Fl. Males. 4(1):268; Chavan &  
Oza, Fl. Pavagadh, 114.

M. stricta Linn. Sp. Pl. (ed.2) 131, 1762; FRI.  
2:663; D. & G. 16.

M. triphylla Lour. (non Burm.); Gr. 12.

An erect slender herb, 5-30 cm. tall, with slightly  
pinkish stem. Leaves in whorls of 2 to 7. Flowers  
white or pink, in lax corymbose terminal cymes.

Flowers & Fruits: August to March.

Bedi 147, 504.

Often noted as a weed in cultivated field in  
association with Oldenlandia corymbosa from which it  
can be differentiated by the absence of petals and  
typical rubiaceous stipules. Common on the sandy river  
beds of Panam and on moist spots in the forest areas.

Gujarat, Sind, S.M. Country, Western Peninsula;  
throughout India. Ceylon, Tropical Africa, China,  
Japan, Australia.

UMBELLIFERAE (APIACEAE)

1. Leaves simple; umbels simple; flowers  
pink; creeping herbs. . . . . Centella
1. Leaves pinnate or decomposed  
(sometimes simple in Pimpinella &  
Coriandrum):
  2. Secondary ridges of fruits  
inconspicuous or absent:
    3. Fruits laterally compressed:
      4. Furrows between the ridges of  
fruit usually with 1 vitta. . . Trachyspermum
      4. Furrows between the ridges of  
fruits 2-3 vitta. . . . . Pimpinella
    3. Fruits not laterally compressed;  
oblong; flowers yellow. . . . . Foeniculum
  2. Secondary ridges of the fruit  
prominent:
    5. Fruits bristly, involueral bracts  
prominent; flowers yellow. . . . . Daucus
    5. Fruits glabrous; subglobose;  
involueral bracts none; flowers  
pink or whitish pink. . . . . Coriandrum



Centella Linn.

Centella asiatica (Linn.) Urban in Mart. Fl. Braz.

2:287, 1879; Gamble, 1:392; Sant. 97.

Hydrocotyle asiatica Linn. Sp. Pl. 234, 1753;

FBI. 2:669; Wt. Ic. t. 565; C. 1:598.

A creeping herb, rooting at nodes. Leaves fan shaped or reniform. Flowers pink in fascicled simple umbels. Fruit a cremocarp, ovoid.

Local name: Brañmi.

Local uses: Plant is locally well  
reputed as a brain tonic.

Flowers & Fruits: September to June.

Bedi 510 (17-9-1960 Banvaro).

Restricted in distribution. Noted only near few streams at higher altitudes i.e. above 500 m. M.S.L. near Banvaro and Pepargota.

Throughout India from Himalayas to South India, in moist localities. Ceylon, Malacca; Tropical and sub-tropical regions.

The plant is often mistaken for Hydrocotyle from which it can be well differentiated by its fruit and colour of the flower. Please see Gamble loc. cit.

Cooke, l.c. and Sant.l.c. are doubtful about the occurrence of Hydrocotyle in Bombay State.

Trachyspermum Link. (nom. cons.)

Trachyspermum stictocarpum (Clarke) Wolff Var. Stictocarpum  
in Pfreich. 43:89, 1927; Chavan & Oza, Fl. Pavagadh,  
115; Sant. 96.

Carum stictocarpum Clarke in FRI. 2:681, 1879; C. 1:600.

A slender, erect herb, 30-75 cm. high. Flowers in  
decompound umbels, white with slightly pinkish tinge.  
Fruit with 1 vitta in each furrow, slightly hairy.

Flowers & Fruits: September to December.

Bedi 579, 1980.

Fairly common near the boundary of Bendol, Kanjeta  
and Pepargota. Often noted along the roadside. It seems  
that the plant is restricted to this area only.

Konkan, Deccan, W. Peninsula. Ceylon.

The spelling of the generic name is that given in the  
list of Nomina Conservanda under No.6014 of the International  
Code of Botanical Nomenclature (1961). Our floras give it  
as Trachispermum; the only correct spelling is Trachyspermum.

Very often this plant is known as Trachyspermum  
stictocarpum (Clarke) Wolff Var. typicum Wolff in Pfreich.  
43:89, 1927; Sant., loc. cit. 96, Var. typicum - this is  
no more allowed; it should be Var. stictocarpum. See

article 24, 26 of the Int. Code of Bot. Nomenclature  
(1961) No author !

Pimpinella Linn.

Pimpinella heyneana Wall. Cat. 566, 1829, (nom. nud.);  
Kurz. in JASB. 46:155, 1877; FBI. 2:684;  
C. 1:601; Gamble, 1:395.

Holosciadium heyneanum DC. Prodr. 4:106, 1830;  
D. & G. 106.

An annual, erect glabrous herb, 50-150 cm. high.  
Leaves 3 foliolate, uppermost often simple. Flowers  
small, white in decompound umbels. Fruit globose,  
glabrous.

Flowers & Fruits: September to December.

Bedi 582, 785.

Common as an undergrowth of forest, along the  
forest paths and in open grassy places. Often noted  
on Ratan Mal and Patan Mata plateaus.

Western Peninsula, Madras. Ceylon, Burma.

Foeniculum Adans.

Foeniculum vulgare Mill. Gard. Diet. n. 1, 1768;  
FBI. 2:695; Gr. 84; D. & G. Suppl. 41;  
C. 1:609.

A glabrous herb. Flower yellow, in compound umbels. Fruits oblong or ellipsoid, ribbed.

Local name: Velyari.

Local uses: Used in vegetables.

Flowers & Fruits: October to April.

Bedi 1940 (28-11-1961 Dhenpur Ashram).

Cultivated in many places on plains only. I have not seen this plant <sup>as an</sup> escape or in cultivation in Ratan Mahal Hills.

Extensively cultivated in many parts of Gujarat.

Widely cultivated throughout India.

Daucus Linn.

Daucus carota Linn. Var. sativa DC. Prodr. 4:211, 1830;  
FBI. 2:718; C. 1:609.

A hispid herb. Leaves pinnately decompound. Flowers white. Fruits bristly along the ridges.

Local name: Gajar.

Local uses: Fleshy roots eaten raw as  
well as cooked as a vegetable.

Flowers & Fruits: November to March.

Bedi 1939 (28-11-1961 Dhenpur Ashram).

Cultivated at few places on the plains.

Extensively cultivated throughout India.

Coriandrum Linn.

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

A pleasant smelling herb. Leaves decompound.  
Flower white with purple or pink tinge, in decompound  
umbels. Fruit subglobose.

Local name: Dhana.

Local uses: Used as a condiment in curries  
and vegetables.

Flowers & Fruits: November to April.

Bedi 1942 (28-11-1961 Dhenpur Ashram).

Cultivated at few places on the plains north of  
Ratan Mahal.

Widely cultivated throughout India.

## ALANGIACEAE

*Alangium* Lam. (nom. cons.)

*Alangium salvifolium* (Linn. f.) Wang. in Engl. Pfl. Reich.

Alangiac. 41:9, 1910; G. 1:404; Saur. 1:256;  
Chavan & Oza, Fl. Pavagadh, 116.

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

*Alangium lamarekii* Thw. Enum. 133, 1859; FHL. 2:741;  
C. 2:1; D. & G. 109; N. 137; Talb. 2:79, f. 333;  
Witt. 128; Indraj. 375.

*Alangium decapetalum* Lamk.: Gr. 72; Wight, Icon.  
t. 194.

A large shrub or a small deciduous tree sometimes attains a large size. Branches scandent, younger parts pubescent; branchlets spinescent. Leaves alternate, lanceolate, glabrous above, pubescent beneath with saccate hairy glands in the axils of the veins. Flowers white, sweet scented, in axillary fascicles; pedicels short bracteolate, densely pubescent. Calyx very short, silky pubescent 6-10 lobed. Corolla white consisting of 6 petals, sometimes the number vary between 6-10, 2-3 cm. long, reflexed, densely pubescent outside. Stamens many, about as long as the petals; filaments hairy at the base. Fruit ovoid, globose, purple to purple black when ripe, crowned by persistent calyx limbs.

Local name: Ankul.

Local uses: Root paste or decoction from the root is used to cure skin diseases.

Flowers: February to April.

Fruits: April to July.

Bedi 1197, 2494.

Very common in almost all the hilly areas as well as on the plains. Luxuriantly flowering during March.

Gujarat, Deccan, S.M. Country, Konkan; common throughout the presidency, in dry places, often along the banks of streams.

Ceylon, Malaya, S. China, Philippines, E. Africa.

## Subclass II Gamopetalae

## 1. Ovary inferior:

2. Leaves with inter or intrapetiolar  
stipules, ovary more than 1 celled..Rubiaceae

## 2. Leaves exstipulate:

3. Flowers in capitulum;  
ovary 1 celled. . . . . Compositae

3. Flowers axillary solitary. . . . Lobeliaceae

## 1. Ovary superior or free:

4. Ovary usually of more than two  
carpels:

5. Plants with milky juice. . . . . Sapotaceae

5. Plants without milky juice:

6. Flowers usually unisexual. . .Ebenaceae

6. Flowers usually bisexual:

7. Ovary 1-celled with  
1 ovule. . . . . Plumbaginaceae

7. Ovary 1-celled with  
many ovules. . . . . Primulaceae

4. Ovary usually of 2 carpels  
(rarely 1 or 3):

8. Flowers regular or slightly  
irregular:

9. Leaves generally opposite,  
very rarely alternate:



- 10. Laticiferous tubes  
present:
  - 11. Pollinia absent. . . . . Apocynaceae
  - 11. Pollinia present:
    - 12. Filaments connate  
into a tube; pollen  
masses waxy. . . . . Asclepiadaceae
    - 12. Filaments free; pollen  
masses granular. . . . . Periplocaceae
- 10. Laticiferous tubes  
absent:
  - 13. Herbs:
    - 14. Stipules small or  
reduced to a transverse  
line; fruit a horn  
shaped capsule. . . . . Loganiaceae
    - 14. Stipules absent; fruit  
not horn shaped. . . . . Gentianaceae  
(ex. irregular  
corolla of Canscora  
and alternate leaves  
of Nymphoides)
  - 13. Shrubs or trees. . . . . Oleaceae
- 9. Leaves generally alternate:
  - 15. Ovules many in each cell;  
style linear or 2 lobed. . . . . Solanaceae

- 15. Ovules definite in  
each cell:
  - 16. Style usually terminal;  
fruit capsular:
    - 17. Plants total  
parasitic,  
leafless. . . . Cuscutaceae
    - 17. Plants not  
parasitic. . . . Convolvulaceae
  - 16. Style terminal or  
gynobasic; fruit  
not capsular:
    - 18. Fruit a drupe;  
trees. . . . Ehretiaceae
    - 18. Fruit 4, 1-seeded  
nuts or pyrenes;  
herbs or sarubs.. Boraginaceae
- 8. Flowers truly irregular  
(personate, bilabiate etc.)  
or rarely apparently regular;  
carpels 2-4:
  - 19. Total or partial root  
parasites:
    - 20. Ovary 1 celled;  
placentation  
parietal. . . . . Orobanchaceae

- 20. Ovary usually 2 celled;  
     placentation axile. . . Scrophulariaceae
- 19. Plants not parasitic:
  - 21. Placentation free  
     central; aquatic  
     herbs. . . . . Lentibulariaceae
  - 21. Placentation not  
     free central:
    - 22. Fruit very long;  
     seed winged; leaves  
     compound . . . . . Bignoniaceae
    - 22. Fruit not much  
     elongated; seed  
     not winged:
      - 23. Ovary 1 celled,  
     epiphytic . . . Gesneraceae
      - 23. Ovary 2 celled:
        - 24. Bracts  
     conspicu-  
     ous. . . . . Acanthaceae
        - 24. Bracts minute  
     or absent:
          - 25. Flowers with  
     extra-floral  
     glands at the  
     base of the  
     pedicels; fruit  
     spiny or with  
     hard, hooked  
     processes:

- 26. Placentation
  - axile. . . . . Pedaliaceae
- 26. Placentation
  - parietal. . . . . Martyniaceae
- 25. Flowers without
  - glands at the base;
  - fruit usually not
  - spiny:
- 27. Ovules many in
  - each cell. . . . . Scrophulariaceae
- 27. Ovules 1 or 2
  - in each cell:
- 28. Ovary entire;
  - style termi-
  - nal. . . . . Verbenaceae
- 28. Ovary 4-lobed;
  - style gyno-
  - basic. . . . . Labiatae

## RUBIACEAE

## Erect or prostrate herbs:

Flowers in axillary and terminal,  
paniculate cymes. . . . . Oldenlandia

Flowers whorled or in axillary  
heads. . . . . Borreria

## Shrubs or small trees:

Seed 1 or 2-5; large shrubs or  
medium sized trees:

Flowers in trichotomous panicles;  
fruit capsule. . . . . Hamiltonia

Flowers sessile on a globose  
receptacle; fruit sorosis. . . . . Morinda

## Seed many:

Flowers in axillary cymes,  
solitary or fascicled:

Ovary 1 celled. . . . . Gardenia

Ovary 2 celled. . . . . Randia

Flowers in globose heads;  
large trees:

Leaves cordate; calyx 5 lobed;  
stigma clavate. . . . . Adina

Leaves ovate; calyx truncate;  
stigma mitriform. . . . . Mitragyna

Oldenlandia Linn.

Peduncles 1-4 flowered from most axils;  
pedicels of flowers not very slender;  
capsule 2-3 mm. broad. . . . . corymbosa

Peduncles many flowered from most axils;  
flowers on long capillary pedicels or  
slender panicle; capsule 1.5 mm. broad. . . dichotoma

Oldenlandia corymbosa Linn. Sp. Pl. 119, 1753;

FBI. 3:64; C. 2:15; G. 423; Blatter &

McCann in JBNHS. 36: 784; Sant. 103;

Saur. 1:263; Chavan & Oza; Fl. Pavagadh, 117.

Hedyotis burmanniana R. Br. in Wall. Cat. 868

pro parte, 1829; Gr. 90; D. & G. 116.

An annual erect herb, very variable in size and form. Leaves linear, subsessile, glabrous with recurved margin. Flowers white or pinkish or pale white, usually on a solitary or 2 to many on a filiform peduncle. Capsule globose with persistent calyx.

Local name: Pitpado.

Flowers & Fruits: August to December.

Bedi 1683.

Mostly found on moist grassy places and as a weed in cultivated fields. More frequent on plains near Dhenpur, Tokerwa, Kundawala etc.

Gujarat, Deccan, Western India; throughout India.  
Ceylon, Tropical E. Asia to Java and the Philippines,  
Tropical Africa and America.

Oldenlandia affinis DC. Prodr. 4:428, 1830; Saur.1:264.

O. dichotoma Hook. f. FBL. 3:67, 1880; C. 1:17;  
G. 424.

A very slender annual herb, 10 to 35 cm. high.  
Leaves linear, lanceolate, 2-3 cm. long. Flowers white,  
on long capillary pedicels, often arranged in terminal  
lax panicles. Capsule minute, 1-2 mm. in diameter,  
globose, glabrous.

Flowers & Fruits: September to March.

Bedi 364, 2410.

Common as an undergrowth of forest on the rocky  
slopes near Bandol. Rare in other areas. I have not  
observed this species on the plains. Cooke, l.c.  
'Rare S.M. Country'. Sparingly distributed throughout  
the plains of India. Java.

So far there was no record of this species from  
Gujarat recently Santapau has recorded from Saurashtra.

*Thecagonum ovatifolium* (Cav.) Bahu.

Borreria G.F.W. Meyer (nom. cons.)

Small, erect herbs; flowers white; seeds  
polished shining. . . . . stricta

Large, procumbent herbs; flowers pink,  
purple-blue rarely white; seeds finely  
granular. . . . . articulata

Borreria stricta (Linn. f.) K. Schum. in Pfam.

4(4):143, 1891; G. 461; Sant. 108;  
Saur. 1:262; Maheshwari, Fl. Dli. 180;  
Chavan & Oza, Fl. Pavagada, 118 .

Spermacoce stricta Linn. f. Suppl. 120, 1781;

FBI. 3:200; C. 2:52; Gr. 93; D. & G. 111.

An annual, erect herb. Branches angled or  
furrowed and scabrid. Leaves opposite or whorled,  
linear-lanceolate; subsessile; stipules united, bristly,  
filiform. Flowers white in dense capitate, terminal  
and axillary cymes. Mericarp dehiscing ventrally without  
a persistent septum. Seeds polished, shining, dark brown  
or black.

Flowers: August to December.

Fruits: September to February.

Bedi 7, 2578.



Common as an undergrowth of forests in the hilly regions. Not common on plains.

Deccan, Konkan, S.M. Country; Tropical Himalayas from Kashmir eastwards and throughout India.

Ceylon, Tropical Asia and Africa.

Borreria articularis (Linn. f.) F.N. Will. in Bull. Herb. Boiss. II, 5:956, 1905; Saur. 1:261; Santapau & Mercant in Bull. Bot. Surv. India 3(2):107, 1962; Chavan & Oza, Fl. Pavagadh, 117.

Spermacoce articularis Linn. f. Suppl. 119, 1781 (excl. Syn. Rumph.).

S. hispida Linn. Sp. Pl. 102, 1753; FBI. 3:200; C. 1:624; Gr. 93; D. & G. 111.

Borreria hispida K. Schum. in Pfam. 4(4):144, 1891, non Spruce ex K. Schum. 1888; G. 461; Sant. 108; Maheshwari, Fl. Dli. 181.

A procumbent herb, inflorescence bearing branches sometimes erect; rarely stunted erect specimens are also observed. Leaves oblong or elliptic, scabrid. Flowers rarely white, generally pink or pale lilac, axillary many in a stipular cup. Seeds finely granular.

Flowers & Fruits: August to December.

Bedi 218.

Common in the undergrowth of forest in the hilly region, less frequent on plains.

Gujarat, Deccan, Konkan, S.M. Country; Tropical Himalaya from Kashmir eastwards and throughout India.

Ceylon, Tropical Asia and Africa.

Hamiltonia Roxb.

*Spermodictyon suaveolens* Roxb.

Hamiltonia suaveolens Roxb. Hort. Beng. 15, 1814

nom. nud. & Fl. Ind. 1:554, 1832; FBL. 3:197;  
C. 2:51; Talb. 2:134, f. 364; G. 458; Blatter  
& McC. 794.

A tall shrub, about 2 m. Leaves opposite, lanceolate. Flowers white or faint blue, sweet smelling only in the late season, in trichotomously branched panicles. Capsule ellipsoid.

Flowers & Fruits: October to April.

Bedi 667, 669.

Restricted to only few localities, not common. Often noted in good abundance on the southern slopes of Ratan Mal 'plateau' near temple.

Throughout the hilly regions of Central, Western Peninsula; South India. Tropical and Subtropical Himalaya. China.

Morinda Linn.

Morinda tomentosa Heyne ex Roth, Nov. Pl. Sp. 147,  
1821; D. & G. 114; Saur. 1:258; Santapau  
& Merchant in Bull. Bot. Surv. India  
3(2):108, 1962; Chavan & Oza, Fl. Pavagadh,  
119.

M. tinctoria Roxb. Var. tomentosa Hook. f.  
FBI. 3:156, 1880; C. 1:43; Blatter & McC.  
loc. cit. 793.

A small or a medium sized tree. Leaves 10-20 cm.  
long, pubescent. Flowers white, pleasant smelling, on  
a stalked globose head. Fruit fleshy green, consisting  
of a number of coalescent drupes.

Local name: Aladi.

Flowers: April to May.

Fruits: June to August.

Bedi 2947.

Rare only noted few trees near Kanjeta and Bendol.

Gujarat, Deccan, S.M.Country, Kanara.

Gardenia Linn.

Gardenia turgida Roxb. Hort. Beng. 15, 1814 nom. nud.,  
Var. montana Hook. f. FBI. 3:118, 1880;  
C. 1:29; Witt. 123.

Gardenia montana (Sp.) Roxb. Fl. Ind. 1:709;  
Wt. Ic. t. 577; Gr. 88; D. & G. 120.

A small deciduous tree. Plants armed with strong sharp spines. Stem and branches glaucous. Flowers yellow or pale yellow. Fruit globose, 3-8 cm. in diameter.

Local name: Karhar.

Flowers: March to April (leafless during flowering season).

Fruits: April to June.

Hedi 2466 (28-3-63 Ratan Mal).

Rare, noted only few plants in dry rocky places in Chari and on Ratan Mal 'plateau'.

Deccan, S.M. Country, Western Peninsula, Behar.

Burma, Chittagong.

Though common in deciduous forests on the southern parts of the Bombay Presidency, but no locality from Gujarat has been recorded so far.

Randia Linn.

Leaves 10 cm. or less long; flowers 2-3 cm.

and fruits less than 4 cm. across. . . . . spinosa

Leaves 15 cm. or more long; flower 3-6 cm.

and fruits more than 5 cm. across. . . . . uliginosa

Randia spinosa (Thunb.) Blume, Bijdr. 981, 1826;  
Saur. 1:266; Chavan & Oza, Fl. Pavagadh, 119.

Gardenia spinosa Thunb. Diss. Gard. No. 7, 1780;  
Linn. f. Suppl. 164, 1781.

Randia longispinosa DC. Prodr. 4:386, 1830;  
Gr. 89; D. & G. 119.

R. dumetorum Lamk. Tab. Encycl. 2:227, 1793;  
FBI. 3:110; C. 2:27; Talb. 2:98, t. 341  
omnes pro parte.

R. brandisii Gamble, Fl. Madras 616, 1921 and  
(Rep. ed.) 434; Blatter & McC. 787; Sant. 133.

A small tree armed with sharp, hard spines. Leaves  
3-7x2-2 cm., obovate. Corolla 1-2 cm. across white or  
pale yellow in colour. Fruit ovoid, globose 2-4 cms.  
in diameter.

Local name: Mindal.

Flowers: March to July.

Fruits: April to October.

Bedi 1584, 2158.

Fairly common near streams in Pepargota and on  
Ratan Mal 'plateau'.

Gujarat, Deccan, Konkan, Kanara, S.M. Country;  
throughout India, especially the W. Peninsula.

Ceylon, Java, Sumatra, S. China and Tropical East Africa.

In the FBI. there is but one species, R. dumetorum Lamk.; Gamble split this into several species, among them R. dumetorum proper, R. brandisii etc. Keay in Bull. Jard. Bot. Etat. Bruxelles (28:38, 1958) once more, united the whole complex into one single species, which he called Xeromphis spinosa (Thunb.) Keay. But, I am not convinced of the merger of different species, as such I have retained R. spinosa as a separate species.

Randia uliginosa DC. Prodr. 4:386, 1830; FBI. 3:110;  
C. 2:27; Gr. 89; D. & G. 119; Talb. 2:97,  
f. 340; Wt. Ic. t. 397; G. 434; Witt. 134.

A small tree or sometimes a large shrub. Leaves glabrous about 20 cm. long. Flowers about 4 cm. across, white then turning to pale yellow with age, sweet smelling. Fruit globose, ovoid, yellow 4-6 cm. long.

Local name: Gegadi.

Local uses: Fruits edible and is used by the tribals as vegetable.

Flowers: January to May.

Fruits: June to December (ripens during August - December).

Bedi 1352, 1580.

Restricted to higher altitudes only i.e. above 400 m. M.S.L. Common on Ratan Mal and Patan Mata plateaus.

Gujarat: Kathiawar; Eastern, Central and Southern India. Ceylon.

This species has not been reported from these parts of the State.

Adina Salisb.

Adina cordifolia (Roxb.) Hook. in Benth & Hook. Gen.

Pl. 2:30, 1873; FBI. 3:24; C. 2:7; Talb. 2:85, f. 334; G. 412; Witt. 129; Blatt. & McCann in JBNHS. 36:781; Sant. 101; Saur. 1:258.

Nauclea cordifolia Roxb. Pl. Cor. 1:40, t. 63, 1795; Gr. 87; D. & G. 118.

A large, beautiful deciduous tree, young parts pubescent. Leaves orbicular, shortly acuminate with cordate base. Stipules of young branches 1-3 cm. long, showy, later falling off. Flowers pale yellow, often with pinkish tinge, in globose heads.

Local name: Kalmi, Haldu.

Local uses: Wood is yellow, durable and is used for agricultural implements.

Flowers: April to July.

Fruits: July to January.

Bedi 2775, (6-8-1962 Kanjeta).

Rare, but sparsely distributed in most of the areas.  
Deccan, Konkan; throughout the hilly parts of India.  
Ceylon.

Mitragyna Korthal (nom. cons.)

Mitragyna parvifolia (Roxb.) Korth. Obs. Nauc1. Ind.  
19, 1839; C. 2:8; G. 413; Sant. 101; Saur.  
1:259; Chavan & Oza, Fl. Pavagadh, 118.

Nauclea parvifolia Roxb. Pl. Cor. 1:40, t. 52,  
1795; Gr. 87.

Stephegyne parvifolia Korth. Verh. Nat. Ges. Bot.  
161, 1840, FBI. 3:25; Talb. 2:86, f. 335;  
Witt. 130.

Nauclea parviflora Dalz. & Gibs. Bomb. Fl. 118,  
1861.

A large deciduous tree. Leaves glabrous, variable  
in size and shape, rounded or acute at the base. Stipules  
large foliaceous. Flowers greenish yellow to pale yellow;  
in globose heads, 2-3 cm. in diameter; style much exerted,  
stigma mitriform. Fruit a globose head of capsules.



Local name: Kadamb or Kalam.

Local uses: Timber is durable and is used  
in agricultural implements.

Flowers: February to June.

Fruits: June onwards and almost throughout  
the year.

Bedi 1101, 2595.

Common on the hilly forest slopes, not abundant  
for large scale commercial exploitation.

Gujarat, Deccan, Konkan, Kanara, S.M. Country;  
throughout the drier parts of India. Ceylon.

*Dantella ropera*

#### COMPOSITAE (ASTERACEAE)

#### Key to the Genera of the COMPOSITAE adapted from Santapau

1. All florets on the same head white, creamy, pale:
2. Florets all tubular:
  3. Stem with white cottony pubescence;  
leaves deeply pinnatifid, spinous,  
cottony beneath; flowers crowded  
in spinous globose clusters. . . . . Echinops
  3. Stem without cottony pubescence;  
leaves not spinous:
    4. Stem glabrous; plants suberect;  
pappus of 2 scales. . . . . Caesulia
    4. Stem more or less pubescent,  
erect; pappus of 5 scales. . . . . Ageratum

2. Florets, outer ligulate, inner tubular:

5. Leaves sessile, simple. . . . . Eclipta

5. Leaves petiolate:

6. Paleae narrow, flat; pappus of 2-4 retrorsely hispid slightly spreading awns; leaves compound. . . . . Bidens

6. Paleae concave, embracing the achenes; pappus 0 or of 5 unequal acute scales, rarely short bristles; leaves simple.. Blainvillea

1. All florets on the same head red-pink-purple-violet-blue:

7. Leaves all sessile:

8. Leaves decurrent into the stem; head in dense globose, terminal masses; heads faint pink to light violet, violet or purple. . Sphaeranthus

8. Leaves not decurrent into stem:

9. Leaves slightly white tomentose beneath. . . . . Vernonia

9. Leaves not white, tomentose beneath:

10. Pappus 0 or of a few short hairs. . . . . Tricholepis

10. Pappus present:

11. Pappus paleaceous, many-seriate; straggling or diffuse herbs. . . . . Amberboa

- 11. Pappus not paleaceous,  
copious usually  
2-seriate . . . . . Vernonia
- 7. Leaves all petiolar:
  - 12. Leaves with dense, white, wooly  
tomentose beneath. . . . . Centratherum
  - 12. Leaves without white, wooly  
tomentose beneath:
    - 13. Involucre of fertile heads  
hard, tough, two beaked. . . . Xanthium
    - 13. Involucre not hard and  
tough nor two beaked:
      - 14. Lower leaves petioled,  
the upper amplexicaul  
and auricled. . . . . Emilia
      - 14. Leaves all petiolate:
        - 15. Pappus of 5 scales. . Ageratum
        - 15. Pappus uniseriate.. . Blumea
        - 15. Pappus 2 - many  
seriate. . . . . Vernonia
- 1. Florets of two or more colours on the  
same head:
  - 16. Leaves simple. . . . . Tridax
  - 16. Leaves compound. . . . . Bidens
- 1. Florets all yellow, yellowish white:
  - 17. Leaves lobed:
    - 18. Leaves mainly radical, pappus  
of many simple hairs. . . . . Launaea

- 18. Leaves opposite:
  - 19. Pappus of 2-4 rigid,  
retroscely hispid hairs. . . . Bidens
  - 19. Pappus of many, aristate,  
feathery bristles. . . . . Tridax
- 18. Leaves alternate:
  - 20. Prostrate herbs; flower  
in globose heads. . . . . Grangea
  - 20. Suberect herbs; flower  
in elongated heads. . . . . Glossocardia
- 17. Leaves entire or serrate, but not  
(or only obscurely) lobed:
  - 21. Leaves opposite:
    - 22. Achenes spinous, with two  
long horn-like spines at  
the top. . . . . Acanthospermum
    - 22. Achenes not as above, nor  
ciliate:
      - 23. Achenes cuneiform. . . . Blainvillea
      - 23. Achenes not cuneiform. . Sclerocarpus
    - 22. Achenes ciliate, ligules  
small, white or yellow;  
pappus 0 or of 2-3 bristles. Spilanthes
  - 21. Leaves alternate:
    - 23. Outer florets ligulate,  
inner tubular:
      - 24. Achenes truncate,  
triquetrous. . . . . Blainvillea

24. Achenes not truncate,  
nor triquetrous:

25. Achenes glabrous..... Sclerocarpos

25. Achenes hairy..... Vicoa

23. Florets all tubular, or  
tubular and ligulate on the  
same head, but ligular ones  
small, inconspicuous:

26. Leaves petiolate. . . . . Blumea

26. Leaves sessile or  
subsessile:

27. Heads in dense  
clusters. . . . . Gnaphalium

27. Heads solitary. . . . . Blumea

Echinops Linn.

Echinops echinatus Roxb. Fl. Ind. 3:447, 1832; F&M.  
3:358; C. 2:112; Gr. 95; D. & G. 131; Clarke  
Comp. Ind. 21; G. 509.

A much branched, spiny herb with white cottony  
hairs on the stem, branches and leaves. Leaves  
pinnatifid. Flowers white in large globose spiny heads.

Flowers & Fruits: October to June.

Bedl 1130, 2307.

Fairly common on plains, especially near Chari, Kundawala, Limidi-Mendhri. Often noted as a weed in dry fallow fields in Pepargota, Alindra and Panam.

Gujarat, Deccan, S.M. Country; upper Gangetic plain, Dehar, N.W. Himalayas.

Hook. f. & Gamble l.c. attributes this plant to DC. in Wight's contribution, but according to the rule of priority it must be attributed to Roxburgh, as Fl. Indica was published two years earlier than Wight's contribution 1934.

Caesulia Roxb.

Caesulia axillaris Roxb. Pl. Cor. 1:64, t. 98, 1795;  
FBI. 3:291; C. 2:92; Gr. 96; D. & G. 126;  
Clarke 116; Wt. Ic. t. 1102; G. 494; Sant. 117;  
Chavan & Oza, Fl. Pavagadh, 123.

Suberect or erect marshy herb, about 40 cm. tall. Leaves linear lanceolate, with serrate margin; base tapering with a dilated base, embracing the flowers in clusters. Flower head homogamous; corolla white with light bluish or faint purple tinge. Achenes flat, 1 ribbed on each side; pappus scales 2.

Flowers & Fruits: August to April.

Bedi 442, 940.

Usually found along the bank of streams, ditches and other moist spots. Common both on plains and in the hilly regions.

Gujarat, Deccan, S.M. Country; throughout the greater parts of India in rice fields.

Ageratum Linn.

Ageratum conyzoides Linn. Sp. Pl. 339, 1753; FBI.  
3:243; C. 2:70; Clarke 30; G. 476; Sant. 110;  
Chavan & Oza, Fl. Pavagadh, 123.

An erect herb 25 to 75 cm. high. Entire plant hairy. Leaves with crenate or serrate margin. Flowers white, in heads.

Local name: Ajganda.

Local uses: Plant juice is used to cure wounds.

Flowers & Fruits: August to March.

Bedi 659, 3595.

Fairly common near Mendhari and Natwani streams and at various places. Frequently noted as a weed in cultivated fields.

Gujarat, Deccan, S.M. Country; Himalaya; throughout India. All hot countries.

Eclipta Linn. (nom. cons.)

Eclipta prostrata (Linn.) Linn. Mant. 2:286, 1771;

Gr. 99; D. & G. 127; Santapau, JBNHS. 54:475-476, 1957; Sant. 118.

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

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

V. pseudo-acmella Linn. Sp. Pl. 901, 1753.

Cotula alba Linn. Syst. (ed. 12) 564, 1767.

Eclipta erecta Linn. Mant. 2:286, 1771; C. 2:95; D. & G. 127.

E. alba (Linn.) Hassk. Pl. Jav. Rar. 528, 1848; FBI. 3:304; Clarke 134; G. 496.

An erect or prostrate hairy herb. Leaves sessile, oblong-lanceolate, strigose. Flowers white in heads. Achenes compressed with narrow wing.

This species varies much in form and habit, depending upon the soil and climatic conditions.

Local name: Bhangro.

Local uses: Root paste is used to cure skin diseases.



Flowers & Fruits: Almost throughout the year,  
profusely so during and  
after monsoon.

Bedi 2, 353.

Fairly common in almost all the localities, often  
noted in semidried ditches, in open grassy places and  
as a weed in cultivated field.

Gujarat, W. Peninsula, Konkan, Central India,  
Himalaya, Punjab and Bengal; almost throughout India.

Ceylon, Burma, Malaya, Cosmopolitan in warm climates.

For the complex nomenclature of this species, please  
see, Santapau, loc. cit.

Bidens Linn.

Bidens biternata (Lour.) Merr. & Sherff Bot. Gaz.

88:293, 1929; Sant. 118.

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

Bidens wallichii DC. Prodr. 5:598, 1836; Gr. 101;

D. & G. 128.

B. pilosa auctor. non. Linn.; FBI. 3:309; C. 2:101;

G. 499.

A tall erect herb 25 to 75 cm. high. Leaves very  
variable, the basal leaflets may be compound and tri-  
partite. Flowers white or pale yellow; ray florets

ligulate, inner tubular. Achenes 7 mm. to 15 mm.  
long, linear, glabrous.

Flowers & Fruits: August to October.

Bedi 414, 1499.

Fairly common in the undergrowth of forest in  
the hilly areas. Often noted on plateaus.

Gujarat, Deccan, Himalaya; throughout India.

Ceylon and all warm countries.

The common West Indian plant, often listed in  
Indian Floras as Bidens pilosa Linn.

Blainvillea Cass.

Blainvillea acmella (Linn.) Philipson in Blumea

6(2):350, 1950; Raizada in Ind. For. Rec.

5(1):7, (N.S.) Botany, 1958; Chavan & Oza,

Fl. Pavagadh, 125.

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

Eclipta latifolia Linn. f. Suppl. 378, 1781.

Blainvillea rhomboidea Cass. in Dict. Sc. Nat.

29:494, 1823; C. 2:97; G. 496.

B. latifolia DC. in Wight's Contrib. 17, 1834;

FBI. 3:305; D. & G. 167; Clarke 135.

An erect, hairy, dichotomously branched herb, 20 to 70 cm. tall. Stem somewhat quadrangular. Flowers white or pale coloured; ray florets very short or inconspicuous. Achenes of the ray florets, cuneiform and triquetrous. Achenes of the disc triquetrous or compressed.

Local name: Akal Kado.

Flowers & Fruits: August to October.

Bedi 184, 1569.

Found as a weed in cultivated fields, especially in maize fields during monsoon, also noted among the undergrowth of forest in Pepargota, Alindra, Panam and various other hilly forest regions.

Gujarat: Pavagadh, Saurashtra; Deccan, Western India; throughout the greater parts of India.

Ceylon, Java, Tropical Asia, Africa, America and Australia.

Sphaeranthus Linn.

Sphaeranthus indicus Linn. Sp. Pl. 927, 1753; FBI. 3:275; C. 2:97; Sant. 116; Chavan & Oza, Fl. Pavagadh, 126.

S. mollis Roxb. Hort. Beng. 62, 1814; Gr. 96;  
D. & G. 123.

A small herb, very variable in habit, usually prostrate or suberect, at times scandent or erect. Leaves decurrent to the stem. Flowers light violet or purple in globose heads.

Local name: Bodio.

Local uses: The plant juice is said to be useful in gastric troubles.

Flowers & Fruits: November to March.

Bedi 880 (18-12-1960 Alindra).

Found in fairly large abundance in the dried fallow fields at Tokerwa, Mendhri, Anderpura. Common almost throughout the plains, both in dry and moist localities. Less frequent in the hilly forest regions.

Gujarat, Deccan; S.M. Country; throughout India.

Ceylon, Africa, Malay Isles, Australia.

Vernonia Schreb. (nom. cons.)

Vernonia cinerea (Linn.) Less. in Linnaea 4:291, 1829;  
FBI. 3:233; C. 2:65; Gr. 96; D. & G. 121;  
Clarke 20; G. 475; Sant. 109.

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

An erect herb, often rooting at first few nodes. Leaves irregularly serrate. Flowers purple to light violet in composite heads. Pappus white exterior row short. Achenes 2-3 mm. long, terete, not ribbed.

Local name: Shedevi.

Local uses: Plant juice is used to cure fever.

Flowers & Fruits: July to March.

Bedi 1455, 3394.

Fairly common everywhere. Usually seen in open grassy places and as a weed in cultivated fields.

Gujarat, Deccan, S.M. Country, Kanara; throughout India. Tropical Asia, Africa and Australia.

On the question of duration and variability of this species, please see Santapau, loc. cit.

Tricholepis DC.

Tricholepis glaberrima DC. Prodr. 6:754, 1837; FBI. 3:381; D. & G. 131; Clarke 240; C. 2:114; G. 511; Sant. 121.

An erect, glabrous, spiny herb, about 1 m. tall. Stem and branches angled and ribbed. Leaves sessile, acute, entire or spinous toothed. Heads long, ovoid; corolla long purple. Achenes oblong faintly ribbed.

Local name: Utateri.

Local uses: Root paste is used in snake bite.

Flowers & Fruits: September to March.

Bedi 562, 577.

Often noted as a weed in cultivated fields, among grasses, on dry fallow fields. Common both in hilly regions as well as on plains.

Gujarat, Deccan, Madhya Pradesh, S.M. Country, Kanara, W. Peninsula.

Amberboa Less. (nom. cons.)

Amberboa ramosa (Roxb.) Jafri in Scientist (Karachi)

III:29, 1959; Chavan & Oza, Fl. Pavagadh, 127.

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

Volutarella divaricata Benth. & Hook. f. Gen. Pl.

2:476, 1873, in part; FBI. 3:383; C. 2:115;

Clarke, 242.

Tricholepis procumbens Wight, Ic. t. 1139, 1846;

D. & G. 131.

A dichotomously branched, erect or suberect, spiny herb. Leaves toothed or pinnatifid with mucronate lobes. Heads ovoid-oblong. Flowers purple. Achenes 4 mm. long, acutely angled.

Flowers & Fruits: September to March.

Bedi 1777, 3170.

Not common, occasionally noted as a weed in dry fallow fields at Kanjeta, Banvaro and Alindra. Rare on plains.

Central, Western and Southern India; N.W. Himalayas. Afghanistan, Baluchistan.

Centratherum Cass.

Slender herbs; leaves densely white woolly beneath. . . . . phyllolaenum

Rigid, tall stout herbs; leaves sparsely hairy, not white woolly tomentose beneath. . . . . anthelminticum

Centratherum phyllolaenum (DC.) Benth. ex Clarke,

Comp. Ind. 4, 1876; FBI. 3:228; C. 2:62;

G. 469; Sant. 108; Chavan & Oza, Fl. Pavagadh, 127.

Decaneurum phyllolaenum DC. Prodr. 7:264, 1838.

An erect herb about 1 m. tall. Leaves with short setae above, densely white woolly tomentose beneath, base tapering into a short petiole. Heads solitary, axillary and terminal. Outer involucral bracts 1 to many, spreading or deflexed, linear lanceolate; the inner most bracts scarious, often purple. Achenes deeply 10 ribbed.

Flowers & Fruits: September to November.

Bedi 634, 3055.

Usually found as a weed in cultivated fields at higher altitudes. More frequent in hilly regions, especially near Banvaro and Alindra. Rare on plains.

Gujarat, W. Peninsula, S.M. Country, Kanara.

Centratherum anthelminticum (Willd.) O. Kuntze Rev.  
Gen. 1:320, 1891; G. 469.

Vernonia antaelsmintica Willd. Sp. Pl. 3:1634,  
1800; FDI. 3:236; C. 2:66; Gr.96, D. & G.  
313; Clarke, 10.

An erect hairy herb, 100-150 cm. tall. Leaves coarsely serrate, lanceolate or elliptic-lanceolate, more or less hairy on both sides. Flowers bluish



pink in subcorymbose many flowered peduncles.

Corolla tubular. Pappus pink or red.

Local name: Kali Jeeri.

Local uses: Seeds are hot, sharp in taste,  
used for asthma.

Flowers & Fruits: September to January.

Bedi 375, 631.

Common weed in the cultivated fields, often  
noted on plains and in the hilly regions.

Cooke and the other workers have not mentioned  
this species from Gujarat.

Deccan, S.M. Country, Kanara; throughout India,  
often cultivated.

Ceylon, Afghanistan.

### Xanthium Linn.

Xanthium strumarium Linn. Sp. Pl. 937, 1753; FBI.  
3:303; C. 2:94; Clarke 132; Sant. 118.

X. indicum Koen. ex Roxb. Hort. Beng. 67, 1814  
& Fl. Ind. 3:601, 1832; Gr. 101; D. & G.  
127; Wt. Ic. t. 1104.

Annual stout herb, 30 to 150 cm. tall. Leaves  
scabrid, 3-lobed, triangular cordate. Stem often

marked with light purple or brown streaks. Heads in terminal and axillary racemes. Achenes about 1 cm. long, oblong or ovoid.

Local name: Gadarium.

Flowers: August to March.

Fruits: Till the beginning of monsoon.

Bedi 345.

Subgregarious in habit, common on wasteland , along the roads, near streams and Panam river. Often noted as a weed in dry fallow fields. More common on plains.

Gujarat, Deccan; W. Himalayas; throughout the hotter parts of India.

Ceylon, warmer parts of the world.

Emilia Cass.

Emilia sonchifolia (Linn.) DC. in Wight, Contrib.

24, 1834 & Prodr. 6:302; FBL. 3:336; C. 2:107;

Clarke, 174; Sant. 120; Chavan & Oza, Fl.

Pavagadh, 128.

Cacalia sonchifolia Linn. Sp. Pl. 835, 1753; Gr. 98.

A soft slender herb. Leaves very variable, variously lobed, lower often radical. Flowers pinkish or purplish in a composite, oblong head; peduncle long, slender.

Flowers & Fruits: August to March.

Bedi 2989.

Not common, occasionally noted near moist spots, in open grassy places, along the banks of streams and near cultivated fields.

Gujarat, Deccan, S.M. Country; throughout India.

Ceylon, most tropical and sub-tropical regions.

Blumea DC. (nom. cons.)

Heads few, in axillary and terminal corymbs:

Prostrate herb with radiating branching  
from the roots. . . . . oxyodonta

Erect herbs, leaves cauline, much  
larger than the previous species. . . ertantha

Heads many:

Heads in spikeiform cymes or panicles:

Florets yellow; plants with  
turpentine smell. . . . . lacera

Florets purple; plant without  
turpentine smell. . . . . mollis

Heads in spreading peduncled, open  
corymbs. . . . . membranacea

Blumea oxyodonta DC. in Wight Contrib. 15, 1834;  
FBI. 3:266; C. 2:77; Clarke, 85; G. 482;  
Sant. 114; Randeria in Blumea 10(1):279,  
1960.

A prostrate, slender, hairy annual herb, 10-30 cm.  
long. Leaves much smaller in my specimens than mentioned  
by Cooke. Florets yellow. Plants with a typical strong  
aromatic smell.

Flowers & Fruits: November to March.

Bedi 2241 (22-2-1962 Kanjeta).

Not common, noted on dry sandy and gravelly beds  
of stream and Panam river. Often noted as a weed in  
dry fallow fields in Bendol, Kanjeta and Anderpura.

Deccan, W. Peninsula, S.M. Country, Kanara; almost  
throughout India, Pakistan and Burma.

Blumea eriantha DC. in Wight Contrib. 15, 1834;  
FBI. 3:226; C. 2:78; G. 482; Sant. 114;  
Randeria, loc. cit. 279.

A slender, erect herb. Leaves membranous, ovate, densely silky on both the sides. Flowers yellow on a long, slender, silky hairy peduncles of dichotomous cymes. Achenes minute, angled, with few hairs on the angles.

Flowers & Fruits: October to December.

Bedi 756.

Common on higher altitudes only, often noted in Banvaro, Alindra and on Ratan Mal and its southern slopes.

Gujarat, Deccan, W. Peninsula, S.M. Country, Konkan; endemic in W. India.

The identity of this species has been confirmed at Kew Herbarium and by Randeria.

For affinities and differentiation of this species with B. oxyodonta and B. malcolnii, please see Randeria, loc. cit. "Often we find hybrids between these closely related species forming this as a complex species".

Blumea lacera (Burm. f.) DC. in Wight Contrib. Bot. Ind. 14, 1834; FBI. 3:263; C. 2:76; Gr. 97; Clarke 76.

Conyza lacera Burm. f. Fl. Ind. 180, t. 59, f. 1, 1768.

Blumea leptoclada Dalz. & Gibs. Bomb.Fl. 126,  
1861 (non DC.).

An annual, erect herb with glandular pubescence.  
Leaves elliptic oblong or obovate, sharply toothed.  
Heads numerous in short axillary cymes and terminal  
spiciform panicles; flowers yellow. Achenes small,  
oblong, sub four gonous.

Flowers & Fruits: September to January.

Bedi 410, 1030.

Usually noted as a weed in cultivated fields,  
in open grassy places and along the roadsides. Less  
common on the plains.

Deccan, Kanara; throughout the plains of India.

Ceylon, China, Malaya, S.E. Asia, N. Australia,  
Tropical Africa.

Blumea mollis (D. Don.) Merrill in Phil. J. So.  
(Bot.) 5:395, 1910; Sant. 113; Randeria,  
loc. cit.

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

Blumea wightiana DC. in Wight Contrib. 14, 1834;  
FBI. 3:261; C. 2:75; G. 483; Clarke 74.

A much branched erect herb. Leaves lower petioled, the upper sessile, irregularly toothed or serrate. Flowers purple or light violet. Achenes minute, oblong 4-5 angled, not ribbed.

Flowers & Fruits: October to December.

Bedi 1694, 1889.

Noted under the shade of trees in Chari, in open grassy places and along roadsides at various other localities.

Deccan, Kanara; throughout the plains of India.

Africa, Pakistan, Ceylon, Burma, China and Indo-China.

Blumea membranacea DC. Prodr. 5:440, 1836; FBI. 3:265; C. 2:77; G. 483; Sant. 114; Randeria, loc. cit. 269.

An annual, erect, glandular-pubescent herb, about 50 cm. tall. Leaves thin, membranous, variously lobed with dentate margins. Heads numerous on a glandular hairy-pubescent peduncles, in much branched open panicles. Flower light yellow. Achenes ribbed.

Flowers & Fruits: September to April.

Bedi 678, 1705.

Often noted as an undergrowth of forests near villages, occasionally along the banks of streams. Common both on plains and in hilly regions.

Deccan: Khandala; S.M. Country. Throughout India; Ceylon, Malay Isles, Burma, Indo-China, China.

Tridax Linn.

Tridax procumbens Linn. Sp. Pl. 900, 1753; FBI. 3:311; C. 2:102; G. 500; Sant. 119.

A straggling or procumbent herb. Leaves glandular hairy, pinnatifid, segments variously toothed. Heads solitary on a long peduncle. Ray flowers ligulate, the ligules yellow rarely white. Achenes densely hairy, silky, black.

Flowers & Fruits: Almost throughout the year.

Bedi 1497.

More common on the plains north-east of Panam river. Often noted along the paths, as a weed in dry fallow fields and other wastelands.



Introduced from America; now naturalized in various parts of India.

Launaea Cass.

*L. procumbens* (Herb.) Lamour. & Rejgob.  
Launaea nudicaulis Hook. f. in FBI. 3:416, 1881;  
 C. 2:122; Sant. 122; Chavan & Oza, Fl.  
 Payagadh, 131.

L. obtusa Clarke Comp. Ind. 261, 1876 (excl.  
 plur. Syn.; non Denth.).

A prostrate or suberect, glabrous, annual herb.  
 Leaves radical, forming rosette on the ground,  
 pinnatifid or pinnatisect, with fringed margins.  
 Flowers pale or whitish yellow on long solitary or  
 of 1-2 clusters. Heads arising from the nodes together  
 with the cauline leaves.

Local name: Bhonai pati.

Flowers & Fruits: September to March.

Bedi 1155.

Noted in open grassy places near Tokerwa, Anderpur,  
 Limidi-Mendhri and Kanjeta. At times recorded as a  
 weed in cultivated and dry fallow fields. Rare in the  
 hilly forest regions.

Gujarat: Pavagadh, Baroda; Deccan, S.M. Country,  
Kanara.

Ceylon, Mauritius, Afghanistan, Egypt, E. Africa.

Grangea Adans.

Grangea maderaspatana (Linn.) Poir. Encycl. Suppl.

2:825, 1811; FBL. 3:247; C. 2:72; D. & G.

124; Wt. Ic. t. 1097; G. 478; Sant. 112.

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

A much branched, prostrate spreading herb.

Leaves sinuately pinnatifid with opposite lobes.

Flowers yellow in globose heads. Pappus a short,  
tube with fimbriate mouth. Achenes glandular.

Flowers & Fruits: November to April.

Bedi 1187, 2927.

Common along the banks of Panam river, in semidried  
ditches and around the margins of Dhenpur tank. Rare in  
the hilly regions.

Gujarat, Deccan, Konkan, Kanara; throughout India.

Tropical and Sub-tropical Asia and Africa.

Glossocardia Cass.Glossocardia bosvallea (Linn. f.) DC. in Wight

Contrib. 19, 1834; G. 499; D. &amp; G. 129.

Verbesina bosvallea Linn. f. Suppl. 379, 1781.Glossocardia linearifolia Cass. in Diet. Nat.

19:62, 1821; FBI. 3:308; C. 2:100.

A small, prostrate or diffuse, tufted annual with a long tap root. Leaves bipinnatisect with linear segments. Flowers yellow in small elongated heads. Achenes with conspicuous long ciliate hairs.

Flowers &amp; Fruits: August to November.

Bedi 118.

Usually seen growing in dry grassy places, in cultivated fields, on escarpments along streams and roadsides.

Madhya Pradesh, Western Peninsula, Deccan, Konkan, Kanara.

Acanthospermum SchrankAcanthospermum hispidum DC. Prodr. 5:522, 1836;

G. 495; Santapan in JRNIS. 45:445, 1945;

Sant. 123.

A rigid, erect, hairy herb, 25 to 50 cm. high. Leaves hairy, obovate, spathulate. The heads arise in the forks of dichotomous branching. Flowers yellow. Achenes spinous, with 2 long horn-like spines at the top.

Local name: Gokhdu.

Flowers & Fruits: August to March.

Bedi 2857.

Noted in open grassy places, along the banks of streams and Panam river. Often recorded as a weed in cultivated as well as in dry fallow fields. Common in plains, rare in the hilly regions of Ratan Mahal. Subgregarious or gregarious in habit, usually grows in big patches forming pure strands.

This South American introduced weed is not mentioned in Cooke's flora. For detailed description of the plant, please see Santapau, loc. cit.

Sclerocarpus Jacq.

Sclerocarpus africanus Jacq. Icon. Pl. Rar. 1:17, t. 176, 1782; FBI. 3:305; C. 2:96; D. & G. 129; Clarke 134, Gamble 496; Chavan & Oza, Fl. Pavagadh, 132.

An erect hairy herb, 25-75 cm. tall. Leaves clothed on both sides with white or light brown appressed hairs. Heads yellow, solitary, sub-sessile at the apex of the branchlets.

Flowers & Fruits: August to November.

Bedi 1563 (16-8-1961, Morai).

Usually found as a weed in cultivated fields in Chari, Simamoi, Vakeshia and various other places. Occasionally seen growing as an undergrowth of forest.

Gujarat: Pavagadh, Porbandar; Deccan, W. Peninsula; W. Himalayas, Punjab.

Tropical Africa.

Spilanthus Linn.

S. *paniculata* (L.) Murr.  
Spilanthus acmella Murr. Syst. Veg (ed.13) 610,1774;  
FBI. 3:307; C. 2:99; Gr. 99; D. & G. 129.

Spilanthus calva Wt. Icon. t. 1109.

An erect hairy herb, 20-50 cm. tall. Leaves opposite. Heads yellow pale or whitish, 5 to 15 mm. across, base acute. Peduncles slender, sometimes reaching upto 10 cm. long. Inflorescence if chewed gives a peculiar burning sensation and gives a lot of saliva.

Local name: Akal kado.

Flowers & Fruits: October to December.

Bedi 612 (21-10-1960 Ratan Mal), 1970 Bendor.

Not common, observed as a weed in cultivated fields and in the undergrowth of forest. More frequently noted in the hilly areas.

Deccan, Konkan, Kanara; throughout India,

Ceylon, all warm countries.

Vicoa Cass.

Vicoa indica (Willd.) DC. in Wight Contrib. 10, 1834;  
Gr. 97; D. & G. 126; Wt. Ic. t. 1148; G. 493;  
Sant. 117.

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

Vicoa auriculata Cass. in Ann. Sc. Nat. (Ser.)  
17:418, 1829; FDI. 3:297; C. 2:88.

An erect herb, 25-75 cm. high. Leaves oblong, lanceolate, hairy on both sides. Heads on long slender peduncle. Ray flowers much longer than the involucre; ligules yellow, narrow 3 toothed at the apex. Achene terete, sparsely hairy.

Local name: Sona sali.

Flowers & Fruits: September to April.

Bedi 600.

Fairly common in almost all the areas. Often noted in the undergrowth of forest and occasionally seen as a weed in cultivated and fallow fields.

Gujarat, Deccan, W. Peninsula, S.M. Country; throughout drier parts of India. Ceylon.

Wight Icon. t. 1148 shows several pappus-hairs, on the achenes of the female flower, but Cooke, loc. cit. say that the female florets have no pappus. I have not observed such pappus-hairs in my specimens.

Gnaphalium Linn.

Gnaphalium indicum Linn. Sp. Pl. 852, 1753; FBL. 3:289;

C. 2:87; Gr. 97; D. & G. 130; G. 491; Clarke 114, Sant. 117.

An erect or prostrate herb. The entire plant is covered with white woolly hairs. Leaves 1-3 cm. long, upper leaves sessile, lower shortly petiolod. Heads small in dense terminal and subterminal spiciform clusters. Achenes oblong, somewhat papilose.

Flowers & Fruits: December to April.

Bedi 1184, 2090, 3703.

Fairly common herb. Often noted in semidried and dried ditches near Dhenpur tank, occasionally recorded from the sandy river beds of Panam. The plants of moist localities are suberect or prostrate.

Gujarat, Deccan; throughout India.

Pakistan, Burma, Africa, China, Japan, most of the hot and warm temperate countries.

#### LOBELIACEAE

#### Lobelia Linn.

Lobelia heyneana Roem. & Sch. Syst. 5:50, 1819 (non Spreng. 1825); Moeliono and Tuyn in Fl. Males 1; 6:129, f. 16d, 1960; Sant. 124; Santapau and Wagh in Bull. Bot. Surv. India 5(2):107, 1963; Raizada, Ind. For. 92(5):316, 1966; Chavan, Bedi & Sabnis, Add. to Fl. Pavagadh, JBNHS. 63(3):786, 1967.

Lobelia trialata Buch.-Ham. in Don Prodr. 157, 1825; FBl. 3:425; C. 2:130; G. 518.

An annual, slender, suberect glabrous herb, 10 to 20 cm. tall. Stem branched, often 3 winged. Leaves



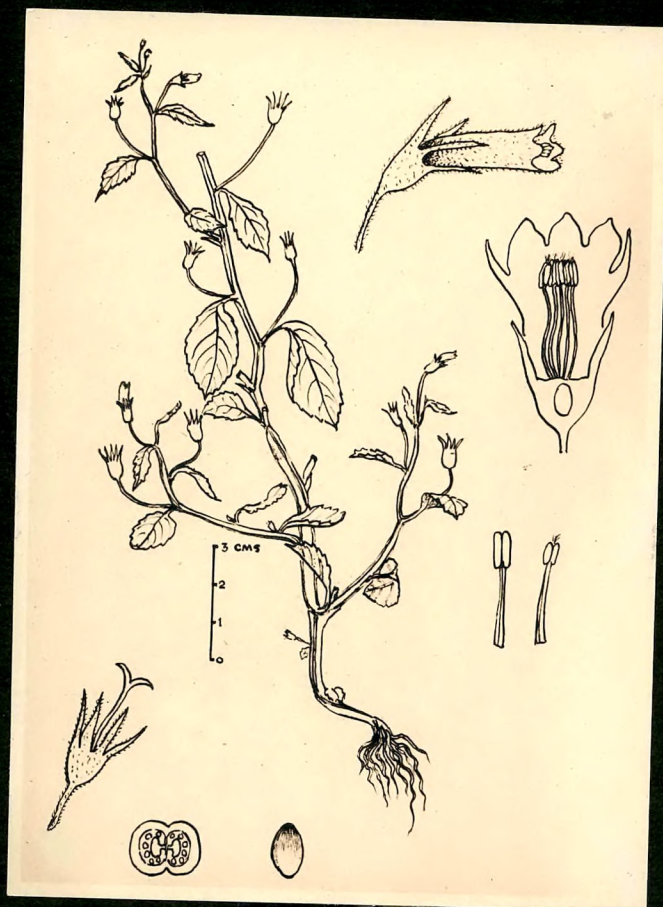


PLATE NO. 19

Lobelia heyneana Roem. & Schult.

sub-sessile or lower sometimes shortly petioled, margin crenate-serrate or dentate. Flowers pale blue on an axillary, long slender, angular peduncle. Capsule 3x6 mm. Seeds ellipsoid, compressed.

Plate No. 19

Flowers & Fruits: September to October.

Bedi Noted as a weed in cultivated field in  
Pepargota, 6th October, 1962.

Rare on plains, found as a weed in cultivated fields. At times, also noted in the undergrowth of the forest.

Deccan: Khandala; Konkan, S.M. Country, Assam, Bengal. More or less throughout India.

#### PLUMBAGINACEAE

##### Plumbago Linn.

Plumbago zeylanica Linn. Sp. Pl. 151, 1753; Fl. 3:480;  
C. 2:136; Gr. 166; D. & G. 220; G. 524; Witt.  
133; Sant. 124; Chavan & Oza, Fl. Pavagadh, 134.

A perennial straggling herb or an undershrub, sometimes rambling in dense shady places. Leaves thin, ovate, glabrous. Flowers in elongated spikes; bracteoles ovate

acuminate; calyx narrowly tubular, densely covered with stalked glands; corolla white, tube 2-3 cm. long. Capsule oblong.

Local name: Chitral.

Local uses: Root paste is used by the natives to cure skin diseases.

Flowers & Fruits: September to March.

Bedi 1066 (1-2-1961, Raiengna).

Not common, once noted in prostrate condition in some caves at Raiengna. Often noted in the erect condition, in Alindra, Panam and Padellia. Usually grows under the shade of Madhuca indica and various other trees.

Deccan, wild in Western Peninsula and probably in Bengal; throughout India.

Ceylon, Burma; cultivated throughout the tropics of the old world.

#### PRIMULACEAE

#### Anagallis Linn.

Corolla longer than the calyx; filaments villous; leaves opposite. . . . . arvensis  
Var. coerulea

Corolla shorter than the calyx; filaments  
glabrous; leaves alternate or lower  
sub-opposite. . . . . pumila

Anagallis arvensis Linn. Var. coerulea (Schreb.)

Gren. et Godr. Fl. France 2:467, 1852;  
Pax & Kunth in Pfreich. 22:323; Chavan  
& Oza, Fl. Pavagadh. 134.

A. coerulea Schreb. Fl. Lips. 5, 1771.

A. arvensis Dalz. & Gibs. Bomb. Fl. 136, 1861;  
FBI. 3:506; C. 2:139; G. 525.

An erect herb, 10-30 cm. long. Stem four angled  
glabrous. Leaves opposite, sessile, ovate, acute,  
entire. Flowers axillary solitary on a long slender  
peduncle. Corolla rotate, blue; filament villous.  
Capsule about the size of a small pea.

Flowers & Fruits: October to February.

Bedi 1020, 3616.

Very rare. Only once noted in Pepargota near a  
water channel and once as a weed in cultivated field  
at Dhenpur.

Gujarat, Deccan, Madhya Pradesh; more or less  
sparingly distributed throughout India.

Ceylon, Europe, W. Asia and introduced into most temperate regions.

Cooke, loc. cit. mentions red or blue (rarely white) flowers. Hooker, loc. cit. writes 'Both the blue and red flowered varieties are found in Western India....'. I have not seen red or white flowers, though I have observed this species from various localities in Gujarat. My field observations permit me to say that corolla is blue which sometimes fades to purple with age, or due to some other soil factor?

Anagallis pumila Swartz, Prodr. Veg. Ind. Occid.  
1:40, 1788; G. 525.

Centunculus pentandrus R.Br. Prodr. 427, 1810;  
FBI. 3:506.

C. tenellus Duby in DC. Prodr. 8:72, 1844;  
C. 2:140.

Micropyxis tenella Wight, Icon. t. 1585.

A small erect, annual, glabrous herb, 5-10 cm. tall. Leaves sub-sessile, alternate, broadly ovate or obovate. Flowers axillary, solitary with long slender peduncle; corolla white or bluish pink, deciduous shorter than the calyx. Capsule oblong nearly equalling the calyx. Seed trigonous, black when ripe.

Flowers & Fruits: October to November.

Bedl 3461..3464 (Pepargota, 9-10-1962).

Not common, noted in moist rocky crevices in the forest areas near Pepargota.

Deccan, Central India, Western Peninsula; Central and Western Himalayas.

Tropical America, Australia.

Cooke, loc. cit. Rare. This species has not been recorded by the earlier workers, from Gujarat State.

#### SAPOTACEAE

Calyx lobes 4-5; staminodes none. . . . . Madhuca

Calyx lobes 6-8; staminodes present. . . . . Manilkara

Madhuca J.F. Gmel.

*M. longifolia* (Roxb.) Merr. & Rolfe

Madhuca indica J.F. Gmel. Syst. Nat. 2:799, 1791;

Merrill, in JAA. 29, 190, 1948; Sant. 126.

Bassia latifolia Roxb. Pl. Cor. 1:20, 5. 19, 1795;

FBI. 3:544; C. 2:152; Gr. 107; D. & G. 139;

Talb. 2:156, f. 372; G. 536.

Madhuca latifolia (Roxb.) Macbride in Contrib.

Gray Herb. (N.S.) 3(53):17, 1918.

A medium size to a large deciduous tree. Leaves elliptic, 15-30 cm. long, clustered at the end of the branches. Flowers in dense fascicles near the end of the leafless branches; corolla cream-coloured, thick fleshy, sweet scented. Fruit ovoid fleshy 2 to 5 cm. in diameter, 1-4 seeded.

Local name: Mahuda; Mahuwa.

Local uses: Thick fleshy petals either eaten raw or cooked as vegetable. Tribal Bheels distil the flowers and prepare country liquor. Seeds known as "Doli" yield oil, used by the natives as cooking medium. I have often tasted all the above mentioned products.

Flowers: December to March.

Fruits: March to May.

Hedi 1368.

Very common throughout Ratan Mahal and surrounding areas, both near villages and less frequently in the forest interiors.

Throughout Gujarat, Konkan, Deccan, Western Peninsula, Madhya Pradesh.

Burma.

Manilkara Adans. (nom. cons.)

Manilkara achras (Mill.) Fosberg in Taxon 13:255,  
1964; Raizada in Ind. For. 92(5):316, 1966.

Sapota achras Mill., Gard. Dict. 1768,

Achras zapota Linn. Syst. Nat. (ed. 10) 2:988,  
1759 (A. zapota Linn. 1753); Bailey, Man.  
Cult. Pl. 790.

A. sapota Linn. Sp. Pl. (ed. 2) 469, 1762; FBL.  
3:534; C. 2:156 (non A. zapota Linn. 1753).

A small much branched tree. Leaves crowded at  
the end of the branches. Flowers white. Fruits  
globose, with thin rusty-brown epicarp. Seeds shining  
black.

Local name: Chiku.

Local uses: Fruits very palatable.

English name: Sapodilla plum.

Flowers & Fruits: October to April.

Bedi 2935.

Cultivated only at few places in Dhenpur and  
adjoining few villages. I have not observed any plant  
from the hilly regions of Natan Mahal.

It grows fairly well in "black cotton soil" of  
Gujarat and Deccan. Cultivated more or less throughout  
India, West Indies; introduced from America.



## EBENACEAE

Diospyros Linn.

Diospyros melanoxylon Roxb. Pl. Cor. 1:36, t. 46,  
1795; FBI. 3:564; C. 2:159; Talb. 2:174.

D. tupru Buch.-Ham. in TLS. 15:111, 1827;  
Clarke in FBI. 3:564.

D. exsculpta Buch.-Ham. in TLS. 15:110, 1827;  
D. & G. 142.

Small or a medium sized tree, with much cracked blackish bark. Branches and young leaves covered with brown tomentum. Male flowers 4 merous in axillary or extra axillary tomentose, drooping cymes. Female flowers sub-sessile, solitary axillary, slightly longer than the male. Fruit about the size of a walnut, globose or ovoid, glabrous, yellow to light orange yellow when ripe; pulp yellow, sweet, edible. Seeds 3-7, compressed, shining brown.

Local name: Timbru; Timru.

Local uses: Fruits palatable relished by the natives. Timber commercially used.  
Leaves used in Bidi making, "Cigarette".

Flowers: November to March.

Fruits: March to June.

Bedi 1303, 2386.

Very common in almost all the ares, often noted in association with Tectona grandis on plains and Terminalia sps. on plateaus. The hard 'ebony' wood is obtained from this tree.

Gujarat, Deccan, throughout Western Peninsula.

Ceylon.

#### OLEACEAE

Scandent shrubs; fruit of 2 berry-like carpel or wanting. . . . . Jasminum

A medium sized tree; fruit woody, pyriform, loculicidally dehiscent capsule. . . . . Schrebera

#### Jasminum Linn.

Bracts subulate, filiform; leaves glabrous, rounded or sub-cordate at the base. . . . malabaricum

Bracts much broader, ovate, often absent; leaves hairy, cordate at the base. . . . multiflorum

Jasminum malabaricum Wight, Icon. t. 1250, 1850;

FBI. 3:594; C. 2:172; Talb. 2:186, f. 384;

Santapau in JBNHS. 46:563.

J. latifolium Graham Cat. 110, 1839 (non Roxb.);

D. & G. 138.

A scandent shrub with white fragrant flowers, usually in loose, trichotomous many flowered terminal cymes.

Local name: Mogra; Jui.

Flowers & Fruits: December to May.

Bedi Cultivated in hedges near Kanjeta Guest House.

It is said to be wild, I have been watching a big patch in the interior of the forest near Kanjeta, but it never bears flower and fruits though resembling with this in vegetative structure. In absence of the reproductive parts I am not in a position to fix their exact identity, only from vegetative characters. Recently a similar patch is also noticed along the bank of a stream near Pepargota in the forest interior (December 19, 1967).

Deccan, W. Peninsula, Konkan, Kanara.

Jasminum multiflorum (Burm. f.) Andr. Bot. Rep. t. 496, 1801, non Roth, 1821; Sant. 128.

Nyctanthus multiflora Burm. f. Fl. Ind. 5, t. 3, f. 1, 1768.

Jasminum pubescens Willd. Sp. Pl. 1:37, 1797,  
FBI. 3:592; C. 2:173; Gr. 110; D. & G. 138;  
Ror & Raizada 219, f. 129, Pl. 78.

J. hirsutum Willd.: Wight, Icon. t. 702.

A climbing shrub with white flowers in dense  
capitate cymes.

Cultivated near Dhenpur Ashram and also noted  
in hedges in the same locality.

Konkan, Kanara; almost throughout India. Often  
cultivated in gardens.

Burma, China.

Schrebera Roxb.

Schrebera swietenioides Roxb. Cor. Pl. 2:1, t. 101,  
1798; FBI. 3:604; C. 2:177; Gr. 112; G.557;  
Talb. 2:193, f. 388.

A medium sized or a large tree with ash coloured  
bark. Flowers yellowish, sweet smelling. Fruit hard,  
stony, pear shaped, pendulous, rough with white raised  
dots. Seeds winged, 3-4 in each cell.

Local name: Mokho.

Flowers: June to July or late August.

Fruits: August to April.

Bedi 3601, 3771 (fruits preserved in the  
Botanical Museum, M.S. University  
of Baroda).

Common on Kanvara Dungar, rare in other regions.

One large tree noted near Kanjeta village.

Deccan, Konkan, Kanara, tropical Himalaya,  
Central and South India.

Burma.

#### APOCYNACEAE

Erect herbs. . . . . Catharanthus

Trees or large shrubs:

Plants armed with spines. . . . . Carissa

Plants unarmed:

Leaves alternate:

Corolla funnel shaped. . . . . Thevetia

Corolla salver shaped. . . . . Plumeria

Leaves whorled; large shrubs. . . . Nerium

Leaves opposite:

Mouth of corolla without a  
corona of scales. . . . . Holarrhena

Mouth of corolla with a  
corona of scales. . . . . Wrightia

Catharanthus G. Don

Wild plants; stem quadrangular; corolla  
less than 1 cm. long. . . . . pusillus

Cultivated plants; stem not quadrangular;  
corolla more than 1 cm. long. . . . . roseus

Catharanthus pusillus (Murr.) D. Don Gen. Syst.

4:95, 1837; Santapau in Bull. Bot. Surv.

Ind. 3:15; Maheshwari, Fl. Dli. 211;

Raizada, in Ind. For. 92(5):304, 1966.

Vinca pusilla Murr. in Comm. Gotting 3:66, t. 2,  
f.1, 1773; FBl. 3:640; D. & G. 144.

Lochnera pusilla K. Schum. in Engl. & Prantl.

Pfam. 4(2):145, 1895; C. 2:191; Raizada in

Ind. For. Rec. (N.S.) Botany 5(1):28.

An erect, annual glabrous herb, 10-30 cm. tall.  
Flowers white, salver shaped. Seeds black when ripe  
with muricate ribs.

Local name: Chandani.

Flowers: July to September.

Fruits: September to November.

Bedi 368, 1493.

Abnoxious weed in cultivated fields at Dumka, Chari, Vakeshia, Kundawala and various other places on the plains. Less frequent in hilly regions, though often noted at Panam, Bendol and Pepargota. Occurrence of this weed in the cultivated field is considered to be a bad omen by the Bhils - it indicates famine.

Gujarat, Deccan, W. Peninsula, Konkan, Kanara;  
W. Himalaya, Upper Gangetic plains.

Ceylon.

Catharanthus roseus (Linn.) G. Don Gen. Syst. 4:95,  
1837; Gr. 115; D. & G. 53; Santapau, in Bull.  
Bot. Surv. Ind. 3:15; Raizada, Ind. For.  
92(5):304, 1966.

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

Lochnera rosea Reichenb. Consp. Reg. Veg. 134,  
1828; C. 2:192; Sant. 131; Raizada in Ind.  
For. Rec. (N.S.) Bot. 5(1):28.

An erect, well known garden undershrub.  
Flowers pink or white. Commonly cultivated at Dhenpur  
Ashram and various other places in the plains, very  
rarely in the hilly regions.

Local name: Bara masi.

Flowers: Throughout the year, as the  
local name indicates.

Cultivated throughout India. A native of West  
Indies.

Carissa Linn. (nom. cons.)

Carissa congesta Wight, Icon. t. 1289, 1848; G. 565;  
Sant. 129; Chavan & Oza, Fl. Pavagadh, 136.

C. carandas Graham Cat. 116, 1839; FBI. 3:630  
pro parte; C. 2:186 (non Linn.); D. & G. 143.

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

A large armed shrub or a small much branched tree.  
Leaves coriaceous, glabrous and shining. Flowers white,  
sweet scented. Fruit a 4-seeded berry, spherical to  
ellipsoid, purple or black when ripe. Palatable, sweet  
in taste.



Local name: Karamda; Karvanda.

Local uses: Fruits are relished by the natives.

Flowers: December to March.

Fruits: March to June.

Bedi 2499 (28-4-1962 Mendhri).

Very rare, only noted few shrubs near Mendhri village.

Gujarat, Deccan, Konkan, N. Kanara; throughout India. Ceylon, Java, Timor.

The two species C. carandas and C. congesta seem to have been confused by most of the authors of Indian floras. For the remarks on the subject, see Santapau loc. cit.

Thevetia Linn.(non. cons.)

Thevetia peruviana (Pers.) Merr. in Philip. Journ. Sci. (Bot.) 9:130, 1914 & Enum. 3:331; Benthall, Trees Calc. 302; Bailey, Man. Cult. Pl. 809.

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

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

Thevetia neriiifolia Juss. ex Steud. Nom. (ed.2), 2:680, 1841; Bor & Raizada 193.

A large ever green shrub or a small tree, with linear, revolute dark green leaves. Flower yellow, sometimes with pinkish tinge, arranged in sub-terminal few flowered cymes; corolla campanulate with hairy, coronal structures. Drupes angular.

Local name: Pili kaner.

English name: Yellow oleander.

Flowers & Fruits: Almost throughout the year.

Bedi Kanjeta, 9-8-1962.

Few trees noted near Ramji's temple in Kanjeta village, also cultivated in Dhenpur Ashram and few other places on the N.E. border of our district.

Cultivated in gardens throughout India.

Introduced. A native of South America and West Indies.

Plumeria Linn.

Plumeria rubra Linn. forma acuminata (Ait.) Sant. & Irani ex Shah in J. Univ. Bomb. 30:35, 1961-62; Datta & Majumdar in Bull. Bot. Soc. Bengal 20(2):98, 1966; Raizada in Ind. For. 92(5):321, 1966.

P. acuminata Ait. Hort. Kew (ed.2) 2:70, 1811;  
Gr. 119.

P. rubra Linn. Var. acutifolia Bailey, Man.  
Cult. Pl. 810.

P. rubra Linn. forma acutifolia (Poir.) Woodson  
in Ann. Miss. Bot. Gard. 25:211, 1938;  
Benthall trees Calcutta 304; Raizada in Ind.  
For. Rec. Bot.(N.S.) 5(1):37, 1959.

A small tree, apparently dichotomously branched.  
Flowers white, waxy, with a yellow center. I have  
not observed the seeds of this plant.

Local name: Champa.

Flowers & Fruits: May to December.

Bedi Cultivated at Kanjeta, Dhenpur.

Cultivated at few places on the plains for its  
beautiful flowers. During October, 1962, cutting  
brought from erstwhile Kathiwada State were planted  
near Bapu's hut.

A native of Tropical America, cultivated and  
has become naturalized more or less throughout India.

Nerium Linn.

Nerium indicum Mill. Gard. Diet. (ed.8) no.2,1768;  
Sant. 133; Maheshwari, Fl. Dli. 215.

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

A much branched large garden shrub, reaching  
upto 4 m. high. Flowers pink, red in terminal panicles,  
fragrant.

Local name: Kanair, Karen.

Flowers: March to August.

Bedi 2776 (6-8-1962, Kanjeta).

Cultivated for its beautiful flowers, in Kanjeta,  
Dhenpur and few other places on the plains.

Cultivated throughout India.

On the subject of the native home of this plant  
Santapau, loc. cit. quotes Merrill, Enum. 3:336,1923 -  
"A native of tropical and sub-tropical Asia now pan-  
tropics". Cooke, l.c. 'A native of Himalaya & Nepal'.

Holarrhena R.Br.

Holarrhena antidysentrica(Linn.) Wall. Cat. 1672,  
1829 nom. nud.; G. Don. Gen. Syst. 4:78,  
1837; FBI. 3:644; C. 2:195; Talb. 2:217,  
f. 398; Sant. 131; Maheshwari, Fl. Dli. 216.

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

A large shrub or a small tree, with light brown  
or pale bark. Leaves opposite, broad, ovate or elliptic,  
Flowers white, sweet scented, in terminal corymbose  
cymes. Follicles two, narrow, pendulous, 15-30 cm.  
long.

Local name: Kadva Indrajav; Kuda.

Local uses: Highly reputed for its medicinal  
properties. Milky juice is at  
times used by the natives to  
prepare curd from the milk.

Flowers: March to July.

Fruits: July to December.

Bedi 1279, 1404.

Fairly common almost all over the district.

More or less throughout India.

Malacca.

Wrightia R. Br.

Leaves glabrous; corona scales fimbriate;  
 follicles thin, long, slender, without  
 white tubercles. . . . . tinctoria

Leaves tomentose; corona scales oblong,  
 entire or lobed; follicles short, stout  
 with white tubercles. . . . . tomentosa.

Wrightia tinctoria R.Br. in Mem. Wern. Soc. 1:73,  
 1809; FBl. 3:653; C. 2:200; Gr. 114; D. & G.  
 145; G. 573; Talb. 2:222, f. 400; Sant. 132.

Small trees. Leaves glabrous, elliptic ovate or  
 oblong, acuminate. Flowers fragrant, white or pale  
 yellow, in lax, terminal dichotomous cymes. Follicles  
 10-30 x .6 cm., glabrous. Seeds comose.

Local name: Kala Kuda; Mitho Indrajo.

Flowers: February to July.

Fruits: April to November.

Bedi 1098.

Fairly common throughout the hilly forest regions  
 of Ratan Mahal. A note from my field diary of 25th  
 February, 1962, Bendol "One of the most common flowering  
 trees of this month".

Gujarat, Deccan, Konkan, Madhya Pradesh.

Ceylon, Timor.

Wrightia tomentosa Roem. & Schult. Syst. 4:414,  
1819; FBL. 3:653; C. 2:200; Gr. 114;  
D. & G. 145; Talb. 2:222; Wight, Icon.  
t. 1296.

Small to a medium sized tree, 3 to 8 m. high.  
Leaves softly or densely tomentose, ovate. Flowers  
pale yellow to creamy white. Follicles stout, rough  
with white tubercles. Seeds comose.

Local name: Kala Indrajo.

Flowers: May to August.

Fruits: July to December.

Bedi 3791 (24-7-1963, Bendol).

Rare, only noted few trees near Bendol forest,  
on the way to Dhenpur.

Western India, Konkan, Kanara; almost throughout  
India.

Ceylon, Burma.

#### ASCLEPIADACEAE

Plants erect:

Pollen-masses pendulous; stem and leaves  
fugaciously cottony-pubescent; leaves  
broadly ovate. . . . . Calotropis

Pollen-masses erect; stem and leaves

not cottony pubescent; leaves

lanccolate. . . . . Tylophora

Trailing, twining or climbing plants:

Antaers without a membranous appendage,  
incumbent on the style-apex:

Corolla tubular, elongate,

inflated at the base. . . . . Ceropegia

Corolla tube short, limb

rotate. . . . . Leptadenia

Anthers with membranous appendage:

Pollen-masses pendulous:

Stem and leaves subhispidly

hairy. . . . . Pergularia

Stem and leaves glabrous

or nearly so. . . . . Holostemma

Pollen-masses erect or horizontal:

Corolla rotate:

Corolla green; coronal lobes

fleshy, spreading. . . . . Dregea

Corolla lobes not green;

coronal lobes tubercle-

like. . . . . Tylophora

Corolla salver shaped or

campanulate:

Stem and leaves tomentose. Marsdenia



Stem or leaves glabrous  
or nearly so; corolla  
tube less than 1 cm. long... Telosma

Calotropis R.Br.

Calotropis gigantea (Linn.) R.Br. in Ait. Hort. Kew  
(ed. 2) 2:78, 1811 et Bot. Reg. t. 58, 1815;  
FBI. 4:17; C. 2:214; Gr. 120; D. & G. 149;  
G. 585; Witt. 153; Blatt. & McC. in JBNLS.  
36:526; Sant. 134; Santapau & Irani, Univ.  
of Bomb. Bot. Mem. No.4 Asclepiadaceae  
and Periplocaceae of Bombay 17, 1962.

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

An erect much branched shrub, 1-3 m. tall. Leaves  
decussate, sub-sessile, broadly ovate. Flowers large,  
dark purple to light violet, in umbellate cymes. Corolla  
lobes spreading; corona lobes shorter than the staminal  
column, with two obtuse auricles just below the apex.  
Follicles in pair, fugaciously cottony pubescent, about  
the size of a country mango. Seeds broadly ovate, obtuse,  
coma silky white.

Local name: Akado.

Local uses: Used for the early cure of wounds.

Flowers: September to May.

Fruits: November to June.

Bedi 1444, 2154.

Often noted in the waste places and in dry fallow fields on the plains. Rare in the hilly regions.

Throughout Gujarat, Maharashtra, S.M. Country, Kanara; throughout India.

Ceylon, Malay Islands, South <sup>h</sup>Cina.

Tylophora R.Br.

(The occurrence of this Genus has not been recorded by the earlier workers, from Gujarat State).

Stem erect; leaves ovate, lanceolate, acute,  
2-4 cm. broad. . . . . fasciculata

Stem trailing along the ground; leaves  
rounded, sub-orbicular, often mucronate  
at the apex, 4.5 to 10 cm. broad. . . . . rotundifolia

Tylophora fasciculata Ham. in Wight, Contrib. 50, 1834;

FBI. 4:40; C. 2:226; D. & G. 151; Wt. Ic. t.

848; Talb. 2:252; G. 592; Blatt. & McCann loc.

cit. 530; Sant. 136; Santapau & Irani 85.

An erect perennial undershrub, 20-60 cm. high. Stems several from a root-stock. Flowers purple, in lateral pedunculate, umbellate cymes. Corolla deeply divided. Follicles lanceolate. With age, the stem and branches turn into purple colour.

Local name: Arsi.

Local uses: Fruits are eaten by the natives, even I have tasted them on several occasions.

Flowers: July to September.

Fruits: August to October.

Bedi 2699, 2784.

Fairly common in the undergrowth of Kanjeta and Mendhri forests. Not common at higher altitudes.

Deccan: Khandala; Konkan, W. Peninsula.

Ceylon and Nepal.

The occurrence of this species is being reported here for the first time from Gujarat State.

Santapau and Irani, i.e. "not common in Bombay State".

Tylophora rotundifolia Ham. in Wight, Contrib. 50, 1834; FBL. 4:43; C. 2:227; Witt. 155; G. 593; Blatter & McCann 530; Santapau and Irani, 86.

A creeper with woody root stock, having many tubercous adventitious roots. Leaves rounded or sub-orbicular, often with mucronate tip. Flowers pinkish-purple, many in lateral umbellate cymes; peduncle upto 5 cm. long. Follicles not seen.

Flowers: August.

Bedi 2824 (8-8-1962, Kanjeta).

Not common, restricted to only certain localities on the hills near Kanjeta. At times recorded from the open grassy places in the forest areas.

W. Peninsula, Konkan, S.M. Country, Travancore, Oude, Assam.

Santapau and Irani, while writing about its occurrence in Bombay State write "Apparently restricted to the hilly regions of Dharwar".

The occurrence of this species is being reported here for the first time from the erstwhile Gujarat State.

Ceropegia Linn.

The occurrence of this Genus is being recorded here for the first time from the erstwhile Gujarat State.

Leaves petiolate, petiole 3-10 cm. long,  
the upper leaves elliptic, oblong or  
obovate with rounded base, lower orbicular..bulbosa

Leaves sub-sessile or sessile, narrowly  
linear, acuminate. . . . . bulbosa  
Var. lushii

Ceropegia bulbosa Roxb. Pl. Cor. 1:11, t. 7, 1795;  
FBI. 4:67; C. 2:240; Gr. 117; D. & G. 153;  
G. 602; Witt. 157; Blatt. & McC. 535,  
Santapau & Irani, l.c. 28, excl. Syn.

A tuberous twiner. Leaves thick, fleshy, orbicular-  
elliptic, oblong with rounded base. Flower violet purple  
inside and purplish green outside, 7-15 mm. long, much  
inflated at the base, narrow in the middle, shortly  
funnel shaped below the lobes; lobes 3-8 mm. long, linear  
from a triangular base, folded longitudinally on their  
backs, connate at the tips, deep purple, villous within.

Plate No. 20

Local name: Jeemikanda.

Local uses: Tubers are eaten by the natives  
and taste like turnip. Often  
tasted by me.

Flowers: June to July.

Bedi 2521, 2564.

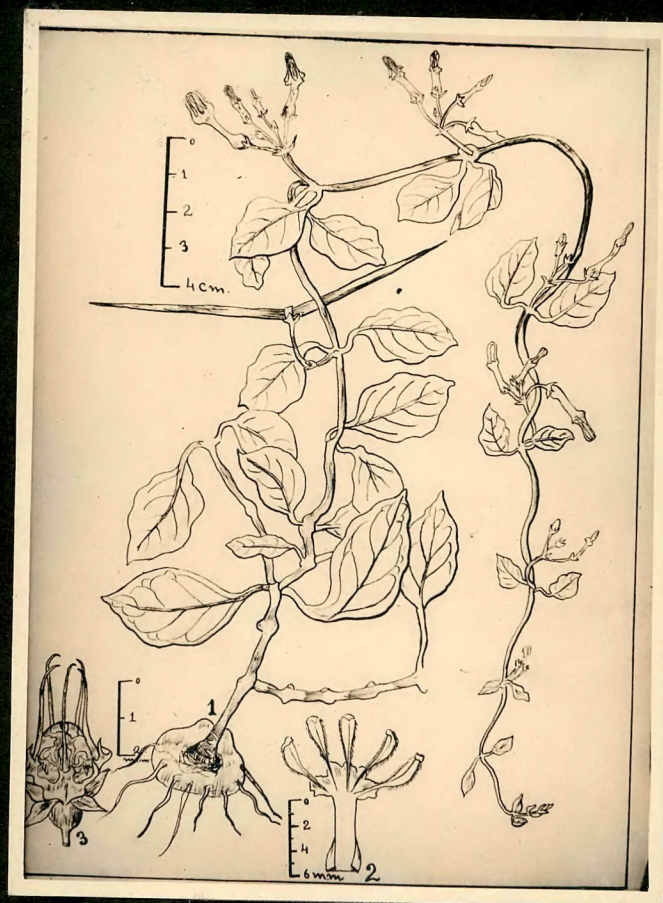


PLATE NO. 20

Ceropegia bulbosa Roxb.

Rare, noted as a twiner on hedges and shrubs, at times prostrate. Recorded from Chari, Kanjeta and Bendol.

Deccan, Konkan, S.M. Country, Madhya Pradesh, Western India, Punjab to Upper Gangetic plains.

Ceropegia bulbosa Roxb. Var. lushii Hook. f. Fl. Brit.

Ind. 4:68, 1883; C. 2:241; Witt. 158; G. 154.

C. lushii Graham in Bot. Mag. t.3300, 1834; Gr.117; D. & G. 154.

A much branched twiner. Leaves thick, fleshy, narrowly linear, acuminate, 10-20 x .5 cm. Flower greenish purple; corolla bottled shaped, inflated at the base; the lobes hairy and connate at the tips, dark purple inside. FollICLES linear, about 10 cm. long tapering to an acute apex.

Plate No.218

Flowers & Fruits: September to October.

Bedi 3315 (2-10-1962 Chari near Panam river).

Very rare, noted twining round the shrubs, along the banks of the Panam river near Chari.

Deccan, Kanara: Kaserai jungles; throughout the Indian Peninsula.



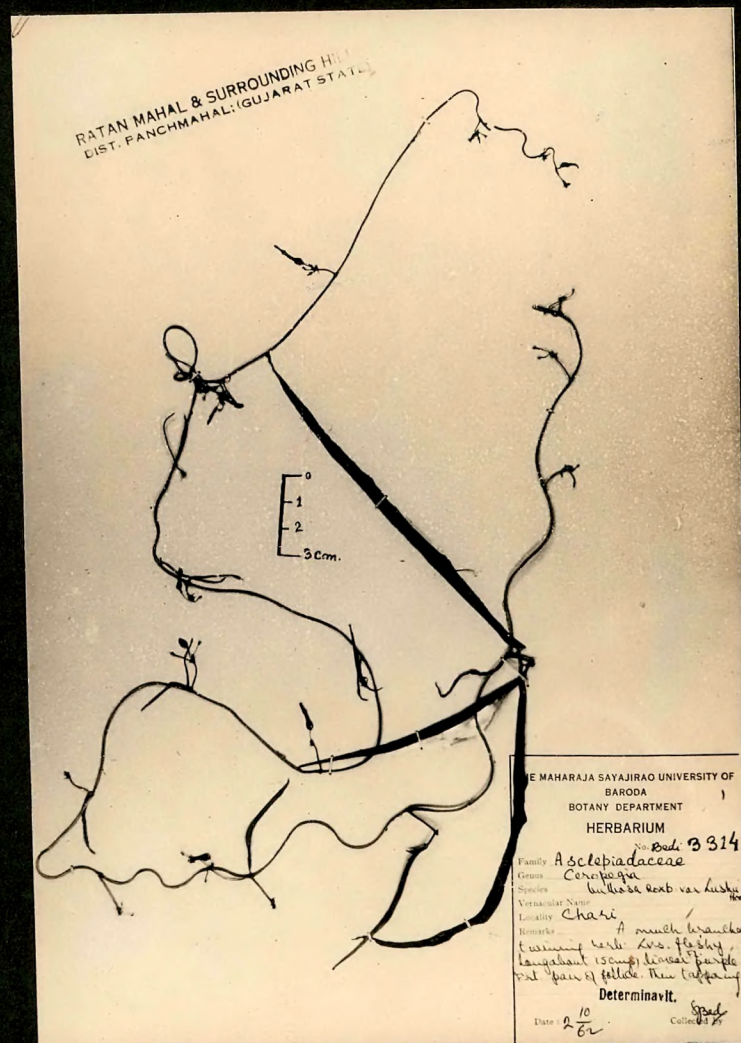


PLATE NO. 21

Ceropegia bulbosa Roxb. Var. lushii



Cooke, loc. cit. "Rare".

This plant has not been recorded from Gujarat by the earlier workers.

Santapau and Irani, loc. cit. 28, have merged C. bulbosa Var. esculenta and C. bulbosa Var. lushii with the species. For this they have not given any justification or any valid reason. Even in their description, they have described the species proper and have neglected the very distinct characters of the varieties.

C. bulbosa Var. lushii can very well be differentiated from the species, both in the field, as well as in the herbarium. This variety shows very constant characters. I am still of the opinion that C. bulbosa Var. lushii Hook. should be retained, so I have retained it as a variety.

#### Leptadenia R.Br.

Leptadenia reticulata (Retz.) Wight & Arn. in Wight, Contrib. 47, 1834; F&B. 4:63; C. 2:237; Wt. Ic. t. 350; Gr. 118; D. & G. 152; Talb. 2:260; Blatt. & McC. in JBNHS. 36:533; Bullock in Kew Bull. 271, 1955; Santapau & Irani, 60.

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

A twining shrub. Branches swollen at the nodes. Leaves opposite with acuminate apex. Flowers greenish yellow, in lateral many flowered umbellate cymes. Corolla rotate, 8 mm. across; lobes lanceolate, acute, pubescent on both sides. Follicles 5-8 cm. long, tapering into a shortly curved beak.

Local name: Nani Dodi.

Flowers & Fruits: March to September.

Bedi 1365, 2491.

Often noted on shrubs and hedges. Not common, though evenly distributed both on plains and in the hilly regions.

Common throughout Gujarat, Deccan, Western Peninsula, Konkan, Punjab.

Ceylon, Singapore, Burma.

Pergularia Linn. (non auct.)

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

Stefan.-Paoli Somal Ital. 1:115, 1916; Blatt.

& McC. 528, 1933; Santapau & Irani, 74.

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

Pergularia extensa N.E. Brown in Dyer. Fl. Cap.  
4:758, 1908; G. 588.

Daemia extensa R.Br. in Mem. Wern. Soc. 1:50,  
1809; FBI. 4:21; C. 2:219; Talb. 2:243;  
Wt. Ic. t. 536; Witt, 154.

A bad smelling climber with milky juice. Stem hispid. Leaves orbicular, cordate. Flowers greenish yellow, drooping; peduncles and pedicels covered with long spreading hairs. Corolla glabrous outside, pubescent inside. Staminal-column adnate to the mouth of the corolla tube. Ovaries many ovuled glabrous. Follicles in pairs 6-7 x 1 cm., reflex, slightly curved, lanceolate, pubescent, softly echinate all over. Seeds densely pubescent.

Local name: Varsa dodi.

Local uses: Vegetable is prepared from the young flowers.

Flowers: July to December.

Fruits: September to March.

Bedi 1081, 1114.

Common in hedges near the villages. Evenly distributed in almost all the areas on plains. Less common or rare in the hilly regions.

For nomenclature, please refer to Blatter & McC.  
loc. cit. or Santapau & Irani, loc. cit.

Holostemma H.Br.

Holostemma annulare (Roxb.) K. Schum. in Pfam.

4(2):250, f. 71 J-K, 1895; G. 586; Blatt. &  
McCann 529; Sant. 135; Santapau et Irani 53,  
Pl. 8, 1962.

Asclepias annularia Roxb. Hort. Beng. 20, 1814  
et Fl. Ind. 2:37, 1832.

Holostemma rheedi Wall. Pl. As. Nar. 2:51, 1831;  
FBI. 4:21; Wt. Ic. t. 597; Gr. 121; D. & G.  
148; Talb. 2:245; Witt, 154.

Holostemma rheedianum Cooke, 2:156, 1904 &  
(Rep. ed.) 2:220 (non Spreng. 1825).

A large glabrous twining shrub with plenty of milky  
latex which dries into a viscous elastic mass. Leaves  
opposite, thick fleshy, membranous when dry, apex acuminate.  
Flowers in axillary few flowered lax cymes. Corolla  
purple to red inside, pink-pale outside, sweet smelling.  
Follicles glabrous, boat shaped.

Local name: Dania; Saneer.

Local uses: Flowers are eaten by the native  
tribes.

Flowers: July to September.

Fruits: August to October.

Bedi 2839, 2980.

Not common, noted in hedges, shrubs and small trees. Only twice I recorded these specimens once from Dunka and then from Pepargota.

Gujarat: Dangs; Deccan, Canara, Konkan, Tropical Himalayas.

Ceylon, Burma, Pegu.

The oldest specific name for this plant is clearly annulare, based on Asclepias annularia Roxb. 1814; this name of Roxb. becomes validated by the reference to Rheede, Hort. Malab. 9, t. 7.

Dregea E. Mey.

Dregea volubilis (Linn. f.) Benth. ex Hook. f. in  
FBI. 4:46, 1883; Talb. 2:254; Witt, 156;  
Santapau & Irani, l.c., 42, t.6, 1962.

Asclepias volubilis Linn. f. Suppl. 170, 1781;  
Roxb. Fl. Ind. 2:36, 1832.

Marsdenia volubilis Cooke, Fl. Pres. Bombay 2:166,  
1904; C. 2:230; G. 595; Blatt. & McCann 531;  
Sant. 137.

Moya viridiflora R.Br. in Mem. Wern. Soc. 1:27,  
1809; Gr. 119; Wt. Ic. t. 586; D. & G. 153.

A large twining shrub on hedges, bushes and small trees. Sap watery not milky. Leaves densely tomentose, glabrous with age. Flowers greenish yellow in many flowered, drooping lateral umbellate cymes. Corolla rotate, hairy outside. Follicles in pairs.

Local name: Dodi; Piwarbet.

Local uses: Flowers are used as vegetable.

Bedi 292, 2348.

Common in hedges and on shrubs on the outskirts of forests near Bendol and Kanjeta.

Deccan Peninsula, Bengal, Assam.

Ceylon, Java.

Marsdenia R.Br.

Marsdenia tenacissima (Roxb.) Moon, Cat. Pl. Ceylon  
21, 1824; FBl. 4:35; C. 2:230; Wt. Arn. in  
Wt. Contrib. 41, 1834; Wt. Ic. t. 590;  
Witt 156; Blatt. & McCann 531.

Asclepias tenacissima Roxb. Pl. Cor. 3:35, t. 240,  
1819.

A large twiner, densely covered with brown hairs. Leaves broadly ovate, acuminate, base cordate with 1-2 cm. deep sinus. Flowers greenish yellow in a large, lax drooping panicles. Follicles ovoid-lanceolate, cylindric. Velvety pubescent.

Local name: Pani vel.

Local uses: Stem is used as rope.

Flowers: August to November.

Bedi 2786 (6-8-1962, Kanjeta).

Not common, noted twining around small trees and shrubs, on Handva hill near Kanjeta.

Gujarat: Champaner, Dangs; Deccan: Katraj Ghat; Western Himalayas, N. Oudh, Bengal.

Ceylon, Timor.

In most of the floras Marsdenia tenacissima is attributed to Wt. & Arn. in Wight Contrib. 1834. The combination for the first time was made by Moon in his Catalogue, 1824, wherein he gives the basonym Asclepias tenacissima Roxb. Pl. Cor. 3:35, t. 240, 1819.

Telosma Coville

Telosma pallida (Roxb.) Craib. in Kew Bull. 1911:418,  
1911; G. 593; Blatt. & McCann 531; Santapau  
& Irani, l.c. 83, 1962; Chavan & Oza, Fl.  
Pavagadh, 142.

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

Pergularia pallida Wt. & Arn. in Wt. Contr. 42,  
1834; Wt. Ic. t. 585; FBl. 4:38; C. 2:229;  
Talbot. 2:251; Witt 157.

A large, twining, pubescent undershrub. Leaves  
glabrous, ovate, acute or acuminate. Flowers pale  
yellow, cream yellow or white in umbellate cymes;  
corolla salver shaped, glabrous outside, slightly  
hairy inside. Follicles 8x2 cm. lanceolate woody.

Flowers: June to August.

Fruits: August to December.

Bedi 2546.

Common in hedges on plains and on shrubs in the  
open forest areas near Kanjeta.

Gujarat: Dangs; Madhya Pradesh, North Kanara:  
Dharwar; Tropical Himalayas, Behar,

Burma.



PERIPLOCACEAE

Leaves with numerous lateral nerves,  
united in an intramarginal one; corolla  
lobes valvate 8 mm. or more long. . . . . Cryptolepis

Leaves with few lateral nerves, not  
united in an intramarginal one; corolla  
imbricate, 5 mm. or less long. . . . . Hemidesmus

Cryptolepis R.Br.

Cryptolepis buechanani Roem. & Schult. Syst. 4:409;  
1819; FBI. 4:5; C. 2:210; Gr. 113; D. & G.  
148; Talb. 2:236; Wt. Ic. t. 494; G. 580;  
Witt 152; Blatt. & McCann in JBNHS. 36:524;  
Sant. 134; Santapau & Irani, 91, 1962.

A large, perennial, glabrous climbing shrub.  
Leaves slightly whitish beneath with typical venation  
and intramarginal nerve. Flowers greenish yellow, in  
axillary many flowered paniculate cymes. Follicles in  
pairs 5-10 cm. long.

Local name: Dud vel.

Flowers: June to August.

Fruits: August to December.

Bedi 1334, 3017.

A fairly common shrub in almost all the hilly forest areas. Often seen climbing on other shrubs, bamboos and other forest trees.

Gujarat: Dangs; abundant on the Western Ghats, Kanara; throughout India. Ceylon.

Hemidesmus R.Br.

Hemidesmus indicus (Linn.) Schultes in Roem. & Schult. Syst. Veg. 6:126, 1819; FBI. 4:5; C. 2:210; Gr. 122; D. & G. 147; Wt. Ic. t. 594; Talb. 2:232; Blatt. & McC. 524; Sant. 134; Santapau & Irani, 96, 1962.

Periploca indica Linn. Sp. Pl. 211, 1753.

A prostrate or twining shrub. Stem and branches shining dark brown. Leaves glabrous. Flowers in sub-sessile cymes; corolla greenish.

Local name: Kali vel.

Flowers: September to November.

Bedi 1330, 3177.

Common throughout Ratan Mahal and surrounding hills, especially in the hilly forest regions. Rare on plains.

Gujarat: Dangs; Berar, Konkan, S.M. Country;  
Northern and Western India. Ceylon.

Most of the Floras put the above mentioned two species, under the family Asclepiadaceae. In recent years, these plants are transferred to the new family Periplocaceae, erected by Bullock (1956) in Kew Bull. The division of the two families was already suggested by R. Brown in 1809 and was latter proposed by Schlechter in Notizul. Bot. Gar. Berlin 9:23, 1924. Hutchinson in Families of flowering plants ed.2, 1:381, 1959, has accepted Periplocaceae as an independent family.

#### LOGANIACEAE

Cynoctonum mitreola (Linn.) Britton in Mem. Torrey Bot. Club, 5:258, 1894; Merrill & Perry in Journ. Arnold Arb. 29:163, 1948; Leenhouts in Fl. Males. 6:375, t. 37F, 1962; Sant. & Wagh in Bull. Bot. Surv. India 5:106, 1963; Raizada in Ind. For. 92(5):307, 1966.

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

Mitreola oldenlandioides Wall. ex DC, Prodr. 9:9, 1845; D. & G. 155; FRI. 4:79; C. 2:246; Sant. 141.



PLATE NO. 22

Cynoctonum mitreola (Linn.) Britton.

A small, erect, glabrous herb, about 25 cm. tall.  
Stem angled. Leaves membranous. Flowers in axillary  
and terminal dichotamous cymes; corolla small, white.  
Capsule horn shape.

Plate No. २२

Flowers & Fruits: August to November.

Bedi 750, 2831, 3428.

Restricted in distribution to certain localities  
only. Often noted at Patan Mata, Raiengna and Handva  
hills. Usually inhabits the moist rocky slopes in the  
forest areas. Not common.

Madhya Pradesh, Western Peninsula.

Burma, Malaya, N. Australia.

#### GENTIANACEAE

Terrestrial herbs; leaves opposite:

Corolla regular:

Flowers in terminal branched cymes;  
peduncles and pedicel long; corolla  
globose, blue, purple, rarely white.. Exacum

Flowers in sessile axillary clusters;  
corolla tubular, white. . . . . Enicostemma

Corolla irregular; flowers pink or  
 white; stigma deeply two lobed. . . . . Canscora  
 Aquatic herbs; leaf single. . . . . Nymphoides

Exacum Linn.

Calyx lobe with a dorsal wing:

Dorsal wing of the calyx lobe narrow;  
 pedicels less than 14 mm. long;  
 leaves sub-sessile. . . . . pedunculatum

Dorsal wing of the calyx lobe broad;  
 pedicel more than 20 mm. long; leaves  
 distinctly petiolate. . . . . petiolare

Calyx lobe without a dorsal wing;

flowers on a more slender, long peduncle. . lawii

Exacum pedunculatum Linn. Sp. Pl. 112, 1753; FBL.4:97;  
 C. 2:253; Trim. Fl. Ceyl. 3:182; G. 614.

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

An annual erect much branched herb. Leaves  
 sub-sessile, not more than 1 cm. broad. Flowers in  
 terminal much branched cymes; pedicel stout rigid;  
 corolla blue, lobes lanceolate acute. Capsule globose  
 4-5 mm. in diameter.

Flowers & Fruits: September to October.

Bedi 3424 (8-10-1962, Patan Mata hill).

Restricted in distribution, localised only to few hills near Kanjeta. Often noted among grasses in the open places, on the Patan Mata plateau.

Gujarat, Deccan, Kanara; throughout India.

Ceylon.

Exacum petiolare Griseb. in DC. Prodr. 9:46, 1845;  
FBI. 4:98; D. & G. 157; Wt. Ic. t. 1324;  
G. 614; Sant. 142; Chavan & Oza, Fl. Pavagadh,  
143.

E. pedunculatum Var. petiolare Trim. Fl. Ceyl.  
3:182, 1893; C. 2:253.

An annual erect herb, 5-15 cm. high. Stem quadrangular, slightly winged, usually unbranched. Flowers blue; calyx lobes with a broad membranous dorsal wing.

Flowers & Fruits: September to October.

Bedi 3455 (9-10-1962, Kanjeta).

Localised in distribution. Noted along the roadside escarpments, near Pepar na Pani on the way to Pepargota.

Deccan, Konkan, Western India, Chota Nagpur.

Exacum lawii Clarke in FBI. 4:98, 1883; C. 2:254;  
G. 615; Sant. 142.

A slender, erect herb. Stem quadrangular, not  
or slightly branched near the top. Leaves sessile.  
Flowers on a long slender terminal peduncle; corolla  
blue or bluish-purple.

Flowers & Fruits: September to October.

Bedi 3239, 3666.

Not common in open grassy places on Raiengna,  
Bendol and Alindra plateaus.

Deccan, S.M. Country, Mysore, Konkan, Malabar.  
Almost throughout Western Peninsula of India.

This species has not been recorded earlier from  
Gujarat State.

Enicostema Blume (nom. cons.)

*hyssopifolium* (Willd.) Vahl

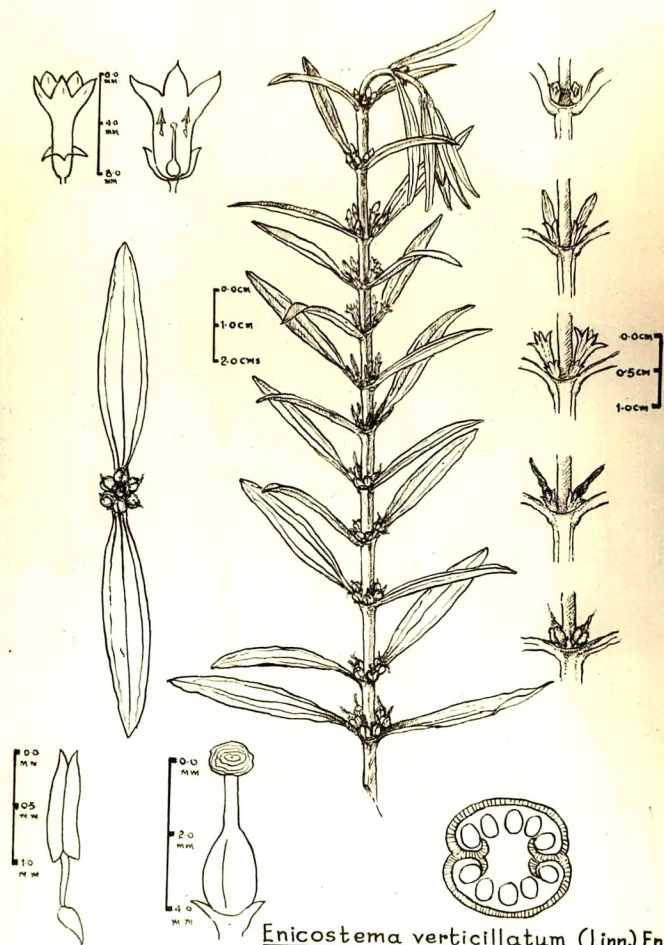
Enicostema verticillatum (Linn.) Engler, Pflanzenw.

Ost.-Africa 6:313, 1895; Chavan & Oza, Fl.

Pavagadh, 143.

Gentiana verticillata Linn. Syst. (ed. 10) 952, 1759.





*Enicostema verticillatum* (Linn.) Engl.

PLATE NO. 23

*Enicostema verticillatum* (Linn.) Engler.

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

A common erect herb, 5-30 cm. long. Flowers sessile, in axillary clusters all along the stem; corolla white, tubular with acute lanceolate lobes. Capsule rounded at the apex, slightly narrowed at the base.

Plate No. 23

Flowers & Fruits: July to October.

Bedi 41.

Fairly common weed in cultivated fields, along the forest paths and in open grassy places.

Gujarat, Maharashtra, Konkan; almost throughout the greater part of India.

Ceylon, Malaya, Tropical Africa, W. Indies.

The spelling of the generic name is that given in the list of Nomina Conservanda under no. 6484 of the International Code of Botanical Nomenclature, 1961. The correct spelling therefore is Enicostema not Enicostemma as is given in our floras.

Canscora Lamk.

Calyx not winged; stem 4 angled; not or  
obsoletely winged. . . . . diffusa

Calyx prominently winged and so also  
the pedicel, wings broader at the top. . . decussata

Canscora diffusa R.Br. Prodr. 451 in Obs. 1810;  
FBI. 4:103; C. 2:257; Gr. 123; D. & G. 158;  
G. 616; Sant. 143; Chavan & Oza, Fl. Pavagadh,  
144.

C. lawii Wight, Icon. t. 1327, 1848 (non Clarke).

An erect glabrous herb, 10-50 cm. tall. Stem  
obtusely quadrangular. Flowers in lax diffuse panicle  
cymes. Corolla 1 cm. long, pink or red.

Flowers & Fruits: October to January and  
upto March near moist  
localities.

Bedi 622, 1072, 3806.

A fairly common herb, along the banks of streams  
and Panam river. Often noted at various places on moist  
rocky places in the forest areas. Found, almost through-  
out Ratan Mahal and surrounding areas.

Gujarat: Pavagadh, Baroda, Dangs; Deccan, Konkan,  
Kanara; throughout India.

Ceylon, Malaya, Australia, Tropical Africa.

Note: The identity of my doubtful specimens of this  
Genera have been confirmed at Kew Herbarium, England.

Canscora decussata Roem. & Sch. iii Mant.:229, 1827;  
FBI. 4:104; G. 618; Trimen. Fl. Ceylon 3:185,  
1895; Chavan & Bedi in JBNHS. 59(2):687, 1962  
(new plant records for erstwhile Bombay State).

An erect glabrous herb. Stem 5-30 cm. 4 winged,  
winges broader towards the apex. Leaves oblong-lanceolate,  
sessile, 3-nerved. Cymes rigid, erect, terminal, having  
bracts at its bifurcations. Pedicels and calyx distinctly  
winged. Corolla white, tube as long as calyx.

Plate No. 24.

Flowers: September to January.

Fruits: October to January.

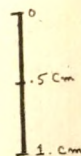
Bedi 1517, 1656, 3599.

The plants were found inhabiting the steep slopes  
and the escarpments along the roadsides near Taramb Kach,  
Kanwara dungar and Patan Mata hill. Restricted to certain  
localities only.

In most parts of India, from Himalayas to Assam;  
abundant in Bengal plains, Eastern Ghats, Madras.

Burma, Ceylon, Madagascar, Tropical Africa.

This species has been recorded for the first time  
from the erstwhile Bombay State loc. cit.



THE MAHARAJA SAYAJIRAO UNIVERSITY OF  
BARODA  
BOTANY DEPARTMENT  
HERBARIUM

No. BED 1856

Family Gentianaceae  
Genus Causcora  
Species decussata Roem & Sch.

Vernacular Name \_\_\_\_\_  
Locality Bachelor Hill. Nalgonda  
Remarks A small annual herb.  
10-12 cm. Stem four winged.  
Flower white or sometimes  
pink. Calyx distinctly winged.

Date: Sept 62. Collected by Syed

PLATE NO. 24

Causcora decussata Roem. & Sch.

Editor has added a note: "This is an interesting find for Bombay; the plant has a reputé in indigenous systems of medicine, and is at present in great demand for research into its biochemistry.....".

Nymphoides Mill.

Corolla lobes entire, glabrous, with a longitudinal fold, down the middle. . . . . cristatum

Corolla lobes fimbriate; not folded or crested down the middle. . . . . Indicum

Nymphoides cristatum (Roxb.) O. Kuntze, Rev. Gen.

Pl. 429, 1891; Maheshwari, Fl. Dli. 224;

Subramanyam in Aquat. Angios. 24, t. 16.

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

Limnanthemum cristatum Griseb. Gen. Spec. Gent.

342, 1839; FDI. 4:131, C. 2:261; D. & G. 153;

Sant. 145.

An aquatic floating herb. Leaves suborbicular, cordate, purplish beneath. Flowers white; corolla 5-7 lobes, glabrous, with a broad longitudinal crest down the middle of each lobe.

Flowers: August to April.

Bedi 2886 (11-8-1962, Dhenpur tank).

Rare, only noted at Dhenpur tank.

Common in tanks throughout Gujarat and Maharashtra;  
almost throughout India.

Ceylon, South China.

Nymphoides indicum (Linn.) O. Kuntze, Rev. Gen. Pl.

429, 1891; Subramanyam in Aquat. Angios. 24,  
f. 17, Pl. 11; Bailey, Man. Cult. Pl. 808;  
Raizada, Ind. For. 92(5):318, 1966.

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

Villarsia indica Vent.: Gr. 123, 1839.

Limnanthemum indicum (Linn.) Griseb, emend. Thw.

Enum. Pl. Zeyl. 205, 1860; FBL. 4:131; C. 2:261;  
G. 621; Sant. 144.

An aquatic herb with floating leaves. Leaves much  
larger than in the preceding species, orbicular, deeply  
cordate. Flowers white with yellow centre; corolla lobes  
deeply fimbriate hairy.

Plate No. 25.

Flowers: August to April

Bedi 2888 (11-8-1962, Dhenpur tank).





PLATE NO. 25

Nymphoides indicum (Linn.) O. Kuntze



Rare, only noted in Dhenpur tank.

Gujarat, Maharashtra, Kanara; throughout India.

Ceylon, Afghanistan, Malaya, Australia, S.E. Asia.

In our Indian floras this genus goes under the name Limnanthemum Gmel. (1770) but this must make way for Nymphoids Hill (1756) on account of priority. O. Kuntze attributed Nymphoids to Ludwig (1737); Ludwig's name is illegitimate being pre 1753. The fact that J. Hill does not consistently follow binomial system of nomenclature, does not invalidate generic names described in Hill's British herbal.

#### BORAGINACEAE

Flowers blue, violet or purple:

Flowers in axillary and terminal  
ebracteate racemes; corolla less than  
10 mm. in diameter. . . . . Cynoglossum

Flowers solitary or few flowered  
bracteate cymes; corolla more than 15 mm.  
in diameter. . . . . Trichodesma

Flowers white or pale yellow:

Flowers solitary, axillary, pale yellow  
or white. . . . . Coldenia

Flowers in scorpioid cymes or in spikes,  
corolla white. . . . . Heliotropium

Cynoglossum Linn.

Cynoglossum meeboldii Brand in Fedde, Repert. 14:323,  
1916 & in Pfreich. 72:134, 1921; Sant. 148.

C. denticulatum Var. zeylanica Clarke in FBI.  
4:157, 1883; C. 2:284; G. 632.

C. canescens Graham, Cat. 135, 1839 (non Willd.).

C. glochidiatum Dalz. & Gibs. Bomb. Fl. 172, 1861  
(non Wall.).

An erect, much branched, hairy herb, often reaching  
upto 1 m. tall. Basal leaves usually with long petiole.  
Flowers blue, first in capitate then in a long terminal  
and axillary slender racemes. Petals entire or slightly  
lobed. Nutlets glochidiate, with a distinct margin.

Plate No. —

Flowers: August to October.

Fruits: September to November.

Bedi 177, 293, 1760.

Not common, sparsely distributed in the hilly forest  
region of Ratan Manal, especially on the south of Panam  
river. Often seen in open grassy places, along the road,  
near Pepargota.

Deccan, Konkan, W. Peninsula.

Apparently this species has not been reported from  
this part of the country.

Trichodesma R.Br.(nom. cons.)

Calyx rounded at the base. . . . . zeylanicum

Calyx cordate or hastate at the base. . . . amplexicaule

Trichodesma zeylanicum (Burm. f.) R.Br. Prodr. 496,  
1810; FBL. 4:154; C. 2:282; Gr. 134; D. & G.  
173.

Borago zeylanica Linn. Mant. 202, 1767.

An annual erect hairy herb, 20-50 cm. high. Leaves  
hispid, oblong-lanceolate. Flowers blue, light blue  
or purple in terminal bracteate cymes or few solitary  
flowers in the upper axils; calyx rounded at the base.

Flowers & Fruits: October to April.

Bedi 2444.

Not common, noted as a weed in cultivated fields  
at Banvaro, Alindra and Pepargota plateaus.

Gujarat, Konkan, Deccan, Western Peninsula.

Ceylon, Malaya, Australia.

Trichodesma amplexicaule Roth, Nov. Pl. Sp. 104, 1821;  
FBL. 4:153; D. & G. 173; Brand in Pfreich.  
72:39; Sant. 147.

T. indicum Var. amplexicaule Cooke, Fl. Pres. Bomb.  
(Rep. ed.) 2:282.

An erect hispid herb. Leaves 10x3 cm. covered with stiff hairs. Flowers pinkish, blue or light violet; calyx cordate, hastate produced below into auricles, turning inwards.

Local name: Undhi Phul.

Flowers & Fruits: September to November.

Bedi 79, 371.

More common than the preceding species. Often noted in open grassy places and as a weed in cultivated fields. The local name has been derived, which means 'inverted flower'.

Almost throughout Western India; from Rajputana, Madhya Pradesh to Malabar.

Coldenia Linn.

Coldenia procumbens Linn. Sp. Pl. 125, 1753; FDI. 4:144;  
C. 2:271; Gr. 135; D. & G. 171; Sant. 146.

A procumbent herb with radiating branches. Leaves crisped, densely covered with ash grey hairs. Flowers pale yellow or white, solitary axillary. Drupes pyramidal, separating into 4, 1-seeded pyrenes.

Flowers & Fruits: November to April.

Bedi 1002, 2862.

Usually found in dried ditches around Dhenpur and Paperia tanks. Occasionally seen growing as a weed in dry fallow fields.

Gujarat, Deccan, Konkan, Kanara; throughout India.

Ceylon, Africa, Australia, America; almost all warm countries of the world.

Heliotropium Linn.

Antners free, not connate by their connectives; calyx usually with narrow lobes; not closely enveloping the nutlet in fruit; leaves elliptic or ovate, obtuse. . . . . supinum

Antners connate by their produced connectives, separating afterwards with a small disc at their apex; calyx in fruit closely enveloping the nutlet; leaves linear-lanceolate. . . . . scabrum

Heliotropium supinum Linn. Sp. Pl. 130, 1753; FDI. 4:149; C. 2:275; D. & G. 171; Wt. Ic. t.1387; G. 629; Sant. 147.

Piptoclaina malabarica G. Don. Gr. 135.

A prostrate or decumbent herb with white woolly appressed hairs. Leaves elliptic, ovate or suborbicular. Flowers white, sessile in short spiciform villous cymes. Fruit ovate or subglobose.

Flowers & Fruits: November to March.

Bedi 1997, 3706.

Not common, noted in dry fallow fields in Dhenpur, Taramb Kach and in dry ditches near Dhenpur tank.

Gujarat, Deccan, Konkan, Kanara, W. Peninsula.

Ceylon, N. & S. Africa, S. Europe.

Heliotropium scabrum Retz. Obs. 2:8, 1781; Santapan, Pl. Saur. 25; Chavan & Oza, Fl. Pavagadh, 148.

H. marifolium Retz. Obs. 2:8, 1781, pro parte; FBI. 4:152; C. 2:280; Wt. Ic. t. 1390. D. & G. 171.

H. marifolium Var. Wallichii C.B. Clarke in FBI. 4:152, 1885.

A much branched, suberect or decumbent herb. Leaves ovate, lanceolate, acute. Flowers white, in short axillary and terminal bracteate spikes 2-5 cm. long.

Flowers & Fruits: August to April.

Bedi 2414, 2654, 3025.

Very variable in form and size, depending upon the habitat. Usually seen growing as a weed in dry fallow fields, in open grassy places and on sandy soil.

Gujarat, Deccan, Konkan, Kanara; throughout India.

Ceylon.

#### EHRETIACEAE

Style once forked, two or bifid. . . . . Ehretia

Style twice forked, four or four fid. . . . Cordia

#### Ehretia Linn.

Ehretia laevis Roxb. Cor. Pl. 1:42, t. 56, 1795;

FBI. 4:141; C. 2:269; Gr. 137; D. & G. 170;

Wt. 1c. t. 1382; Talb. 2:275, f. 424; Witt,  
161; G. 626.

Small to a medium sized tree, rarely a large shrub. Leaves glabrous, very variable in size and shape, generally elliptic or obovate. Flowers sub-sessile or sessile in much branched corymbose cymes; corolla white lobes spreading. Drupes yellow, red and then black, slightly two lobed.

Local name: Tamboli.

Local uses: Fruits are eaten by the natives.  
I have often relished them.

Flowers: February to March.

Fruits: March to May.

Bedi 1245, 1266.

Fairly common on higher altitudes i.e. above  
400 m. M.S.L. Often noted on Patan Mata, Ratan Mal  
and Kanvara hill plateaus. A partial parasite  
Dendrophthoe falcata is often noted on its branches.  
Rare on the plains.

Gujarat, Madhya Pradesh, Deccan, Konkan, Kanara;  
throughout India.

Ceylon, Persia, China, Australia.

Cordia Linn.

Calyx not ribbed; leaves almost glabrous,  
alternate. . . . . dichotoma

Calyx ribbed; leaves densely tomentose,  
sub opposite. . . . . macleodii

Cordia dichotoma Forst. f. Prodr. 18, 1786; Sant. 145;  
Chavan & Oza, Fl. Pavagadh, 145.

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



C. latifolia Roxb. Fl. Ind. 2:330, 1824; Gr. 136;  
D. & G. 173.

C. myxa auct plur; C. 2:265 (non Linn.) Witt, 159.

♂

Small or a medium sized tree. Leaves alternate, subglabrous, somewhat orbicular. Flowers small, white in lax terminal and axillary cymes. Fruit yellowish or pinkish when ripe with very viscous pulp.

Local name: Gundi.

Local uses: Ripe fruits eaten by the natives, unripe used for vegetable and in the preparation of pickle.

Flowers: March to April.

Fruits: April to July.

Bedi 1289, 1338.

Not common, evenly distributed in almost all the forest areas and near villages. On Ratan Mal plateau, trees are very much stunted.

Gujarat, Deccan, Konkan; throughout India. Wild, often cultivated at many places.

Ceylon, Egypt, Cochinchina, Tropical Australia.

Cordia macleodii Hook. f. et Thoms. in Journ. Linn. Soc. 2:128, 1858; FBI. 4:139; C. 2:266; Talb. 2:272, f. 423; G. 624.

A small tree or rarely a large shrub, with light grey bark, young branches and leaves densely covered with fulvous pubescent hairs. Flower white, sub-sessile in dense panicle, terminal and axillary tomentose cymes; calyx distinctly ribbed, with dense grey tomentum.

Flowers: March to April.

Bedi 1337 (30-3-1961, Kharkali hill).

Very rare, noted only few trees on Kharkali hill, on the southern slopes of Ratan Mal "plateau".

Western Peninsula, Madhya Pradesh, Konkan, Kanara.

This species has not been recorded from Gujarat by the earlier workers.

#### CONVOLVULACEAE

Style 1, undivided:

Fruit indehiscent, woody baccate:

Flowers white; corolla salver  
shaped; stigma linear oblong. . . Rivea

Flowers pink; funnel shape;  
stigma globose. . . . . Argyreia

Fruit dehiscent or if indehiscent,  
then with fragile walled:

Stigma globose:

Capsule 4 valved, stem not  
winged:

Pollen grains spinulose or  
echinate. . . . . Ipomoea

Pollen grains not spinulose  
and never echinate. . . . Merremia

Capsule operculately or  
irregularly dehiscent; stem  
winged. . . . . Operculina

Stigma with ovate, elongate lobes  
or linear. . . . . Convolvulus

Style 2 or bifid:

Flowers white, solitary or passing  
into terminal clusters in upper axils;  
styles two. . . . . Cressa

Flowers blue, solitary or few flowered  
cymes; styles 2, each bifid. . . . . Evolvulus

Rivea Choisy

Rivea hypocrateriformis Choisy in Mem. Soc. Pays.

Geneve 6:408, 1833; FBI. 4:184; C. 2:323;  
Gr. 127; D. & G. 168; Talb. 2:282, f. 427;  
G. 635.

R. fragrans Nimm. in Grah. Cat. 127, 1839.

R. bona-nox Choisy, Convolv. l.c. 409; D. & G. 168.

A large climbing shrub, often noted in hedges. Younger branches covered with white, silky, appressed hairs. Leaves orbicular, slightly hairy above, lower surface covered with dense, white silky hairs; corolla about 8 cm. long, white or light pink, pleasant smelling; stigma linear oblong. Fruit glabrous, globose.

Flowers: August to November.

Fruits: September to January.

Bedi 2942, 3180.

A common climber in hedges at Kanjeta. Often noted on Euphorbia nerifolia. Rare in the hilly forest regions.

Gujarat, Deccan, W. Peninsula, Behar and Assam.

On the subject of nomenclature and generic limitation of Rivea, please see Santapau in JBNHS. 47:350 and Van Oost. in Blumea 5:354-55, 1943.

Argyreia Lour.

Flowers 6-8 in capitate or sub-capitate cymes; corolla pink, 6-8 cm. long; ovary 4 celled.... sericea

Flowers in dense hairy corymbose cymes; corolla rosy, 2-3 cm. long, ovary 2 celled.... setosa

Argyreia sericea Dalz. in Dalz. & Gibs. Bomb. Fl.  
169, 1861; FBI. 4:188; C. 2:326; Talb. 2:286;  
G. 638; Witt 163.

Ipomoea bracteata Graham Cat. 131, 1839, (non Don.).

A beautiful large climber. Leaves broadly ovate,  
upper surface with light brown hairs, densely silky or  
silvery-white beneath. Flowers pink about 5 cm. long  
in capitate cymes. Bracts large silvery hairy.

Local name: Goda vel.

Flowers & Fruits; August to September.

Bedi 2991 (17-8-1962, Pepargota).

Not common, noted in shrubs and dense bamboo clumps,  
on Pepargota and Banvaro plateaus.

Deccan, Konkan, Malabar; Western India.

Argyreia strigosa (Roth) Sant. & Patel in Trans. Bose.  
Res. Inst. Calcutta 22:41, 1958; Raizada in  
Ind. For. 92(5):302, 1966.

Ipomoea strigosa Roth, Nov. Pl. Sp. 113, 1821.

Lettsomia setosa Roxb. Hort. Beng. 13:1814, nom.  
nud. & Fl. Ind. 2:80, 1824; FBI. 4:194;  
C. 2:330; G. 640; Witt 164; Wt. Ic. t. 1360.

Argyreia setosa (Roxb.) Choisy in Mem. Soc. Phys.  
Geneve. 6:425; 1833; Fl. Purandhar 86, 1957;  
Raizada in Ind. For. Rec.(N.S.) Botany 5(1):6,  
1959.

A large climber. Stem covered with light brown appressed hairs. Leaves slightly hairy above sparsely hairy beneath. Flowers rose coloured, hairy in corymbose cymes on a long peduncle 5-20 cm. long; corolla 2-3 cm. long. Bracts small, very obtuse covered with brown hairs.

Flowers: September to October.

Bedi 654.

A large climbers on shrubs and bamboo clumps, usually noted on Banvaro plateau. Very rare on plains.

Western Ghats, Madhya Pradesh, Konkan, Kanara; more or less throughout India.

Ceylon.

From the citation given, it is quite evident that Roxburgh's name setosa of 1814 is nom. nud. in the sense of the code, it became validated by the publication of its description in Fl. Ind. in 1824; but Roth's name strigosa had in the mean time been validly published with a description and in consequence becomes the oldest valid epithet for the species.

Ipomoea Linn.

Leaves entire (occasionally 3 lobed in *I. pilose*):

Outer sepals sagittate or cordate at the base;  
flowers pink or white, about 1 cm. long .... sinensis

Outer sepals not cordate or segitate  
at the base:

Flowers in sessile or sub-sessile  
heads; capsule hairy, seed glabrous;  
corolla about 1 cm. long, faint  
pink or white. . . . . eriocarpa

Flowers in pedunculate cymes or  
panicles:

Sepals hispid; stems twining,  
leaves often 3-lobed, white  
woolly beneath. . . . . dichroa

Sepals glabrous:

Plants aquatic. . . . . aquatica

Plants terrestrial:

Sepals obtuse, outer  
shorter than the inner;  
corolla 5 cm. long. . . sepiaria

Sepals acute; corolla  
3 cm. long. . . . . obscura

Leaves lobed (or entire in I. muricate &  
very rarely in I. pestigridis):

Flowers red or purple in 1-few flowered  
cymes:

Stem muricate; leaves ovate, cordate,  
not or rarely slightly lobed. . . . Muricata

Stem not muricate; leaves 3 lobed,  
ovate, cordate; flowers red or  
scarlet. . . . . hederifolia

Flowers white or pink; calyx hairy:

Leaves 3-9 lobed, rarely entire;  
corolla about 4 cm. long. . . . . pestigridis

Leaves palmately 3 lobed; corolla  
more than 5 cm. long. . . . . nil

Leaves with filiform segments, flowers  
red. . . . . quamoclit

Ipomoea sinensis (Desv.) Choisy in Mem. Phys. Soc.

Genev. 6:459, 1834; Verd Court in Kew Bull.  
1958:204, 1958; Raizada in Ind. For. 92(5):314,  
1966.

Convolvulus sinensis Desv. in Lamk. Encycl. 3:557,  
1791.

Ipomoea calycina Clarke in Hook. F&B. 4:201, 1883;  
C. 2:311 (non Messn. 1868); Witt 165; G. 642.

I. tropica Sant. & Patel in JBNHS. 54:798, 1957;  
Raizada in Ind. For. Rec. (N.S.) Botany 5(1):24,  
1959.

A slender annual twiner in hedges; sparingly clothed  
with long spreading hairs. Flowers about 1 cm. long.  
Outer sepals sagittate. Fruit ovoid, glabrous.

Flowers & Fruits: August to November.

Bedi 1646, 3317.



Not common, recorded on shrub and hedges near Karari, Pepargota and Chari. Stems often twining with each other.

Gujarat, Deccan, Konkan, Madras, Western Himalayas.

Tropical Africa.

Ipomoea eriocarpa R.Br. Prodr. 484, 1810; FBI. 4:204; C. 2:312; Ooststroom in Fl. Males. 4:462, t. 35, 1953; Verd Court in Fl. Trop. East Africa 91:1963.

Convolvulus hispidus Vahl, Symb. Bot. 3:29, 1794.

Ipomoea hispida (Vahl) Roem. & Schult. Syst. 4:238, 1819.

T. sessiliflora Roth Nov. Pl. Sp. 116, 1821; D. & G. 166; Wt. Ic. t. 169.

A slender twiner, sometimes prostrate on ground. Entire plant clothed with white or light brown hairs. Leaves cordate-subhastate. Flowers 2-5 in a head; corolla pink about 1 cm. long. Capsule globose hairy. Seed glabrous.

Flowers & Fruits: August to December.

Bedi 168, 695, 3380.

Fairly common along the paths, often twining tall grasses and also recorded as a weed in cultivated fields.

Present both on plains and in the hilly regions.

Gujarat, Deccan, Konkan, Kanara; throughout India.

Ceylon, Afghanistan, tropics of the old world,  
N. Australia.

This species resembles very much in form and habit with that of I. sindica from which it can be separated by its hairy capsule and glabrous or minutely foveolate seeds, whereas in I. sindica, capsule is glabrous and seed is velvety.

Ipomoea dichroa (Roem. & Schult.) Choisy in DC.

Prodr. 9:364, 1845; Shah in Journ. Univ.  
Bombay 30(3 & 5):36, 1962; Raizada in Ind.  
For. 92(5):313, 1966.

Convolvulus dichorus Roem. & Schult. Syst. Veg.  
4:263, 1819.

C. pilosus Roxb. Hort. Beng. 14, 1814, nom. nud.  
& Fl. Ind. 2:55, 1824.

Ipomoea pilosa Sweet, Hort. Brit. (ed. 2) 372,  
1830; FRI. 4:213; C. 2:313 (non Houtt. 1777,  
nec. Cav. 1791-1801).

A twiner with long brown spreading hairs. Leaves broadly ovate, cordate, silvery white woolly beneath. Flower pink or rose purple. Capsule subglobose hairy towards the apex.

Flowers: July to October.

Fruits: October to December.

Bedi 1633, 3322.

Not common, but sparsely distributed in almost all the areas. Occasionally noted in hedges and shrubs. Once, few small erect, specimens were recorded from a dry fallow field at Chari.

Gujarat: Baroda; Punjab, Bengal, W. Himalayas; throughout most of the tropical India.

Tropical Africa.

In Indian floras this plant is given under the name of I. pilosa Sweet, but there are two earlier homonyms that make Sweet's name illegitimate.

Ipomoea aquatica Forsk. Fl. Aegypt.-Arab. 44, 1775; FBI. 4:210; C. 2:215; Santapau in JBNUS. 47:346; Van Oostr. in Fl. Males. Ser. 1, 4(4):473, fig. 47-8, 1953; Verde. in Fl. Tróp. E. Afr. 113, April, 1963; Chavan & Oza, Fl. Pavagadh, 153.

Convolvulus repens Vahl Symb. 1:17, 1790 (non Linn.).

Ipomoea reptans Poir in Lank. Encycl. Suppl. 3:460, 1814; Gr. 130; D. & G. 164; G. 643.

A prostrate aquatic herb with hollow stem, rooting at nodes. Leaves variable elliptic, ovate-oblong, with entire or rarely with toothed margin. Flower pink about 5 cm. long.

Local Name: Nar ni Vel.

Local uses: Vegetable is prepared from the young leaves.

Flowers: October to April.

Bedi 2854.

Fairly common near the margins of Dhenpur tank, not so frequent at Peparia tank. I have not seen this species elsewhere in Ratan Mahal hills. Usually seen in shallow water and sometimes on semidried places near tanks.

Gujarat, Maharashtra; throughout India.

Tropical Asia, Africa, Malaysia and Australia.

For nomenclature, please see Verdc. loc. cit.

Ipomoea sepiaria Koenig ex Roxb. Hort. Beng. 14, 1814  
nom. nud. & Fl. Ind. 2:90; 1824; FBI. 4:209;  
C. 2:315; Verd Court in Kew Bull. 15(1):7-8,  
1961 & in Fl. Trop. E. Africa 117, 1963;  
Raizada, Ind. For. 92(5):314, 1966.

I. maxima sensu auct. mult. non (Linn. f.) Sweet, 1830.

A slender twiner. Leaves ovate, cordate, entire. Flowers white, pale purple or bluish purple. Corolla about 5 cm. long.

Flowers & Fruits: October to November.

Bedi 651 (30-10-1960, Banvaro).

Very rare, only once noted, twining round tall grasses in open places near Banvaro plateau.

Gujarat, Deccan, Konkan, Kanara; throughout India.

Ceylon, Malaya, Indochina.

For full discussion on nomenclature, please see Raizada loc. cit. or Verd Court, l.c.

Ipomoea obscura (Linn. f.) Ker. Gawl. Bot. Reg. 3, t. 239, 1817; FBI: 4:207; C. 2:317; Gr. 131; D. & G. 166; Santapau in JBNHS. 47:347; Van Oostr. in Fl. Mal. Ser. 1, 4(4):471, fig. 44, 1953; Verdc. Fl. Trop. E. Afr. 116, 1963.

Convolvulus obscurus Linn. Sp. Pl. (ed.2) 220, 1762.

A slender twiner in hedges and shrubs. Stem at times with light purplish tinge. Leaves small, ovate, entire with cordate base and rounded lobes. Flower white or pale

yellow with a purple centre or spot near the throat, solitary or few in dichasial cymes. Capsule globose or ovoid, glabrous, 2-4 seeded. Seeds brown velvety.

Local name: Vag vel.

Flowers & Fruits: October to January.

Bedi 726, 2184.

Common in the hilly forest regions of Ratan Mahal. Often noted in hedges and shrubs, occasionally in the open grassy places. Sometimes found as a weed in cultivated fields.

Gujarat, Deccan, Konkan; throughout India.

Ceylon, Malaya, China, Tropical Africa to South Africa.

Ipomoea muricata (Linn.) Jacq. Hort. Schoenbr 3:40, t. 323, 1798 (non Cav. 1799); FBL. 4:197; Witt, 164; Oost. Blumea 3:551, 1940; Sant. 151; Oost. Fl. Mal. Ser. 1, 4(4):481, 1953; Verdo. in Fl. Trop. E. Afr. 130, 1963.

Convolvulus muricatus Linn. Mant. 44, 1767.

Calonyction muricatum (Linn.) G. Don Gen. Syst. 4:264, 1837; G. 2:322; Gr. 130; G. 646.

A climber in hedges. Stem muricate. Leaves ovate, cordate, glabrous. Flowers large, showy, bluish purple to rose purple. Fruit globose apiculate, 1 cm. in diameter, usually 4 seeded.

Flowers: September to December.

Bedi 72, 3577.

Not common, occasionally noted on shrubs near Bendol, Tokerwa and Khalta.

Gujarat, Madhya Pradesh, Deccan hills, Konkan, Northern border of Uttar Pradesh.

Ceylon, Japan. An American plant now widely distributed in the tropics of the old world.

Ipomoea hederifolia Linn. Syst. Nat. (ed. 10) 925, 1759; Verdc. in Fl. Trop. E. Afr. 132, 1963.

I. angulata Lamk. Encycl. 1:464, 1791; Oost. in Blumea 3:553, 1940; Santapau, l.c. 349; Oostr. Fl. Mal. Ser. 1, Vol. 4(4):481, t. 54, 1953.

I. phoenicea Roxb. Fl. Ind. 2:92, 1824.

Quamoclit phoenicea Choisy in Mem. Soc. Phys. Hist. Nat. Geneve. 6:433, 1833; D. & G. Suppl. 59; G. 645.

Ipomoea coccinea Clarke in FBI. 4:199, 1883 (non Linn.).

Quamoclit coccinea Cooke, Fl. Pres. Bom. 2:261,  
1904 (non Moench.) & Rep. ed., C. 2:330.

An elegant climber on hedges and shrubs. Leaves  
ovate-cordate, acute or usually 3-5 lobed. Flowers  
red with exerted stamens, in lax cymes.

Flowers & Fruits: September to December.

Bedi 325.

Fairly common on hedges and shrubs near Kanjeta,  
Alindra, Panam, and in various other places even in  
the deep interior of forest areas.

Native of tropical America, now circum tropical,  
cultivated or quasi wild.

Ipomoea pestigridis Linn. Sp. Pl. 162, 1753; FBI.  
4:204; C. 2:320; Gr. 132; D. & G. 165;  
Wt. Ic. t. 836; Witt, 165; G. 644; Santapau,  
l.c. 348; Oost. Blumea 3: 504, 1940 & Fl.  
Mal. Ser. 1, 4(4):46, f. 40, 1953.

I. hepaticifolia Linn. l.c. 161.

I. postigridis Var. hepaticifolia Clarke in FBI.  
4:204, 1883.

I. pestigridis Linn. Var. capitellata Clarke in  
FBI. 4:204, 1883.



A long twiner clothed with long spreading brown hairs. Leaves usually 5-9 lobed, sometimes 3 lobed, very rarely entire, hirsute on both sides. Flowers pinkish in pedunculate heads, surrounded by large ovate-oblong hairy bracts.

Local name: Pasi; Ved Panadi.

Flowers & Fruits: September to December.

Bedi 738, 1741(25-11-1960, Kanjeta).

Fairly common in hedges and shrubs; also noted as a weed in cultivated fields. More common on plains.

Gujarat: Godhra, Chandod; Deccan, Konkan, more or less throughout India.

Ceylon, Malaya, Polynesia, Tropical Africa.

I have confirmed the identity of my specimens at ERI. Herbarium, Dehra Dun. Raizada's specimen 23658 collected on 12-10-1953 from Dwarka, Gujarat State, shows undivided ovate-cordate leaves.

Till recently some of the authors of our floras mention two varieties established by Clarke loc. cit. I have often observed undissected, ovate, cordate and 3-9 lobes leaves on the same plant. My specimen Bedi 1741 is of importance to solve this problem. I feel

that both the varieties should be merged with the type, as differences are superficial and not constant.

Ipomoea nil (Linn.) Roth, Cat. Bot. 1:36, 1797;  
Ooststroom, Blumea 3:497, 1940; Santapau  
l.c., 348; Sant. 151; Oost. in Fl. Males.  
Ser. 1, 4(4):465, 1953; Verde. in Fl. Trop.  
E. Afr. 113, 1963.

Convolvulus nil Linn. Sp. Pl. 219, 1762.

Ipomoea hederacea Clarke in FBI. 4:199, 1883;  
C. 2:321 (et al. plur. auct. non Jacq.);  
Witt 164.

A large hairy twiner in hedges along the roads.  
Leaves ovate-cordate, 3 lobed. Flowers very showy,  
blue then turn purple blue and finally rose purple  
when faded. Corolla about 6 cm. long; sepals hirsute  
at the base, flowers closing before noon.

Flowers & Fruits: October to December.

Bedi 3531 (12-10-1962, Bendol hill).

Common in hedges near villages. Sometimes noted  
in shrubs in the forest interiors.

Gujarat, Bombay; many parts of India.

Tropical and sub-tropical regions of both hemi-  
spheres.

Ipomoea quamoclit Linn. Sp. Pl. 159, 1753; FBL. 4:199;  
Oostrooom l.c., 555; Santapau l.c. 349; Sant.  
151; Oost. Fl. Mal. Ser. 1, 4(4):482, 1953.

Quamoclit vulgaris Choisy in Mem. Soc. Phys. Hist.  
Nat. Geneve 6:434, 1833; C. 2:331; D. & G.  
Suppl. 59.

A beautiful slender twiner. Leaves with a comb-like  
linear filiform segments. Stem purple or purple green.  
Flowers red, very attractive,

Local name: Kam lata.

Flowers: August to December.

Bedi 277, 2936.

Common at few places in hedges near Kanjeta and  
Dhenpur, often seen on waste places. Most probably  
cultivated and escaped from cultivation! Runs wild  
many times!

A native of Tropical America, now circumtropical.  
Very common in gardens throughout India.

Merremia Dennst. ex Hallier f.

Leaves reniform, broader than long; inner  
sepals 2-lobed at the apex. . . . . gangetica

Leaves 3 to 5 times longer than broad;  
3 toothed at the apex and near the base;  
inner sepals not 2-lobed at the apex. . . . tridentata

Merremia gangetica (Linn.) Cufodontis in Bull.

Jard. Bot. Etat. Brux. Suppl. 31:743,  
1961; Maheshwari in Bull. Bot. Surv. Ind.  
5(2):133, 1963; Raizada in Ind. For.  
92(5):317, 1966.

Convolvulus gangeticus Linn. Cent. Pl. 11:9,  
1756; Amoen. Acad. IV:306, 1759.

Evolvulus gangeticus Linn. Sp. Pl. (ed. 2)  
391, 1762.

Merremia emarginata Hall. f. in Engler, Bot.  
Jahrb. 16:552, 1893; C. 2:305.

Ipomoea reniformis Choisy in Mem. Soc. Phys.  
Geneve 6:446, 1833; FBI. 4:206; Gr. 131;  
D. & G. 164.

A much branched hairy creeper, often rooting at  
first few nodes. Leaves reniform 1 to 2.5 cm. broad.  
Flowers yellow. Fruit a globose capsule.

Flowers & Fruits: October to January.

Bedi (24-11-1961, Tokerwa).

Fairly common on plains, often noted in dry fallow  
fields and open wastelands. Sub-gregarious in habit.

Deccan, Western Peninsula, Rajputana, Behar.

Ceylon, S.E. Africa, Tropical Africa.

Merremia tridentata (Linn.) Hallier f. in Engl.

Bot. Jahrb. 16:552, 1893; C. 2:306; G. 652;

Van Oost. Fl. Mal. Ser. 1, 4:445, 1953;

Verd Court, Fl. Trop. E. Afr. 51, t. 14,  
1963.

Convolvulus tridentatus Linn. Sp. Pl. 157, 1753.

Ipomoea tridentata Roth in Roem. Archiv. Bot.

1(3):38, 1798; Clarke in FBI. 4:205; Gr. 131;

D. & G. 165.

Evolvulus tridentatus Linn. (ed.2) 392, 1762.

A prostrate, glabrous herb with woody root stock.  
Stem slender and angular. Leaves linear oblong, often  
deeply emarginate and 3 toothed at the apex and dilated  
at the base into toothed auricles. Flower tubular,  
white or pale yellow, axillary, solitary, on filiform  
peduncles. Capsule globose, glabrous.

Local name: Mirgu.

Flowers & Fruits: August to January.

Bedi 495, 991, 3437.

Common as a weed in cultivated fields and in open  
dry places. Plants usually, prefer dry sandy soil.  
Sometimes noted forming large mats.

Gujarat, Deccan, Western Peninsula.

Ceylon, Mauritius, Madagascar.

Operculina Silva Manso

Operculina petaloidea (Choisy) van Ooststr. in Blumea  
3:369, 1939; Raizada in Ind. For. Rec.(N.S.)  
Bot. 5(1):34; Chavan & Bedi JBNHS. 61(3):717,  
"New Plant records for erstwhile Bombay State".

Ipomoea petaloidea (Choisy) in Mem. Soc. Phys.  
Genev. 4:451, 1833; Convolv. Or. 69 et in DC.  
Prodr. IX, 360.

Ipomoea petaloidea Choisy var. pauciflora Clarke  
in Hooker, FMI. 4:212, 1883.

I. xanthantha Kurz, For. Fl. Brit. Burma 2:219, 1877.

A large, scandent, glabrous shrub, often found  
climbing on shrubs or small trees. Stem twisted, grooved  
and winged at a few places. Leaves 15x10 cm.; base  
rounded or sub-cordate; apex ovate of the basal leaves,  
upper leaves acute lanceolate; petiole of the lower  
leaves about 6 cm. long. Flowers in sub-racemose  
inflorescence; sepals sub-acute, glabrous; corolla about  
3-5 cm. long, yellow with slightly hairy bands outside.  
Stamens inserted lower down in the tube; anthers sometimes  
twisted. Capsule 1.5 cm. ovoid; seed minutely velvety.

Plate No. 26 & 27

Flowers: March to May.

Fruits: April to June.

Bedi 1965, 1966, 3767, 3768.



*Operculina petaloidea* (Choisy) Van. Oost.

PLATE NO. 26

*Operculina petaloidea* (Choisy) Van. Oost.  
(older branches)



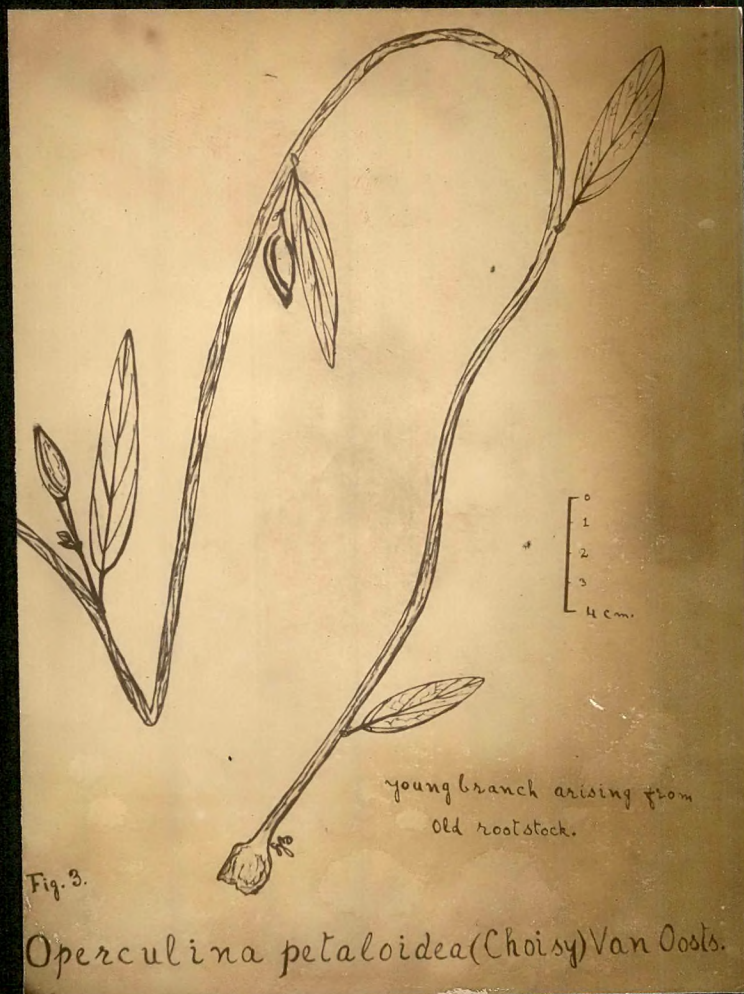


PLATE NO. 27

*Operculina petaloidea* (Choisy) Van Oost.  
(young branches arising from  
old root stock)



The plants were found as an undergrowth of a dry, deciduous mixed teak forest, near the bank of a stream on the border of Kanjeta and Mendhri village in Panch Mahal District, Gujarat State. The plant is rare and localised in distribution: N. Oudh, Thomas; all over Prome and Pegu, Kurz. Distribution Timor.

From the examination of Donal's specimens kept at F.R.I. herbarium and the specimens collected from Ratan Manal it seems that there exists a lot of variability in the leaf and inflorescence character. Basal ovate and upper oblong-lanceolate leaves along with the peduncles with more than two flowers at the nodes are a common feature of the older branches, while all the leaves oblong-lanceolate and peduncles with one or two flowers at the nodes are found on young branches arising from old rootstocks. From these field observations the author is inclined to believe that Ipomoea petaloidea Choisy var. pauciflora established by Clarke in F.B.I. is no more valid and should be merged with the species.

Convolvulus Linn.

Prostrate or sub-erect hairy herbs:

Stigmas filiform. . . . . microphyllus

Stigmas clavate or elliptic oblong. . . glomeratus

Twining glabrous herb; stems often

twisted together. . . . . arvensis

Convolvulus microphyllus Sieb. ex Spreng. Syst.

1:611, 1825; FBI. 4:218; 2:301; D. & G. 164;

Wt. Ic. t. 1367.

A procumbent hairy herb. Leaves 1-3 cm. long,  
mucronate hairy on both sides. Flower pink, solitary  
or 2-4 together.

Flowers & Fruits: November to March.

Bedi 2008 (30-11-1961, Bendol).

Common in open grassy places on plains north-east  
of Panam river. Often noted as a weed in dry fallow  
fields.

In the drier parts of W. & N.W. India.

Baluchistan to Egypt and Nubia.

Convolvulus glomeratus Choisy ex DC. Prodr. 9:401,  
1845; FBI. 4:219; C. 2:302; Wt. Ic. t. 1366.

A large, spreading, prostrate or sub-erect,  
pubescent herb. Leaves 2 to 4 cm. long. Flowers in  
dense globose villous heads, hairs light brown. Corolla  
tubular faint pink or white. Stigma clavate or elliptic  
oblong.

Flowers & Fruits: October to March.

Bedi 734, 1013.

Less common than the previously mentioned species.  
Often noted along field bunds at Kundawala, Tokerwa and  
Cuari. Rare in the hilly regions.

Gujarat, Punjab.

Afghanistan, Pakistan, Baluchistan, W. Tropical  
Africa.

Convolvulus arvensis Linn. Sp. Pl. 153, 1753; FBI.  
4:219; C. 2:303; Gr. 132; D. & G. 163; Witt  
167; G. 650; Oostr. in Blumea 3:283; Santapau  
in JBNHS. 47:343; Sant. 150.

A trailing or more commonly a twining herb. Leaves  
lanceolate or hastate. Flower white or faint pink.  
Fruit glabrous, globose.

Local name: Hirinch.

Flowers & Fruits: November to March.

Bedi 736, 1832.

Fairly common in almost all the areas on the plains. Usually noted as a weed in cultivated fields, especially maize. After the crop is harvested plants lie prostrate in absence of any erect support and their stems twist around themselves.

Gujarat, Deccan, Western India, Madhya Pradesh.

A common plant widely distributed in almost all temperate and sub-tropical regions.

Cressa Linn.

Cressa cretica Linn. Sp. Pl. 223, 1753; FBI. 4:225;  
C. 2:296; D. & G. 162.

C. indica Retz. Obs. 4:24, 1786; Gr. 133.

An annual erect hairy herb. Leaves ovate, acute. Flowers white or pink in the axil of upper leaves. Fruit a capsule.

Local name: Peelio.

Flowers & Fruits: December to April.

Bedi 1394.

Common as a weed in dry fallow fields, in dried ditches at Banvaro plateau and many other places on the plains, north to the Panam river.

Gujarat, Punjab, Deccan, Konkan, Kanara, throughout India. Ceylon, all warm regions.

Evolvulus Linn.

Evolvulus alsinoides Linn. Sp. Pl. 392, 1762; FBI.

4:220; C. 2:296; G. 648; Santapau in JBNHS.

47:340; Sant. 149; Verd Court, Fl. Trop.

E. Africa 18, 1963.

Convolvulus alsinoides Linn. Sp. Pl. 157, 1753.

Evolvulus hirsutus Lamk. Gr. 133; D. & G. 162.

A small prostrate hairy herb. Leaves lanceolate, ovate, clothed with white appressed hairs, distichous. Flowers bright blue, light blue rarely white, solitary or in pairs, on an axillary peduncle.

Local name: Badli Phuli; Sankha Wali.

Flowers & Fruits: July to March.

Bedi 75, 416, 2695.

Fairly common in almost all the areas. Usually it prefers dry sandy soil. Very common as a weed in cultivated fields and among grasses.

Gujarat, Deccan, Konkan; throughout India.

Ceylon, tropical and sub-tropical regions of the world.

#### CUSCUTACEAE

##### Cuscuta Linn.

Cuscuta reflexa Roxb. Pl. Cor. 2:3, t. 104, 1798;  
FBI. 4:225; C. 2:292; Gr. 134; N. 206;  
Witt 168; Santapau in JBNHS. 47:339;  
Santapau & Patel in JBNHS. 54:712, t. 1,A;  
Sant. 149; Oostst. Blumea 3:70, 1938.

A leafless, total stem parasitic twiner, yellow to yellowish green in colour. Flowers white bell shaped in sub-umbellate cluster, capsule globose.

Local name: Amber vel or Anter vel.

Flowers & Fruits: November to March.

Bedi 3630 (15-10-1962, Dhenpur).

Very rare in the hilly regions of Ratan Mahal, though occasionally seen on the N.E. border of our districts, especially near Kundawala, Vakeshia, Vedbedh, Dhenpur etc. <sup>a</sup> Parasitic on various species, usually on Streblus.

Gujarat, Madhya Pradesh, Deccan, Konkan;  
throughout India.

Ceylon, Malaya, Afghanistan, China.

### SOLANACEAE

Fruit a berry, indehiscent:

Anthers connivent in a cone, longer  
than the filament:

Anthers dehiscing by apical pore  
or by short slit; leaves entire  
lobed or pinnatifid; corolla  
violet blue or white. . . . . Solanum

Anthers dehiscing by longitudinal  
slits; leaves pinnatisect;  
flowers yellow. . . . . Lycopersicon

Anthers not connivent in a cone; not  
longer than the filament:

Calyx in a fruit small; corolla  
white. . . . . Capsicum

Calyx in a fruit greatly enlarged  
and enclosing the fruit, flowers  
pale yellow. . . . . Physalis

Fruit a capsule, mostly dehiscing or at  
length splitting:

Flowers axillary solitary; calyx nearly  
covering the fruit, smooth. . . . . Nicotiana

Flowers in terminal panicles; calyx  
much shorter than the fruit, reflexed  
and echinate. . . . . Datura

Solanum Linn.

Plants unarmed; flowers white. . . . . nigrum

Plants armed with prickles; flowers  
purple violet to light blue or violet:

Prostrate or ascending herbs with  
long straight, golden yellow  
prickles. . . . . surattense

Erect shrubs or undershrubs:

Calyx accrescent in fruit;  
berry rounded, oval or elongate-  
cylindric; cultigen. . . . . melongena

Calyx not accrescent in fruit;  
berry globose; plants wild. . . . indicum

Solanum nigrum Linn. Sp. Pl. 186, 1753; FBL. 4:229;  
C. 2:332; G. 657; Santapau in JBNES. 47:652;  
Sant. 154; Chavan & Oza, Fl. Pavagadh, 158.

S. rubrum Mill. Gard. Diet. n. 4, 1768; Wt. Ic.  
t. 344.

S. incertum Dunal : Gr. 137.



A small, erect, glabrous herb. Leaves variously toothed and lobed. Flowers white in extra umbellate cymes. Berry globose 5 to 8 mm. in diameter.

Local name: Piludi.

Local uses: Leaf infusion is used by the native Dhils to remove the effect of opium.

Flowers: July to April.

Fruits: October to April.

Bedi 66, 1012, 2165.

Common weed in cultivated fields and in waste places near villages.

Gujarat, Deccan, Konkan; throughout India.

Ceylon, all temperate and tropical regions of the world.

Solanum surattense Burm. f. Fl. Ind. 57, 1768 (excl. Syn. Pluk et Ray.); Sant. 154; Chavan & Oza, Fl. Pavagadh, 159.

S. xanthocarpum Schrad & Wendl. Sert. 1:8, t. 2, 1795; FBI. 4:236; C. 2:335; G. 658; Santapau in RBSI. (ed.1), 196.

S. jacquini Willd.: Gr. 139; Wt. Ic. t. 1401.

A diffuse perennial prickly herb. Young branches pubescent. Prickles straight, 1-2 cm. long, shining yellow. Flowers blue to light violet with long yellow filamentous anthers. Fruit a globose berry, yellowish.

Local name: Bhui ringeni.

Local uses: Decoction prepared from the root is used to cure cough and fever.

Flowers: August to May.

Fruits: December to June.

Bedi 1125, 2506.

Fairly common in waste places, in dry fallow fields and on dry sandy beds of the river Panam. Less frequent in the hilly regions.

Gujarat, Deccan, Konkan, Punjab to Assam; throughout India.

Ceylon, S.E. Asia, Malaya, Tropical Australia and Polynesia.

Solanum melongena Linn. Sp. Pl. 186, 1753; FBI. 4:235; C. 2:339; Gr. 138; Witt 170; G. 658; Sant. 154.

An erect diffuse undershrub, sometimes without prickles. Leaves lobed. Flower light violet, violet blue or bluish purple, rarely white. Berries round,

oval or elongated cylindric, light purple to violet,  
very rarely white.

Local name: Rengan.

English name: Egg plant or Brinjal.

Local uses: Extensively cultivated on  
                  plains, for its fruit which is  
                  used as vegetable.

Flowers & Fruits: August to April.

Bedi 2334.

Cultivated almost throughout the district, more so,  
on plains near Dhenpur.

Cultivated throughout India and in the warmer  
regions of the globe.

Solanum indicum Linn. Sp. Pl. 187, 1753; <sup>Det.</sup> FBI. 4:234;  
C. 2:336; Gr. 138; D. & G. 174; Wt. Ic. t. 346;  
Witt, 169; G. 658; Sant. 154.

A much branched prickly shrub. Young branches  
covered with light brown tomentum. Flower blue. Berry  
yellow, 2-5 cm. in diameter with numerous seeds.

Local name: Van rengani; Jungli rengani.

Local uses: Berries eaten by the natives.

Flowers & Fruits: November to April.

Bedi 1360 (13-3-1961, Banvaro).

Rare, noted in association with other shrubs at waste places near villages. More frequent on the plains near Dhenpur.

On December 19, 1967 few patches were also noted on Pepargota plateau. These specimens were having bigger berries than the berries of the plants observed at Dhenpur.

Common in Madhya Pradesh, Deccan; throughout tropical India.

Ceylon, Malaya, China, Philippines.

Lycopersicon Mill.

*Lycopersicon* (L.) Korsten

Lycopersicon esculentum Mill. Gard. Dict. (ed. 8), no. 2, 1768; Santapau in JBNHS. 47(4):659-660, 1948; Sant. 156; Chavan & Oza, Fl. Pavagadh, 159.

Lycopersicon esculentum Mill. : Clarke in FBI. 4:237; C. 2:345; Gr. 139; G. 661.

An erect or ascending herb, having long spreading hairs, especially on branches. Flowers yellow, decurved. Berries red when ripe.

Local name: Tomata.

Local uses: Eaten raw or used as a vegetable.

Flowers & Fruits: November to April.

Bedi 130.

Extensively cultivated on plains and sometimes in the hilly regions. Occasionally noted as an escape along the banks of the Panam river and rubbish heaps near villages.

Extensively cultivated throughout India.

A native of tropical America.

The correct spelling of the generic name is Lycopersicon, not Lycopersicum, as it is often mentioned in our floras. On the subject, please see Santapau, l.c.

Capsicum Linn.

Capsicum annuum Linn. Sp. Pl. 188, 1753; C. 2:347;  
Santapau, l.c. 661; Sant. 156; Maheshwari,  
Fl. Dli. 248.

Plant is well known and needs no description.  
Flower dull white. Fruit much longer than broad, red when ripe, pungent.

Var. acuminata Fingerh. in Mon. Gen. Caps. 13, t. 2, f. C, 1832 and Var. longum Steud. in Mart. Fl. Bras. 10:147.

Local name: Mirchi.

Local uses: Fruit spicy, used in vegetables.

Flowers & Fruits: September to March.

Bedi 3495.

Commonly cultivated for its fruits which are either eaten raw or used as spices in curries. More common on plains, less frequent in the hilly regions.

A native of Tropical America, extensively cultivated throughout India.

Physalis Linn.

Physalis minima Linn. Sp. Pl. 183, 1753; FBI. 4:238;

C. 2:340; Gr. 140; Santapau, loc. cit. 657;

Sant. 155; Chavan & Oza, Fl. Pavagadh, 160.

P. pubescens Wight, Ill. t. 166 B, f. 6 (non Linn.).

An annual soft hairy herb, 10-30 cms. tall. Leaves variously toothed. Flowers solitary, pale yellow. Fruit berry enclosed in an inflated calyx.

Local name: Popati.

Local uses: Fruits eaten by the natives.

Flowers: August to November.

Fruits: October to January.

Bedi 68, 290.

Fairly common in almost all the areas, often recorded as a weed in cultivated fields.

Madhya Pradesh, Deccan, throughout tropical India.

Ceylon, tropical Asia, Africa and Australia.

Nicotiana Linn.

Flower greenish yellow, less than

2.5 cm. long. . . . . rustica

Flowers pink or rosy, more than

4 cm. long. . . . . tabacum

Nicotiana rustica Linn. Sp. Pl. 180, 1753; FBI. 4:245.

A viscid-pubescent annual herb. Leaves petiolate, lower large broad ovate or sub-orbicular, upper small and narrower. Flowers greenish yellow in terminal, paniculate racemes. Capsule globose.

Local name: Surti tabacoo.

Flowers: October to December.

Bedi 1960 (29-11-1961, Banvaro).

Rare, only once noted few plants growing in association with N. tabacum at Banvaro.

Cultivated in many parts of Gujarat, Punjab and other parts of India.

Asia, Europe, Africa and America.

Nicotiana tabacum Linn. Sp. Pl. 180, 1753; FBI.  
4:245; C. 2:346; Gr. 140; D. & G. Suppl.  
62; G. 661; Santapau, loc. cit. 660;  
Sant, 157.

An erect, large, viscid hairy herb. Lower leaves much larger, oblong or ovate-lanceolate, upper smaller and amplexicaul. Flower tubular, rosy, in terminal panicles. Capsule ovate.

Local name: Tabacoo.

Local uses: Dried leaves are smoked by the natives in the form of Bidis & Cigars.

Flowers & Fruits: October to April.  
Bedi 2050.

Cultivated by the natives near their huts. Extensively cultivated on the plains near Dheupur, Tokerwa and Vadbedh.

Commonly grown throughout Gujarat, Maharashtra, Madhya Pradesh and almost all over India.



It is supposed to be a native of South America?  
It does not exhibit much tendency to spread as a weed  
or allow other weeds to grow near it.

Datura Linn.

(On the subject of the identity and nomenclature  
of Daturas, please see, Santapau in JBNHS. 47:657-659,  
1948).

Datura metal Linn. Sp. Pl. 179, 1753; Santapau, l.c.  
657; Sant. 155.

D. fastuosa Linn. Syst. Nat. (ed. 10) 2:932,  
1759; FBI. 4:242; C. 2:343; Gr. 141; Wt. Ic.  
t. 1396; G. 660.

D. alba Nees in TLS. 17:73, 1837; Wt. Ic. t. 952;  
G. 141; D. & G. 174.

D. fastuosa Var. alba Clarke in FBI. 4:243, 1883.

An erect glabrous undershrub. Leaves triangular-  
ovate, unequal sided at the base. Flowers white, large  
tubular about 15 cm. long. Capsule globose, prickly.  
Seeds, flat, light brown.

Local name: Datura.

Local uses: Leaves are smoked to cure cough.

Flowers: September to March.

Fruits: December to April.

Bedi 904.

Common in waste places and on rubbish heaps near villages. Rare in the hilly regions.

Fairly common in Gujarat, Maharashtra, Madhya Pradesh and many other parts of India.

#### SCROPHULARIACEAE

Leaves all alternate; corolla sub-rotate,  
yellow. . . . . Verbascum

Leaves all opposite or the lower only:

Corolla distinctly bilabiate; not parasitic:

Stamens 4, included in the corolla  
tube:

Calyx campanulate; corolla-pallate  
with two folds. . . . . Lindenbergia

Calyx 5-partite; corolla-pallate  
without fold:

Anther cells stipitate:

Placentas separating in  
fruit or if joined in a  
column not winged; seeds  
terete. . . . . Stemodia

Placentas joined in  
a column, winged by the  
remains of the septa;  
seeds angular. . . . . Limnophila

Anther cells contiguous, not  
stipitate; 3 lobes of the  
calyx larger than the other  
2, which are very narrow. . . Bacopa

Stamens 2 with perfect anthers, the  
2 lower reduced to staminodes inserted  
on the corolla throat. . . . . Lindernia

Corolla-tube elongated, the lobes spreading;  
stamens four, the anther cells distinct,  
equal or one imperfect or wanting; semi-  
parasitic herbs:

Calyx tubular, 5 toothed or 5 fid:

Corolla-tube straight or nearly  
so; lobes subequal; lower leaves  
much larger than the upper. . . . Buchnera

Corolla tube abruptly incurved  
at or above the middle; 2 upper  
lobes smaller than the others;  
lower leaves not much larger  
than the upper. . . . . Striga

Calyx campanulate, 5 fid or 5 lobes;  
anther 2 celled one of the cells  
barren; leaves always pinnatisect;  
corolla-tube short with dilated  
throat. . . . . Sopubia

Verbascum Linn.

Verbascum chinensis (Linn.) Santapau, Fl. Purandhar  
90, 1958; Sant. 157; Chavan & Oza, Fl. Pavagadh,  
163.

Scrophularia chinensis Linn. Mant. 250, 1771.

Celsia coromandeliana Vahl. Symb. Bot. 3:79,  
1794; FBL. 4:251; C. 2:352; D. & G. 176;  
Wt. Ic. t. 1406; G. 663.

An erect pubescent herb, 20-80 cm. tall. Radical  
leaves lyrato-pinnatifid, forming rosette, cauline leaves  
much smaller passing into floral bracts. Flower yellow  
in simple or branched terminal racemes. Capsule subglobose.

Local name: Kalhar.

Flowers & Fruits: July to April.

Bedi 1088, 2570.

Common on dry stream beds, often recorded as a  
weed in cultivated fields. Noted almost throughout the  
district.

Gujarat, Deccan, Punjab; throughout India.

Ceylon, Afghanistan, China.

On the subject of Verbascum & Coromandeliana, please  
see Santapau, loc. cit.

Lindenbergia Lehm.

*melharia* (Roxb) P. B. S. S. S. S.

Lindenbergia indica (Linn.) Kuntze, Rev. Gen. 462,  
1891; Santapau in JBNHS. 49:45, 1950.

Dodartia indica Linn. Sp. Pl. 633, 1753.

Lindenbergia urticaefolia Lehm. in Link and Otto.

Icon. Pl. Rar. Hort. 95, t. 48, 1828; FBI.

4:262; C. 2:379; Gr. 143; D. & G. 176; G. 665;

Blatter and Hallberg in JBNHS. 25:424.

L. polyantha Royle ex Benth. Scroph. Ind. 22, 1835;

FBI. 4:262; C. 2:380.

A much branched glandular hairy herb. Leaves opposite  
or the upper alternate. Flowers yellow; corolla bilabiate;  
stamens 4, didynamous. Capsule many seeded.

Local name: Ota.

Flowers & Fruits: August to April.

Bedi 3622 (15-8-1962, Dhenpur).

Plant is common on the N.E. border of our district.  
Very rare in the hilly regions of Ratan Mahal. Noted  
on escarpment, along the roadside. Also recorded at few  
places near the banks of Panam river.

Gujarat, Deccan, Konkan; throughout India.

Afghanistan.

Stemodia Linn. (nom. cons.)

Stemodia viscosa Roxb. Pl. Cor. 2:33, t. 163, 1798;  
 FBI. 4:265; C. 2:359; Gr. 143; D. & G. 176;  
 Wt. Ic. t. 1408; G. 668; Santapau, 32, Sant.  
 158.

An erect glandular hairy herb. Leaves sessile,  
 serrate or sub-entire. Flowers axillary, solitary or  
 in terminal few flowered cymes. Corolla blue to purple  
 blue or violet.

Local name: Nakchuni.

Flowers & Fruits: November to March.

Bedi 2162 (15-2-1962, Pepargota).

Fairly common on the southern slopes of Banvaro  
 plateau. Often noted in semidried ditches at Pepargota.  
 Plants when in dense clumps form a pretty sight. On  
 many occasions recorded as a weed in cultivated fields.

Gujarat, Madhya Pradesh, Western India, Deccan.

Afghanistan.

Linophila R.Br.

Linophila indica (Linn.) Bruce in Rep. Bot. Exch. Club.  
 Brit. Is. 3:420, 1914; Santapau, loc. cit. 34;  
 Sant. 158; Subramanyam, Aquat. Angios. 30, 1962.

Hottonia indica Linn. Syst. Nat. (ed. 10) 919,  
1759.

Linnophila gratioloides H.Br. Prodr. 422, 1810;  
FBI. 4:271; C. 2:362; Gr. 143; D. & G. 177;  
G. 568.

L. racemosa Benth. Scroph. Ind. 26, 1835; FBI.  
4:271; C. 2:362.

A small, strong smelling, marshy herb, rooting at  
lower few nodes. Lower leaves whorled pinnatifid.  
Flower tubular, pink, mouth 2 lipped, about 1 cm. long.

Local name: Turti.

Flowers & Fruits: October to December.

Bedi 681.

Not common, only noted in few semidried ditches  
at Pepargota, Banvaro and Ratan Mal (near temple).

Gujarat, Deccan, Konkan, almost throughout India  
in wet places.

Ceylon, Baluchistan, Malaya, China, Australia,  
Tropical Africa.

Bacopa Aubl. (nom. cons.)

Bacopa monnieri (Linn.) Pennell in Proc. Acad. Nat.  
Sci. Philad. 98:94, 1946; Santapau, l.c. 30;  
Sant. 150.

Lysimachia monnieri Linn. Cent. Fl. 2:5, 1800.

Moniera cuneifolia Cooke, Fl. Pres. Bomb. 2:285,  
1904; C. 2:356 (Monniera); G. 953.

Herpestis monniera Benth. Scroph. Ind. 30, 1835;  
FBI. 4:272; Gr. 144.

A small, succulent prostrate herb with spreading  
or ascending branches, root at nodes. Leaves thick fleshy,  
obovate-oblong. Flowers light blue, rarely white with  
faint blue veins.

Local name: Bam.

Local uses: Leaf juice is said to cure  
rheumatism.

Flowers & Fruits: August to March.

Bedi 2647.

Semi-aquatic or marshy herb. Common on Valva  
river beds near Dhenpur and on moist spots in Chari.  
Sometimes noted forming dense mats.

Gujarat, Deccan, throughout India in wet places.

Ceylon, all warm countries.



Lindernia All.

Stamens 4 with perfect anthers. . . . . Crustacea

Stamens, upper two perfect, the lower  
two reduced to staminodes:

Leaves sharply, deeply and closely  
serrate; flowers white to pinkish  
blue, in lax terminal racemes. . . . . Ciliata

Leaves sub-entire or shallowly or  
distinctly serrate; flowers purplish  
violet in axillary racemes. . . . . Oppositifolia

Lindernia crustacea (Linn.) F. Mueller, Cens. Austr.

Fl. 97, 1882; Mukerji in JIB. 24:130;  
Santapau, l.c. 37; Sant. 159.

Capraria crustacea Linn. Mant. 87, 1767.

Vandellia crustacea Benth. Scroph. Ind. 35, 1835;  
FBI. 4:279; C. 2:366; Gr. 144; Wt. Ic. t. 863.

An annual glabrous herb, 45-30 cm. tall, usually  
branching from the base. Flowers axillary and sub-racemose  
at the end of the branches; corolla white or with pinkish  
tinge.

Flowers & Fruits: August to December.

Bedi 333, 2900.

Very common near moist spots. Usually noted as a weed in cultivated fields. At times also recorded as an undergrowth of forest.

Deccan, Konkan, throughout India.

Tropics of the old world.

Lindernia ciliata (Colsm.) Pennell in Journ. Arn.

Arb. 24:253, 1943; Mukerjee 133; Santapau 39;  
Sant. 160; Chavan & Oza, Fl. Pavagadh, 166.

Gratiola ciliata Colsmann Prodr. Descr. Grat. 14,  
1793.

Bonnaya brachiata Link. & Otto, Ic. Pl. Sel. 2:25,  
t. 11, 1820; FBI. 4:418; C. 2:369; Gr. 143;  
D. & G. 178; Blatt. & Hallb. 418.

A small, erect herb, 5-15 cm. high. Leaves sessile, opposite with sharply serrate margin. Flower pink in terminal racemes.

Flowers & Fruits: August to October.

Bedi 212.

Common during and soon after monsoon in open grassy places and as a weed in cultivated fields.

Gujarat, Deccan, Konkan, throughout India.

Ceylon, Java, China, Philippine Islands.

Lindernia oppositifolia (Retz.) Mukerjee in JfB. 24:134,  
1945; Santapau, l.c. 40; Chavan & Oza, Fl.  
Pavagadh 167.

Gratiola oppositifolia Retz. Obs. 4:8, 1786 (non  
Linn. Ut. Scribit. Mukerjee).

Bonnaya oppositifolia Spr. Syst. 1:41, 1825; FBI.  
4:286; C. 2:370; Gr. 143; D. & G. 179.

A small erect, much branched, glabrous annual herb,  
5-15 cm. high. Leaves sessile, slightly toothed. Flowers  
axillary, corolla purple violet.

Flowers & Fruits: September to March.

Bedi 1304.

Not common. Recorded as a weed in cultivated fields  
and near the banks of streams.

Bombay, Konkan throughout W. Peninsula.

Buchneria Linn.

Buchneria hispida Buch.-Ham. in D. Don, Prodr. Fl. Nep.  
91, 1825; FBI. 4:298, C. 2:373; D. & G. 142;  
Wt. Ic. t. 1413; G. 679; Sant. 162.

An erect hairy herb, 10-50 cm. tall. Leaves toothed  
or entire. Flowers in spikes, 5 to 25 cm. long; calyx



PLATE NO. 28

Buchnera hispida Buch.-Ham.

hispid; corolla blue, hairy inside. Capsule shorter than the calyx. The entire plant turns black on drying.

Plate No. 28

Flowers & Fruits: September to November.

Bedi 573, 574, 3606.

Not very common. Often noted at an altitude of 400 m. M.S.L. near Pepar ka Pani, on the way to Pepargota.

I have noted two forms of this plant. One very much stunted (Bedi 3606, 14-10-1962, Kanvara dungar, Bendol), these specimens are usually branching near the base. Leaves much shorter. In the other form collected from Ratan Mal plateau, the plants are unbranched or if branched, then branching above the middle. Plants and leaves very much larger in size. Both these forms grow among grasses and are most probably(?) parasitising their roots.

Deccan, Konkan, Madhya Pradesh, W. Peninsula; Western and Central Himalayas.

Madagascar, Tropical Africa.

This species has not been recorded from Gujarat by the earlier workers.

Striga Lour.

Striga angustifolia (Don) Saldanha in Bull. Bot. Surv.  
of India 4(1):70, 1963.

Buchnera angustifolia Don Prodr. Fl. Nep. 91, 1825.

B. euphrasoides Benth. Scroph. Ind. 41, 1835 (non  
Vahl. 1794).

Striga euphrasoides Benth. in Hook. Comp. Bot. Mag.  
1:364, 1836; FBL. 4:299; C. 2:376; Santapau in  
JBNHS. 49:44, 1950.

An erect hairy herb, very variable in size and form.  
Leaves linear, 2-5 cm. long. Flowers white or faint blue,  
sessile, in lax erect spikes. Capsule 7 mm. long, oblong-  
ellipsoid.

Flowers & Fruits: September to November.

Bedi 175, 707, 731.

Fairly common weed, in cultivated fields after the  
monsoon. Specimen Bedi 707, collected from Hatan Mal  
plateau are much smaller than those, collected from the  
fields.

Common almost throughout India.

Ceylon, Burma, Java.

The plant in our floras goes under the name Striga euphrasoides. Saldanha after a careful study of the type material and original description is of the opinion "Buchnera euphrasoides Vahl is quite distinct from Striga euphrasoides Benth." According to the Art 55 of the code the name Striga euphrasoides Benth. has been renamed as Striga angustifolia (Don) Saldanha.

Sopubia Buch.-Ham.

Sopubia delphinifolia (Roxb.) G. Don. Gen. Syst. 4:560, 1837; FBL. 4:302; C. 2:378; Gr. 145; D. & G. 182; Santapau, loc. cit. 45; Sant. 164; Chavan & Oza, Fl. Pavagadh, 168.

Gerardia delphinifolia Roxb. Pl. Cor. 1:t.90, 1795.

An erect herb with grooved stem. Leaves pinnatisect, segments few and filiform. Flowers solitary, axillary or in terminal racemes; corolla pink to purple. Capsule many seeded.

Local name: Dudli.

Flowers & Fruits: September to November.

Bedi 70, 665.

Common in open grassy places on Ratan Mal and other plateaus. Possibly a partial parasite on grass roots? Often noted as a weed in cultivated fields.

Gujarat, Deccan, W. Peninsula, Behar.

Ceylon.

# OROBANCHACEAE

Corolla lobes sub-equal, broad; flower solitary, cigar shaped; anther cells unequal. . . . . Aeginetia  
Corolla 2 lipped, upper lip 2 lobed, lower 3 lobed; flowers in dense, cylindric spike; anther cells equal. . . . . Orobanche

## Aeginetia Linn.

Aeginetia indica Linn. Sp. Pl. 632, 1753; FBI. 4:320; C. 2:384; Gr. 146; D. & G. 202; Wt. Ic. t. 894; G. 684; Sant. 166; Chavan, Bedi & Sabnis, Curr. Sci. 30:191-192, 1961.

Orobanche aeginetia Linn. Sp. Pl. 883, 1763.

An erect, purplish, total parasitic herb. Scape one or more from the rhizome, erect, slender, with or without scales at the base. Flower shape is like a cigar hood.



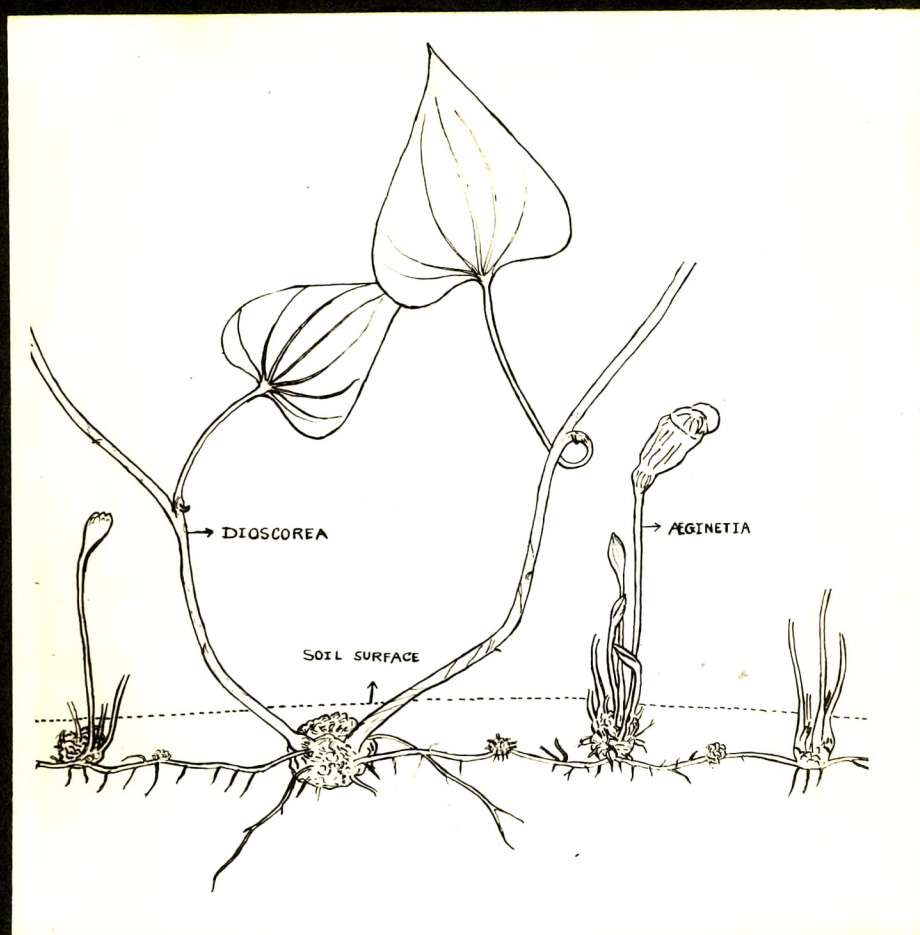


PLATE NO. 29

Aeginetia indica Linn.

A total parasite on the roots of  
Dioscorea wallichii Hook. f.

Plate No. 29

Flowers & Fruits: September to December.

Bedi 224, 3144.

Gregarious parasitic herb, restricted in distribution. Recorded (loc. cit.) parasitising the root of Dioscorea wallichii. Rare, though locally common along the banks of a stream on the southern slopes of Banvaro plateau. Also once noted, a patch of few dried specimens, on the hilly slopes near Nalda na Pani in Bendol village. Plants prefer humus rich soil.

Gujarat: Dangs; Bombay, Khandala, throughout India.

Ceylon, China, Japan, Philippine Islands.

For the host-parasite relationship of this plant, please see Chavan, Bedi & Sabnis loc. cit.

Orobanche Linn.

Orobanche cernua Loefl. Var. nepalensis DC. Prodr.

11:33, 1847; R.A. Graham in Fl. Trop. E. Africa (Orobanchaceae) 6, fig. 1, t. 4, 1957; Santapau & Wagh in Bull. Bot. Surv. of India 5:107.

O. nicotiana Wight, Ill. 2:179, t. 158, 1850; FBI. 4:326.

O. cernua Loef. Var. desertorum Ritter G. Beck, Monogr.

Orob. in Biblioth. Bot. 19:142, t. 33(1), 1890; C. 2:387.

A stout, erect, pale brown parasitic herb, 10-30 cm. tall. Stem brownish. Flowers in dense cylindric spikes; corolla glabrous, pale blue or the tube whitish; anthers glabrous, filaments slightly pubescent at the base. Capsule scarcely exceeding the calyx.

Flowers & Fruits: November to March.

Bedi 1666 (24-11-1961, Kundawala).

Rare, only noted on the N.E. border of our district, near Kundawala. This species becomes more and more frequent as we go towards Devgadbaria. Noted as a total parasite on tobacco roots.

Cooke, loc. cit. remarks: "I have seen no specimens of this plant from the Deccan, where it is said to occur on tobacco, nor it is included in Woodrow's list. Dalzell's specimen in Herb. Kew is from Coimbatore (Madras)". In the N.E. border of Ratan Mahal and at various other localities in Gujarat, this plant is fairly common. I have often observed this plant in Begadewadi, near Poona in Deccan.

Gujarat, Punjab, Western Himalayas, Nepal, Tibet, N. Africa and Spain.



PLATE NO. 30

Orobanche cernua Loefl.

Var. nepalensis DC.  
showing bifercated spike.



Normally the inflorescence spike is unbranched, but my specimen Bedi 1666 is of great interest showing bifercated spike. As far as could be ascertained from the available literature, no reference is found to this abnormality, which may be just due to a freak of nature.

Plate No. 30

I could successfully grow this total root parasite on the root of various cultivated genera of Solanaceae, out of these Solanum malongena and Lycopersicum esculentum appeared to be very hospitable host, as the plant showed a very healthy growth.

#### LENTIBULARIACEAE

##### Utricularia Linn.

*inflexa* Forsk var. *stellaris* (L.f.) Taylor.

Utricularia stellaris Linn. f. Suppl. 86, 1781; FBI.

4:328; C. 2:390; Gr. 165; D. & G. 135; Wt. Ic. t. 1567; Subramanyam, Aquat. Angios. 33, f. 23, 1962.

A root-less aquatic herb, submerged in water except the inflorescence. Leaves pinnately divided into capillary segments, often in whorls. Flowers yellow in aerial racemes. Peduncles kept erect by a whorl of spongy floats.

Flowers: August to May.

Bedi 2897.

An insectivorous, free floating aquatic herb,  
noted in ditches and around the margins of Dhenpur tank.

Gujarat, Maharashtra, Konkan; common throughout  
India in rice-swamps and tanks.

Ceylon, Malaya, S.E. Asia, N. Australia, Tropical  
and South Africa.

#### GESNERIACEAE

##### Didymocarpus Wall (nom. cons.)

Didymocarpus pygmaea Clarke in Hook. f. F&B. 4:345,  
1884; G. 694; Santapau & Saldanha, in JDNHS.  
53:213, f.4, 1955; Chavan & Oza, Fl. Pavagadh,  
169.

Roettlera pygmaea O. Kuntze, Rev. Pl. 2:476, 1891.

A small, delicate, hairy herb. Stem short, 3-20 cm.  
tall, usually single leaved, at times more than two.

Flowers white. Fruit cylindric or slightly compressed.

Plate No. 31.

Flowers & Fruits: October to December.

Bedi 1842, 3246.

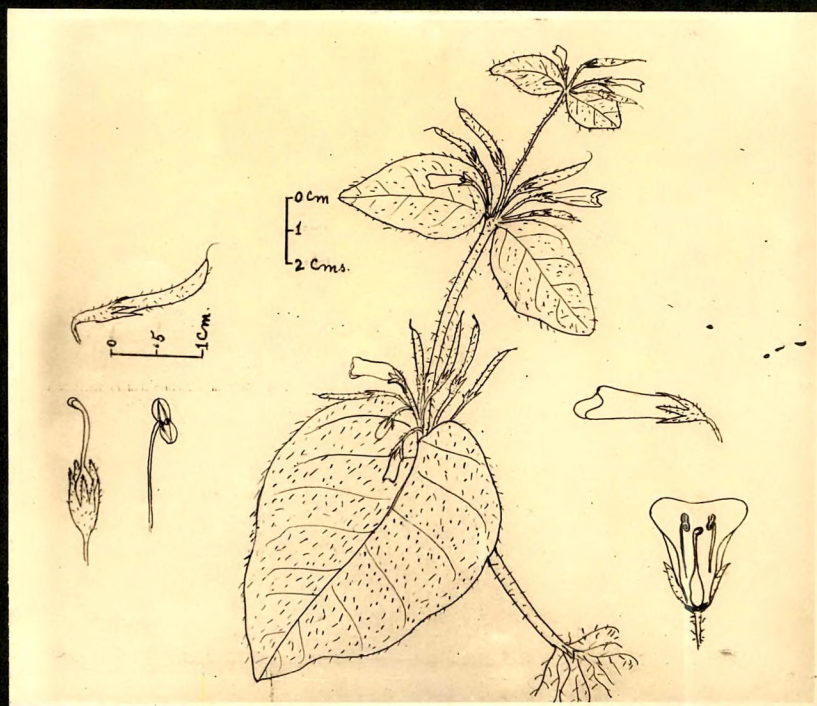


PLATE NO. 31

Didymocarpus pygmaea Clarke.

Rare, sub-gregarious or gregarious in habit; often noted on moist shady rocks. Restricted in distribution to certain localities only. Common at Patan Mata hill, once noted on Handava and Bendol hills.

Gujarat: Pavagadh; Madhya Pradesh, Madras, Behar, Orissa.

The identity of my specimens have been confirmed at Kew Herbarium, England.

Santapau et Saldanha, l.c., have reported this plant as new record for Bombay which may be referred to for complete description.

Wallich published the name Didymocarpus hamosa in his catalogue, but in the absence of a description, the publication was not valid; the plant was first described by R. Brown under the name of Chirita hamosa, the name Didymocarpus hamosa Wall., being cited as a synonym by Brown, the date 1840 must, therefore, be considered as the earliest date for the valid publication Chirita hamosa as well as Didymocarpus hamosus (non. cons. 7810).

For detailed discussions on the identity or nomenclature, please see Chavan & Oza, l.c.



BIGNONIACEAE

Perfect stamens 5; capsule more than  
35 cm. long and more than 6 cm. broad,  
flat. . . . . Oroxylum

Perfect stamens 4; capsule less than  
25 cm. long and less than 4 cm. broad,  
sub-cylindric or sub-quadrangular. . . . . Dolichandrone

Oroxylum Vent.

Oroxylum indicum (Linn.) Vent. Dec. Gen. Nov. 9, 1808;  
FBI. 4:378; C. 2:401; G. 698; Talb. 2:306.

Bignonia indica Linn. Sp. Pl. 625, 1753; Gr. 125.

Calosanthus indica Blume: Wt. Ic. t. 1337, 1338;  
D. & G. 161.

Small to a medium sized tree. Timber very soft.  
Leaves 2-3 pinnate, 1 to 2 m. long. Flowers large, purple  
coloured, perfect stamens 5, with hairy filaments. Capsule  
30-50 cm. long and 6-8 cm. broad. Seeds flattened with  
large papery wing.

Local name: Tetoli.

Local uses: Bark paste is used by the natives  
to cure the wounds of their cattles.

Bedi 2208, 2974.

Rare, noted few trees in fruiting condition on 18-2-1962 on Pepargota plateau and two trees near Kanjeta village (7-8-1962). I was told by the natives that this species (species of evergreen forest) used to be common in Pepargota and various other forest regions, but slowly becoming more and more rare, as the local tribes very often remove the bark of these trees.

Western Ghats, Konkan, Kanara, very common in the ever-green forests, near Nilkund Ghat; throughout India, except the western drier areas.

Ceylon, Malaya, Cochinchina, Ava.

As indicated from the above distribution, this species has not been reported from this part of the country and its occurrence in these hills is of importance.

Dolichandrone Seem.

Dolichandrone crispa Seem. in Journ. Bot. 8:381, 1870;  
FBI. 4:379; Talb. 2:308, f. 436.

Bignonia crispa Buch.-Ham. in Roxb. Fl. Ind. 3:103;  
Gr. 125.

A medium sized deciduous tree. Leaflets acuminate, glabrous, unequally pinnate, the terminal leaflet much

longer. Flowers white, fragrant, in terminal 1-5 flowered raceme. Fruit sickled shaped, compressed 15-25 cm. long.

Flowers: May to June.

Fruits: June to September.

Bedi 3030.

Very rare, only noted two trees growing on the border of Garbari and Dumka.

S.M. Country, S. Deccan Peninsula, Western Peninsula.

#### PEDALIACEAE

#### Sesamum Linn.

Sesamum indicum Linn. Sp. Pl. 634, 1753; FBI. 4:387; C. 2:413; D. & G. 161; G. 704; Sant. 172; Bruce in Fl. Trop. E. Afr. 17, f. 7, 1953; Chavan & Oza, Fl. Pavagadh, 172.

S. Orientale Linn. Sp. Pl. 634, 1753; Gr. 126.

An erect branched herb, 20-50 cm. tall. Lower leaves often lobed, upper lanceolate, entire. Flowers pinkish-purple, occasionally noted, pure white. Fruit oblong, capsule 2-3 cm. long; seed white or black, obovate.

Local name: Til.

Local uses: Cultivated for its oil which  
is used in cooking.

Flowers: September to October.

Fruits: October to December.

Bedi 337, 1800.

Usually cultivated on plains, at times noted  
as an escape along the banks of streams and Panam  
river, especially near villages.

Cooke, loc. cit. writes: "It is probably a native  
of Tropical Africa, but its original habitat is not  
known with certainty. It has been cultivated in India  
from a very remote period, and is grown in many tropical  
countries of the world".

It has a reference to Article 57 of the International  
Code of Botanical Nomenclature 1961. A.P. De Candolle in  
Pl. Rar. Jard. Genev. 17 & 18, 1829, was the first author  
to reduce S. orientale to S. indicum making it a variety  
of this species. He says that in deciding to unite the  
two species he has chosen the name indicum in preference  
to orientale as this indicates the true country to which  
this species belongs.

## MARTYNIACEAE

Martynia Linn.

Martynia annua Linn. Sp. Pl. 618, 1753; G. 705;  
Raizada, Ind. For. Rec. (N.S.) Botany  
5(1):29, 1958.

M. diandra Glox. Obs. Bot. 14, t. 1, 1785;  
C. 2:414; Gr. 127, D. & G. Suppl. 58.

A viscid, pubescent, soft, velvety herb or undershrub,  
rough during fruiting period. Flowers in drooping racemes,  
pink with dark purple; bracts and bracteoles petaloid.  
Fruit large, capsular, hard black with two recurved hooks.

Local name: Vach; Vachh.

Local uses: Leaf juice is used to cure  
sore throat.

Flowers: August to November.

Fruits: October to March.

Bedi 342, 1438.

Not common, noted on waste places and on rubbish  
heaps near villages. Rare in the hilly regions.

Plant is a native of Mexico and has become a part  
of the natural flora, common throughout India.

## ACANTHACEAE

(Key to the Genera of the Acanthaceae adapted from Santapau)

1. Seeds not supported on hard retinacula;  
erect or prostrate herbs; stamens 4. . . Staurogyne
1. Seeds supported on a hard, hooked  
retinacula:
  2. Corolla without an upper lip, the  
lower lip large, expanded, 3 lobed. . Blepharis
  2. Corolla 2-lipped or with 5 sub-equal  
lobes:
    3. Corolla lobes twisted in bud:
      4. Ovules more than 2 in each  
cell:
        5. Corolla distinctly 2 lipped.. Hygrophila
        5. Corolla sub-equally 5 lobed:
          6. Capsule clavate with a  
solid base. . . . . Dipteracanthus
          6. Capsule, seed bearing  
from the base. . . . . Hemigraphis
      4. Ovules 2 in each cell; capsule  
with 4 or fewer seeds:
        7. Stamens 2; corolla tube  
long and linear. . . . . Eranthemum
        7. Stamens 4; Corolla tube  
swollen. . . . . Carvia

## 3. Corolla lobes imbricate in bud:

## 8. Ovules 3-10 in each cell;

capsule 6 or more seeded:

## 9. Flowers in panicles without

axillary cladodes. . . . . Andrographis

## 9. Flowers clustered with

cladodes. . . . . Bremekompia

## 8. Ovules 2 or rarely 1 in each cell:

## 10. Corolla lobes 5, sub-equal:

## 11. Calyx 4-partite, the

2 opposite outer sepals

much longer than the

inner; 2 stamens only

perfect. . . . . Barleria

## 11. Calyx 2-partite, 5 lobed;

stamens 4 didynamous,

upper pair with long

perfect anther cell. . Neuracanthus

## 10. Corolla distinctly 2-lipped:

## 12. Stamens 4, anthers

2 celled; bracts conspi-

cuous; often spinous. . Lepidagathis

## 12. Stamens 2; anthers

2 celled:

## 13. Placenta separating

elastically from the

valves from the base

upwards:

## 14. Bracts in uni-

lateral spikes. Rungia

14. Bracts clustered  
in the leaf-axil  
or lax cymose. . Dicliptera

13. Placentas not  
separating elastically  
from the valves:

15. Anther cell with  
a white basal spur  
like appendage;  
capsule usually  
4 seeded:

16. Sepals scarious,  
the midrib  
produced into a  
long arista,  
having long  
bulbous-based  
white hairs. . Rostellularia

16. Sepals not  
scarious, not  
aristate. . . . Justicia

15. Anther cell not  
with a spur like  
appendage:

17. Anther cells  
apiculate;  
bracts large;  
corolla large  
white with  
purple streaks. . Adhatoda



17. Anther cells  
not apiculate,  
but muticous,  
bracts small;  
corolla small;  
rose purple. . Peristrophe

Staurogyne Wall.

Staurogyne glauca (Nees) O. Kuntze, Rev. Gen. Pl.  
497, 1891; C. 2:421; G. 710; Santapau,  
Botanical Memoirs University of Bombay,  
2:13, 1951.

Ebermaiera glauca Nees in DC. Prodr. 11:73, 1747;  
Clarke in FBI. 4:395; Wt. Ic. t. 1488.

A small erect pubescent herb, 15-30 cm. tall.  
Leaves upto 5 cm. long. Spikes 5-15 cm. long. Sepals  
are of different breadth, glandular hairy; corolla tube  
cylindric, pink in colour.

Flowers & Fruits: October to March.

Bedi 1789, 2214.

Rare, localised in distribution. Recorded from a  
small semidried ditch on Ratan Mal 'plateau' near  
Ratneshwar Maharaj temple.

Not common; Western Peninsula, Madras, Kanara,  
Ceylon.

The identity of my specimens has been confirmed  
at Kew Herbarium, England.

This species has not been recorded from Gujarat  
by the earlier workers.

Blepharis Juss.

Leaves petiolate, thin, acute. . . . . maderaspatensis  
Leaves sub-sessile, thick and fleshy,  
obtuse. . . . . molluginifolia

Blepharis maderaspatensis (Linn.) Heyne ex Roth. Nov.

Pl. Sp. 320, 1821; Santapau, l.c. 15.

Acanthus maderaspatensis Linn. Sp. Pl. 892, 1753.

Blepharis boerhaviaefolia Pers. Syn. Pl. 2:180,

1806; FBL. 4:487; C. 2:424; Gr. 160; D. & G.

192; Wt. Ic. t. 458; G. 712; Witt 178.

A prostrate or sub-erect, pubescent herb, 20-50 cm.  
long. Leaves acute, thin, membranous, 4 in a whorl.  
Corolla faint blue with a yellow spot on the lower lip.

Flowers & Fruits: October to March.

Bedi 674, 894.

Common as an undergrowth of forest, along the paths and occasionally as a weed in dry fallow fields.

Gujarat, Madhya Pradesh, Deccan, Konkan, W. Peninsula, Chota Nagpur, Orrisa.

Ceylon, Tropical and South Africa.

*repens* (Vahl) Retz

Blepharis molluginifolia Pers. Syn. 2:180, 1807; FBI. 4:479; C. 2:425; Gr. 160; D. & G. 192; G. 712; Santapau, 16.

A prostrate hispid herb. Leaves sessile or subsessile, whorled, unequal, fleshy, oblong-obovate or obtuse. Flowers light blue, lower lip of the corolla pubescent on both sides. Capsule closely surrounded by bracts and calyx.

Local name: Jeeni atigenu.

Flowers & Fruits: October to March.

Bedi 3288, 3324.

Common on hard dry soil along the forest paths. More common on plains near Mendhri, Anderpura, Chari, Dhenpur etc. Occasionally noted as a weed in dry fallow fields.

Gujarat, Deccan, Konkan, W. Peninsula.

Ceylon, Tropical and South Africa.

Hygrophila R.Br.

Inflorescence spinous; 2-8 seeded. . . . auriculata

Inflorescence not spinous; seeds 8

or more. . . . . polysperma

Hygrophila auriculata (Schum.) Meine in Kew Bull.

16(2):172, 1962; Chavan & Oza, Fl. Pavagadh,  
175; Raizada, Ind. For. 92(5):312, 1966.

Barlaria auriculata Schum. in Schumach. & Thonn.

Besker Guin. Pl. 285, 1827.

B. longifolia Linn. Cent. Pl. 2:22, 1756; Gr. 161.

Asteracantha longifolia (Linn.) Nees in Wall. Pl.

As. Rar. 3:40, 1832; C. 2:428; D. & G. 189;  
G. 712; Wt. Ic. t. 449; Santapau, l.c. 17;  
Sant. 173; Maheshwari, Fl. Dli. 267.

Hygrophilla spinosa Anders. in Thwait. Enum. 225,

1860; FBI. 4:408.

An erect hairy herb, 30 to 80 cm. tall. Leaves  
in whorls, 5-15 cm. long sparsely hispid. Spines in  
whorls at a node in the axil of leaves. Flowers light  
violet or blue.

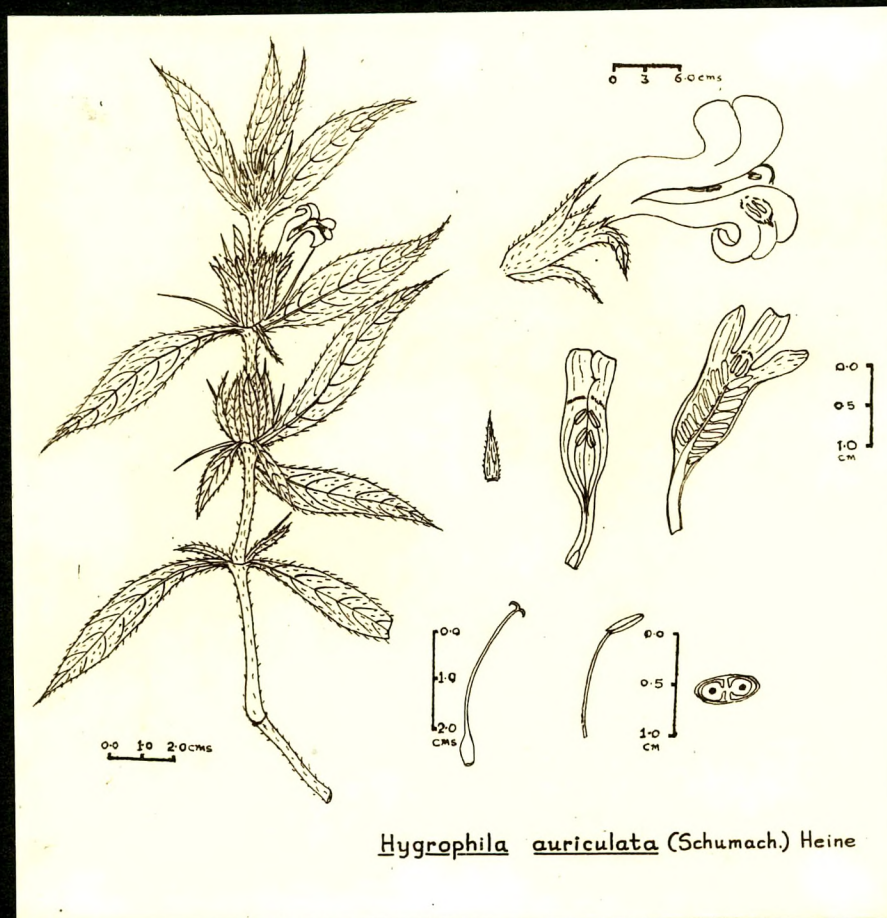


PLATE NO. 32

*Hygrophila auriculata* (Schumach.) Heine

Plate No. 32.

Local name: Akharo.

Flowers & Fruits: October to March.

Bedi 1112.

Common in ditches on the plains, also recorded from Banvaro and Pepargota plateaus. Not common in hilly forest regions.

Gujarat, Deccan, almost throughout India.

Ceylon, Tropical and South Africa.

*Hemiadelphus polyspermus* Nees

Hygrophila polysperma (Roxb.) Anders. in JLS. 9:456, 1867; FBI. 4:406; C. 2:429; G. 713; Santapau, 19; Sant. 173.

Justicia polysperma Roxb. Hort. Beng. 3, 1814  
nom. nud. & Fl. Ind. 1:119, 1832.

A small procumbent hairy herb, 5-30 cm. long, branches often rooting near the base. Flowers blue or light violet. Capsule glabrous. Seeds about 20.

Flowers & Fruits: November to March.

Bedi 1144 (25-3-1963, Dhenpur).

Not common, noted in semidried ditches near Dhenpur, The presence of large number of seeds does suggest the specific name of the plant.

Gujarat, Sind, Kanara, throughout India in wet places.

Afghanistan.

Dipteracanthus Nees, emend. Brem.

Dipteracanthus prostratus (Poir.) Nees in Wall.

Pl. As. Rar. 3:81, 1832; Santapau, l.c. 24  
& in Ind. For. 79:321, 1953; Sant. 174;  
Chavan & Oza, Fl. Pavagadh, 176, 1966.

Ruellia prostrata Poir. in Lam. Encycl. 6:348,  
1804; FBI. 4:411; G. 714.

Dipteracanthus dejectus Nees, l.c. 82.

R. prostrata Var. dejecta Clarke in FBI. 4:412,  
1884; C. 2:431.

An erect, sub-erect or straggling herb, 20-40 cm.  
high. Leaves subglabrous. Flowers blue, bracts shorter  
than the calyx. Fruit is a pubescent capsule.

Flowers & Fruits: October to January.

Bedi 3620 (15-10-1962, Dhenpur).

Rare, only collected from Dhenpur Ashram, where it  
might have been recently introduced. I have not observed  
this species anywhere else in these hills.

Deccan, Konkan, Behar; throughout India.

Ceylon, E. Africa.

For the change of these species of Ruellia to the genus Diptercanthus, please see Santapau, loc. cit. 321-323.

Hemigraphis Nees

Hemigraphis latebrosa Nees Var. heyneana Brem. in Mat. Mon. Strob. 139, 1944; Santapau, loc. cit. 26; Sant. 174; Chavan & Oza, Fl. Pavagadh, 176.

H. latebrosa Nees in DC. Prodr. 11:723, 1847; FBI. 4:423; C. 2:434; Wt. Ic. t. 1504.

An erect hairy herb. Leaves ovate, acuminate, coarsely serrate-crenate. Bracts with bluish purple tinge. Flowers in axillary and terminal short spikes. Corolla mouth light blue, limb white or rarely entire white.

Flowers & Fruits: August to April.

Bedi 952, 1946, 3558.

Fairly common as an undergrowth of almost all the hilly forest areas, often noted in rocky places.



Western Ghats, throughout Deccan Peninsula, Behar.

Eranthemum Linn.

Eranthemum roseum (Vahl) R.Br. Prodr. 477; D. & G.  
195; G. 719; Santapau 34; Sant. 175; Chavan  
& Oza, Fl. Pavagadh, 177.

Justicia rosea Vahl Enum. 1:165, 1804.

Daedalacanthus roseus Anders. in TLS. 9:487,  
1867; FBI. 4:419; C. 2:439; Witt, 176.

An erect plant about 1m. tall. Stems quadrangular.  
Leaves 10-20x3-8 cm. oblong lanceolate. Flowers usually  
in lax axillary and terminal spikes. Flowers sky blue,  
drying to brick red. Bracts greenish white with prominent  
dark green raised nerves.

Local name: Das Muli.

Flowers: October to March.

Bedi 699, 699A, 699B.

Fairly common on almost all the hilly forest slopes,  
especially to the south of Panam river. Often subgregarious.

Deccan, Madhya Pradesh, Western India.

For the problem of generic name, please see Santapau,  
l.c. 32.

Carvia Brem.

Carvia callosa (Nees) Brem. in Mat. Mon. Strob. 187, 1944; Santapau, l.c. 46; Sant. 177; Chavan & Oza, Fl. Pavagadh, 177.

Strobilanthes callosus Nees in Wall. Pl. As. Rar. 3:85, 1832; FBI. 4:451; C. 2:444; Witt, 177; Santapau in JBNHS. 44:605 and 49:320.

S. grahamianum Wight, Ic. t. 1520, 1850; D. & G. 188.

Sparsely branched, shrub 2-4 m. tall. Stem rigid, rough and soft. Leaves elliptic-lanceolate with bluntly toothed or crenate margins. Flowers axillary in small spike, blue, bracts with pinkish tinge.

Local name: Carvi.

Local uses: Natives use the stem for thatching their huts.

Flowers & Fruits: October to November (1960, 1961, 1962, 1963).

Bedi 926, 1747, 1961, 2978, 3250.

Most common shrub in the hilly slopes or on plateaus. The growth is so dense and at times in pure formation, that it becomes very difficult problem to locate forest paths during monsoon. Fairly abundant on almost all the hilly forest regions of Ratan Mahal.

Endemic. Gujarat, Central and Western India.

On the subject of the change in the name of the plant, please see Santapau, loc. cit.

Regarding the flowering periods, there does exist a lacuna in our knowledge. Santapau, l.c. is of the opinion "no conclusion can be drawn from the scanty data collected upto date". So I feel it necessary to add a note from my field diaries, about the flowering of this species.

During December 1960, I observed few clumps in fruiting condition near Popat ka Kunva in Pepargota. On 15-8-1961 and 18-8-1961 I noted few clumps in budding condition at Panam and Kanjeta. During November 1961, I noted few clumps in flowers at Pepargota, Ratan Mal 'plateau' and its southern slopes. On 15-2-1962 noted few fruiting plants in a semidried condition. On 1st and 8th October, 1962 about 5% of the plants were noted in flowering condition. During October-November, 1963 about 15-20% clumps were noted in flowering condition. During October, 1964 there was a general flowering and almost all the shrubs flowered.

According to the tribal Bhils, the general flowering occurs after seven years. Previous to this, general

flowering occurred in 1958. Many of the authors of our Indian floras describe this period as ten years.

I believe that the rare flowering of few clumps starts after two years of the general flowering period and the number of shrubs flowering per year goes on increasing, till there is next general flowering.

Andrographis Wall.

*Gmelonessia echinoides*

Andrographis echinoides (Linn.) Nees in Wall. Pl. As.

Rar. 3:117; 1832; FBL. 4:505; C. 2:451;

D. & G. 198; Santapau, l.c. 51.

Justicia echinoides Linn. Sp. Pl. 16, 1753; Gr. 164.

A small erect, hairy herb, 15-50 cm. tall. Flowers in a typical horizontal raceme; corolla dirty white with purple dots. Fruit hairy compressed.

Flowers & Fruits: November to March.

Bedi 326, 611, 3139.

Common near wells, rocky crevices near streams and on dry sandy soil. Plant is easily distinguishable by its candelabrum like arrangement of flowers.

Gujarat, Deccan, Punjab, Tropical India.

Ceylon.

Bremekampia Sreem.

Cladodes stout 2 cm. or more long;

capsule glabrous. . . . . verticillata

Cladodes slender, 1-6 cm. long;

capsule pubescent. . . . . neilgherryensis

Bremekampia verticillata (Roxb.) Streemadnavan in

Bull. Bot. Surv. Ind. 6(2-4):323, 1964;

Raizada, Ind. For. 92(5):303, 1966.

Justicia verticillata Roxb. Fl. Ind. 1:135, 1832;

Gr. 165.

Haplanthus verticillatus (Roxb.) Nees in DC. Prodr.

11:513, 1847; FBI. 4:506; C. 2:452; D. & G.

197; G. 737, ("verticillaris"); Santapau, l.c.

51; Sant. 177.

An erect hairy herb, 15-60 cm. tall. Leaves  
glabrous. Cladodes at nodes in whorls, having long  
white hairs. Flower blue or bluish-violet.

Flowers & Fruits: October to February.

Bedi 676, 938.

Common as an undergrowth of hilly forests.  
Often noted in rocky places, along the banks of streams.  
Rare on the plains.

Gujarat, Deccan, Madhya Pradesh, Konkan,  
W. Peninsula.

Bremekampia neilgherryensis (Wt.) Steemadhavan in  
Bull. Bot. Surv. Ind. 6(2-4):323, 1964;  
Raizada in Ind. For. 92(5):303, 1966.

Haplanthus neilgherryensis Wight Ic. t. 1556,  
1850; G. 737.

H. tentaculatus Nees Var. neilgherryensis Clarke  
in FBI. 4:507; C. 2:453.

H. tentaculatus Nees in DC. Prodr. 11:513; 1847;  
C. 2:453.

An erect herbaceous plant, 20-50 cm. tall. Flowers  
and cladodes collected in conspicuous terminal branches.  
Cladodes slender with long, white spreading hairs, less  
than 2 cm. long. Capsule slightly pubescent.

Flowers & Fruits: September to December.  
Bedi 387, 1490.

Less common than the preceding species and can  
be easily differentiated from it by its slender

cladodes and slightly pubescent capsule. More common on the upper heights i.e. near Banvaro and Panam.

Gujarat, Madhya Pradesh, Western Peninsula, Mysore, Malabar.

Barleria Linn.

Plants spiny; flowers yellow. . . . . prionitis

Plants without spines:

Outer sepals fimbriate or with spinous margin; seeds hairy. . . . . cristata

Outer sepals not spinous, fimbriate or cristate; seeds glabrous. . . . . prattensis

Barleria prionitis Linn. Sp. Pl. 636, 1753; FBI. 4:482; C. 2:457; Gr. 160; D. & G. 189; Wt. Ic. t. 452; G. 741; Santapau, l.c. 57; Sant. 178.

A much branched undershrub with long silvery white spines. Leaves elliptic, acuminate or mucronate. Flowers yellow, sessile, often solitary in the lower axils, becoming spicate above. Capsule 2-3 cm. long, ovoid with a long tapering beak.

Local name: Karanti.

Local uses: Local Bhils apply the leaf juice to the soles of their feet to harden them, so that they can tolerate extreme heat, cold and rough soil.

Flowers & Fruits: November to April.

Bedi 925.

Rare, noted in hedges and waste places in Kanjeta, Bendol, Pepargota and some other villages on the plains.

Gujarat, Deccan, Konkan, Himalaya; throughout India.

Ceylon, tropical Asia, tropical and S. Africa.

Barleria cristata Linn. Sp. Pl. 636, 1753; FBI. 488;  
C. 2:460; Gr. 160; D. & G. 188; Witt 180;  
Santapau, l.c. 59; Sant. 179.

Herbaceous plant about 75 cm. tall. Leaves opposite entire, 6-14x2-5 cm. elliptic oblong. Flowers axillary and terminal in short dense spikes; bracts shorter than the outer calyx; corolla light blue to purple blue. Capsule 1-2 cm. long, orbicular, compressed, silky hairy.

Flowers: October to November.

Fruits: November to December.

Bedi 642, 697.



A fairly common plant above 500 m. M.S.L., usually seen as an undergrowth of the forest near Banvaro and Pepargota. Plant is rather showy with beautiful flowers.

Deccan, W. Ghats; Konkan, Kanara; throughout India. Often cultivated in gardens.

Burma, Malaya, China.

Barleria prattensis Santapau in Kew Bull. 1948:487, 1949 & in Bot. Mem. Bomb. Univ. 2:62; Sant. 179; Chavan & Oza, Fl. Pavagadh, 179.

An erect glabrous or sub-glabrous plant, 50-100 cm. high. Leaves thin, membranous, glabrous, entire. Flowers solitary, axillary or in a short condensed spikes. Corolla light blue to rose purple. Fruit a capsule. Seeds black, compressed, glabrous.

Flowers & Fruits: September to December.

Bedi 462, 650, 700.

Fairly common on the higher altitudes i.e. above 400 m. M.S.L., near Banvaro, Alindra, Pepargota, Ratan Mal. This species become less and less common as we go towards north and is very rare on the plains. Plant is

very showy, especially the flowers.

Gujarat, Madhya Pradesh, Western Ghats, Konkan  
and Kanara.

For more detailed description of the plant and  
its relations with the real B. montana, please see  
Santapau loc. cit.

Neuracanthus Nees

Neuracanthus sphaerostachyus (Nees) Dalz. in Kew  
Journ. Bot. 2:140, 1850; FBL. 4:491;  
C. 2:465 ("sphaerostachys"); D. & G. 190;  
Santapau, l.c. 66; Sant. 181.

Lepidagathis sphaerostachya Nees in DC. Prodr.  
11:254, 1847.

Neuracanthus lawii Wight, Ic. t. 1531, 1850.

An erect, hairy herb, 50-100 cm. tall. Leaves  
sub-sessile, lower petiolate. Flowers in dense sub-  
globose, axillary, short spike. Corolla light blue  
or violet, fading to purplish blue.

Flowers: August to January.

Fruits: December to March.

Bedi 3023.

Not very common, occasionally noted as an undergrowth of forests on the hilly forest slopes, or sometimes associated with tall grasses in open places. Plant is more common on plains.

Gujarat, Bombay Island, Konkan, Western Peninsula.

Apparently endemic.

Lepidagathis Willd.

Inflorescence mostly in globular radical or sub-radical heads; bracts and calyx tips long spinous, mucronate; capsule 2 seeded. . . cristata

Inflorescence mostly in elongate villous spikes; bracts and calyx tips, broad, sharply mucronate; capsule 4 seeded. . . . . cuspidata

Lepidagathis cristata Willd. Sp. Pl. 3:400, 1801;

FBI. 4:516; C. 2:470; Gr. 160; D. & G. 191;

Wt. Ic. t. 455; Santapau, l.c. 71.

A small undershrub, branches procumbent from a hard central root stock. Leaves opposite, sessile, linear oblong or lanceolate. Flowers in radical or sub-radical globose heads; bracts, bracteoles and calyx tips spinous-mucronate. Corolla white, hairy, often spotted with brown or purple. Capsule glabrous, grooved

on two sides; 2 seeded.

Flowers & Fruits: November to April.

Bedi 1261, 2367.

Fairly common on the dry rocky slopes of Patan Mata hill. In my specimen 2367, two smaller subglobose heads are found at the nodes above the basal radical head.

Deccan, Konkan, W. Peninsula.

Coromandal.

Lepidagathus cuspidata (Wall.) Nees in Wall. Pl.

As. Rar. 3:97, 1832; FBI. 4:519; C. 2:474;  
G. 748; Santapau, l.c. 73; Sant. 182; Chavan  
& Oza, Fl. Pavagadh, 180, 1966.

An erect or ascending glandular hairy or pubescent undershrub about 1 m. high. Leaves on the main stem much larger than the leaves on the branches. Flower in terminal spikes; corolla dirty white with pink dots. Capsule 4-seeded.

Flowers: September to March.

Fruits: January to April.

Bedi 1328, 2465, 3804.

Fairly common on the upper southern rocky slopes of Ratan Mal 'plateau'. Found almost everywhere along the banks of streams in the hilly forest regions. More common than the preceding species.

Deccan, Konkan, Tropical India.

Rungia Nees

Bracts dimorphic; upper lip of the corolla acute, not notched. . . . . pectinata

Bracts uniform; upper lip of the corolla notched . . . . . elegans

Rungia pectinata (Linn.) Nees in DC. Prodr. 11:469, 1847; Wt. Ic. t. 1547; Santapau, l.c., 77; Sant. 183.

Justicia pectinata Linn. Amoen. Acad. 4:299, 1759; Gr. 165.

Rungia parviflora Nees Var. petinata Clarke in FBI. 4:550, 1855; C. 2:478; G. 750.

R. parviflora Nees Var. muralis Clarke, l.c.; C. 479; G. 750.

An erect or scandent herb, very variable in size and form, often rooting at first few nodes. Flowers in terminal or axillary spikes; corolla faint blue, upper

lip acute. Capsule acute, compressed, pubescent at the tip. Seeds 2-4, orbicular, minutely echinate, yellow.

Flowers & Fruits: September to March.

Bedi 518, 705, 964, 1999.

Common among the undergrowth of the forest. Very variable in form, depending upon the soil and the season.

Gujarat, Deccan, Western Ghats, Himalayas, throughout India. Ceylon.

Santapau, l.c., considers the two varieties of Clarke, FBI. l.c., as seasonal forms of the same plant. Accordingly R. pectinata includes both these varieties.

Rungia repens (Linn.) Nees in Wall. Pl. As. Rar. 3:110, 1832; FBI, 4:549; C. 2:480; D. & G. 196, Wt. l.c. t. 465; G. 750; Santapau, l.c. 78; Sant. 183.

Justicia repens Linn. Sp. Pl. 15, 1753; Gr. 165.

An erect or sub-erect herb at times rooting at first few nodes. Very variable in size and form. Flowers in erect terminal one sided spike. Corolla blue, attractive; bracts with scarious margins.

Flowers: September to February.

Fruits: December to March.

Bedi 77, 2032.

Common as an undergrowth of forest, in open grassy places and in hedges. At times noted as a weed in cultivated fields.

Deccan, W. Ghats, Konkan, Kanara; throughout India.

Ceylon.

It comes very close to R. elegans from which it is often difficult to differentiate. Please see a note by Santapau, Acanth, l.c. 2:78.

Dicliptera Juss. (nom. cons.)

Dicliptera leonotis Dalz. ex Clarke in FBI. 4:553, 1885; C. 2:482; Santapau, l.c. 81.

D. burmanni Dalz. & Gibs. Bomb. Fl. 196, 1861 (non Nees).

An erect hairy herb, often noted growing from old root stock. Leaves sparsely hairy. Flowers rose purple, distinctly bilabiate, in clusters of sub-sessile cymes, stamens 2. Capsule and seeds hairy.

Flowers & Fruits: March to May.

Bedi 2472 (27-4-1962, Ratan Mal).

Rare, observed only at few places on the southern edges of Ratan Mal 'plateau', near Ratneshwar Maharaj temple. Though locally common but restricted in distribution.

Deccan, Konkan. Tropical Africa.

"Closely allied to D. micranthes, but the bracts, flowers, capsules and seeds are considerably large" (Clarke, l.c.).

Cooke, l.c., Rare.

This species has not been recorded by the earlier workers from Gujarat State.

This plant is fairly common in the campus of Forest Research Institute, Dehra Dun, May 15, 1962.

Rostellularia Reichenb.

It is often a problem, both in the field and in the herbarium to differentiate the various species and varieties of the complex genera Justicia. On the subject, please see the remarks of Gamble, Clarke or Santapau, l.c.



Bremekamp in Verh. Nederl. Akad. Wet. (2)45,  
(2):61 has separated the species of Sec. 6 of Clarke,  
l.c., Rostellularia and treated them as separate genus.

Rostellularia crinata Nees in DC. Prodr. 11:373, 1847;  
D. & G. 193; Sant. 186.

Rostellularia crinata Nees in Wall. Pl. As. Rar.  
3:101, 1832 ("Rostellularia").

Justicia micrantha Heyne ex Wall. Cat. 2449, 1830  
nom. nud.; FBI. 4:536; C. 2:489; G. 756;  
Santapau, l.c. 87.

A branched slender herb, 15-50 cms. high. Flowers  
in axillary or terminal dense spike. Corolla blue or  
pinkish blue. Sepals scarious, midrib produced into a  
spinocious point. Capsule sub-obtuse, mucronate, glabrous  
except few hairs at the apex; seeds 4, finely rugose.

Flowers & Fruits: November to December.

Bedi 1746 (25-11-1961, Kanjeta).

Not common, noted in hedges in Kanjeta, Chari and  
few other villages on the plains.

Deccan, Konkan, W. Peninsula.

Justicia Linn.

Bracts and bracteoles longer than the calyx, or atleast equally long; elliptic subacute, clothed with glistening jointed hairs; sepals hairy. . . . . simplex

Bracts and bracteoles shorter than the calyx; sepals minutely scabrous at the tip, rest glabrous. . . . . diffusa

Justicia simplex D. Don Prodr. Fl. Nep. 188, 1825;  
FBI. 4:539; C. 2:490; G. 756; Santapau,  
l.c. 89.

An erect or sub-erect hairy herb, often rooting at first few nodes. Flowers pink in axillary and terminal spikes. Spike 2-5 cm. long, densely covered with glistening white jointed hairs.

Flowers & Fruits: July to December.

Bedi 418, 1599.

Fairly common in the undergrowth of forest, more so in the hilly regions. Often noted in rocky crevices.

Gujarat, Madhya Pradesh, Deccan, Konkan and Kanara.

Nepal, Malaya.

The identity of my specimens of the difficult genus has been confirmed at F.R.I. Herbarium, Dehra Dun and Blatter's Herbarium, Bombay.

Justicia diffusa Willd. Sp. Pl. 1:87, 1789; FBI. 4:538; C. 2:489; G. 757; Santapau, l.c. 87.

Hostellaria diffusa Nees in Wall. Pl. As. Rar. 3:100, 1832; D. & G. 193.

An erect or sub-erect hairy herb, about 20 cm. long. Flowers in axillary and terminal slender spikes; calyx hairy at the tips, rest glabrous; corolla pink or purple red.

Flowers: August to November.

Fruits: October to December.

Bedi 273, 1600, 2722.

Common as an undergrowth of forest and often noted as a weed in cultivated fields, at times<sup>s</sup> noted in open grassy places.

Gujarat, Deccan, W. Peninsula, Punjab.

Justicia gendarussa Burm. Fl. Ind. 10, 1768. FBI. 4:532; C. 2:492; Santapau, l.c. 91.

A shrub, cultivated as a hedge plant in Dhenpur Ashram, Kanjeta and few other places on the plains.

Adhatoda Nees

Adhatoda vasica Nees in Wall. Pl. As.Rar. 3:103, 1832; FBI. 4:540; C. 2:493; D. & G. 194; Witt, 181; Talb. 2:340, t. 448; G. 758; Santapau, l.c. 92; Sant. 186.

Justicia adhatoda Linn. Sp. Pl. 15, 1753; Gr.164.

A much branched shrub, 1-3 m. high. Leaves opposite, large lanceolate, usually at the end of the branches. Flowers in spikes; bracts large; corolla white with purple spots in the centre.

Flowers & Fruits: Almost all throughout the year.

Bedi 3648 (15-10-1962, Dhenpur).

Rare, noted few shrubs near Dhenpur tank.

Probably planted?

Bombay, throughout India; often planted.

Ceylon, Singapore, Malaya, S.E. Asia.

Peristrophe Nees

Peristrophe bicalyculata (Retz.) Nees in Wall. Pl.

As. Rar. 3:113, 1832; FBI. 4:554; C. 2:495;

D. & G. 197; G. 759; Santapau, l.c. 93;

Sant. 187.

Dianthera bicalyculata Retz. in Act. Holm. 297,

t. 9, 1775.

Justicia bicalyculata Vahl Symb. 2:13, 1791;

Gr. 164.

An erect or straggling hairy herb, often noted in hedges. Flowers pink or rosy, rarely white, panicles lax divaricate. Capsule pubescent. Seeds orbicular, papillose and slightly rugose.

Flowers & Fruits: August to March.

Bedi 620, 2046.

Fairly common in hedges and shrubs near villages. During monsoons, plants are sub-glabrous, erect, but after November plants are straggling or sub-scandent in hedges and are more common in dry localities. Plants growing in extreme dry localities are hairy. Santapau, l.c. considers them as two separate forms.

Gujarat, Deccan, Konkan, Kanara, Madras, throughout India.

Tropical Africa.

## VERBENACEAE

Herbs, usually creeping; flowers in  
short ovoid or cylindric spikes. . . . . Phyla

Shrubs or undershrubs:

Plants armed with prickles. . . . . Lantana

Plants unarmed:

Leaves 3-5 foliolate;  
flower bluish. . . . . Vitex

Leaves simple, entire or  
toothed; flower white or  
with pinkish tinge. . . . . Clerodendrum

Trees:

Corolla regular, white. . . . . Tectona

Corolla 2 lipped, orange or  
yellowish. . . . . Gmelina

Phyla Lour.

Phyla nodiflora (Linn.) Greene in Pittonia 4:46,  
1889; Sant. 188.

Verbena nodiflora Linn. Sp. Pl. 20, 1753.

Lippia nodiflora A. Rich. in Michx. Fl. Bor.  
Amer. 2:15, 1803; FBI. 4:563; C. 2:499;  
D. & G. 198; Wt. Ic. t. 1463.

A prostrate herb, often rooting at nodes. Leaves  
crenate-serrate. Flowers in globose, cylindric, short  
spikes; corolla pink or white.

Local name: Rate liyo.

Flowers & Fruits: August to April.

Bedi 2316, 2844.

Common on moist river beds and in other marshy places. Often noted as a weed, in open grassy places. More frequent on plains.

Gujarat, Deccan, throughout India.

Ceylon, all tropical and sub-tropical regions.

Lantana Linn.

Lantana camara Linn. Var. aculeata (Linn.) Moldenke  
in Torrey 34:9, 1934; Sant. 187.

L. aculeata Linn. Sp. Pl. 627, 1753; Gr. 156;  
D. & G. Suppl. 68.

L. camara auct (non Linn.); FBI. 4:562; C. 498,  
Witt, 181.

A much branched shrub with recurved prickles. Leaves scabroid. Entire plant with strong characteristic smell. Flowers red, pink or yellow. Fruits globose, drupes green when young, finally black on ripening.

Flowers & Fruits: Almost throughout the year.

Bedi 1454, 2575.

Very common and often sub-gregarious at few places on the beds and along the banks of Panam river. Often noted near villages as a hedge plant.

Introduced; native of Tropical America. Runs wild in India & Ceylon.

The typical Linnean plant L. camara is unarmed. Our plant in this region is armed with prickles and it is Moldenke's Var. aculeata.

Vitex Linn.

Vitex negundo Linn. Sp. Pl. 638, 1735; Fl. 4:583; C. 2:508; Wt. Ic. t. 519; Witt, 185; Sant. 189.

V. bicolor Willd.: D. & G. 201.

V. trifolia Graham, Cat. 155, 1839 (non Linn.).

A large shrub. Leaves 3-5 foliolate, slightly whitish beneath. Flowers small, whitish blue in large in pedunculate branched tomentose cymes. Drupe black when ripe.

Local name: Nigud.

Local uses: Natives use the leaf poultice to cure swelling of joints and healing of wounds.



Flowers: Greater part of the year.

Bedi 2250 (22-2-1962, Anderpura).

Rare, restricted in distribution. Few large much branched shrubs were noted on the dry beds of a stream near Anderpura. Not observed from hilly forest regions.

Gujarat, Deccan, W. Ghats, throughout India.

Ceylon, Afghanistan, S.E. Asia to Japan, Philippine Islands and N. Australia.

Clerodendrum Linn.

*multiflorum* (Burmf.) G. Kuntze.

Clerodendrum phlomidis Linn. f. Suppl. 292, 1781;

FBI. 4:590; C. 2:511; Gr. 137; D. & G. 200;

Wt. Ic. t. 1473.

A large much branched shrub, noted in hedges.

Leaves opposite ovate. Flowers white or pink, in axillary and terminal cymose panicles.

Flowers & Fruits: August to March.

Bedi 1196 (26-3-1961, Kanjeta).

Not common, recorded few shrubs in hedges near Bapu's house in Kanjeta village. Very rare in the hilly regions of Ratan Mahal.

Gujarat, Deccan, Konkan.

N.W. Himalayas; throughout the drier parts of India,  
Ceylon.

The generic name in our floras is Clerodendron,  
the correct spelling as shown by Moldenke is Clerodendrum.

The specific name: Linne (1781) gave it as phlomidis,  
but most of the writers of Indian Floras except Cooke &  
Gamble, follow Willdenow 1800 in Sp. Pl. 3:386, who gave  
it as phlomoides. The only correct spelling is that of  
Linn. f. as given here.

Tectona Linn. f. (nom. cons.)

Tectona grandis Linn. f. Suppl. 151, 1781; FBI. 4:570;  
C. 2:503; Gr. 158; D. & G. 199; Witt 182;  
Talb. 2:346.

A large deciduous tree, often reaching upto 20 m.  
high and 130 cm. in circumference at B.H., in the moist  
localities near Pepargota. Leaves large, opposite, rough  
above, hairy below. Flowers white or dirty white. Fruit  
enclosed by the inflated papery calyx.

Local name: Sag.

Local uses: It is the most important  
economic product of these  
forests.

Flowers: July to October.

Fruits: October to December.

Bedi 1681.

Most common tree of these forests, forming an important commercial product. Fairly common, rather abundant on the plains and hilly slopes. The frequency reduces as we go towards higher altitudes. Not very common on Ratan Mal "plateau", the highest plateau in these hills about 650 m. M.S.L.

Tectona grandis is the dominant tree species on the plains and on some of the lower slopes. It is often associated with Diospyros melanoxylon, Lagerstroemia lanceolata, Anogeissus latifolia, Terminalia crenulata.

Gujarat, Madhya Pradesh, W. Peninsula,

Burma, Malay Peninsula, Sumatra, Java.

I have often recorded Dendrophthoe falcata - a partial parasite, on this tree.

Leaves are often infected during dry months by Uncinula tectona Salm.

Gmelina Linn.

Gmelina arborea Roxb. Hort. Beng. 46, 1814, nom. nud.  
& Pl. Cor. 3:42, t. 246, 1819; FBI. 4:581;  
C. 2:504; Gr. 158; D. & G. 201; Wt. Ic. t.  
1470; Witt 185; Talb. 2:348, f. 451.

A medium sized tree with greyish bark. Leaves,  
young branches and flowers covered with dense brown  
tomentum. Corolla yellow, orange-yellow, or brownish  
yellow. Flowers in panicles.

Local name: Sevan.

Local uses: Fruit is eaten by the  
natives. Timber is  
considered to be valuable.

Flowers: February to April.

Fruits: April to June.

Bedi 1380, 1917.

Though the plant is occasionally seen with other  
forest species, but it is not uncommon.

Gujarat, Madhya Pradesh, Deccan, Konkan, Kanara;  
throughout India.

Ceylon, Malaya and Philippine Islands.

## LABIATAE (LAMIACEAE)

Corolla with 4 nearly equal lobes. . . . Mentha

Corolla obviously bilipped:

Stamens 4, all perfect and declinate;  
anther cells confluent:

Lower lip of corolla declinate,  
flat or slightly concave,  
hardly longer than the upper  
lip:

Calyx deflexed in fruit;  
upper lobe widest large,  
ovate, recurved, margins  
decurrent on the tube. . . . Ocimum

Calyx sub-erect, margins  
not decurrent on the tube.

Infl. in whorls, crowded  
in globose or ovoid

heads. . . . . Acrocephalus

Lower lip of the corolla  
deflexed, boat shaped or  
saccate, longer than the  
upper lip; calyx very

oblique, 2 lipped. . . . . Anisochilus

Stamens 4, perfect, filament  
straight spreading:

Corolla 4-fid, lips spreading. Pogostemon

Corolla lobes 5, 2 lipped, upper  
lip short, nearly flat; stamens

exserted. . . . . Anisomeles

Corolla 2 lipped, upper lip  
2 fid; lower 3 fid; stamens  
included. . . . . Lavandula

Upper lip of corolla hooked,  
densely woolly; stamens  
included; anther divergent:

Lower lip of corolla  
longer than the hood. . . Leucas

Lower lip of the corolla  
shorter than the hood. . . Leonotis

Stamens 2; corolla 2 lipped, the  
upper entire concave or emarginate,  
lower spreading, 3 fid; anther cell  
very unequal on a long transverse  
connective. . . . . Salvia

Mentha Linn.

Mentha spicata Linn. Sp. Pl. 576; Bailey, Man.  
Cult. Pl. 863.

M. viridis Linn. Sp. Pl. 804, 1763; FBI. 4:647;  
C. 2:559.

An aromatic, perennial, glabrous herb. Leaves  
serrate. Flowers white or pink. Cultivated by the  
natives for its aromatic leaves, which they add in  
curries.

Local name: Pudini.

Bedi 3130 (9-9-1962, Dhenpur Ashram).

Cultivated on the plains and Dhenpur Ashram.

Sometimes cultivated as a pot herb.

Commonly cultivated throughout India.

Ocimum Linn.

Plants herbaceous:

Calyx hairy within:

Fruiting calyx 3 mm. long, and  
corolla 6 mm. long. . . . . americanum

Fruiting calyx 6 mm. long and  
corolla 10-12 mm. long. . . . . basilicum

Calyx glabrous within; pedicels as  
long as or longer than the calyx;  
bracts not exceeding calyx. . . . . sanctum

Plants shrubby; pedicels shorter than  
the calyx; bracts longer than calyx. . . gratissimum

Ocimum americanum Linn. Sp. Pl. 833, 1753(non Jacq.);

Sant. 192; Chavan & Oza, Fl. Pavagadh, 189.

O. canum Sims. in Bot. Mag. t. 2452, 1824; FBI.

4:607; C. 2:521; Gr. 147; D. & G. 203;

Mukerjee, Lab. Ind. Empire, 17.

An annual, erect, hairy herb. Flowers white or purplish white in whorls of lax inflorescence. Seed ellipsoid, black.

Local name: Ajalo damro.

Flowers & Fruits: August to February.

Bedi 360, 3337.

Commonly found in waste places and as a weed in cultivated fields both on plains and in hilly areas.

Deccan, Madhya Pradesh, Konkan; plains and lower hills of India.

Ceylon, Java, W. Asia, Tropical Africa, America.

Ocimum basilicum Linn. Sp. Pl. 597, 1753; FBI. 4:608;  
C. 2:523; Mukerji, l.c. 18.

An erect herb. Leaves ovate lanceolate, entire or toothed. Entire plant sweet scented. Stem purplish, square. Flowers faint pink in whorls on simple or branched racemes.

Local name: Tulsi.

Local uses: Leaf infusion is reputed to remove alcoholic intoxication. It is also used as flavouring agent.



Flowers & Fruits: July to April.

Bedi 1152, 2091.

A common pot herb, cultivated by the natives for aromatic leaves.

Cultivated throughout tropical and hotter parts of India.

Ceylon.

Ocimum sanctum Linn. Mant. 1:85, 1767; FRI. 4:609;  
C. 2:521; Gr. 147; D. & G. 204; Mukerjee, 19;  
Sant. 192.

An erect much branched herb, often woody near the base. Stem and branches sometimes purplish. Flower light pink, whorled in racemes.

Local name: Damaro.

Flowers & Fruits: October to December.

Bedi 3293.

Cultivated by the natives. Leaves used medicinally. Often noted as an escape near villages.

Cultivated throughout India.

Ceylon, Malay Archipelago, Australia, W. Asia, Arabia.

Ocimum gratissimum Linn. Sp. Pl. 1197, 1753; FBI.  
4:608; C. 2:522; G. 777; Mukerjee, 20.

A tall erect shrub, 75-200 cms. high. Leaves large, deeply dentate, ovate, acute, about 20 cm. long, with a long petiole. Flowers in racemes, greenish yellow.

Local name: Jungli Tulsi.

Local uses: Seeds and roots are used in fermenting and flavouring the country liquor.

Flowers & Fruits: September to November.

Bedi 3185 (30-9-1962, Kanjeta).

Rare, restricted in distribution. Noted along the banks of a stream near Kanjeta.

This species can be easily differentiated from the other species of Ocimum by its large leaves and great height of the plant. Truly wild in these hills, not seen in cultivation in the nearby areas.

Gujarat, Deccan, Konkan; throughout India, often cultivated.

Ceylon, Java, Tropical Africa and America.

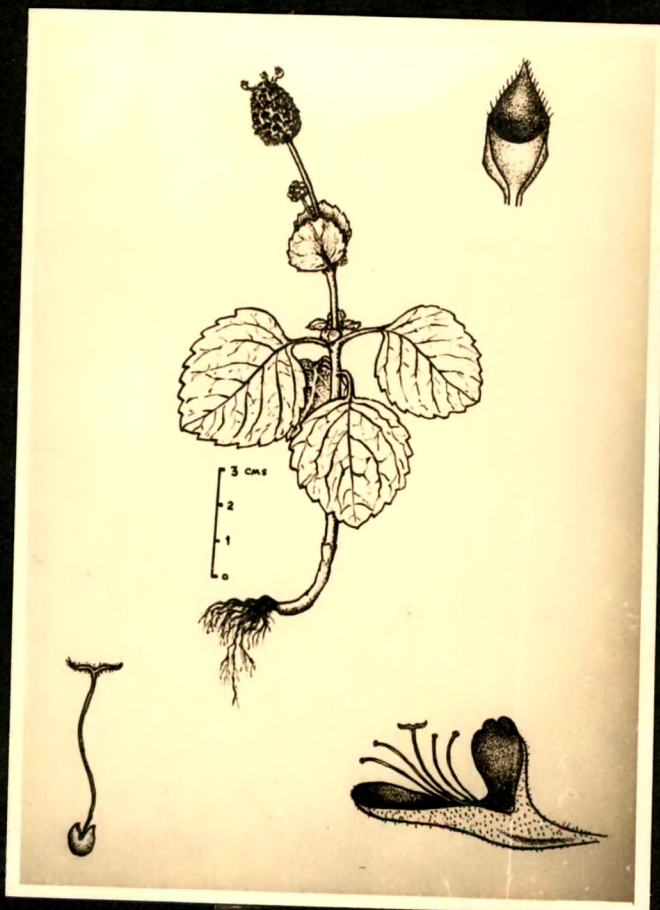


PLATE NO. 33

*Acrocephalus indicus* (Burm.) O. Kuntze

Acrocephalus Benth.

Acrocephalus indicus (Burm.) O. Kuntze, Rev. Gen.

2:511, 189; Mukerjee, 29; Sant. 192.

A. indicus Briq. in Engl. & Prantl. Nat. Pfl.

fam. 4(3a):367; G. 780.

A. capitatus Benth. in Bot. Reg. Sub. t.t. 1282,

1300 in Wall. Pl. As. Rar. 2:18, 1831;

FBI. 4:611; C. 2:525; Gr. 158; D. & G. 204.

An erect branched herb, 10-40 cm. tall. Leaves opposite, crenate or dentate, ovate-lanceolate. Flowers in terminal globose or cylindric heads, with 2 spreading leaves at the base. Corolla small, light purple.

Flowers & Fruits: September to November.

Bedi 1743; 3535.

Plate No. 33

Common in rocky places in the hilly forest regions near Kanjeta, Mandva hill, Alindra, Bendol and Raiengna.

Throughout India, especially in Himalayan regions and hilly districts in the rest of the country.

Burma, Java, Borneo, China.

Anisochilus Wall.

Anisochilus eriocephalus Benth. in DC. Prodr. 12:81;

FBI. 4:627; G. 788; Mukerjee, 58; Chavan, Bedi &

Sabnis, Add. Fl. Pavagadh, JBNHS. 63(3):786, 1966.

A. carnosus Var. eriocephalus Cooke, Fl. Bomb.  
2:532.

A. decussetus Dalz. & Gibs. Bomb. Fl. 206.

An annual erect herb, 20-50 cm. high, with  
obtusely quadrangular stem. Leaves thick, fleshy,  
ovate, crenate or dentate. Flowers in subglobose to  
a dense cylindric spike. Corolla blue or whitish  
blue; mouth of the fruiting calyx closed by the  
deflexed upper lip.

Flowers & Fruits: September to November.

Bedi 749, 3256, 3439.

Rare, restricted in distribution. Only recorded  
from Patan Mata, Raiengna and few other hills. Plants  
usually inhabit moist shady places on the rocky hills.

Deccan Peninsula, Konkan, Kanara.

This species has been recorded by the author for  
the first time from Gujarat State, see, l.c.

Pogostemon Desf.

Clusters usually close but occasionally  
interrupted in the terminal spike; bracts  
ovate imbricate, concealing the calyx;  
calyx short. . . . . benghalensis

Clusters close, interrupted towards  
the base; bracts ovate lanceolate, not  
concealing the calyx; calyx teeth  
nearly as long as the tube. . . . . purpurascens

Pogostemon benghalensis (Burm. f.) O. Kuntze, Rev.

Gen. 2:517, 1891; Raizada in Ind. For.

92(5):321, 1966.

Origanum benghalense Burm. f. Ind. 128, t. 38,

f. 3, 1768.

Pogostemon plectranthoides Desf. in Mem. Mus.

Nat. Paris 2:155, t. 6, 1815, ("plectranthoides");

FBI. 4:632; C. 230; D. & G. 207; G. 793;

Mukerjee, 69.

A much branched hairy undershrub, branches sub-  
quadrangular, often with purple tinge. Flowers in  
dense stout spikes; corolla pink, rarely white.

Flowers & Fruits: August to April.

Bedi 962, 1085, 1348.

Fairly common along the banks of streams in the  
hilly forest regions.

Gujarat, Deccan, W. Peninsula, Western Himalayas,  
Bengal, Behar.

Pogostemon purpurascens Dalz. in Kew Journ. Bot.

2:337, 1850; F.B.I. 4:632; C. 2:537; D. & G.  
207; G. 792.

A much branched herb or undershrub, densely covered with white, small hairs. Inflorescence in long whorled globular spikes, very close and continuous on the upper parts interrupted below; flowers white with pinkish tinge.

Flowers & Fruits: November to March.

Bedi 954, 2168 (16-2-1962, Pava na mul).

Rare, only noted in few localities near Pepargota, southern slopes of Banvaro plateau and Pava na mul. Usually inhabits along the banks of streams and at times as an undergrowth of forest.

Deccan, Konkan, Kanara, W. Peninsula.

This plant has not been reported from Gujarat State by the earlier workers.

The identity of my specimens has been checked and confirmed at F.R.I. Herbarium, Dehra Dun and Blatter's Herbarium, Bombay.

Anisomeles R.Br.

Flowers purple or red; leaves thick. . . indica

Flowers white; leaves thin. . . . . heyneana

Anisomeles indica (Linn.) Kuntze, Rev. Gen. 1891 &  
in Haines Bot. Beh. & Oris. 745, 1924;  
G. 797; Mukerjee, l.c. 152.

Nepata indica Linn. Sp. Pl. 571, 1753.

Anisomeles ovata R.Br. Alt. Hort. Kew (ed.2)  
3:364, 1811; F.B.I. 4:672; C. 2:543; D. & G.  
210; Wt. l.c. t. 865.

An erect densely tomentose herb, 50-150 cm. high.  
Stem 4 angled. Leaves thick broadly ovate, crenate  
or serrate, pleasant smelling. Flowers yellowish  
purple or purple red. Nutlets shining black.

Local name: Chadaro.

Flowers: September to December.

Fruits: November to February.

Bedi 720, 1914, 3374.

Common in open places, along the banks of streams  
and sometimes near Panam river.

Gujarat, Deccan, Konkan, Himalaya ; throughout India,  
Ceylon, Malay Archipelago, China, Philippines.



Anisomeles heyneana Benth. in Wall. Pl. As. Rar.

1:59, 1830; FBl. 4:672; C. 2:543; G. 1153;  
Mukerjee 152; Sant. 194.

A tall erect herb, glabrous or sparsely hairy.  
Stem and branches 4 angled. Leaves thin crenate-  
serrate. Flower whitish. Nutlet broadly ovate,  
obtuse, sub-compressed the inner faces slightly angled,  
the dorsal face rounded, smooth polished, dark brown.

Flowers & Fruits: October to December.

Bedi 670, 1757, 3681.

Fairly common in the undergrowth of forests near  
Banvaro, Pepargota, Alindra. Less common on plains.  
Occasionally noted along the forest paths.

Deccan Peninsula, Western Ghats from the Konkan  
southwards.

Lavandula Linn.

Lavandula bipinnata (Roth) C. Kuntze Rev. Gen. Pl.

521, G. 790; Mukerjee, 65.

Bisteropogon bipinnatus Roth. Nov. Sp. 255.

Lavandula burmanii Benth. Lab. Gen. et Sp. 151,

1833; FBl. 4:631; C. 2:534; Wt. Ic. t. 1438.

An erect hairy herb, 50-150 cm. tall. Stem simple or branched, quadrangular. Leaves deeply pinnatisect. Bracts glandular pubescent. Flowers blue.

Flowers & Fruits: September to November.

Bedi 565, 3608.

Not common, though locally abundant, sub-gregarious in habit, often associated with tall grasses. Usually noted on Ratan Mal "plateau", Kanvara dungar 'Bachelor hill' and near Pepar na Pani near Pepargota.

Deccan, Konkan, Western Peninsula, Madhya Pradesh.

Leucas R.Br.

Mouth of the calyx oblique, tube bent:

Flowers in large subglobose terminal whorls only. . . . . cephalotes

Flowers both in terminal and axillary whorls; calyx mouth produced on the lower (anterior) side. . . . . urticaefolia

Mouth of the calyx never oblique; calyx tube straight:

Whorls usually 5-many flowered, leaf margin entire. . . . . stricta

Whorls less than 4 or usually 2 flowered; leaf margin crenate or serrate. . . . . biflora

*capitata* Desf.  
Leucas cephalotes Spreng. Syst. 2:743, 1825; FBI.  
4:689; C. 2:549; Gr. 153; D. & G. 211;  
Wt. Ic. t. 337; G. 804; Mukerjee, l.c. 168.

An erect hairy herb, 25-75 cm. tall. Stem  
obtusely quadrangular. Entire plant densely hairy.  
Leaves with dentate margin. Flowers white in terminal,  
dense globular heads.

Flowers: September to February.

Fruits: December to March.

Hedi 1206, 1877, 3291.

Fairly common herb, usually seen growing as a  
weed in cultivated and dry fallow fields.

Gujarat, W. Peninsula, Himalayas, Punjab, Bengal,  
Assam.

Afghanistan.

Leucas urticaefolia R.Br. Prodr. 504, 1810; FBI. 4:680;  
C. 2:547 (urticifolia); Wt. Ic. t. 1451;  
Mukerjee, l.c. 166; Maheswari, Fl. Dli. 290.

An erect annual herb, 20-50 cm. tall. Leaves  
ovate-lanceolate, coarsely serrate. Flowers in dense  
globose or subglobose axillary whorls; corolla white;  
bracts acute, aristate.

Flowers & Fruits: September to January.

Bedi 334, 3331.

Fairly common as a weed in cultivated fields, especially in the maize crop during monsoon. More common on plains.

Gujarat, Deccan, W. Peninsula, Upper Gangetic plains, Punjab, Bengal.

Beluchistan, Arabia, Abyssinia.

The identity of some of my doubtful specimens has been checked and confirmed by Dr. S.K. Mukerjee of Central National Herbarium for which I am grateful to him.

Leucas stricta Benth. in Wall. Pl. As. Rar. 1:61, 1829; FDI. 4:688; C. 2:551; G. 804; Mukerjee, l.c. 170; Sant. 194.

A finely tomentose, annual herb. Leaves linear-oblong, margin entire. Flowers in terminal or sometimes sub-terminal globose whorled heads.

Local name: Kumbi.

Local uses: Leaves are used as vegetable by the natives and often added in Dal.

Flowers & Fruits: August to November.

Bedi 403, 3333.

Fairly common as a weed in cultivated fields.  
Occasionally seen in open grassy places.

Deccan, W. Peninsula.

Leucas biflora R.Br. Prodr. 504, 1810; FBI. 4:653;  
C. 2:553; D. & G. 211; G. 804; Mukerjee,  
l.c. 180; Wt. Ic. t. 866; Chavan & Oza,  
Fl. Pavagadh, 192.

A prostrate or straggling, pubescent herb.  
Leaves ovate-acute, margin crenate-serrate. Flowers  
in whorls of 1-4, usually two at each node. Corolla  
white.

Flowers & Fruits: September to November.

Bedi 3516.

Rare, restricted in distribution. Noted near the  
banks of a stream near Jal Dharo (water fall). Often  
noted on the steep escarpments near the streams and  
along the roads.

Gujarat, Deccan, W. Peninsula.

Ceylon.

Leonotis Pers.

Leonotis nepataefolia (Linn.) R.Br. Prodr. 504  
and in Ait. Hort. Kew, 3:409, 1811;  
FBI. 4:691; C. 2:555 ('nepetifolia');  
Gr. 153; D. & G. 212 & Suppl. 67; G. 807;  
Mukerjee, l.c. 185; Wt. Ic. t. 867;  
Chavan & Oza, Fl. Pavagadh, 192.

Phlomis nepataefolia Linn. Sp. Pl. 586, 1753.

A tall erect herb or undershrub, 1-3 m. high.  
Leaves ovate, coarsely serrate. Flowers densely crowded,  
in globose axillary heads or whorls round the stem,  
sometimes giving a beaded appearance to the upper part  
of the stem. Bracts with hard sharp spiny tips. Corolla  
orange densely hairy.

Local name: Mota shool.

Local uses: Ash prepared from the inflorescence  
is mixed with butter and is used  
to cure certain eye diseases, espe-  
cially swelling of the eye lids.

Flowers & Fruits: December to March.

Bedi 2225, 3687.

Common near human inhabitation, often noted in  
barren lands, along the banks of Panam river. Subgregarious  
or gregarious in habit. Occasionally noted in big patches.

Deccan, Konkan, throughout the hotter parts of India. Cultivated and naturalized. Doubtfully indigenous.

Ceylon, Tropical Asia, Africa, America.

Salvia Linn.

Salvia plebeia R.Br. Prodr. 501, 1810; FBI. 4:655; C. 2:577; D. & G. 209; G. 808; Mukerjee loc. cit. 111; Sant. 195.

A small erect pubescent herb. Leaves oblong lanceolate, toothed or crenate. Flowers small, white or light pink, in whorls or in panicles of slender racemes. Calyx is much enlarged in fruit.

Flowers & Fruits: October to December.

Bedi 2085 (12-2-1962, Khalta).

Not common, noted as a weed in cultivated fields near Khalta and Dhenpur. Often noted among grass on plains. Very rare in the hilly forest regions of Ratan Mahal. Not recorded earlier from the erstwhile Gujarat State.

Deccan, Konkan, throughout India, China, Malay Islands. Australia.

The identity of many specimens has been confirmed at F.R.I. Herbarium, Dehra Dun.