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THE FLORA OF KHANDALA ON THE
WESTERN GHATS OF INDIA

BY
H. SANTAPAU, S.J., Ph.D., D.I.C., F.I.I.,
St. Xavier's College, Bombay.

WITH A FOREWORD
BY
Dr. K. Biswas, M.A., D.Sc. (Edin.), F.R.S.E., F.I.I., F.B.S.,

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FOREWORD.

It is my pleasure and privilege to get the Flora of Khandala on the Western Ghats of India published in Volume XVI, No. 1. Due to war and consequent financial and other difficulties issue of the Records of the Botanical Survey of India had to be kept in abeyance for about 8 years. Immediately after the war and as soon as the conditions improved, publications of the Records of the Botanical Survey of India were renewed under the orders of the Govt. of India, and Vol. XV, Pt. I and Pt. II—Common Fresh and Brackish Water Algal Flora of India and Burma, 1949 by K. Biswas was published. Soon after materials for the ‘Flora of Khandala’ were received from Father H. Santapau and ‘Studies in Indian Berberidaceae’ from Dr. R. Chatterjee. Govt. sanctions for the publication of both these works were obtained as soon as possible and the Govt. of India Press are good enough to take up printing work of these almost immediately on receipt of these manuscripts.

Although the Flora of Khandala on the Western Ghats of India occupy a small space, it is none the less an important and interesting spot in the Bombay Presidency. My esteemed friend late Father E. Blatter with whom I had the good fortune to travel together to Poona mentioned to me years ago while passing through the then denser vegetation of Khandala by train about the need for thorough exploration and study of this spot and also of the flora of the Mahabaleswar hills in Panchghani district where he lived in his Parish house. Father Santapau by taking up this floristic work has thus contributed much to our knowledge of the flora of this part of the country. His work is extremely valuable as it contains more or less complete record of his detailed observations made actually in the field during his many visits to the Khandala Valley. The data contained in his monograph ‘the Flora of Khandala on the Western Ghats of India’ are therefore of greatest value to science in the preparation on modern lines of future floras of other parts of India. He has left no stone unturned to collect and record briefly all possible information which a systematician can possibly expect in a work of this kind. Then again his work has been brought to perfection by comparison and examination
of his own specimens with those in the Herbaria at Calcutta, Kew, British Museum Natural History, London and Linnean Society. He has also made a very good attempt to clarify the systematic position and complicated question of nomenclature of many species mentioned in his Treatise. His notes under each species are valuable additions.

Moreover, this work is of considerable value in throwing light on the nature of different elements in the flora of Khandala, and also distribution and migration of some of the cosmopolitan and Malayan species which curiously enough seem to be predominant in this locality. Many species are allied to Bengal species. During my review of the Systematic and Taxonomic studies on the Flora of India and Burma I pointed out to quote H. N. Ridley’s words “If we examine the flora of India from the Himalayan region to Ceylon and Burma, we notice that it is composed of a series of elements common to other regions of the surrounding areas; of these we may eliminate for study purposes the weeds or plants intentionally or accidentally introduced by man and confine our attention to those which are indigenous, and we must make a distinction also between plants which have migrated overland and the sea-borne or maritime species which have arrived by quite a different path. Hooker (Flora Indica, 1855) gave a division of the flora as then known into sections according to geographical affinity. More recent investigations have much modified his sections.”

No definite conclusion therefore can be drawn from our meagre knowledge of the flora, unless like Father Santapau, detailed botanical survey of the different parts of India is carried out and data and observations are recorded as a result of field study in season and out of season for the study of each and every species. Antecological investigation is therefore gaining more and more importance in solving many an intricate floristic problem of this vast subcontinent of ours with which the floras of the neighbouring countries are intimately linked.

Fr. Santapau’s work will undoubtedly prove useful to all Systematists, Taxonomists and students of Botany. I have no hesitation to recommend this valuable work to all interested in the flora of this country.

THE HERBARIUM, K. BISWAS, INDIAN BOTANIC GARDEN, Superintendent, CALCUTTA. Indian Botanic Garden, Calcutta.
The 22nd February, 1952.
PREFACE.

The present Flora is the result of twelve happy years spent in the exploration of Khandala. For a long time I had been keenly interested in the plants of the Western Ghata of India, but it was almost an accident that this work was undertaken. The late Rev. Fr. J. F. Caius, S. J., shortly after my return to India in 1940, once remarked to me that many botanists, who had worked on the botany of India, seemed to have gone for extensive rather than intensive exploration. This casual remark was the inspiration that urged me to concentrate on Khandala.

My work has been made easier by the help and assistance that I have received from many people. The Rev. A. M. Coyne, for many years Principal of St. Xavier's College, gave me every facility, not only by granting me leave of absence from the college, but also by putting St. Xavier's Villa in Khandala at my disposal. Throughout the earlier part of the work, I was fortunate to have the advice and constant company of C. McCann, F.L.S., the then Asst. Curator, Bombay Natural History Society; he accompanied me in many of my field outings and helped in the identification of some of the more difficult families of plants; by his departure from India in 1946 I have been deprived of the company of a very charming friend, and India has lost one of the best field workers in Natural History.

I owe sincere thanks to Sir Edward Salisbury, F. R. S., the Director, and to Dr. N. L. Bor, the Assistant Director, Royal Botanic Gardens, Kew, for many kindnesses received from them during my two years' stay at Kew during the preparation of this book; to Dr. K. Biswas, the Superintendent, Indian Botanic Garden, Calcutta, and to Dr. S. K. Mukerjee, the Curator of the Herbarium, for their help in the identification of some of my plants; Mr. M. B. Raizada of Dehra Dun has also helped me; it is with sincere gratitude that I acknowledge my indebtedness to them all. Part of the work connected with this Flora was submitted to London University towards the degree of Ph.D. and is here presented with the kind permission of the authorities of London University.

The Flora of Khandala is dedicated to the legion of Indian botanists working throughout the new and independent India,
with the sincere hope that other local floras may in time be published and so help gradually to make our very rich flora better known to the scientific world.

St. XAVIER'S COLLEGE, BOMBAY;

### Explanation of Map of Khandala

<table>
<thead>
<tr>
<th>Main Road</th>
<th>Railway line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canal</td>
<td>Streams</td>
</tr>
<tr>
<td>Sleep slopes</td>
<td></td>
</tr>
</tbody>
</table>

1. Behran's Plateau
2. Monkey Hill Plateau
3. Monkey Hill
4. Battery Hill Plateau & Reversing Station
5. Patanmal Plateau
6. Elphinstone Point
7. St. Xavier's Villa
8. Khandala Hotel
9. Forbay
10. Khandala Station
11. St. Mary's Villa
12. Duko's Nose
13. Echo Point
14. Saddle
15. Bhoma Hill
16. Barometer Hill
17. Korinda Valley
18. Lanavla Lake
19. Kano Plateau
20. Ghira Hill
21. Meroli Plateau
22. Lanavla Grove
23. Lanavla Station
24. Tata Canal

- d. Kuno Stream
- e. Dhobi Falls
- f. St. Mary's Ravine
MAP OF KHANDALA
(Scale approx. 1 : 63,000)
INTRODUCTION.

THE DISTRICT OF KHANDALA.

Geographical position.—Khandala is a small Maratha village and a railway station on the main G. I. P. South East Line, situated at the western edge of the Decan Plateau, 110 Km. by road from Bombay and 66 Km. from Poona. The position of the railway station, the centre of the present village, is 73° 25' E. and 18° 0' N. (See No. 10 on the map). The highway from Bombay to Poona passes through the middle of the village, and from the Konkan plains to Khandala itself follows, at least in some stretches, the very old Bhore Ghat road of the Maratha days. The original village of Khandala lies about 300 m. to the south of the station, on one of the many spurs or "Sausages" of Bhoma Hill. The elevation of the railway station is about 677 m. above sea level, and about 630 m. above the Konkan plains to the West.

Main features of the district.—The district covered in the present flora and referred to in these pages as "Khandala District" consists of a level plateau about 25 km. sq. made up of three semi-independent plateaus. Kavmanda or Karinda Valley is the southernmost part or plateau (Nos. 17 & 18 on the map), and is separated from Khandala proper by Bhoma Hill and Echo Point; it is, however, united to Khandala through the eastern part where Bhoma Hill comes suddenly to an end. The northern portion is the larger plateau, known as Kuno Plateau (no. 19 on map), and is separated from the central portion by the Kune stream and ravine, the latter often referred to in these pages as "St. Mary’s Ravine" (14–f on map). The western boundaries of the district are formed by the long ravine that runs from a spot roughly between the old Revealing Station and St. Xavier’s Villa southwards to the base of Duke’s Nose (2–a on map); the eastern boundaries are rather arbitrary, and for convenience sake were fixed as the line passing through the top of Ghira Hill (no. 20 on map) to the eastern side of Barometer Hill (no. 16 on map), as the eastern portion of Bhoma Hill is often called. Somewhat cut off from the main part of Khandala are Behran’s Plateau, 4–5 km. north of Khandala station (no. 1 on map), and Patamal Plateau (no. 5 on map) about 5 km. SW of the station; both these plateaus and the intervening country have been included as part of the district, mainly because they are of easy access from St. Xavier’s Villa and the elevation of the plateaus above sea level is about the same as that of the main or central Khandala plateau.

The highest spot in the district is Bhoma Hill (No. 15); the highest part being marked on the Survey maps as 2,782 ft. (about 848m.) above sea level; to the west of Bhoma Hill is Echo Point (No. 13), which is but a little lower than Bhoma Hill itself; the spur joining these two hills is known locally as the "Saddle" and is about 722 m. above sea level (No. 14); through the Saddle passes the path that connects Khandala with Karinda village through Khandala Hotel (No. 8) and the Forbay
terminus of the Tata Hydroelectric Canal (No. 9). Slightly to the southwest of Echo Point and rising in isolated majesty is the massive hill known as "Duke's Nose", so called after the Duke of Wellington on account of the remarkable similarity between the western edge of the hill and the profile of the human face (No. 12).

To the north of Khandala rises a massive plateau, known locally as "Behran" and to English-speaking visitors as "Rama's Bed and Pillow"; the latter name graphically describes the shape of the plateau: it consists of a level stretch about 1.5 km long and 900—1,400 m. broad, and is bounded on the north by two hills which are joined by a neck slightly lower than the hills themselves; from some distance away the two hills with their connecting hnk do look like a pillow on which a head has rested. The plateau ends very abruptly on all sides, more especially so on the eastern and north sides. In geological times Behran's Plateau, Patanmal Plateau and Matheran (about 18 kms. away to the NNW) were obviously connected to the main Deccan Plateau, from which they have been cut off in the course of time through the intense erosive action of winds and rains; this explains the fact that all these plateaus have about the same elevation over sea level and that their vegetation is typically the same as that of Khandala.

St. Mary's or Kune Ravine is a deep chasm with very steep, almost vertical sides, running in a north westerly direction between Khandala and Kune for about 1.5 km.; then it turns north and runs in this new direction for several kilometers (c.—g on map); the ravine may be said to start at the foot of Dhobie Falls (83 m. high, a magnificent sight during the monsoon) just behind St. Mary's Villa, hence the name of "St. Mary's Ravine" given to it by school boys and visitors. Occasionally the slopes of this Ravine open out into a ledge-like plateau, e.g. at Meroli.

St. Xavier's Ravine runs in a S. or SSW. direction for about 3 kms. and passing through the village of Chauni goes to swell the waters of the river Ambar. About 1.5 km. from the upper end of this ravine it is joined by a stream that runs between Echo Point and Duke's Nose (b on map); for the sake of convenience in the following pages I refer to this stream and ravine as "Echo Point Ravine", whilst the lower part of the main stream and ravine I have called "Duke's Nose Ravine". Locally there is no name for these ravines; I have given them arbitrary names for the sake of brevity in my field books and in the pages of this flora.

Climatic Conditions.

Reference has already been made to the intense erosive action of winds and rains. In order to get a clear idea of the climatic conditions prevailing in the district, I had a meteorological observation post set up in Khandala, and for three whole years was thus able to obtain a fairly complete set of records. Through the kindness of the Director General of Observatories, Poona, I also obtained rainfall data for a number
of years previous to those during which I explored the district. During my absences from Khandala most of the instruments were left in charge of the Rev. O. More, the missionary in charge of Kunj Katkari Settlement, to whom I gladly acknowledge my indebtedness.

Rainfall.—Owing to its position on the edge of the Ghats, Khandala is exposed to the full blast of the monsoon; an occasional shower of rain may fall towards the end of May or beginning of June; the monsoon proper sets in some time in the first half of June and continues with unabated force until the beginning of September; there is then generally a break of a few days with only occasional showers; the winds and rains then change to a N.W.—S.E. direction and this constitutes what is termed the "second monsoon". About the beginning of October or occasionally a little earlier the rains come to a stop, and until the middle of May of the following year there is either no rain at all or only in such small quantities that they can scarcely be measured with the ordinary rain gauge. During the rainy months, the amount of rainfall in 24 hours may go from a few mm. to well over 335 mm.; it is clear that under such conditions, botanizing may be rather trying.

The following table gives the total rainfall from June 1st to September 30th, for the years 1931 to 1946. The highest total is that for 1942 (230·90 in. = 585·5 cms.), the lowest that for 1941 (128·6 in. = 326·6 cms.); the average for the 16 years is 192·9 in. = 489·9 cms.

**Table 1.**

*Total Rainfall June—September.*

<table>
<thead>
<tr>
<th>Year</th>
<th>Total in In.</th>
<th>Total in Cms. (Approx.)</th>
<th>Remarks.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1931</td>
<td>215·8</td>
<td>542·5</td>
<td></td>
</tr>
<tr>
<td>1932</td>
<td>154·8</td>
<td>353</td>
<td></td>
</tr>
<tr>
<td>1933</td>
<td>224·0</td>
<td>571·3</td>
<td></td>
</tr>
<tr>
<td>1934</td>
<td>172·3</td>
<td>437·3</td>
<td></td>
</tr>
<tr>
<td>1935</td>
<td>168·1</td>
<td>437·3</td>
<td></td>
</tr>
<tr>
<td>1936</td>
<td>155·6</td>
<td>420·6</td>
<td></td>
</tr>
<tr>
<td>1937</td>
<td>130·3</td>
<td>457·7</td>
<td></td>
</tr>
<tr>
<td>1938</td>
<td>226·0</td>
<td>573</td>
<td></td>
</tr>
<tr>
<td>1939</td>
<td>172·2</td>
<td>430·5</td>
<td></td>
</tr>
<tr>
<td>1940</td>
<td>218·7</td>
<td>556·8</td>
<td></td>
</tr>
<tr>
<td>1941</td>
<td>128·0</td>
<td>326·4</td>
<td>The lowest in 16 years.</td>
</tr>
<tr>
<td>1942</td>
<td>230·0</td>
<td>556·5</td>
<td>The highest in 16 years.</td>
</tr>
<tr>
<td>1943</td>
<td>216·5</td>
<td>547·0</td>
<td></td>
</tr>
<tr>
<td>1944</td>
<td>133·0</td>
<td>343·4</td>
<td></td>
</tr>
<tr>
<td>1945</td>
<td>223·1</td>
<td>556·1</td>
<td></td>
</tr>
<tr>
<td>1946</td>
<td>228·1</td>
<td>574·3</td>
<td></td>
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</table>
To make my data comparable with those given by Champion in his book "Preliminary Survey of the Forest Types of India and Burma" (Ind. For. Rec. 1(1), 1936) Table 2 has been added to show the distribution of the annual rainfall throughout the months of the year.

**Table 2.**

*Rainfall in cms. for 1944–1946.*

<table>
<thead>
<tr>
<th>Months</th>
<th>1944</th>
<th>1945</th>
<th>1946</th>
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<tbody>
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<td>April</td>
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<tr>
<td>May</td>
<td>Traces</td>
<td>Traces</td>
<td>Traces</td>
</tr>
<tr>
<td>June</td>
<td>52-8</td>
<td>80-3</td>
<td>80-5</td>
</tr>
<tr>
<td>July</td>
<td>213-1</td>
<td>294-9</td>
<td>203-4</td>
</tr>
<tr>
<td>August</td>
<td>197-9</td>
<td>183-9</td>
<td>212-3</td>
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<tr>
<td>September</td>
<td>27-7</td>
<td>67-1</td>
<td>78-2</td>
</tr>
<tr>
<td>October</td>
<td>13-9</td>
<td>3-5</td>
<td>Traces</td>
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<tr>
<td>November</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>December</td>
<td>Traces</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td><strong>Total for Year</strong></td>
<td><strong>445-4</strong></td>
<td><strong>368-7</strong></td>
<td><strong>374-4</strong></td>
</tr>
<tr>
<td><strong>Rainy Days</strong></td>
<td>86</td>
<td>112</td>
<td>112</td>
</tr>
<tr>
<td><strong>Months with less than 5 cms.</strong></td>
<td>7</td>
<td>3</td>
<td>3</td>
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</tbody>
</table>

The erosive action of such torrential rains can best be seen in parts of the district where the forest has been cut down in recent years. Extensive deforestation was carried out on the spurs of Echo Point behind Khandala Hotel from 1939 to 1945; for the first few years the soil could support a fair crop of *Nagori* (Elaeis coracana Gaertn.) and other cereals; but gradually the upper soil is being washed away and the rocks begin to appear; at the present rate in the course of a few years all the soil will have been washed away and there will be another bare and rocky spot added to the many that so considerably disfigure the district.

**Winds.**—During the first half of the monsoon winds blow in a S.W.—N.E. direction and often reach the speed of 60 km./hr. and more per hour; when the wind force is coupled with heavy rains it often results in bringing
down some of the tallest trees of the forest, a frequent occurrence in Khandala during the first half of the monsoon. During the second half of the rainy season winds are more moderate. Outside the monsoon months there are fairly strong winds blowing from the N. or N.E., and during the months of December and January such winds may attain the velocity of gales, but their duration is only from the early hours of the morning to about 10 a.m. or at most till noon. For the rest of the year there is but a gentle breeze from the sea that springs up in the evening and lasts throughout the night and considerably freshens the atmosphere.

Temperature.—The hottest months of the year are March and April, with noon temperatures in the shade often reaching 37·8°C (=100°F); the hottest hours of the day are between 1.30 and 3 p.m. The lowest temperatures recorded during 1945 were only 8·9°C (=48°F) on January 7th, and 11·1°C (=52°F) on December 27th. In the course of the day even in January or December temperatures often rise to 26·6°C (=70°F). The range for any particular day in the year between the maximum and minimum for that single day may be over 17°C; during the rains the range may be as low as 0·5°C and is seldom above 5·5°C.

Table 3, built after the fashion of those in Champion, loc. cit., gives the temperature data for 1945.

**Table 3.**

<table>
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</thead>
<tbody>
<tr>
<td><strong>Max.</strong></td>
<td>29·4</td>
<td>28·1</td>
<td>28·4</td>
<td>28·8</td>
<td>37·6</td>
<td>27·8</td>
<td>25·2</td>
<td>20·5</td>
<td>20·5</td>
<td>20·5</td>
<td>20·5</td>
<td>20·5</td>
</tr>
<tr>
<td><strong>Max.</strong></td>
<td>34·4</td>
<td>32·6</td>
<td>31·8</td>
<td>30·6</td>
<td>37·8</td>
<td>27·8</td>
<td>23·8</td>
<td>20·6</td>
<td>20·6</td>
<td>20·6</td>
<td>20·6</td>
<td>20·6</td>
</tr>
<tr>
<td><strong>Lowest Min.</strong></td>
<td>8·9</td>
<td>13·6</td>
<td>17·8</td>
<td>20·0</td>
<td>22·2</td>
<td>21·1</td>
<td>20·5</td>
<td>20·5</td>
<td>19·4</td>
<td>17·8</td>
<td>14·4</td>
<td>12·1</td>
</tr>
<tr>
<td><strong>Mean Rel. Hum. at 9 a.m.</strong></td>
<td>47·7</td>
<td>46·7</td>
<td>47·2</td>
<td>48·2</td>
<td>51·2</td>
<td>50·7</td>
<td>54·0</td>
<td>55·4</td>
<td>51·8</td>
<td>60·6</td>
<td>75·6</td>
<td></td>
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</tbody>
</table>

Mean Yearly temperature 24·2°C.  
Mean Max. temperature 29·7.  
Mean Min. temperature 19·0.  
Highest Maximum 39·4.  
Lowest Maximum 39.  
Mean Rel. Humid. 9 a.m. 84·7 per cent.
Wet & Dry Thermometer Readings for 24 April & 6 November, 1944
INTRODUCTION

Relative Humidity.—Owing to its position on the western edge of the Ghats, Khandala receives the breezes from the sea which is only about 60 km. away, and in consequence the atmosphere never gets as dry as e.g. in Poona and other places further inland. Even during the hottest and driest months of the year, the relative humidity during the night and in the early hours of the morning is fairly high, often about 90 per cent.; during April the relative humidity is generally above 70 per cent. in the morning, during the course of the day the air dries up and the moisture content may come down to 25 per cent. at about 3 p.m.; thereafter it rises again so that by 10 p.m. it is again over 60 per cent. During the rainy season the moisture content of the air is seldom below 90 per cent. and often is near 100 per cent. Table no. 3 gives the mean monthly relative humidity for 1945: all the readings have been calculated from the Dry and Wet Bulb Thermometer readings, the official Hygrometric Tables of the Meteorological Dept., Govt. of India, being used for the calculations.

The two diagrams, Nos. 1 and 2, give the Dry and Wet Bulb Thermometer readings for April 25 and November 6, 1944, and the percentage relative humidity as calculated from the thermometer readings.

During the summer months of 1946, April to June, I had a thermograph set up in St. Xavier’s Villa, in the shade, about 1.5 m. from the ground. The records obtained show a very regular daily curve with a maximum of about 100°F (=37.8°C) in the early afternoon and a fairly gradual descent lasting until 7-8 a.m. of the following day; after 8 a.m. there was a steep rise to the afternoon maximum. Occasional showers of rain during May and the first half of June were recorded as a sharp, almost vertical drop; when the rain set in, the record became an almost straight line at about 70°F (=21.1°C). As a specimen of the records obtained, those of the week beginning on 22 April 1946 are here reproduced.

SOIL AND GEOLOGY.

Khandala forms the western edge of the Deccan Plateau, and its rocks are mostly, like those of the rest of the plateau, of very dark basalt. The northern wall of St. Mary’s Ravine shows the rocks laid down in very regular horizontal strata of varying thicknesses, separated by rather thin, snow-white quartz layers. In such localities the upper strata may be missing, and this gives rise to horizontal ledges varying in width from a few cms. to several hundred meters; thus for instance, Maroli Plateau is formed by one of these ledges about 300 m. wide and 1.5—2 km. long. Generally all over Khandala the amount of loose soil is very scanty except in places where the silt brought down by the rains from the higher ground has been retained by some natural or artificial barrier, as is the case in the cultivated fields on either side of the railway station. Where the vegetation is dense, as in most of the ravines and their slopes, there is
always plenty of humus on the ground; but where the vegetation has been cut down, the upper soil is easily washed away, as on many of the slopes of either side of Bhoma Hill, Echo Point and the "Bed" or flat tableland of Behram's Plateau.

mentioned as occurring in Khandala in his time. In general I may say that Graham's Catalogue has been of real service to me in the exploration of the district.

Blatter, Hallberg and McCann.—These botanists with Blatter as the leader, carried out extensive work in the district and made large collections during the years 1917—1919, as a matter of fact their collections form the main nucleus of the Blatter Herbarium. McCann, working on his own, made a special collection of the Gramineae, Cyperaceae and Orchidaceae from 1919 to 1931. Many of the plants of the earlier collections
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THE BOTANICAL EXPLORATION OF KHANDALA.

John Graham (1805-1899), was the first of the "modern" botanists to explore Khanda!; in his Catalogue Graham mentions Khanda! 101 times, "Lanovlee Grove near Kandalla" 14 times, the Ghat's about Khanda! or the Ghat's generally over 90 times. Whilst reading the Catalogue, one may notice that when Graham mentions, e.g. Belzoum, S. Conna and other places, he generally gives Laws, Gibson, and others as his authorities; as regards Khanda!, except on very rare occasions, he mentions the place and various points in the district directly, and it would seem, from his own observations. Graham spent considerable time in Khanda!, but from the plants listed in his Catalogue it appears that he was there only during the dry season of the year or at most from October onwards; as regards monsoon plants, he merely cites them as "common" without any reference to Khanda!. He died in Khanda! on May 28, 1899, and was buried in a small cemetery which is at present enclosed within the grounds of St. Mary’s Villa. The funeral inscription on the well-preserved tomb records that Graham was "an active originator, warm supporter and accomplished member of the Agricultural Society of Western India’’ and that the tomb was "erected by his numerous friends...in commemoration of...his disinterested labours and valuable contributions in the cause of Botanical Science”.

Hooker f. and Thomson in the introductory essay to their Flora Indica (p. 52) have a few very hard expressions on Graham and his Catalogue; "the Catalogue...has unfortunately been of little use to us...; internal evidence occasionally enables us to recognize with certainty the plant named; but more frequently it shows that the identification is erroneous...". In spite of the many obvious deficiencies of Graham’s Catalogue, it has been quoted by practically every subsequent writer on the flora of Western India, including several of the authors who helped Hooker f. in his Flora of British India. For my part, I have been able to trace, with but few exceptions, all the plants that Graham mentioned as occurring in Khanda! in his time. In general I may say that Graham’s Catalogue has been of real service to me in the exploration of the district.

Blatter, Hallberg and McCann—These botanists with Blatter as the leader, carried out extensive work in the district and made large collections during the years 1917-1919; as a matter of fact their collections form the main nucleus of the Blatter Herbarium. McCann, working on his own, made a special collection of the Graminaceae, Cyperaceae and Orchidaceae from 1919 to 1931. Many of the plants of the earlier collections
of these workers are not too well preserved and often not too carefully pressed; moreover, these collections were made mainly during October and March to May, so that monsoon plants are rather poorly represented. Blatter seems to have planned writing the Flora of Khondala and for this purpose recorded his findings in a card index, which is at present in the Blatter Herbarium, and will be quoted in this flora as "Blatter in MS. catalogue". Similarly, Hallberg kept a record of the plants he collected in Khondala; his catalogue consists of a series of marginal notes to his own copy of Nairne's Flowering Plants of Western India; this series of annotations is mentioned in this flora as "Hallberg, in MS. catalogue". Shortly before C. McCann left India for New Zealand I had occasion to examine his private herbarium, which consisted of several thousand well preserved specimens; his collection at the time of writing this flora is in Wellington, New Zealand.

Occasional Visitors.—Among the many botanists who have paid occasional visits to Khondala the following deserve special mention: Dr. A. Gibson, the superintendent of the Botanic Garden at Dapuri; J. S. Law of the Bombay Civil Service; Dr. J. E. Stocks, Bombay Medical Staff; G. M. Woodrow, Professor of Botany, College of Science, Poona; Dr. Th. Cooke, Principal of the College of Science, Poona and Director of the Botanical Survey of Western India; the Rev. R. D. Aoland, Bishop of Bombay; J. L. Seigwick, of the Bombay Civil Service, and others such as Gamme, Meobold, Bhida, Bhina, Kamikar, etc. Their collections are scattered through several herbaria in India and Europe; for the purpose of this Flora, I have examined the collections of Blatter, Hallberg, and McCann, Seigwick and Bell, Aoland, Woodrow, Cooke in Poona and in Kew, etc. The bulk of the collections from Khondala of Stocks, Law, Gibson, Dalzell and a few sheets of Meobold are kept in Kew Herbarium; a large number of sheets of Cooke, Gamme, Bhida, Bhina, etc. are preserved in the Herbarium of the Economic Botanist, Bombay Government, in the Agricultural College, Poona, where recently I have had occasion to examine them at leisure.

My Exploration of Khondala.

Method.—The present flora is based on the results of ten years of study in Khondala. Almost from the very beginning of my work I was fortunate in having the company and assistance of C. McCann, the only survivor of the trio Blatter, Hallberg & McCann, who until 1946 was my almost constant companion in many of my visits through the district. With McCann's help, the following method was evolved for the exploration of Khondala:

1. For the purpose of obtaining a record not only of the vegetation of Khondala, but also of the seasonal changes, excursions were made regularly at least once, often twice or more times every month in the year, including the monsoon and winter months; this has been kept up for 1940—1946 and 1948—1949.
2. St. Xavier's Villa was made the centre or base camp for the work. In a large room in the villa I set up a laboratory where scientific instruments and chemicals could be kept permanently and where all dissection and other work could be carried out in comfort. Radiating from St. Xavier's Villa, the district was divided into sections that each of these could be explored in little more than half a day; parts of the district which on account of distance could not be visited in this regular fashion have been left out of this flora entirely.

3. In the course of the day's excursion, plenty of observations were entered in a rough log book and specimens were collected. On the return to St. Xavier's Villa, all the specimens were carefully checked, rough notes studied and entered into the proper field books; the specimens were then poisoned, labelled and pressed. When a plant had been repeatedly collected and pressed, new specimens were again collected and examined, and, should they add nothing further to the previous collections, an entry was made in the field book merely to record the presence of the plant and its condition, and the specimens were discarded. An attempt was made in every case at the identification of the plant before pressing or discarding; any specimen that could not be identified on the spot, was preserved for future study. The laboratory work at times was very heavy, especially during the monsoon; but the general plan was to finish the study of one set of plants before attempting another collection. This, on occasion, meant staying up in the laboratory till nearly midnight, but generally speaking the plan was carried out smoothly and without undue fatigue.

4. On numerous occasions plants were found in the vegetative condition and their identity could not be ascertained; then the exact position of the plant in question was determined by reference to several points in the district, this was done with a prismatic compass; in the course of ten years I have never failed to find again a plant that had been so marked.

5. Special attention was paid to the sizes of trees, etc., as it appeared that the measurements given by Cooke often seemed to disagree with my findings in Khondala. For the purposes of accurate measurements, I made use of an Abney level or of a pocket sextant; the trigonometrical method of measuring trees has been found to be the most accurate and at the same time the easiest, for trees over 4m. in height.

6. The colour of the flowers, often so vaguely and inaccurately described in some of the Indian floras, was determined whilst the flowers were still fresh by reference to the tables in Ridgway's Standard Colours and Nomenclature; references are given in the body of this book as "Ridg. 1, b," etc.

Results.—Practically every plant found in Khondala by previous collectors has been recorded again in this flora; the relative abundance of most plants and their life cycles have been determined; moreover, a fairly good number of plants not previously recorded for the district has been added; several new species, varieties and forms have been described. The flowering and fruiting seasons for most plants have been
accurately recorded, and these have been found to vary considerably from the data given by Cooke. The colours of most flowers have been noted down, and where they did not agree with published descriptions, reference was made to Ridgway’s book, which has always been part of my equipment in my excursions.

Plants which in Cooke’s Flora are given as “rare” or “very rare” have been repeatedly found in Khandala; from my findings, I would rather say that they are restricted in their occurrence or in the length of time during which they are conspicuous for their flowers; thus, e.g., Cooke writes of *Phaseolus khandalensis* Santapau (*Ph. grandis* Cooke): “A very rare plant, found only on Konkan and Deccan hills”; similarly of *Dolichos bracteatus* Baker Cooke writes: “A very rare plant, the only specimen seen being those in Herb. Kew marked ‘Konkan, Stocks’”; both plants are abundant in Khandala and Pandharpur; unfortunately their flowering times coincide with the worst part of the monsoon, and so specimens in herbaria are rather scanty. Some of the typical monsoon plants passing as rare in the literature are not rare at all, but “unfortunately they flower in July, at which time the whole of the hill-sides are streaming with water, rendering plant-collecting a task of no ordinary difficulty” (Cooke, 2: 734); some of these rare plants have proved to be about the commonest and most abundant ones in Khandala during the heavier part of the monsoon.

In the course of my excursions, I have paid special attention to plants of the families Liliaceae, Amaryllidaceae and other tuberous or bulbous plants; in the past they have often been missed by previous collectors, because their flowers are of very short duration and come out immediately after the very first monsoon showers. Such is the case, for instance, with several species of *Pancreatus*, *Crinum* and with the vernal form of *Cereus pseudomaniensis* Grant, residence in Khandala throughout the month of June has afforded me a good opportunity to collect interesting data heretofore not recorded on these early monsoon plants.

**The Vegetation of Khandala.**

On several occasions, both in the field and in the laboratory, I have tried to fit the various types of vegetation found in Khandala into one of the groupings described by Champion in his book “Preliminary Survey of the Forest Types of India and Burma”; but I have found great difficulty in this, the reason being that the species mentioned by Champion are quite different from those of my district. For this reason I have finally decided to omit all reference to Champion’s types, and to give my own description.

One of the remarkable features of the vegetation of the district taken as a whole, is the almost complete absence of deciduous trees; it is only on the “Bed” or flat tableland on Behlab’s Plateau that deciduous trees are sufficiently numerous to affect the general character of the
place. In other parts of Khandala there are deciduous trees, but their leaves are shed at different times or seasons for different trees, so that the district as a whole must be classed among the evergreen parts of the country. Some trees shed their leaves at the beginning of the cold season, others during the hot summer months, most trees, however, are evergreen. One tree has often attracted my attention, *Heterophyllum quadriloculare* Schum. (*H. Roxburghii* DC. in Cooke’s Flora); it is one of the few trees that are generally leafless during the first part of the monsoon.

1. **Meroli Plateau.** As indicated above, Meroli consists of a practically flat ledge varying in width between 200 and 300m. and about 1.5—2 km. in length. Its altitude is about 275--310m. Botanically it is one of the most interesting spots in the district, as its forest on account of its inaccessibility has not been cut down to any considerable extent and the spot is in consequence about the only piece of virgin forest left in Khandala. The forest at Meroli seems to be made up of several clear layers. Actual measurements of the tallest trees shows that the upper layer reaches an average of 20 m. (about 100 ft.); the most common trees in the top layer are the following:

- *Caryota urens* Linn.
- *Ficus nervosa* Heyne
- *Schleichera oleosa* Merr.
- *Cupressus tabularis* Juss.
- *Mangifera indica* Linn.
- *Pongamia pinnata* Pierre
- *Albizia odoratissima* Benth.
- *Ficus glomerata* Roxb.
- *Tetrameles nudiflora* R. Br.
- *Dysoxylum binecariferum* Hook. f.
- *Holoptelea integrifolia* Planch.
- *Astonia scholaris* R. Br.
- *Albizia procera* Benth.
- *Holigarna grahami* Hook. f.

Climbing over the tops of these trees are the most powerful climbers in the district, among which are the following:

- *Entada phaseoloides* Merr.
- *Calycopterus floribunda* Lamk.
- *Diplocistis glaucescens* Diels.
- *Combretum ovalifolium* Roxb.

Towards the edges of Meroli away from the ravine, on rising ground are some large specimens of

- *Clidemia spinosorum* Merr.
- *Bridelia squamosa* Gehrn.
- *Garcinia malabarica* Tbl.
- *Garcinia indica* Choisy.
- *Lopisanthus tetraphylla* Raddlk.
- * Lagerstroemia lanceolata* Wall.

with *Cylindrostemon* Wt. & Arn., *Symphorema involucratum* Roxb. and *Mesoneuron cucullatum* Wt. & Arn. and other climbers.
The second layer of the forest at Meroli is constituted by much smaller trees, which reach but 12–18 m. high, among which the following deserve special mention as being the commonest:

- *Hyeronima echinata* Wall
- *Gnetum arborum* Roxb.
- *Pouteria tomentosa* Baehni
- *Sterculia guttata* Roxb.
- *Mesua basjoo* Roxb.
- *Erinocarpus nemomonti* Gradl.
- *Murraya koenigii* Spreng.

These trees are remarkable in Meroli on account of their height; in the open or in other parts of the district they seldom reach 16 m., but in Meroli they often go up to 18 m.

A third layer of the forest is almost exclusively formed by

- *Carissa composita* Wt.
- *Mesua crassifolia* Wt. & *Pristimera grahami* Smith., etc.

The ground in large tracts is practically bare, in others it is more or less densely covered with ferns, *Stachyophrinum spicatum* Schum., and a few grasses, among which the broad-leaved *Opismenus compositus* Beauv. is common. Climbing over rocks and tree trunks, but seldom going high, is the ubiquitous *Piper nigrum* Linn. The finest specimens of *Gnetum nela* Brongn. of the district are found here, climbing over some not very high trees on rising ground near the southern path leading to the plateau from Kune.

As to the general changes induced by the monsoon, there is little here that is typical, except that at the northern end of the plateau there are some large clumps of *Impatiens*, *Zingiberaceae*, a few orchids, etc. At that spot there is a large clump of *Costus speciosus* Seem., and this is the only spot in Khandala from which I have recorded this plant. The relative humidity of the forest is very high throughout the year, and possibly for this reason the forest is heavily infested with mosquitoes; this may account for the fact that except for a few monkeys and squirrels, both of which keep in the high branches of trees, we have never encountered any wild animals in a very wild spot of forest.

2. St. Xavier’s and Duke’s Nose Ravines. The composition of the forest in these ravines is in general similar to that of Meroli, but the separation of the forest into layers is not so clear, the heights of trees not so uniform nor so large, and the dominant trees slightly different. Among the commoner plants are the following:

- *Mangifera indica* Linn.
- *Leptospernum tetrapterum* Radlk.
- *Holoptelea integrifolia* Planch.
- *Terminalia chebula* Retz.
- *Salalina malabarica* Schott & Endl.

- *Schleichera oleosa* Merr.
- *Sterculia guttata* Roxb.
Salmalia insignis Schott & Endl.

Bridelia squamosa Gehr.

Olea dioica Roxb.

Sageraea laurifolia Blatt.

Mimusops elengi Linn.

Ficus glomerata Roxb.

Hibiscus hirtus Linn.

Neuraeanthus trimervius Wight.

Blepharis asperiflora Nees.

Haplanthus sp.

Among the climbers, the largest plants are Bauhinia Vulgaris Wt. & Arn., Butea superba Roxb., Butea parviflora Roxb.; these are the giants not only among climbers but also among forest trees, but are rather rare, except locally in some parts of the ravines. One of the commonest climbers in the undergrowth, even in poor light conditions, is Teramnus labialis Spreng.; among conspicuous climbers going high over large trees and common all over the ravines are the following:

Ventilago bombaiensis Dalz.

Ancistroclades heyneanus Wall.

V. maderosquarva Gaertn.

Diploclisia glaucescens Diels.

Combrutum extensus Roxb.

Gnetum Ula Brongn.

O. ovalifolium Roxb.

Stylophora coerulea Linn.

Anodendron paniculatum DC.

Hoya wightii Hook. f.

Cylindra scariosa Roxb.

Cylindracea floribunda Lamk.

Most of the species of climbing Ampelidaceae or Vitaceae found in Khandala are common in these two ravines. Suberect or climbing shrubs are Cupparis Mornii Wt., Curtisia congesta Wt., Elaeagnus conferta Roxb., etc., at the edges of the forest Mosoandron cumulatum Wt. & Arn. forms an almost impassable barrier. Scattered through the ravine slopes in fairly large clumps are several species of the plants hitherto classed under Strobilanthes, of which S. callosus, S. trixicephalus and S. perfoliatus are the commonest. On ravine slopes in more or less open ground there are numerous specimens of Ensete superbum Chossam., often seen growing in almost inaccessible situations.

In general, one of the most noticeable features of the ravines and their slopes is that whilst the vegetation is more or less uniform throughout, there are some small corners where some of the otherwise rare trees or plants are to be found in relative abundance; such rare plants do not seem to spread to other parts of the forest. The slopes below Echo Point show a good example of such a restricted abundance; on the upper southern portion Beilschmiedia is the commonest and largest tree; about half way down Strombosia ceylanica Gard. and Sageraea laurifolia Blatt. are dominant; near the base there are a number of trees seldom seen anywhere else in the ravines, Sapindus, Kneea, etc.; at the very bottom of the ravine along the stream course Bambusa Bambos has taken possession of the ground to the almost complete exclusion of all competitors.

3. Top and Upper Slopes of Bhuna Hill. These are the parts of Khandala most exposed to the winds and rains of the monsoon; moreover, deforestation has caused much of the higher ground to become so bare
INTRODUCTION

of soil that only a few hardy plants can now manage to live on some of the slopes except during the monsoon. Among the trees of the upper plateau, the most common are the following:

**Tetrameles nudiflora** Roxb.  
**Acinosma tuckneri** Nee.  
**T. bellerica** Roxb.  
**Dicopyros montana** Roxb.  
**T. oreumala** Roth.  
**Izora brachiata** Roxb.  
**Bridelia squamosa** Gehr.  
**Ficus glomerata** Roxb.  
**Albizia chinensis** Merr.  
**Eriophyes quinquilocularis** DC.  
**Sycamum Cuminii** Skeels.  
**Allophyllus serratus** Radlk.  
**Heterophragma quadriloculare** Sch.  
**Salacia insignis** Schott & Endl.  
**Embelia officinalis** Gaertn.  
**Sterculia guttata** Roxb.  
**Crotalaria retusa** Linn.  
**Dillenia pentagyna** Roxb.  
**Grewia disperma** Rothl.  
**Osiris wightiana** Wall.  
**Gloeocidion Hohenackeri** Bedd.  
**Celastrus paniculata** Willd.  

Among the trees and shrubs which, though rare in the district, are found on the upper slopes and plateau, the following may be mentioned:

**Hevea trijuga** Heyne.  
**Canthium divocicum** Merr.  
**Corokia obliqua** Willd.  
**Kydia calycina** Roxb.  
**Rauwolfia densiflora** Benth.  
**Atylosia lineata** Wt. & Arn.  
**Lobelia nicotianaeefolia** Heyne.  
**Pittosporum floribundum** Wt. & Arn.  

Among climbing plants, the most typical of Bhoma Hill and its slopes are the following:

**Clematis hederarifolia** DC.  
**Hemidesmus indicus** R. Br.  
**Tragia hispida** Willd.  
**Smilax zeylanica** Linn.  
**Olax wightiana** Wall.  
**Diploclisia glaucescens** Diels.  
**Gnetum Ula** Bronn.  
**Entada phaseoloides** Merr.  
**Braenagnus conferta** Roxb.  
**Hoya wightii** Hook. f.  
**Arypegia elliptica** Choisis.  

A number of introduced or naturalized plants are found on Bhoma and its slopes:

**Vitex Negundo** Linn.  
**Lantana camara** var. acutilata Mold.  
**Stachytopheta urticaefolia** Salisb.  
**Psidium guajava** Linn.  

Forbay and its neighbourhood seems to have been the place from which several exotic plants have been introduced into the district; in addition to *Psidium guajava* Linn., one may find very numerous specimens of the brightest flowered Asclepiad of Khadala, *Asclepias curassavica* Linn., and the common *Lycopersicon esculentum* Mill. spreading from Forbay down to the ravines along the stream beds.
The undergrowth often consists of pure stands of *Curvula eucalyptoides* Brenn., growing in such dense clumps that very few other plants manage to obtain sufficient light for growth. Where the vegetation has been removed on the slopes and upper plateau, *Euphorbia nerifolia* Linn. is one of the most conspicuous plants at present.

4. **Behran's Plateau.** The whole of this plateau rises isolated with deep ravines on at least two sides, and is joined to Khandala through Monkey Hill Plateau on the south side. On the eastern side the vegetation is scanty, and this is due to a great extent to the almost vertical slope of the hill sides. The western and northern sides are covered with small trees and shrubs, which seem to be the result of secondary growth or natural regeneration of the original forest; much damage is caused annually to the plateau and its slopes by the constant cutting of trees and the firing of the grasses just immediately before the rains.

The general aspect of the plateau is that of a savannah, consisting of large bare tracts with occasional groups of small trees; during the monsoon the open spaces become covered with grass and then the name "savannah" can be applied with accuracy. The ground is rocky, and most of the soil has been washed away by the heavy monsoon rains, which here are heavier than in Khandala itself. The commonest tree on the plateau is *Terminalia crenulata* Roth, a stunted tree which is generally covered with insect galls. Other common trees or shrubs are:

- *Memecylon talbotianum* Brand.
- *Hymenodictyon obovatum* Wall.
- *Ficus arnottiana* Miq.
- *Bridelia squamosa* Gehr.
- *F. glomerata* Roxb.
- *Randia brandisii* Gamb.
- *Sapindus insigne* Benth. var. *malabaricum* Hook. f.
- *Grewia tiliaefolia* Wall.
- *Heterophragma quadriloculare* Sch.
- *Murraya koenigii* Spr.
- *Lagerstroemia parviflora* Roxb.
- *Ixora brachytha* Roxb.
- *Pouteria tomentosa* Baehni.
- Scattered through the Plateau, but not abundant are:
  - *Allophylus serratus* Radlk.
  - *Syzygium cumini* Skeels.

Among the climbers, the most noticeable are:

- *Tinospora cordifolia* Miers.
- *Smilax sieylianae* Linu.
- *Asparagus racemosus* var. *javanicus* Baker.
- *Argyreia elliptica* Choiss.
- *Ventilago maderaspatana* Gaertn.

One of the remarkable features of the plateau itself is the complete change of aspect that sets in with the advance of the season; during the summer months, most of the plateau is dry and practically bare; with the advent of the rains, all the open places become covered with a mass of yellow flowers, generally of the large-flowered *Senecio graminis* Hook. f.;
when these flowers disappear or become rare, *Neurocanthus sphaero-
stackhous* becomes the dominant plant; towards the end of the rainy season
large patches are occupied by *Dysphylle stellata* Benth., *Cynodonine
bates* Law., *Hyrophila scrobilum* Anders., with its attendant parasite,
*Striga gemnerodes* var. *minor* Sant., several species of *Utricularia*, etc.,
each of these plants growing in almost pure formations in large patches.
Among the undergrowth towards the western edge of the plateau, several
Amaryllidaceae are about the only plants in flower with the exception of
a few grasses. Towards December, the most common herb is *Blumea
oxydonta* DC., a highly scented but otherwise scarcely noticeable plant.
With the coming of the hot season, grasses and most other herbaceous
plants die out and at the time the ground becomes entirely bare but for a
few specimens of *Lepidacanthus tinerus* Wall. and *Vernonia cinerea* Less.
Shortly before the coming of the rains, the slopes and the plateau itself
are set on fire by shepherds with the idea that better crops of grass are
obtained from burnt ground; much damage is caused to trees by this
burning, as generally herbaceous plants tend to accumulate under the
shade of trees.

Another feature of the plateau is the great abundance of orchids
(*Dendrobiun*, *Aerides*, *Eria*, etc.) supported by various trees, especially by
the scrubby-looking *Terminalia crenulata* Roth and the evergreen
*Mecycylon umbellatum* Burm.

At the foot of the plateau there is a large flat portion of land that
extends up to Monkey Hill and has been under cultivation for a long
time; this flat land deserves mention on account of the numerous speci-
mens of *Bolus andracea falcata* Seem. var. *Lavu Haines*, *Laneea grandis*
Engl., *Bryophyllum colorata* Burk., and *Anogeissus latifolia* Wall. scattered
through it; some of these trees are nowhere else to be seen in the whole
district.

5. **Khandala and Kune Plateaus.** The village of Khandala and its
immediate neighbourhood is distinguished from the rest of the district
by the large number of showy plants that have been successfully intro-
duced. Among trees and shrubs, the following are outstanding for
their flowers:

- *Delonix regia* Raf.
- *Duranta repens* Linn.
- *Thunbergia grandiflora* Roxb.
- *Artocarpus integrifolia* Merr.
- *Carica papaya* Linn.
- *Peltosphorus inermis* Nav.
- *Bougainvillea spectabilis* Willd.
- *Plumeria acuminata* Ait.
- *Anacardium occidentale* Linn.
- *Syzgium jambos* Alst.

Of trees that are native of the district, *Casinia fistula* Linn., *Bryophyllum
colorata* Burk., and *Olea dicotica* Roxb. have been introduced into gardens,
the shirt two for their flowers, the last one for its shade. *Ficus retusa*
Linn., *Bambusa bambos* Voss., *Adhatoda vasica* Nees, *Duranta repens*
Linn., *Vitex negundo* Linn. etc. are often used as garden plants especially
as hedge plants. *Casuarina equisetifolia* Linn. and *Eucalyptus* sp. are also found in some gardens, and both make fine trees. Among the introductions, mention must also be made of *Lantana camara* var. *aculeata* Mold. of relatively recent introduction, which is spreading very widely and causes much damage; *Pedilanthus tithymaloides* Poir. has escaped from gardens and may be found in flower, but it is not an attractive plant. Of the genus *Opuntia* only one plant has been observed in the district (*O. elatior* Mill.); it flowers readily throughout the year, but does not seem inclined to spread. *Ricinus communis* Linn. is also found in some gardens, and is occasionally found as an escape.

These two plateaus are fairly intensely cultivated, at least during the monsoon and post-monsoon periods; there are no forests on either plateau, and the trees to be mentioned occur scattered singly or in small clumps.

*Mangifera indica* Linn.  
*Randia brandisii* Gamble.  
*Grevia tiliaefolia* Vahl.  
*G. dispar* Rottl.  
*Garcinia indica* Chois.  
*Flacourtia latifolia* Cooke.  
*Erythrura stricta* Roxb.  
*Garcinia urens* Linn.  
*Sterculia guttata* Roxb.  
*Syzzygium cumini* Skeels.  
*Izora brachiata* Roxb.  
*Bridelia squamosa* Gehrm.  
*Pongamia pinnata* Pierre.  
*Mecynax laxiflora* Robyns.  
*Saluclia malabarica* Sch. & Endl.  
*Ficus glomerata* Roxb.  
*Butea monosperma* O. Kuntze.  
*Sapium insigne var. malabaricum* Hk. f.

Scattered through the two plateaus and rather localised are a number of trees, that are native of the district, but are far from common:

*Albizia chinensis* Merr.  
*Phoenix sylvestris* Roxb.  
* Mimosa sclerocarpa* Linn.  
*Linociera malabarica* Wall.  
*Gmelina arborea* Roxb.  
*Carallia brachiata* Merr.  
*Zizyphus jujuba* Lamk.  
*Stereospermium personatum* Chatt.  
*Madhuca latifolia* Macbr.  
*Mangifera indica* Linn.  
*Macaranga pelata* Muell. Arg.  
*Vitex leucocephon* Linn.  
*Holopolea integrifolia* Planch.  
*Toona ciliata* Roxb.  
*Acacia arabica* Willd.  
*Garuga pinnata* Roxb.

Among the commoner shrubby, subereot or climbing plants, are:

*Hiptage benghalensis* Kurz.  
*Combretum ovalifolium* Roxb.  
*Anodendron paniculatum* DC.  
*Stephania hermansiana* Wulp.  
*Cynanchum callialata* Buch. Ham.  
*Thunbergia fragrans* Roxb.  
*Dalbergia roxburghii* Roxb.  
*Jasminum malabaricum* Wt.  
*Clematis hedyariifolia* DC.  
*Elaeagnus conferta* Roxb.  
*Capparis moeni* Wt.  
*Simulz zeylanica* Linn.  
*Acacia torta* Craib.  
*Carissa conegra* Wt.
Among the commoner shrubs are:

Calotropis gigantea R. Br.  
Celtis oppositifolia Sm.

Holarrhena antidysenterica Wall.  
Pavetta indica Linn.

Cassia grandis Linn.  
Vitex negundo Linn.

Lantana camara var. aculeata Mold.

Among herbaceous plants flowering during the dry part of the year, the following stand out as more common and noticeable:

Argemone mexicana Linn.  
Salvia plebeia R. Br.

Tanacis stalligera Wall.  
Pogostemon pleonanthoides Desf.

Solanum xanthocarpum Schr. & Wendl.  
Polygonum glabrum Willd.

Datura innoxia Mill.  
Eclipta alba Linn.

In and around the village tank

Nympheae pubescens Willd.  
Limnanthemum indicum Thw.

Bacopa monnieri Pennell  
L. cristatum Griseb.

Centella asiatica Urb.

In general these two plateaus are the parts of the district most affected by man's interference. Among the cultivated plants commonly seen in Khondala are Cynara scolymus Linn., which is cultivated in fields which have a tolerably good soil and abundant water supply; Natchi (Eleusine coracana Gaertn.) is grown in fields which are too poor either on account of the stony nature or of the steep slope of the ground; occasionally during the after-monsoon period Cicer arietinum Linn., Solanum tuberosum Linn., Lycopersicon esculentum Mill., Solanum melongena Linn., several var. of Capsicum annuum and a few of the commoner varieties of Phaseolus are also cultivated. Much damage, however, is caused to these cultivated plants either by wild animals or insects; in the case of the potato and tomato plants there is another serious cause of trouble, and that is that very few insects are attracted to their flowers, and in consequence fertilisation has to be carried out by artificial means.

6. Elphinstone slopes. This is an interesting corner just below Elphinstone Point, and near mile stone No. 70 along the main road from Bombay; the forest here extends from about 780 to 300 m.; by far the most abundant tree in this part of the forest in Albantia racemosa Wt. & Arn., a pleasant sight when in flower; the following are also common:

Putranjiva roxburghii Wall.  
Tetrameles nudiflora R. Br.

Distylium binecariferum Hk. f.  
Pristimera grahami Smith.

Ventilago bombaiensis Dalz.

For the rest this part of the forest both in composition and in the sizes of the larger trees is very similar to Meroli Plateau, but the division of the forest into layers is not so clearly marked here. At certain times of the year, particularly in the early morning and towards sunset, this
place is considered dangerous on account of panthers and other wild animals which have made it their home.

7. Changes induced by the rainy season. Soon after the first isolated showers towards the end of May or beginning of June, bulbous plants of the families Amaryllidaceae, Zingiberaceae and others come into flower very suddenly, often long before the leaves appear above ground. Among such plants are:

- *Pancratium sp.*
- *Crinum latifolium* Linn.
- *Curcuma pseudomontana* Grah.
- *Curculigo orchoides* Gaertn.
- *Arisaema murrayi* Hook.

Soon after the beginning of the monsoon the following plants are conspicuous:

- *Asparagus racemosus* var. *javanica* Baker.
- *Tylophora fasciculata* Ham.
- *Ensete superbum* Cheesm.
- *Impatiens kleinii* Wt. & Arn.
- *Zingiber sp.*
- *Cissus elongata* Roxb.
- *Fimbriostylis digitata* Roock.
- *Hypoxis aurea* Lour.

and several of the Cucurbitaceae, among which *Dioscoreum reticulatum* Ckles, is common. After about a week of steady rains, new grasses cover the whole ground with a beautiful light green. Throughout the monsoon, the most conspicuous plants, excluding grasses which on account of their abundance form the outstanding feature of open places, are the following:

- *Curcuma pseudomontana* Grah.
- *Zingiber macrostachyum* Dalz.
- *Impatiens balsamina* L.
- *Swertia minor* Knoblau.ch.
- *Exacum umbellatum* Griseb.
- *Chlorophytum tuberosum* Baker.
- *Thesium tuscum* Dalz. & Gms. *C. glaucum* Dals.
- *Thunbergia fragrans* Roxb.
- *Begonia crenata* Dryand.
- *Asystasia dalzelliana* Sant.
- *Barleria prattensis* Sant.

Orchids are also common and showy, among the ground ones the genus *Habenaria* being the commonest and most conspicuous:

- *H. digitata* Lindl.
- *H. keymbana* Lindl.
- *H. grandiflora* Lindl.
- *H. marginata* Coleb. etc.

On Bhoma Hill and its slopes the “Queen” of Khandala orchids, *Phalanthera susannae* Lindl. is found in fairly large numbers. Ultricularias cover large spaces on rocks and tree trunks, whilst *Hygrophila serpyllum* Andrae covers much of the rocky ground. About the middle of the rainy season, the commonest plants in flower are:

- *Senecto grahamae* Hook.
- *Neurocanthus sphaerocephalous* Dalz.
**Plectranthus mollis** Spr.  
*Smithia setulosa* Dalz.  
*Tricholepis amplexicaulis* Ck.  
*Elephantopus scaber* Linn.  
*Anothia foetida* Bth. & Hk.  
*Dioscorea* several species,  
*Leuca myrsiniflora* Heyne.  
*Clerodendrum serratum* Moon.  
*Commelina obliqua* Buch. Hum.  
*Cyanotis tuberosa* Schult.  
*Fleurya interrupta* Gaud.  
*Geissaspis cristata* Wt. & Arn.  
*Drosera indica* Linn.  
*Melanthes turbinata* Wt.  
*Striga gesneroides* Vatke.  
*Rhamphicarpa longiflora* Bth.  
*Sepultia delphinifolia* Don.  
*Landernia* several species

Restricted in their habitat but rather showy are these plants:

*Orozylum indicum* Vent.  
*Eracum bicolor* Roxb.  
*Ilicshios bracteatus* Baker.  
*Phaseolus khandalensis* Sant.  
*Beqonia concanensis* DC.  
*Kaempfera scaposa* Bth.  
*Mussaenda glabrata* Hutch.  
*Trichosanthes bracteata* voigt.  
*Rhynchosia spinifera* obliquam Bl.  
*Sonerila scapigera* Hook.  
*var. parviflora* Ck.  
*Impatien acuata* Arn.  
*Roreria strigosa var.  
*terminalis* Ck.  
*Ceropogia emanuili* MoC.  
*B. lutei* Anders.  
*L. setuligera* Clarke.

During the years 1943-1945 the most noticeable monsoon plants were the large clumps of *Carvia callosa* Breunek., which covered the slopes above and around Khandala and added a vivid touch of colour to the hillsides.

As may be seen from the accompanying rainfall chart, at the beginning of September there is generally a fall in the rains lasting for a few days; at such a time, when the ground is covered with dense vegetation and high waterfalls plunge into the ravines and the weather is cool and not too wet, Khandala is one of the most attractive spots in Western India. The only snag in the otherwise perfect picture is that deadly snakes (Cobras, Russel’s Vipers, etc.) and other dangerous animals are common not only among grasses, but even or perhaps more so in the neighbourhood of human dwellings. The differences in general appearance among the various parts of the district described above, seem to disappear during the monsoon; many of the plants just mentioned as belonging to the monsoon, are common everywhere, except in dense forests where want of light prevents many of the herbaceous plants from growing. One of the main difficulties encountered in the exploration of the district during the rains is the fact that the ground is covered with liverworts (*Funaria, Anthoceros*, etc.) and is thereby rendered very slippery; in my experience of nearly ten years this has been a greater difficulty even than a heavy monsoon day with a rainfall of 10 or more inches and with the stormiest winds of the season.
INTRODUCTION

Plan Followed in This Flora.

The present work is primarily a record of ten years of exploration of Khandala. The data given in these pages are all first-hand, and have been carefully recorded on the spot on the day itself of the collection. As for the collections of specimens, I made them myself, since the study of the literature convinced me that generally collectors seem to gather the most obvious specimens and easily avoid difficult parts of the country. Often in my excursions I had two or three local men, but as a rule they only collected what was pointed out to them, so that even when they saw the plants before I did, I insisted on examining every specimen on the spot before it was disturbed; this has entailed much labour and to some extent has reduced the number of specimens; but on the other hand, I have been able to obtain direct evidence concerning all the specimens gathered in the district.

The more immediate work connected with this flora was carried out mainly in London during my stay lasting just over two years. Most of my time was spent in such institutions as Kew Gardens, British Museum of Natural History, London, and Linnean Society. All my Khandala specimens were checked against the actual types, when these were available in London, or with the best specimens in those institutions. Another important part of the work done in London was the adjusting of the nomenclature of Khandala plants and bringing it up to date. In Hooker's Flora of British India there are many plant names which, to say the least, were rather arbitrarily chosen; Cooke himself did little in this respect except follow almost blindly the lead of Hooker. For my work I made use of every recent available monograph, so that any change in the names of plants in this book has been introduced on the authority of the latest monographers. As a result many of the names given by Cooke in his Flora have been relegated to the synonymy, and new names or new combinations have been adopted; this however, has only been done where such changes have proved strictly necessary in accordance with the Rules.

In the preparation of this Flora, I have consulted, in addition to my own ample field notes and numerous specimens (over 16,000 plants were collected in Khandala between 1940 and 1949), the few notes and ample herbarium materials in Blatter Herbarium, Sedgwick and Bell's Herbarium, Acland's collections, McCann's private and very interesting herbarium, Dr. Lisbon's collections, and the three London Herbaria mentioned above; I have lately examined a large number of specimens of Cooke, Woodrow, Gammie, Bhule, Bhiva, etc. in the herbarium of the Agricultural College, Poona. Following the common practice, I have inserted an exclamation mark after a number when I have examined the sheet in question and been satisfied as to the identity of the plant.

Of the vernacular or local names, only those are given here which I have ascertained to be in use locally; vernacular names vary greatly from place to place, and often the same name is used to indicate several plants. In general I have noticed in Khandala that only those plants
which are economically useful have local names; small herbs which are not used either medicinally or as an article of food have no names.

The order followed in this book is the same as that of Cooke in his Flora. The remarks given against individual plants are not meant to be a full description of the plant; only such data as correct or complete Cooke's description are entered here. Throughout this work the decimal system is used, occasionally the common English system is added as for instance in the case of rainfall or temperature measurements; such data were first obtained with instruments marked with English units, the conversion to decimal units being done with the help of the Handbook of Chemistry and Physics, 31st edition.

ABBREVIATIONS.

For economy of space, titles of journals and names of the more commonly occurring authors have been cut down from the conventional abbreviations to shorter or even mere initials, as follows:

ABGC Annals of the Royal Botanic Garden, Calcutta.
C. Cooke, Th.: The Flora of the Presidency of Bombay.
D. Dalzell, N.
D. & G. Dalzel, N. & A. Gibson: The Bombay Flora.
FBi. Flora of British India by Sir J. D. Hooker et al.
F. Fischer, C.E.C., joint author with Gamble of the Flora of the Presidency of Madras.
Hk. f. Hooker, filius, i.e., Sir J. D. Hooker, the editor of Flora of British India.
JAA Journal of the Arnold Arboretum.
JASS Journal of the Asiatic Society of Bengal.
JBNHS Journal of the Bombay Natural History Society.
JIB Journal of Indian Botany or the Journal of the Indian Botanical Society.
JLS Journal of the Linnean Society of London.
N. Nairne, A. K.: The Flowering Plants of Western India.
PLS Proceedings of the Linnean Society of London.
Pfam. Engler and Prantl, Die natürlichen Pflanzenfamilien.
Pfreich. Engler, Das Pflanzenreich.
<table>
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<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>RBSI</td>
<td>Records of the Botanical Survey of India.</td>
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<tr>
<td>TLS</td>
<td>Transactions of the Linnean Society of London.</td>
</tr>
<tr>
<td>Wall.</td>
<td>Wallich, N.</td>
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RANUNCULACEAE.

Clematis Linn.

*Clematis gouriana* Roxb., Hort. Beng. 43, 1814 & Fl. Ind. 2: 671, 1832; FBl. I: 4; Gr. I; D. & G. I; C. I: 2; N. 5.


According to Cooke this plant is common in thickets on the Ghauts; the authority for the inclusion of this plant in this book are two manuscript catalogues left by Blatter and Halberg. I have not seen this plant in Khandala, there are no specimens from that locality in any of the Herbaria I have consulted. (1)


Very common about Khandala; these plants may be seen almost throughout the year, especially along the railway line embankment at the foot of Behran’s Plateau. Flowers are not showy in themselves, but as they grow in dense masses, they render the plant an attractive one. The plant is especially attractive in fruit.

Flowers.—October to November. Fruits.—November to May.


Delphinium Linn.


Fairly abundant in Khandala along the edge of the ravine from Khandala Cemetery to the foot of Echo Point; not seen elsewhere in the district. This plant is said to be rare by Cooke. At Purandhar, Poona Dt., this is one of the commonest and most abundant flowering plants; in every case this plant seems to thrive in well-watered and well-drained soil, it does not grow except on steep slopes. A very fine plant when in flower.

Flowers and Fruits.—In Khandala during October only. At Purandhar this plant is very common, and can be seen in flower and fruit from October to December.


(1) On Nov. 29th, 1881 for the first time I collected this plant in flower (Santapau 1888—1890!) and on Dec. 27th, 1881 in fruit (Santapau 1888—1890!) on the slopes below Fortbay.
DILLENIACEAE.

Dillenia Linn.

*Dillenia pentagyna* Roxb., Pl. Corom. 1: 21, t. 20, 1795; FBI. 1: 38; Cr. 2; C. 1: 6; N. 7.

A fairly common tree scattered through the ravines or slopes of the various hills about Khandala. In the seedling stage leaves may reach and even exceed 90 x 30 cms. On 26th November 1945 I found a tree about half way down St. Xavier’s Ravine with buds and leaves on it. I have not seen this irregularity about flowering time on any other occasion. The wood is soft, and is only used for fuel.

*Local name:* Karumbel.

*Flowers.*—March to June. *Fruits.*—April to September.

Bl. Herb. 17438! 17440! 18029! 19439! McCann 3711! 3712! Santapau 59/1! 59/3.4! 59/7! 540l! 1883! 8863! 9959! 9960!

MAGNOLIACEAE.

Michelia Linn.

**Michelia champaca** Linn., Sp. Pl. 536, 1753; FBI. 1: 42; C. 1: 7; N. 7.

Rare in the district; only seen in some of the gardens in Khandala.


ANOACEAE.

Saccopetalum Bennett.

*Saccopetalum tomentosum* Hk. f. & Thoms., Fl. Ind. 152, 1855; FBI. 1: 85; C. 1: 16; King in ABGC. 4(1): 159, t. 207; Blatter in JBNHS. 34: 293; N. 9.

Not a very common tree about Khandala; I have found it in Meroli Plateau, at the base of the slopes below Elphinstone Point and on Monkey Hill Plateau.

*Flowers.*—March 1943. *Fruits.*—March to June.

Sageraea Dalz.

Sageraea laurifolia (Grab.) Blatter, loc. cit. 294, 1930; Chatterjee in PLB. 154: 266.

Guatteria laurifolia Graham, Cat. 4, 1839.

Sageraea laurina Dalz. in Kew Journ. Bot. 3: 207, 1851; D. & G. 2; FBI. 1: 99; Beilison, Icon. t. 9; King, loc. cit. 7, t. 35 B pro parte; Tabl. 1: 33 pro parte.

Boungia Dallzellii Hook. f. & Thoms., in FBI. 1: 92, 1872; C. 1: 17 pro parte.

Not common about Khandala; occasional specimens are found scattered on ravine slopes.

King, loc. cit., has separated Sageraea from Boungia Stl. KHL; Hook. f. and Thoms. (in FBI.), Benth. and Hook. (in Gen. Plant.) retain Sageraea as distinct from Boungia. But in FBI., loc. cit., Hook. f. and Thoms. unite the two genera into one with the name of Boungia. Among the more recent authors, Talbot (For. Pl. 1: 33, 1909), Brandis (Ind. Tr. 13, 1911), Gamble (Ind. Timb. 15, 1902), and Blatter, loc. cit., follow King in separating the two genera; King does not think it possible to combine the extreme imbrication of the sepals and petals in Sageraea with the valvate calyx and corolla of Boungia.

Local names: Sajeri and Undi.

Flowers.—November. Fruits.—December to March.

Blatt. Herb. 28432! Santapau 30/2-3, 7! 1351! 1521! 1563! 3285! 3286! 3586! 6010!

MENISPERMACEA.

Tinospora Miers.

Tinospora cordifolia (Willd.) Miers. in Ann. Hist. Nat. (Ser. 3), 7: 38, 1851; Hook. f. & Thoms., Fl. Ind. 184, 1855; FBI. 1: 97; D. & G. 8; C. 1: 18; Diels, in Pfreich. 46: 139; Blatter 31; 549; N. 10.


Cocculus cordifolius DC., Syst. 1: 518, 1818 & Prod. 1: 97; Gr. 1; Wight, Icon. tt. 285, 486.

Fairly common about Khandala; very common on Behran’s Plateau. Unfortunately this plant flowers when there are no leaves on it, and in consequence it is often confused with other species of Tinospora. In Khandala, however, I have not seen any but T. cordifolia growing.

Flowers.—January to March. Fruits.—April to June.

**Diploclisia Miers.**


*Ceculus glaucescens* Blume, Bijdr. 25, 1825.

*Ceculus macrocarpus* Wight & Arn., Prodr. 13, 1834; Gr. 5; Wight, Ill. 1: 22, t. 7; Fl. B. i. 101; C. 1: 20; N. 11.

This plant, both in flower and in fruit, is one of the finest sights in the jungle around Khandala. During the flowering season numerous insects, particularly the small Indian bee, *Apis indica*, can be seen and heard hovering about the plant.

The leaves are used locally for cigarette wrappers.

*Local name:* Vatoli.

*Flowers.—* March to June.  *Fruits.—* April to September.


**Stephania Lour.**

*Stephania hernandifolia* (Wild.) Walp., Repert. 1: 96, 1842; Fl. 1: 103 *pro parte*; C. 1: 22 *pro parte*; Diels, l. c., 279; Blatter, loc. cit. 35.


*Clypea hernandifolia* Wight & Arn., Prodr. 14, 1834; Wight, l. c. l. 939.

The description found in Fl. and followed by Cooke is based on mixed material consisting of *S. hernandifolia* proper and *S. japonica*. On the whole question of *Stephania*, see Blatter loc. cit.

The following details have to be added to Blatter's description. The general colour of the inflorescence is green or greenish yellow. The fruit at first is green, at maturity is generally white or creamy white, occasionally one finds fruits with a tinge of orange colour on them; I cannot tell whether this colour is a transition from the green to the white or is final and definite.

A common climber widely spread about Khandala; it seems to grow best on open plateaus and exposed situations; the whole plant looks somewhat pale in colour.

I have examined all the specimens of *Stephania* in Blatter Herb. and have found that all the fruits have a perforated condyle; *St. hernandifolia* must, then, be considered by far the commoner of the two species in Khandala.

*Local name:* Tan.

*Flowers.—* June to November.  *Fruits.—* August to January.
Stephania japonica (Thumb.) Miq., in Ann. Nat. Hist. (Ser. 3) 18: 14, 1866; Blatter, loc. cit.

The identification of this species is a difficult one; Diels loc. cit. 377, gives the following characteristics: glabrous shrubby plant, leaves glabrous, inflorescence glabrous; condyle not perforated. I have examined all the specimens in Blatt. Herb. where mature fruits are present, and in all cases without exception I find the condyle perforated. S. japonica, therefore, must be considered a rare species in Khandala. The specimen mentioned below was identified by Blatter, but in the absence of mature fruits I cannot confirm the identification.

Blatter and McCann 1747.

Cocculus DC.

Cocculus hirsutus (Linn.) Diels, in Pfl. Reich. 46: 236, 1910; Blatter 552.
C. villosus DC., Syst. 1: 525, 1818; FBI. 1: 101; C. 1: 21; N. 11.
The occurrence of this plant in Khandala is given on the authority of Chibber, who found the plant in the district in June 1909; I have seen the specimen in the Herb. Econ. Bot., Poona, and found it too defective for satisfactory identification.

Chibber, June 1909.

Cissampelos Linn.

Cissampelos pareira Linn., Sp. Pl. 1031, 1753; FBI. 1: 103; Diels 286, f. 91 A-K; Blatter 555; C. 1: 22; N. 11.

A climber on hedges, etc. The long pendulous female bracteolate racemes make this an elegant plant.

Flowers.—June to September. Fruits.—August to September.

Woodrow; Blatter and McCann 18058! 28303! Santapau 37/9! 521! 1050! 1051! 2588! 5109! 6937! 6938! 6939! 6986! 9010! 9011!

CycleaArn.

Cyclea burmanni (DC.) Hk.f. & Thoms., Fl. Ind. 201, 1855! FBI. 1: 104; C. 1: 23.
Convolvulus Burmannii DC., Prodr. 1: 90, 1824.
Menispermum peltatum Lam., Kewc., 4: 96, 1797.
Cyclea peltata Diels, loc. cit. 312, 1910; G. 31; Blatter 556 (non C. peltata Hook. f. & Thoms., nec Miers).

Diels in his monographic treatment of the genus Cyclea adopted the name C. peltata for the present species. The specific name peltata is not available, it being preoccupied by two other homonyms. In the circumstances, the oldest available name for the present species is that of Hook. f. and Thoms.

The identification of this plant is not easy; male flowers are quite distinct, and if present render identification easy. The female flowers and fruits of this species and those of C. fissicalyx Dunn are practically identical. I have based my identification of the female flowers on the following character, which is given by Cooke, and accepted as correct by Blatter in his Revision:

Sepal hairy ............. C. Burmannii Hook. f. & Th.

Sepal glabrous ............. C. fissicalyx Dunn.

All the specimens listed below and showing female flowers have a sepal that is densely hairy outside.

A common plant in Khandala: when young it is glaucous in colour and often densely hairy; when old it is more or less pubescent on the stem and either glaucous or green in the rest of the plant. Male flowers are very characteristic in their structure, but they are also very easily caducous.

Flowers and Fruits.—Throughout the whole year.
Blatter 18054; McCann 4238; Blatter and McCann 18057, 18059, 18060, 18061, 17454; Santapau 374, 6, 897, 1252, 1420, 1514, 1669, 1570, 1677, 2202, 3057, 3065, 3086, 3590, 3734, 4117, 4284, 4467, 4994-4996, 5240, 8938-8941!


There is but one specimen of this species in Blatter Herb., and unfortunately it is without flowers or fruits; the sheet bears the identification of Blatter. According to this author, the plant is "apparently rare"; in Khandala I have not seen any specimen which may be taken as belonging undoubtedly to this species.

Blatter 18056!

NYMPHAEACEAE.

NYMPHAEA LINN.

Nymphaea pubescens Wild., Sp. Pl. 2: 1154, 1799; G. 34; Blatter 34: 204 pro parte.
N. rubra Roxb. ex Sallah., Parad. Lond. 1, sub t. 14, 1803; Wight, Illust. t. 10; Gr. 5.
N. Lotus Hk. f. & Thom., FBI. 1: 114, 1872; C. 1: 25; N. 12 (non Linn.).
N. Lotus var. pubescens Hk. f. & Thom., loc. cit.; C. loc. cit.
Conard (Kholora 18: 161-164, 1916) does not identify any of the Indian species of Nymphaea with the N. Lotus of the Linnean Herb. Following Wight and Arn. (Prodrt. 17), Conard distinguishes two different species on the strength of the colour of the flowers: N. rubra Roxb., and N. pubescens Willd. Blatter, loc. cit., follows Conard; Gamble, disregarding the colour of the flowers, distinguishes two species on the pubescence or glabrousness and the structure of the margin of the leaves.

In my opinion, colour cannot be made into the basis of classification. For a number of years I have been observing these plants in Khandala and have come to the conclusion that there is a very wide variation in colour from deep red to pure white, with an extensive range of pinks, etc. in between. Moreover, on one and the same flower one can see variation in the intensity of the colour from the outer perianth segments inwards. In every case, the structure of the anthers and stigmatic rays and of the leaf margins place these Khandala plants among N. Lotus or N. Lotus var. pubescens of Cooke, and N. pubescens of Gamble. For this reason I have followed Gamble and S. T. Dunn (Kew Bull. 1916: 60—61) in the classification of Khandala Nymphaeas.

The plant is commonly in flower in Khandala village tank almost throughout the year, with the exception of the first months of the monsoon. Just before the monsoon the tank is generally cleaned and all Nymphaeas plants removed; leaves and flowers only begin to reappear towards the end of September.

Roots, petioles and peduncles are collected and eaten locally; Cooks states that the seeds are also eaten, and this may account for the rarity of fruits in Khandala.

Blatt. Herb. 18098 | 27452 | 27453 | Santiapau 1141 | 5265 | 5266 | 5474 | 8759

Nelumbo adamsi.

Nelumbo nucifera Gaertn., Frukt. 1: 73, t. 19, f. 2. 1788; Blattar 294.


The occurrence of this plant in Khandala is given on the authority of Hallberg; I have not seen the plant growing in Khandala, there are no specimens from this locality in Blatt. Herb.

Hallberg, in MS. catalogue.
PAPAVERACEAE.

Argemone Linn.

*Argemone mexicana* Linn., Sp. Pl. 508, 1753; Bot. Mag. t. 243; Gr. 6; FBI. 1: 117; Wight, Illustr. t. 11; C. I: 27; Fedde in Pfreich. 49: 273, t. 36 B; N. 13; WI 116.

The colour of the flowers in Khandala is always yellow; I have not seen white flowers, as mentioned by Cooke for the genus.

Very common all over Khandala in waste lands; in the ravines it generally occurs along stream beds, showing the course or method of distribution of the plant. It is not found in dense jungle, nor on Bhoma Hill. During the rainy season the plant seems to be washed away from the district, and is very rare or altogether absent; immediately after the rains, the seeds germinate and seedlings and plants once more become very common and remain so till the next rainy season.

The sap of the plant is yellow or greenish yellow

*Local name*: Dhota.

*Flowers and Fruits*—Throughout the year, rare during the rains.

*Blatter und Hallberg* in MS. catalogues. *Blatt. Herb.* 18106 (Santapau passim.

Papaver Linn.

*Papaver somniferum* Linn., Sp. Pl. 508, 1753; FBI. 1: 117; Gr. 6; Blatter. 296; Fedde, 338, t. 37 A; N. 13.

Blatter listed this plant in his MS. catalogue as having seen it in Khandala; there are no specimens in Blatt. Herb. I have often seen it cultivated in gardens in Bombay and elsewhere, but not in Khandala.

Blatter in MS. Cat. "Cultivated".

CRUCIFERAE.

Rorippa Scop.

*Rorippa indica* (Linn.) Hochreut. in Candollea 2: 370, 1925.

*Stigmabium indicum* Linn., Mant 1: 93, 1767

*Nasturtium indicum* DC., Prodr. 1: 139, 1824; FBI. 1: 134; C. 1: 36.
Common particularly on the old railway line from below Elphinstone Point to the Railway station; especially abundant on the waste ground near the village tank.

Flowers and Fruits.—January to June.

_Santaapau_ 4108 ! 4109 ! 4383 ! 5936 ! 6041 ! 6042 ! 6043 ! 8638 !

**Cardamine Linn.**


*Cardamine subumbellata_ Hk. f., _FBI._ 1 : 138, 1872; _C._ 1 : 30; K. Biswas, _MS._ in _Kew Herb._

Common in moist waste places, especially on the old railway line near the village tank; common also in stream beds. Everywhere gregarious in habit.

Flowers and Fruits.—March to October.


**Sisymbrium Linn.**


An erect herb, up to 1m. high; leaves lyrate, the apical segment hastate to sagittate; flowers small, yellow; pods linear, nearly cylindrical, long.

This plant has only been observed on one occasion; it was growing in a ditch near the railway station.

Flowers and Fruits.—24 March 1949.

_Santaapau_ 10000—10006 !

**CAPPARIDACEAE.**

**Uleome Linn.**

*Uleome viscosa_ Linn., _Sp._ Pl. 672, 1752; _FBI._ 1 : 170; _Wight, Icon._ t. 2; _C._ 1 : 39; _Blatter._ 31; _Pax & Hoffm._ in _Fam._ (2) 17 B ! 213; _N._ 16.
Cleome icosandra Linn., loc. cit. 1753.
Polanisia viscosa DC., Prodr. 1 : 22, 1824.
Polanisia icosandra Wight & Arn., Prodr. 22, 1834; Gr. 8;
Merrill, Enum. Phil. Fl. Pl. 2 : 290.
This is a very common plant in Bombay and Salsette islands, but
relatively rare in Khandala. Its flowers are yellow and the whole plant
is densely clothed with glandular hairs, which make the plant very
"sticky" to touch. In Khandala I have only seen it in a ditch near
running water on sandy soil, near the railway station.
Flowers and Fruits.—May 1946.
Blatt. Herb. 29299 ! Santarpune 8966 !

Cleome cheilodoni Linn. f., Suppl. 300, 1781; FBI. 1 : 179; C. 1 :
39; Blatter, 900.
Polanisia Cheilodoni DC., Prodr. 1 : 242, 1824; Gr. 7; Wight &
Arn., Prodr. 22; Wight, Icon. t. 319.
The only specimens collected in Khandala have a strongly developed
stem and a large number of radical leaves; stem at ground level up to
20mm. thick, gradually tapering upwards. Radical leaves usually
7-foliolate, petioles up to 15cms. long; leaflets up to 5x2cms., obovate,
tapering into the petiole.
Stems, petioles and leaflets covered with short, stout hairs from broad
bases, which renders the whole plant very hispid. The pubescence
mentioned by Cooke is absent from my Khandala specimens.
Santarpune, in stream bed of St. Mary’s Ravine, 1944 !

Gynandropsis DC.

Genève 17 : 382. 1914; Merrill, loc. cit. 209; Pax & Hoffm. 218.
Cleome gymandra Linn., Sp. Pl. 671, 1753.
Cleome pentaphylla Linn., Sp. Pl. (ed. 2) 938, 1762.
Gynandropsis pentaphylla DC., Prodr. 1 : 239, 1824; FBI. 1 : 171;
Gr. 7 ; C. 1 : 40 ; N. 16.
Cooke gives June as the flowering time of this plant. Blatter gives
December. Examination of the specimens in Blatt. Herb. shows that
the plant is in flower practically throughout the year.
A rare plant in Khandala, only found near habitations, possibly
an escape from cultivation.
Blatt in MS. catalogue; Santarpune 2953 ! 5407 ! 5498 ! 5676 !

Cattanae Linn.

Capparis moonii Wight, Illustr. 1 : 35, 1840; FBI. 1 : 175; C.I : 46;
Blatter, 900; Pax & Hoffm. 170.
This is a common plant in Khandala, especially about St. Xavier’s Villa and along the road to the Reversing Station. Flowers are very conspicuous; the fruit remains on the parent plant for a long time, on a stout gymphore. But the presence of short, stout and hooked thorns makes collection and preservation of specimens a task of no mean danger.

Flowers.—October to April. Fruits.—March to August.


**Capparis sepiera** Linn., Syst. (ed. 10) 1071, 1759; FBI. 1: 177; Gr. 9; C. 1: 48; N. 13.

*Capparis incanescens* DC., Prodr. 1: 247, 1824; Hook., Icon. t. 123.

There is in my collection from Khandala but one specimen of this plant, and that specimen has neither flowers nor fruits; the general character of the leaves, however, seems to place my specimen under this species. Until further material be collected from the same locality, the occurrence of this plant in Khandala is uncertain.

*Santapau 4425!*

**Capparis zeyanica** Linn., Sp. Pl. (ed. 2) 720, 1762; Dunn in Kew Bull. 1916: 62; Blatter, 903 (sub *C. brevispina*) & 906 (non *C. zezanica* Hk. f. & Thoms. in FBI. 1: 174).

*Capparis harrida* Linn. f., Suppl. 264, 1781; Wight & Arn., Prodr. 26; Wight, Icon. t. 173; FBI. 1: 178; C. 1: 48; N. 18.

This is an interesting plant, mainly on account of the complications in nomenclature; see Dunn, loc. cit. and further notes by Blatter, loc. cit.

Not a common plant in Khandala; I have only seen it three times in six years.

*Blatter and McCann 1813! 18148! Santapau 1982! 5803! 8672! 8873!*

**BIXACEAE.**

**Bixa** Linn.

*Bixa orellana* Linn., Sp. Pl. 512, 1753; FBI. 1: 190; Gr. 10; Wight, Illust. 17; D. & G. Suppl. 5; C. 1: 53; Tabl. 1: 72; t. 46; Blatter, 909; Pilger in Pfam. (ed. 2) 21: 315, t. 139; WI. 196, t. 31.
The only authority for the inclusion of this plant is Blattar, who states, in his MS. catalogue, that he has seen the tree in Khandala, growing in gardens. I have not seen the tree in the district, there are no specimens from Khandala in Blatt. Herb.

*Blattar in MS. catalogue: "Cultivated".*

**FLACOURTIACEAE.**

**Flacourtia Commers.**

*Flacourtia montana* Graham, Cat. Bomb. Pl. 10, 1839; U. 1: 55; Tabl. i: 76, t. 48; Blatter, 912; Pilger in Plam. (ed. 2) 21: 440; N. 19.

Both Cooke and Blatter speak of rather long spines on the trunk and branches of this tree. My specimens from Khandala have no spines of any sort. Among the specimens in Kew Herb. originating from Bombay and Madras, I have searched for such spines in vain.

The ripe fruit is eaten by the Katakari; it has a pleasantly acid taste. The red fruits stand out very conspicuously on the deep green background of the foliage. The tree is middle-sized to very large, at times one of the largest in the district. The size of the tree, the absence of spines and the size of the fruit for a long time prevented me from identifying this species; I must thank Dr. S. K. Mukerjee of the Indian Botanical Garden, Calcutta, for his help in identifying it.

Not common in Khandala; the best specimens are to be found on the steep slopes below Elphinstone Point.

*Local name: Taru Bor.*

*Flowers.—December 1943. Fruits.—December to April.*


**Flacourtia occidentalis** (Hook. f. & Thoms.) Blattar in JBNHS. 31: 914, 1927.


The following is Blatter’s description (loc. cit.): “A small tree; whole plant more or less covered with permanent grey velvety tomentum; bark grey, scaly, thin. Spines slender, straight. Leaves 3–8 by 2–5 cm, broadly oblong, oblong-elliptic, orbicular or obovate or lanceolate, rarely elliptic or ovate, crenate or serrate, base rounded, cuneate or cordate, rounded or acute at the apex, more or less tomentose: petioles tomentose or velvety. Racemes tomentose. Sepals ovate, ciliate. Styles about 5, distinct, reflexed, and 2-divided at the apex.”
According to Blatter this species differs from \textit{F. Ramontchi} in having its branchlets, leaves, petioles and inflorescences permanently more or less velvety or tomentose, and spines being slender.

A rare plant in Khandala; I have seen no other specimens but the one mentioned by Blatter in his Revision, which is kept in Blatt. Herb.

The fruit is strongly astringent when immature; when ripe it attains a size of 9 mm. in diam., and is very dark purple, almost black in colour; the ripe fruit has an agreeable taste.

Local name: Tambat.

Flowers.—January to June. Fruits.—January to October.


\textit{Flacourtia sepia} Roxb., Pl. Cor. 1: 48, t. 68, 1795; \textit{FBI.} 1: 194; Gr. 10; C. 1: 56; Blatter, 914; Gilg, in Pflam. (ed. 2) 21: 440.


A small shrub with rigid branches, and spines bearing flowers and leaves. In his Revision, Blatter mentions No. 18197 as a specimen of this species from Khandala. On examination, the specimen turns out to be not \textit{Flacourtia} but \textit{Flacégnea}.

\textit{Sundara} June 1942, May and June 1946.
PITTOSPORACEAE.

PITTOSPORUM Banks.

*Pittosporum floribundum* Wight & Arn., Prodr. 164, 1834; FBI. 1: 196 p. pro parte; Gr. 38; C. 1: 58; Tahb. 1: 81.

*P. nepaulense* Blatter in JBNHS. 34: 302, 1930 (non Rehder & Wils.).

Blatter, loc. cit., gives the name of this tree as *P. nepaulense* Rehder and Wils., and adds the synonyms Renania nepaulensis Wall. and Celestrus verticillata Roxb. Rehder and Wils. in Sargent, Pl. Wils. 3: 326, 1916 distinguish between *P. nepaulense* and *P. floribundum* Wight: the former seems to have flowers in an elongated umbelliferous panicle, whilst the latter has them in a much branched paniculate corymb: in Hook. f., FBI., the description is based on mixed material of the two species. *P. nepaulense* is the typical plant of the Eastern Himalayas, Sikkim and Khasia Hills; *P. floribundum* belongs to the South and Western parts of India.

A fairly common tree on Bhoma Hill from Forbay upwards. The most typical part of the plant is the fruit, which at maturity turns jet black and retains its spicularion.

*Local name:* Pisara.

*Flowers.*—July to August. *Fruits.*—August to May.

Graham; Cooke & Blatt, Herb. 18206! 18211! Sedgwick 1888! Santapau 95! 14638! 14642! 4651! 14653! 4718! 4885! 6077! 6290! 6294! 6295! 6296!

POLYGACEAE.

POLYGALAE Labn.

*Polygala erioptera* DC., Prodr. 1: 326, 1824; FBI. 1: 203; Chodat, Mon. Polygal. 2: n. 28, t. 1-4; Kleen in Plam. 3(4): 336; C. 1: 60; Blatter 34: 302; N. 21.

Rare in Khandala; I have not seen it growing in the district, there are no specimens from Khandala in any of the herbaria I have examined.

Blatter in Revision, loc. cit.
CARYOPHYLLACEAE.

POLYCARPON Linn.

Polycarpon indicum (Retz.) Merrill in Phil. Journ. Sci., Bot., 10: 30; 1906; Blatter 34 : 304.

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


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

Hapaloeis Loesflingae Wall., Cat. 6962, 1832, nom. nud.; Wight & Arn., Prod. 358, 1834.


Coolie lists this plant as one of the rare plants in the Presidency. In Khandala far from being rare, it is one of the commonest herbs found in rice fields after the harvest and in other moist places where grasses are not the dominant feature of the vegetation. It is particularly abundant during the dry season in dried or drying up pools. In a corner of the Soldier's Playing Fields they form a very dense mat in an almost pure formation and cover a space of about 7 x 10m. It is often associated with Polygonum pulegium Br., which it much resembles in habit and appearance; it can easily be distinguished from the latter by the fact that Polygonum has alternate leaves and bright red or pink flowers.

Flowers and fruits.—Throughout the dry season.

Santapan 422 ! 535 ! 2115 ! 4053 ! 4123 ! 4195 ! 4199 ! 4281 ! 4369 !
4384 ! 4434 ! 8008 ! 8665 ! 8737 ! 8967 ! 8972 ! 9106 ! 9127 ! 9128 !

SAPONARIA L.


An erect, glabrous herb, up to 35 cm. high. Flowers of about the same colour as those of Campanula difforma R. Br.; calyx deep green along the midrib, white at the edges.

Found as a weed in gardens in Khandala and elsewhere in Western India; it is not common.

Flowers.—December to February. Fruits.—March.

Santapan 6119 !
PORTULACACEAE

Portulaca Linn.


Common all over Khandala, especially along the village streets, near the village tank and in stream beds, or in general in moist ground. It is common but scarcely abundant. Locally the plant is not mentioned as being used as a vegetable.

*Flowers and fruits.*—Throughout the dry season.

*Blatter* in MS. catalogue; *McCunn* 43311! *Santapau* 2622! 2123! 3770! 3981!

Portulaca quadrifida Linn., Mant. 1: 73, 1767; FBI 1: 247; C. 1: 68; Wight, Ill. 2: 109; Pax & Hoffm. 247; N. 23.

A rare plant in Khandala; I have not found it there. In Blatt. Herb, there are no specimens from Khandala. Hallberg is the only authority for the inclusion of this plant in this flora.

*Hallberg* in MS. catalogue.

ELATINACEAE

Bergia Linn.


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

A fairly common herb in Khandala, especially about the village tank or in moist places; in habit it is very similar to *Ammannia* and *Rotala* from both of which it is easy to distinguish on account of the shape of the capsule.

*Flowers and Fruits.*—October to April.

*Blatt. Herb.* 17806! *Santapau* 311! 3354! 3364! 5277! 5121! 9763! 10011!

GUTTIFERAE

Garcinia Linn.

Garcinia purpurea Roxb., Fl. Ind. 2 : 624, 1832 ; Gr. 25 ; D. & G. 31.
The rind of the fruit is used locally for pickling; the pulp is eaten
and has a delicate flavour. A small tree, common on the Khandala
Plateau; in the ravines it attains a fairly large size.

Local names: Kokam or Kokambi; by Anglo-Indians or Europeans
this tree is sometimes called "The Tomato Tree".

Flowers.—November to March. Fruits.—January to August.

Graham; Gammie 16162 (in Herb. Econ. Bot.) ; McCann 3708.
Santapau 62/3, 10, 11, 13, 14 ! 1554(2) ! 2147 ! 3122 ! 3253 ! 3596 !

Garcinia xanthochymus Hk. f., FBI. 1 : 269, 1874 ; C. 1 : 78 ; N.
25 ; Blatter, 624.
Xanthochymus pictoris Roxb., Fl. Cor. 2 : 51, t. 196, 1798; (non
Garcinia pictoria Roxb.).
X. tinctoria DC., Prodr. 1 : 562, 1824 (sphalm. pro "X. pictoria
Roxb.")

Garcinia tinctoria Dunn, in Kew Bull. 1916, 64 ; G. 74.

The occurrence of this plant is given on the authority of Blatter;
I have not seen any specimens from the district. It is very easy to
confuse this species with G. malabarica Talbot, as will be explained below;
from the leaves alone it is not possible to distinguish these two trees;
in every doubtful case I have based my identifications on the flowers or
fruits and I have found that all my Khandala plants belonged to G.
malabarica Talbot.

Blatter in MS. catalogue.

Garcinia spicata (Wight & Arn.) Hook. f. in J.L.S. 14 : 486, 1875 ;
C. 1 : 78 ; G. 74; Blatter 624.
Xanthochymus spicatus Wight & Arn., Prodr. 102, 1834.
X. ovalifolius Roxb., Fl. Ind. 2 : 632, 1832.
(Garcinia ovalifolia (Roxb.) Hk. f., FBI. 1 : 269, 1874 (non Oliver).

A rare plant in Khandala; Blatter mentions the tree from Khandala
in his MS. catalogue, and in the Revision he further states that he has
seen the specimens from Khandala.

Gammie 16163 of 21.3.1903 ! Blatter in MS. catalogue and in Revision,
loc. cit.

Garcinia malabarica Talbot, in JBNHS. 11 : 234, t. 1, 1897 & For. Fl-
1 : 96; Blatter 624.
G. ovalifolia var. macrantha Anders. in FBI. 1 : 269, 1874.
Xanthochymus ovalifolius Graham, Cat. 26, 1839 (non Wight & Arn.).

The description of Xanthochymus ovalifolius given by Graham, the
time of flowering and fruiting and the type of fruit seem to indicate
that he was dealing with this species; moreover, the present species is about the commonest in the ravines at Khandala.

A small tree, easily confused with *G. xanthochymus*, from which it can be distinguished by the number of stigmatic lobes, *G. malabarica* having 3, *G. xanthochymus* 5-6.

A fine small tree with very typical leaves and fruits. Common on ravine slopes.

Local name: Pansara.

Flowers.—November to January. Fruits.—February to May.

Graham; Blatt. Herb. 27647; 28438; Santapa 62/7—9, 12; 1747; 1892; 3251; 3252; 3331-3333; 3560; 4210.

OCHROCARPOS Du Petit-Thou.

**Ochrocarpos longifolius** (Wight) Benth. & Hook. f., Gen. Pl. 1: 980, 1876; FBI. 1: 270; C. 1: 79; Blatter, 624; Engler in Pflm. (ed. 2) 21: 192.

Calyx section longifolium Wight, Ill. 1: 130, 1840.

Occasionally found on steep slopes or in the ravines; flowers remain on the tree for a fairly long time; the fruit persists until the beginning of the rains. The wood is red and hard, but no use is made of it locally except for fuel.

Local name: Undi.

Flowers.—February to April. Fruits.—April to June.


ANCISTROCLADACEAE.

ANCISTROCLADUS Wall.

**Ancistrocladus hayneanus** Wall., Cat. 7262, 1832; Gr. 28, 1839; Wight, Icon. tt. 1987 1988; FBI. 1: 299; C. 1: 87; N. 20; Talb. 1: 116, t. 69; Gilg in Pflm. (ed. 2) 21: 592, t. 270 A.

A dimorphic shrub with hooked branches. In the young stages, or even later when support is not available, it is an erect shrub with very large, strap-shaped leaves, which are scattered all over the stem or branches. At later stages, when near support, it is a climber with much smaller leaves, which are gathered at the ends of branches.

Fairly common in the ravine just below St. Xavier’s Villa. This is a very typical plant on account of the following characteristics: (a) The
books which are especially noticeable on young branches; (b) The size and shape of the fruits, with the large winged calyx; (c) The particular revolving movement, propeller-like, of the fruits in falling.

Flowers.—February to May. Fruits.—February to June.

Phreatophyllum robustum Hook.; Blatt. Herb. 24269(2) 1; Santapau 63/1-21 1745 1 2165 1 3706-3715 1 4119-4121 1 6060-6062 1 9039 1

MALVACEAE.

Sida Linn.

Sida acuta Burm., Fl. Ind. 147. 1768; C. 1: 93; Blatter 34: 628. S. carpinoides Linn. f., Suppl. 307. 1781; FBL. 1: 323.

Althaea coronelliana angustis, pedunculis foliis, semina hirsuo Plukenet, in Herb. vol. 1, fol. 53 (in Brit. Mus., Nat. Hist.).

Burmann cites Plukenet’s plant as the type of this species; Plukenet’s specimens are preserved in the British Museum, Natural History, London, and have been examined in connection with the present work.

The leaves of Plukenet’s specimens are all glabrous, the petioles hairy; after studying Plukenet’s specimens, I went through all the sheets of Sida acuta in Kew Herb.; all agree with Plukenet’s specimen, except one from Tinnivelly, collected by Beddome (No. 519). From the specimens of this plant in the Brit. Mus. and Kew Herb., the distribution of this plant is quite clear: it extends through India, Ceylon, Malaya, the Philippine Islands, Timor and other Pacific Islands, Formosa and China.

Blatter, loc. cit., mentions the occurrence of this plant in Khandala. In the Blatt. Herb. there are several specimens of Sida labelled by Blatter “Sida acuta Burm.”; on careful examination, all such sheets have turned out to belong to S. rhombifolia var. rhomboidea. Until further evidence is obtained, I consider the occurrence of this plant in Khandala very doubtful.

Blatter and McCann, ex Revision, loc. cit.


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

Not in Cooke. A number of sheets from Bombay at present in Kew Herb. have been identified as S. acuta Burm. but belong to the present species. Blatter has reduced Master’s variety to a form, or account of the extreme variability of the plant.

Externally this plant is very similar to S. acuta Burm., for which it is often mistaken; S. acuta Burm. has glabrous leaves and very long awns, whilst the present species has hairy leaves and very short or 0 awns.
Fairly common and abundant in Khandala. Local woodmen use the stems as ropes for their grass or firewood bundles. 
Local name: Chikankara.

*Flowers.*—September to December. *Fruits.*—October to January.
*Blatter Herb.* 1834: 18333 ! 18342 ! 18328 ! 18340 / 20033 / Santapau 65/27 ! 1211 ! 2745 !

*Sida rhombifolia* Linn., var. *retusa* Masters in FBI. 1: 324, 1874; 
C. 1: 93.
*Sida retusa* Linn., Sp. Pl. (ed. 2) 961, 1762; Gr. 16; D. & G. 17.
*S. rhombifolia* Linn., forma *retusa* Blatter 629, 1930.

A common plant in Khandala in open places and by the road sides. Local people use the stems as ropes for grass or firewood bundles.

Merrill (Enum. Phil. Pl. 2: 35) has restored Linne’s *S. retusa* to specific rank; Blatter on the other hand finds the different varieties of *S. rhombifolia* so variable that he has made them all forms of the same species. My findings in Khandala agree with those of Blatter; I have, however, retained the plants as varieties (and not merely as forms) in deference to authority.
Local name: Chikankara.
*Graham; Blatt. Herb.* 18203 ! 18284 ! Santapau 811 ! 1021 ! 2593 !

**Kydia Roxb.**

*Kydia calycina* Roxb., Hort. Beng. 50, 1814 & Pl. Cor. 3: 12, t. 215, 1819; FBI. 1: 349; Gr. 20; C. 1: 94; N. 33; Talb. 1: 127, t. 78; Blatter, 623.

A common tree all over the district; when in bloom, its white masses of flowers and the many insects around it, make this tree a showy one in Khandala. Leaves fall off during the hot season; fruits or their remains persist to the beginning of the monsoon.
Local name: Warang or Warengi.

*Flowers.*—October to January. *Fruits.*—November to May.

**Abutilon Linn.**

*Abutilon polyandrum* (Roxb.) Wight & Arn., Prodr. 55, 1834; 
Gr. 15' FBI. 1: 325; C. 1: 95; Blatter 629; N. 28.
*Sida persica* Burm. f., Fl. Ind. t. 47, f. 1, 1768 !
Fairly common and often gregarious; one of the brightest flowers in Khandala. The plant would be worth cultivating in gardens, except for the spreading habit of its branches.

Flowers.—November to March. Fruits.—December to March.

Graham; Cooke, 19.1.1892 (in Herb. Econ. Bot.) | Blatter. Herb. 18347 | 18348 | Hallberg in MS. catalogue; McCann; Sakapau 65/50 | 65/31 | 1326 | 1724 | 3264(2) | 3330(2) | 3872

URENA Linn.


U. sinuata Linn., Sp. Pl. 692, 1753; FBI. & C. ll. cc.; Gr. 13; Blatter 34, 691.

I have followed Hochreutiner and Merrill in uniting Linnaeus's two species under U. lobata. The distinction between the two species on the ground of the leaf structure cannot be maintained. Some plants have all their leaves deeply lobed, others have them more or less shallowly lobed, and yet others have their upper leaves not lobed at all whilst their lower ones are more or less deeply lobed, with a gradual passing from the unlobed upper to the deeply lobed lower leaves. The structure and colour of flowers, fruits, etc., is uniform and indistinguishable in the two species. In Khandala the lobing of the leaves seems to be a matter of age or position of the leaves on the stem.

Common after the rains, and in moist places even during part of the hot season. A poor looking plant. Local people make use of the stem fibres as ropes for grass or firewood bundles.

Flowers and Fruits.—October to March.

Graham; Gammie 15158 | Blatter. Herb. 17000 | 18348 | 18382 | 18333 | Blatter and McCann, ex Blatter in Revision; Sakapau 65/28, 29 | 1134 | 1245 | 1736 | 2892 | 4949 | 4950 | 4951 | 5374

HIBISCUS Linn.


Common in flower or in fruit throughout the year except during the rainy season; generally it occurs on the edges of the forest or in clearings or by paths in dense forest; but it is not a gregarious plant.

The flowers look beautiful but the plant as a whole is a poor sight. A very fibrous plant, but on account of its relative scarcity no use is made of the fibres by local people.

Local name: Narari.
Flowers and Fruits.—October to June.

Woodrow! Cooke, 16.1.1892! Blatt. Herb. 18409! 18410! 28287!
Sedgwick 7972! 7974! McCanna 4326! Hallberg in MS. catalogue; Sante-
apau 65/25, 32! 1117! 1161! 1306! 3340! 6025! 8047!

Hibiscus micranthos Linn. f., Suppl 308, 1781; FBI. 1: 335; D. &
O. 20; C. 1: 107; Blatter 632; N. 30.

A rare plant in Khandala; in Blatt. Herb. there is only one specimen
from Khandala; I have not seen the plant growing in the district.
Hallberg ex MS. catalogue; Blatter ex Revision, loc. cit.; Blatt.
Morb. 28327!

Hibiscus rosa-sinensis Linn., Sp. Pl. 694, 1753; FBI. 1: 344; Bot.
Mag. t. 158; Gr. 13; C. 1: 113; Blatter 634.

Introduced probably from China and cultivated in Indian gardens,
where it flowers most of the year. According to Blatter, no fruits are
produced in India; I have seen no fruits, although I have kept several
of these plants under observation for a number of years. Generally the
colour of the flowers is red; other colours, pink, yellow or pale creamy
yellow, occur, but have not been seen in Khandala.

Blatt. Herb. 18473! Blatter in MS. catalogue: Sante-pau in gardens!

Hibiscus schizopetalus Hook. f. in Bot. Mag., t. 6524.

H. mutabilis Blatt, loc. cit. 34: 634, 1930 (non Linn.).

In Khandala I have seen the plant cultivated in gardens for the
last eight years. There are several good plants in St. Mary's Villa, and
in the gardens near the Hindu temple on the South side of the village tank.
The flowers are either pure red or more often red streaked with white
or creamy lines. The plant does not seem to fruit in India.
Sante-pau 9584!

ABELMOSCHUS Medik.

Abelmoschus manihot (Linn.) Medik., Malv. Fam. 46, 1787; Hoch-
reut. in Candollea 2: 87, 1924.


H. tetraphyllus Roxb., Hort. Beng. 52, 1814, & Fl. Ind. 3: 211, 1832;
FBI. 1: 341; C. 1: 111; Tabl. 1: 123, t. 74; N. 31.

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

Shrubby, erect, up to 1m. high, sometimes higher.

Involucral bracts generally longer than the calyx. Roxburgh named
his plant H. tetraphyllus on account of the four bracts of the epicalyx;
for a few years I have been searching in Khandala and elsewhere for a
plant with only four bracts, but only on very rare occasions did I see
any flower with four bracts, their number being generally 5, occasionally
3 or 6, and very rarely 4.
Kochreuter distinguishes three varieties of *H. manihot*: *genuinus*, *tetraphyllum* and *pungens*. I cannot assign my Khandala plants to any of these varieties, as my plants seem to be intermediate between the first two varieties.

Tolerably common in Khandala, but not gregarious.

*Local name*: Ran Bhendi.

*Flowers and Fruits*.—October to December.

*Blatt. Herb. 18452! 18466! 18463! 18462! McCann 28067! Santapau 1132 ! 2859 ! 5107 !

*Abelmoschus esculentus* (Linn.) Moench., *Meth. 617*, 1794; Gr. 14; Schumann in *Pfl. 3(0): 48, t. 20K.  

*Hibiscus esculentus* Linn., *Sp. Pl. 696*, 1753; *FBI. 1: 343; C. 1: 112; Blatter, loc. cit.*

Blatter mentions the occurrence of this plant in his MS. catalogue. I have not seen it growing in the district, although the fruits are sold in the local market as a vegetable. The plant is obviously cultivated in the district, but in what particular part I am unable to say.

*Local name*: Bhendi.

*Blatter* in MS. catalogue: "Cultivated as a vegetable".

*Theophrastus Soland.*


*Ipomoea campastula* Linn., *Sp. Pl. 160*, 1753 (non *FBI.*; nec *Cooke nec. allor. auct. ante Kerr, 1941*).

A fairly large tree planted along the main road from Khandala to St. Xavier’s Villa. I have not seen it anywhere in the jungle.

Flowers when young are pale yellow or sulphur yellow with a large deep-purple spot inside the corolla near its base; when the flowers begin to fade, they turn pinkish red, the purple spot inside becoming almost black.

*Local name*: Bhendi.

*Theophrastus lampas* (Cav.) Dalz. & Gibs., *Bomb. Pl. 19*, 1861; *FBI. 1: 345*; *Talb. 1: 124, t. 75*; *Hutch., Sil. & Steph., Evol. Gossyp. 6*; *N. 32*.

*Hibiscus Lampas* Cav., *Diss. 3: 154*, t. 56, f. 2, 1787; *Gr. 13*; *Wight, Icon. t. 5*; *Hochreut. in Ann. Cons. Jard. Bot Genève 4*; *57*; *Blatter 631*.

Shrubby, erect, up to 3 m. high, generally about 1½–2 m. The whole plant when young is densely covered with simple and compound hairs which, however, fall off in the mature plant; branching sparse, occasionally profuse, the branches spreading and long.
This is a very common plant all over the district; it is especially common on the slopes of Monkey Hill or of Battery Hill, among grasses. The size and colour of the flowers render the plant very conspicuous. The bark is used by hill people to make rough cordage to tie bundles of firewood for the market.

Local name: Ran Bhendi.

Flowers.—September to November. Fruits.—September to January, and occasionally till May.

Cooke; Blatter in Revision; Blatt. Herb. 18476! 18477! 18478! Santapau 65/15! 1058(2)! 1239! 2219! 8904!

BOMBACACEAE.

SALMALIA Schott & Endl.

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

Bombax malabaricum DC., Prodr. 1 : 479, 1824; FBL. 1 : 349; Gr. 16; C. 1 : 120; Tabl. 1 : 150, tt. 79-80; Blatter & Millard, Beaut. Ind. Tr. 9; N. 33.

Fairly common in Khandala, but scarcely as common as the following species. Locally the wood is used for firewood; commercially the cotton of the fruit is collected for stuffing pillows and mattresses; the wood is used in the manufacture of matchsticks. Of late years there has been extensive cutting of these trees for the match industry; in time this may lead to the total extermination of the tree from Khandala.

When the tree is in full bloom, it is visited by a number of birds in search of the abundant nectar produced by the flowers.

Local name: Saur.

Flowers.—February to March. Fruits.—March to April.

Blatt. Herb. 18502! McCann 4319! Santapau 1700! 6079! 8630! 10757!

Salmalia insignis (Wall.) Schott & Endl., Melet. 35, 1832.

Bombax insignis Wall., Pt. As. Rar. 1 : 71, 1830; FBL. 1 : 349; C. 1 : 120; Blatter, 657; Blatter & Millard, 13.

Corolla very prominent, petals up to 16-5 x 3-5 cms., tomentose outside. The colour varies between very pale pink to deep red, but generally is much paler than in the preceding species.

Stamens between 450 and 900. Filaments at first pale, almost white, becoming brick red on drying up; in length up to 10 cms. Anthers small, at first yellow, at length purplish. Style about the same colour as the filaments, but tinged reddish pink in the upper third, 2 cms. longer than the massed filaments. Stigma 5-lobed, inconspicuous.
This is much more common than S. malabarica; at the time of the
dehiscence of the fruit, masses of cotton covering the seeds are common
on the floor of the forest. It is impossible or nearly so to distinguish
this species from S. malabarica when both trees are in leaf; S. insignis
comes into flower and fruit several months earlier, the size of its flowers
is much larger and the colour much paler, the number of stamens about
2 times larger, the size of the fruit is also much bigger. When in flower
or fruit, the identity of the Salmalias of Khandala is quite clear.

Locally the tree is only used for fuel; commercially it is used for
matchsticks.

Local name: Saur.

Flowers.—November to January. Fruits.—December to April.
Blatt. Herb. 18905! Santapau 1258! 1259! 1470! 1713! 2112! 10655!

STERCULIACEAE.

STERCULIA LIND.

Sterculia urens Roxb., Pl. Cor. 1: 25, t. 24. 1795; FBI. 1: 355;
C. 1: 123; Tabl. 1: 137, t. 83; Blatter 878; N. 34.

After leaf fall the trunk and branches appear white, the bark peeling
off in large irregular patches; this gives the tree a patchy appearance.
The wood is mucilaginous and when an incision is made on the wood
the mucilage comes out and solidifies into a colourless gum, which is used
locally as an article of food; in the rainy season this gum easily decom-
poses with an unpleasant odour. For the rest this tree is only used for
fuel.

Not a common tree in Khandala, except at the foot of Behran’s
Plateau, on the narrow ledge between the railway line and St. Mary’s
Ravine, and on the slopes below Elphinstone Point.

Local name: Kaundal.

Flowers.—November to March. Fruits.—January to May.
Blatt. Herb. 2464! Santapau 67/13! 8997! 8998!

Sterculia villosa Roxb., Hort. Beng. 50 & Fl. Ind. 3: 153, 1832;
Gr. 19; FBI. 1: 355; C. 1: 124; Blatter 875.

Leaves on young seedlings of very large proportions, up to 60 cm.
diam., with a petiole 75 cm. long. A rare tree in Khandala.

Flowers.—December 1942. Fruits.—Not seen.

Sterculia guttata Roxb., Hort. Beng. 50, 1814, & Fl. Ind. 3:
148, 1832; FBI. 1: 355; Gr. 17; Wight, Icon. t. 487; C. 1: 124; Tabl.
1: 139, t. 84; G. 106; N. 34.
The seeds of this tree are eaten by monkeys, but until dehiscence they are difficult to get at on account of the thick, fibrous pericarp. A common tree in Khandala, flowering and fruiting abundantly. A short branch collected on Battery Hill on 21 December 1913 had 21 follicles with a total weight of 5 kilograms (follicles only). The seeds are occasionally eaten raw or roasted by local people.

Local name: Kukrum or Kukar.

Flowers.—November to March. Fruits.—December onwards, persisting for a year or more on the tree.

Blatt. Herb. 6396! 23455! Hullberg in M3. Catalogue; McCann 4906-4309! Santapa 67/2. 4. 24! 1477! 1502! 3096! 3303! 3304! 3342(2)! 3432—3433!

**Erythropsis** Lindl.


*Sterculia colorata* Roxb., Pl. Cor. 1: 26, t. 25, 1796; FBl. 1: 389; Gr. 17; C. 1: 125; Tabl. 1: 140, t. 85-86; Blatt. & Millard, 192; N. 35.

*Sterculia colorata* R. Br. in Benn., Pl. Jav. Rar. 235, 1844; G. 107; Blattert, 79.

During the flowering and fruiting season, and when the leaves first appear, this is one of the more colourful trees in Khandala; the wood is soft, and is only used for fuel. Common, though not abundant, in the district; the best specimens are to be found on Monkey Hill Plateau.

Local name: Kausi.

Flowers and fruits.—March to May.


**Pterygota** Schott & Endl.

**Pterygota alata** (Roxb.) R. Br. in Benn., Pl. Jav. Rar. 234, 1844; G. 104; Blatter 879.

*Sterculia alata* Roxb., Hort. Beng. 50, 1814, & Pl. Cor. 3: 85, t. 287, 1819; FBl. 1: 360; C. 1: 125.

Cooke seems to be the only author to mention the occurrence of this plant in Khandala; Blatter in his Revision follows Cooke, but adds no further details. I have not seen the plant in Khandala; there are no specimens from this place in any of the Herbaria I have consulted.

Cooke: Blatter "Planted at Khandala and Poona".
THE FLORA OF KHANDALA.


A large tree cultivated in the grounds of Khandala Hotel, the only specimen in the district. In March 1942 the ground beneath the tree was covered with flowers. In May 1944 Mr. Nanaboy, the owner of the Hotel, kindly presented me with some of the fruits which he had collected some time previously; the seeds seem to remain alive for a very short period once they are separated from the parent tree. It is not a particularly fine tree.

Flowers.—March 1942. Fruits.—May 1944. Cooke: Blatter in Revision; Santapau March 1942, May 1944.

Helicteres Linn.

Helicteres isora Linn., Sp. Pl. 963, 1753; FBI. 1: 365; Gr. 16; Wight, Icon. t. 180; D. & G. 22; C. 1: 138; Tabl. 1: 146, t. 38; G. 197; Blatter 879; N. 35.

The colour of the flowers and the structure of the fruit render this a conspicuous plant. Common in Khandala in the undergrowth on the slopes below Duke's Nose. No practical use is made of the stem or fruits.

Local name: Murdi.

Flowers.—August to November. Fruits.—September to June.

Blatter in Revision; Blatt. Herb. 4340! 6544! 27594! 29476! Santapau 87/18! 1331! 1536! 1752! 2890! 2891! 3355! 4285! 5164! 5829! 5830! 5831!

Eriolaena DC.

Eriolaena quinquelocularis Wight, Icon. 3: 7, 1847; FBI. 1: 371; C. 1: 132; Tabl. 1: 115. tt. 92 93; G. 110; Blatter 831.

Common and somewhat gregarious on the higher parts of the district; especially common on the upper plateau of Bhoma and Ghira Hills; lower down it is not common. Except perhaps when the new leaves are on, the tree is a poor sight even when in flower: at the best of times it looks bare and rugged.

Local name: Buti.

Flowers.—May to June. Fruits.—June to August, but persisting for a year or more before dehiscence.

Woodrow; Blatt. Herb. 6318! 6382! 27634! Sedgwick 7934! Santapau 87/17! 440! 533! 507! 4492! 8597!
PTEROSPERMUM Schreb.

Pterospermum acerifolium Willd., Sp. Pl. 3: 729, 1801; FBI. 1: 368; C. 1: 129; Tabl. 1: 149; Blatter 880.

There is but one tree in a garden near St. Mary's Villa; I have kept the tree under observation for a number of years. It is a small tree with large leaves and large, white flowers. Flowers and fruits: from November onwards till the beginning of the monsoon.
Santapau 9580-9583!

MELCHIA Linn.

Melochia umbellata (Houtt.) Stapf in Kew Bull. 1913: 317; G. 110; Blatter 883.

Visertia umbellata Houtt., Handl. 8: 309, t. 46, f. 3, 1777; Wight, Icon. t. 509.

Melochia volubilis Wall., ex Bodd., For. Man. in Fl. Sylv. xxv, t. 5, f. 3, 1871; FBI. 1: 374; C. 1: 135; N. 36.

Wrightia tosaefolia DC., Prodr. 1: 491, 1824; Gr. 19; D. & G. 24.

Blatter mentions in his MS. catalogue that this plant flowers in November, I have not seen the plant in Khandala. Graham, loc. cit., adds that it grows on "the hill above Sir Herbert Compton's Bungalow at Kandala"; there is no record of such a bungalow even in the Collector's Office, Poona; but from information gathered from Mr. Nanaboy, it seems probable that the bungalow occupied the present side of the Khandala Hotel, and that the slopes mentioned by Graham are the lower slopes below Forbey.

Graham, Blatter in MS. catalogue.

Waltheria Linn.

Waltheria indica Linn., Sp. Pl. 673, 1753; FBI. 1: 374; Gr. 246; C. 1: 135; G. 111; N. 36.


A rare plant in Khandala; I have not seen it in the district. There is but one specimen in Blatter Herbarium.

Blatter in his Revision places this plant among the Bombacaceae, but gives no explanation for the change; all the authorities consulted place Waltheria among the Sterculiaceae.

Blatter 283892!

TILIACEAE.

Grewia Linn.

The Flora of Khandala

**Microsos latiflora** Linn., Sp. Pl. 514, 1753 (non Grewia latiflora G. Don, 1831).


A small erect tree, 4-6 m. high; on one occasion I measured a specimen on Meroli Plateau reaching 18 m. high.

Very common in Khandala, especially in deciduous forests and on open plateaus; particularly common in the slopes above Forbay. The tree as stated above may reach large sizes in dense forests.

**Local name:** Dhaman.

**Flowers.—**March to June. **Fruits.—**April to August.

**Blatt. Herb.** 6172 | 6169 | 6171 | 6154 | 6155 | 6159 | 6168 | 6163 | McCann 4342 | 4340 | 4341 | Santapau 64/4-6, 12, 13, 33 | 4182 | 8930 | 9153

*Grewia disperma* Rottl. ex Spreng., Syst. 2: 579, 1825; Burcott, loc. cit. 381; G. 118; Haines, Fl. Bih. & Or. 91; Drummond, MS. in Kew Herb.

*Grewia laevigata* auct. plur. (non Vahl); FBI. 1: 389; C. 1: 143; Talb. 1: 164, t. 101; Blatter 888.

A common tree in Khandala; in deciduous forests or on open plateaus.

Many authors have identified the Indian tree with *G. laevigata* Vahl, but as far as Khandala is concerned, I have seen no specimen of the true *G. laevigata* Vahl. Many specimens so labelled in Blatt. Herb. belong to *G. disperma* Rottl. The differences between these two species are small but quite clear: *G. laevigata* has leaves with rounded, eglandular bases, whilst *G. disperma* has leaves with rounded bases and with several glands on either side. Vahl in his description in Symb., loc. cit., positively states that his plant has no glands at the base of the leaf, and he uses this point as one of the specific differences. In my treatment, I have followed Drummon in Kew Herb., who has revised most of the sheets of the genus at Kew. According to this author, *G. laevigata* Vahl seems to be a rare tree in India.

**Flowers.—**September to November. **Fruits.—**October to March.

**Blatt. Herb.** 28064 | 27531 | 27582 | 28057 | 28227 | 28235 | Santapau 64/15 | 25 | 29 | 1111 | 1131 | 1297 | 2914 | 2942 | 3192 | 4987-4989 | 5219 | 5220 | 5925 | 5926 | 6064 | 6065

*Grewia abutilifolia* Vent., ex Juss. in Ann. Mutt. Par. 4: 92, 1804; FBI. 1: 390 pro parte; Burcott, loc. cit. 723; C. 1: 144; Talb. 1: 165; t. 102.

*Grewia aspera* Roxb., Hort. Beng. 42, 1814 & Fl. Ind. 2: 591, 1832; G. 119; Blatter 888.

Not common in Khandala; a few good specimens have been kept under observation for several years on Monkey Hill and Battery Hill Plateaus. Generally it occurs at the edges of the forest.

**Flowers.—**March to August. **Fruits.—**June to December.

**Blatt. Herb.** 27608 | 27413 | Santapau 2200 | 2955 | 3099 | 3328 | 4265 | 4629 | 9094 | 9095.
ERINOCARPUS Nimmo.

Erinocarpus nimmonii Graham, Cat. 24, 1839; D. & G. 27; C. 1: 146; Tab. I: 168, t. 104-105; Blatter 880; Burtt, loc. cit., 261.
E. nimmonii Masters in BJI. 1: 394; 1874; N. 38.

Small to middle-sized tree; erect, very conspicuous when in flower or in fruit. Leaves deciduous, large.

On October 15, 1944 I found a tree on the slopes of Dandimal Plateau with fruits only occasionally triquetrous, most fruits having only two wings and being in consequence flat; the central portion of the 2-winged fruit was clearly purple in colour and bulged noticeably on account of the seeds enclosed.

A common tree in Khandala; it is particularly abundant on the plateau below Echo Point or about the stream passing through Kune Plateau. The tree seems to be endemic on the Western Ghauts.

Local name: Cher.

Flowers.—August to November, exceptionally on 30th April 1943.
Fruits.—September to next flowering season.

Graham; Wood Rowe; Mehadia Ghata; Blatt Herb 889; 12741; 92464; 28935; 28235; Acland 114; Sanapur 64/5, 17; 906; 1962.

TRIUMFETTA Linn.

Triumphetta pilosa Roth, Nov. Pl. Sp. 223, 1821; FBI. 1: 394; C. 1: 174; G. 120; N. 38.
T. cana Blume, Bijdr. 113, 1825; FBI. 1: 396.

The name T. tomentosa Noronha is a 'nomen nudum', as it was published without any description or plates or without any reference to a previous description. The name, therefore, has no value from the point of view of nomenclature; the oldest valid name is that of Roth.

A rare plant in Khandala; I have not seen any living specimen, and in the herbarium the only sheets examined are those mentioned below. The leaves are much more hairy than those of T. annua Linn., and the fruits are covered with hairy spines, the fruits being as large as or slightly larger than those of T. annua L.

Blatter and McCunn in Revision; Blatt. Herb. 6280; 6288.

Triumfetta bartramia Linn., Syst. (ed. 10) 1044, 1759; Roxb., Fl. Ind. 2: 469; Fawcett & Rendle, in Journ. Bot. 59: 224; Blatter 889.

THE FLORA OF KHANDALA.

A very common shrub in the undergrowth of the forest, especially in St. Xavier's Ravine, particularly just below St. Xavier's Villa. Gregarious and persisting in fruit and occasionally in flower for the greater part of the year. The structure and size of the fruit and the shape of the leaves are characteristic. Locally the stems and branches are used to make wood or grass bundles for the market.

Flowers.—September to January, occasionally to April. Fruits.—September to May.

Blatt in Revision; Blatt. Herb. 6252 ! 6269 | McCann 4356 | Santapau 64/26-28 ! 1055 ! 1166 | 2944 ! 3061 !

_Trimumfetta annua_ Linn., Mant. 1 : 73, 1767; FBI. 1 : 396; Gr. 120; Blatter 830.

A common plant in Khandala, especially on Battery Hill Plateau and in the undergrowth of St. Xavier's Ravine. The structure of the fruit and its spines distinguish this species from all other species of _Triumfetta_ in Western India. The plant is not mentioned in Cooke's Flora.

Flowers.—October to November. Fruits.—October to December.

Blatt. Herb. 6285 ! 28189 ! 28270 | Santapau 64/26 ! 1185 ! 2096 ! 2071 ! 5108 ! 8643 !

_Corchorus_ Linn.

_Corchorus capsularis_ Linn., Sp. Pl. 529, 1753; FBI. 1 : 397; Gr. 246; D. & G. 25; C. 1 : 148; Blatter 891.

A rare plant in Khandala; the only specimen from the district which I have examined being those mentioned below; the plant is common lower down on the Konkan plains and in Bombay Island.

Blatt. Herb. 28335 !

_Corchorus fascicularis_ Lamk., Encycl. 2 : 104, 1786; FBI. 1 : 395; C. 1 : 149; Blatter loc. cit.

Erect, suberect or prostrate; leaves acute or subacute, serrate, the lower serratures not produced into filiform appendages. Flowers small, pale yellow.

A rare plant in Khandala; on the banks of the village tank it grows with its branches closely appressed to the ground, but not rooting at the nodes.

Flowers.—October to November. Fruits.—October to January.

Santapau 5272 ! 5919 ! 8122 !


_C. aquatilis_ Lamk., Encycl. 2 : 104, 1786; FBI. 1 : 398; Gr. 20; D. & G. 25; C. 1 : 150.
A rare plant in Khandala; I have only seen one specimen from the district. The plant is fairly common down on the Konkun, and the fact that it was found in Khandala along the main road points out the way along which it was probably introduced into the district.

_Santapau_ 2999! In fruit on 22nd October 1943.

_Corchorus olitorius_ Linn., Sp. Pl. 529, 1753; FBL. 1: 297; Gr. 20; D. & O. 25; C. 1: 149; Blatter 891; Merrill, Plant Life Pac. World 140, t. 151.

Erect, shrubby plant, up to about 1 m. high; stems very fibrous. Leaves up to 12 x 4 cms., serrate, the last serrate on either side of the base produced into a filiform appendage up to 10 mm. long; petioles up to 4-5 cms. long. Flowers yellow.

Rare in Khandala.

_Santapau_ 2637! 2638! In flower and fruit on 4 September 1943.

ELAEOCARPACEAE.

ELAEOCARCUS Linn.


_Elaeocarpus Ganitrus_ Roxb., Hort. Beng. 42, 1814 & Fl. Ind. 2 : 632, 1832; FBL. 1: 460; Gr. 29; D. & O. 27; C. 1: 151; Tabl. 1: 170; Blatter 892.

According to Cooke, this tree occurs on the Western Ghauts, but is not common, Blatter adds that the presence of this species on the Western Ghauts can scarcely be doubted, but judging from its distribution one is allowed to conclude that it is not indigenous in the Presidency.

There are no specimens of this tree in Blatter Herb.; Blatter's reference to it in his MS. catalogue is my only authority for the inclusion of this tree.

_Blatter_ in MS. catalogue.

LINACEAE.

LINUM Linn.

_Lineum usitatissimum_ Linn., Sp. Pl. 277, 1753; FBL. 1: 410; Gr. 34; Reiche in Pfam. (ed. 1) 3(4): 28, t. 25 E, J, K, N; Winkler in sod. op. (ed. 2) 19 A: 87, t. 43, & 89, t. 44.
The only place in Khandala where this plant has been seen growing is the railway station and some ditches near it. This clearly shows how the plant has been introduced into the district. I have not seen it in cultivation in Khandala. Flowers are blue, fruits spherical.

Lately, 24th March 1949, I collected a number of specimens from a ditch near the station along the railway line; there the plant was growing abundantly in a large, dense patch, individual plants reaching 50 cms. high; branching was very rare.

Blatter Herb. 29612 ! 28562 ! Santapau 5865 ! 5866 ! 5867 ! 6040 ! 10006-10008 !

Linum mysorensse Hayne in Wall., Cat. 1507, 1820; Wight & Arn., Prod. 134, 1834; FlBl. 1 : 411; Gr. 33; D. & G. 16; C. 1 : 155; Winkler, loc. cit. 114.

Annual herb, up to 47 cms. high. Stem erect, slender, at first covered with leaves from near the ground up to its apex, soon becoming leafless in the lower part. In Khandala I have observed the following types of plants: (a) Erect, unbranched stem, more or less extensively branched only in the upper quarter of the plant. (b) Branching extensive from near the ground only, each branch erect and similar in structure to the main stem and about equally long as the main stem. (c) Plants extensively branched from near the ground and all along the stem; this type of branching is very rare in Khandala. In types (a) and (b) and occasionally in (c), the branches form a sort of corymb reaching as high as the main stem.

Very common and abundant in grass fields where grass is short; also common in cultivated fields. Often this plant occurs in almost pure stands in cultivated fields and elsewhere. A pretty plant.

Flowers.—September to December. Fruits.—October to December.
Graham; Blatter in M8 catalogue; Santapau 1017 ! 1120 ! 2557 ! 2749 ! 2814 ! 3038 ! 3476 ! 4997 ! 5025 ! 5199 ! 5211 ! 5414 ! 5915 !

Reinwardtia Dumort.

Linum trigynum Roxb. in As. Res. 6 : 357; Smith, Exot. Bot. 1 : t. 17; Pot. Mag. t. 1100; Gr. 34.

This plant was collected in flower in Convalescent Home on Jan. 28, 1951; it was growing near the garden, but obviously as an escape.
Santapau 12184 !
MALPIGHIACEAE.

Hiptage Gaertn.


Hiptage malabata Gaertn., Fruct. 2: 169, t. 116, 1791; FBL. 1: 413; Gr. 28; C. 1: 157; Tabl, 1: 173, t. 110.

Common on Kuma Plateau where it climbs over small trees; common also along the stream bed that runs along the lower portion of St. Xavier's Ravine. I have not been able to discover any scent in the flowers.

Local name: Koshi.

Flowers.—January to March. Fruits.—March to May.

Blatter in Revision; Blatt. Herb. 17813! 17814! 28056! McCann 4332! 4333! 4334! Santapau 77/1, 2! 173! 194! 1601! 1662! 1663! 3907 3910! 3793! 4441! 4441! 6053! 6116! 6117!

ASPIDOPTERIS Juss.


It is with great hesitation that I include this plant. Dalzell and Gibson in their Bombay Flora, and Blatter in his MS. catalogue assert that this plant is to be found in Khandala. Of the three species into which Jussieu's plant has been split, "there is some likelihood that A. indica may occur in the Bombay Presidency" (Blatter in Journ. Bomb. Nat. Hist. Soc. 34: 894, 1931). There are no specimens from Khandala in any of the herbaria examined.

D. & G.; Blatter in MS. catalogue.

Aspidotipus cordifolia (Heyne) A. Juss. in Ann. Sc. Nat. (ser. 2) 13: 267, 1840; FBL. 1: 421; D. & G. 34; C. 1: 158; Blatter 894.

Hirata cordifolia Heyne in Wall., Cat. 1060, 1829; Wight & Arn., Prodr. 108, 1834.

Common on Battery Hill Plateau, rare elsewhere in the district. The fruit appears in large bunches and remains on the parent plant even when the whole plant seems to be dry.

Flowers.—September to October. Fruits.—October to February.

OXALIDACEAE.

Oxalis Linn.

Oxalis corniculata Linn., Sp. Pl. 435, 1753; FBI. 1 : 436; Wight, Icon. t. 18; C. 1 : 167.
O. monadelpha Roxb., ex Wight & Arn., Prodr. 142, 1834.

A common herb in moist places; particularly common on damp walls near Forbay. The leaves are sometimes eaten by local people, they are pleasantly acid and refreshing.

Flowers and fruits.—January to August.

Halberg in MS. catalogue; Blatt. Herb. 27951 ! 29805! McCann 4365 ! Santapau 3737-3741 ! 3553 ! 4148 ! 4149 ! 4365 ! 8609 !


There is only one specimen in Blatt. Herb., collected by Blatter probably in a garden in Khandala. The specimen is in too poor a condition for identification.
Blatt. Herb. 18725 !

TROPÆOLACEAE.

Tropæolum L.


A garden plant occasionally cultivated in Khandala gardens, both for its flowers and for the leaves which are locally used as a vegetable.
Santapau, cultivated in St. Xavier’s Villa, 15. 3. 1945 !

BALSAMINACEAE.

Impatiens Linn.

I. sepiiflora Hook. in Bot. Mag. 64 : t. 5587, 1837 (non Heyne).

This is the only secpigerous, perennial or semi-perennial balsam of Khandala; it is common under water-falls, or on rocks where abundant water trickles down. It is also one of the first balsams to come into flower in the district, and one of the first to disappear.
In general appearance it is very similar to *I. scopiflora* Linn., from which it is easily distinguishable by its wing having only two lobes. *I. acutis* is a gregarious plant, at times covering the whole surface of rocks on the ravine slopes.

Flowers and Fruits.—September.

Woodrow; Cooke; Hallberg in MS. catalogue; Blatter in Revision; McCann 4379; Blatt. Herb. 28063; 28064; 28065; 28066; Santapau 71/5; 842; 875 (1-5).

**Impatiens oppositifolia** Linn., Sp. Pl. 937, 1753; FBI. I: 448; Gr. 34; Wight, Icon. t. 863; C. I: 172.

*I. rupicola* Hook. f. in Kew Bull. 1910: 292; Blatter 310.

Examination of all the *I. oppositifolia* and *I. rupicola* material available at Kew shows that these two species are but one and the same plant; the structure of the flowers and of the leaves is the same in both species; Hook. f. gives as one of the distinguishing characters of *I. rupicola* that it is "foliis integerrimis...distincta", but none of the specimens mentioned by Hook. f. as typical has perfectly entire leaves. Another character is the cymbiform lip, with ascending obtuse mouth; this is so in one or two of the plants mentioned as typical, but in the great majority of the sheets in Kew Herbarium the lip does not differ from that of *I. oppositifolia*.

Common in Khandala almost from the beginning of the rains till the end of October, generally it is not gregarious, and occurs in open ground or on grassy slopes, but is rare in dense forests.

Flowers and Fruits.—August to November.

Meebold 5831; Blatt. Herb. 17785; 26249; Santapau 71/9; 759; 781; 2479; 2657; 2658; 2659; 2660; 4821; 4961; 6869; 7461; 7462; 7463; 9277; 9278; 9279; 9280; 92811.

**Impatiens kleinii** Wight & Arn., Prodr. 140, 1834; FBI. I : 445; Wight, Icon. t. 884; Hook. f. in Kew Bull. 1910: 293; C. I: 171; Blatter 311.

This is the smallest-flowered balsam of Khandala. It is also one of the commonest; it appears at the beginning of the rains and may be seen throughout the rainy season till well into October. It occurs generally as a solitary plant, on hedges, or under the shade of trees, sometimes on tree trunks. Occasionally it is a gregarious plant, but it is never as abundant as the following species.

Flowers and Fruits.—July to October.

Blatt. Herb. 18791; McCann 4380; Santapau 71/4; 623; 644; 2232; 2402; 28067; 28068; 4572; 4982; 6793; 6794; 6795; 6870; 6871; 6872; 9242; 9243; 9282; 92831.

**Impatiens balsamina** Linn., Sp. Pl. 938, 1753, var. rosea Hook. f. in FBI. I: 554, 1874; Blatter 314.

*I. rosea* Lindl. in Bot. Reg. t. 27, 1841.
THE FLORA OF KHANDALA.


Very common in Khandala from the beginning of July onwards till the end of October or beginning of November; flowers only appear about the middle of August, and become very abundant from September. For the rest of the year an occasional plant may be seen in flower in moist shaded spots. During the second half of the rainy season this is undoubtedly the most conspicuous plant in the district, owing to its gregarious habit and its numerous bright coloured flowers.

Local name : Tinda.

Flowers.—June to November, exceptionally April 1946 in a ditch.

Fruits.—August to November.

Blatt. Herb. 18784 ! 18785 ! 28226 ! 29661 ! 29666 ! McCown 4378


The structure of the plant is in general similar to that of the var. anomala; the flowers are slightly smaller. The type of inflorescence is quite distinct: in the new variety flowers are axillary, arranged in corymbose racemes. The common peduncle or rachis of the raceme is up to 1-3 cm. long, bearing 3—6 flowers disposed along the rachis at varying distances, 2 or more mm. from each other; the pedicels vary in length in such a manner that the inflorescence makes almost a perfect corymb; each pedicel is supported by a small bract, which is about 1 mm. long, acute, pubescent.

The type of this plant was collected on Kune Plateau on November 2nd, 1944, and is kept in Blatt. Herb (Santapau 5459).

RUTACEAE.

Evodia Forst.

Evodia henu-anukanda (Gaertn.) Merrill. in Phil. Journ. Sci. 7 : 378, 1912 ; G. 148.

Fagara henu-anukanda Gaertn., Fruct. 1 : 334, t. 68, f. 9, 1788.

Fagara triphylla Roxb., Fl. Ind. 1 : 416, 1832 (non Lamk.).

Zanthoxylum triphyllum Graham, Cat. 36, 1839.

Evodia nyagariro Benth., Fl. Hong. 39, 1881; FBR. 1 : 487 ; C. 1 : 177 ; Talib. 1 : 185, t. 113 ; Blatter 315.

A rare plant in Khandala of which I have seen only one specimen in six years.

Graham ; Blatter in MS. catalogue ; Santapau 1080 !
FAGABA Linn.

**Fagara budrungsa** Roxb., Hort. Beng. 11, 1814 & Fl. Ind. 1: 437, 1820; Engler in Pflan. (ed. 2) 19A: 216, 1931.

**Zanthoxylum Budrunga** D.C., Prodr. 1: 728, 1824; C. 159; Blatter 315.

**Fagara Rhetae** Roxb., Hort. Beng. 11, 1814 & Fl. Ind. 1: 438, 1820.

**Zanthoxylum Rhetae** (Roxb.) D.C., Prodr. 1: 728, 1824; FBL. 1: 495; D. & G. 45; C. 1: 173; C. 159; Merr., Enum. 2: 327.

Not common in Khandala except on the lower slopes below Duka’s Nose. It is not a noteworthy tree except for the numerous prickles on stem and other parts. As far as I have been able to ascertain, no use (medicinal or otherwise) is made of this tree in the district, the numerous prickles making it difficult to handle.

Flowers.—July to August. Fruits.—September to November.

Arbuckles ex Graham: Blatt in MS. catalogue: Blatt. Herb. 27428

TODDALLA Juss.

**Todalia asiatica** (Linn.) Lamk., Ill. 2: 116, 1793, G. 150; Haines, Bot. Bih. & Or. 160; Blatter 316.

**Rantivvia asiatica** Linn., Sp. Pl. 365, 1753.

**Todalia aculeata** Pers., Syn. 1: 249, 1805; FBL. 1: 479; Gr. 37; D. & G. 46; Wight, Ill. t. 66; C. 1: 179; Talb. 1: 189, t. 115.


The occurrence of this tree in Khandala is given on the authority of Dalzel] and [Gibson in their Flora and of Blatter in his MS. catalogue. I have seen no specimen from Khandala.

D. & G.; Blatt in MS. catalogue.

GLYCOSMIS CORN.


**Limmium pentaphylla** Retz., Obs. 5: 24, 1789; Roxb., Pl. Cor. 1: 60, t. 64.

**Glycosmis triphylla** Wight, Icon. t. 167, 1839.

An erect shrub, up to 2-5 m. high, with stout stem and branches.

Very common in the undergrowth of evergreen forests; particularly Common on Gerril Plateau and on the slopes below Echo Point and St. Xavier’s Villa. Buds, flowers and fruits in all stages of maturity are present at the same time. Flowering and fruiting goes on practically throughout the year.
Local name: Gangooan.
Flowers and Fruits.—October to June.
Woodrow; Blatt. Herb. 1919! 29580! McCann 4337! Sandapan! 78/15, 16! 349! 1523! 2164! 3537! 3538!

Murraya Koehn. ex Linn.

Bergen Koenigi Linn., Mant. 1: 565, 1767; Roxb., Pl. Cor. 2: t. 112; Gr. 24; Wight, Icon. t. 13.

Small to medium sized tree; the largest specimen seen in Khundala is one on Behran's Plateau, the stem of which measures 45 cms. diam. at the base and is about 6 m. high.

The whole plant is strongly and not unpleasantly aromatic, but the fruits are especially so. The leaves are regularly collected by local people and exported to neighbouring towns as an article of commerce; they are used for the seasoning of curries, hence the local name of this plant. Due to frequent cutting of branches and leaves, it is seldom that the tree is allowed to come to any large size. The hot months of the year seem to be the best for the collection of the leaves, and large bales of them may be seen in the local railway station ready for export during April and May.

Common all over the district, in open places or in dense jungle.

Local name: Kury Pattu.

Flowers.—March to April. Fruits.—March to June.

Blatter in MS. catalogue; Blatt. Herb. 19683! 27552! McCann ex Blatter in Revision; Sandapan 78/2, 3, 13! 399! 1783! 1887! 2016! 4246!

Murraya paniculata (Linn.) Jack., in Mal. Misc. 1: no. 5, 31, 1829; Gr. 24; D. & G. 29; Blatter 317; Mein., B. 2: 336.
Chalco sa paniculata Linn., Mant. 1: 68, 1767; Tanaka, loc. cit. 24.
Murraya exotica Linn., Mant. 2: 563, 1771 (Murraya); F. & L. 1: 562; Gr. 24; Wight, Icon. t. 96; C. 1: 182; Talb. 1: 193, t. 198; G. 165.

A small unattractive tree with a sombre appearance.

Flowers scented, more particularly so at night, with a fairly strong scent which is very similar to that of orange blossom.

Fairly common on Murloli Plateau, elsewhere only occasional. Often found in gardens, where it is cultivated for the sake of the perfume of the flowers.

Local name: Limbu.

Flowers.—June to January. Fruits.—September to May.
Atalanta Cort.

Atalanta monophylla (Roxb.) DC., Prodr. 1: 535, 1824; FBI. 1: 311; Gr. 23; D. & G. 22; C. 1: 187; Blatter, 310; Engler in Pflan. 3(1): 191, t. 111 C--D & (ed. 2) 19A: 328, t. 150 C--D; Airy-Shaw in Kew Bull. 1931: 290-293.

Linonia monophylla Roxb., Pl. Cor. 1: 60, t. 83, 1795 (non Linn.).


Graham, loc. cit., states that this tree is "Common on the Ghauts at Sidney Point, Mahableshwar"; Talbot, however, remarks that Graham was probably referring to the common A. racemosa which is found there. Cooke adds that in the Herb. of the College of Science, Poona, there were a number of sheets labelled A. monophylla, but that they were wrongly named, as they all belonged to A. racemosa. In the Blatt. Herb. I have examined a larger number of sheets from Khandala, which, although named A. monophylla, have proved to be A. racemosa. My identification is based on the structure of the calyx and the type of inflorescence. Blatter published his Revision of the Rutaceae in 1933, and was aware of the definite assertions of Cooke and Talbot on the subject; in spite of this, Blatter gives Bombay Island and Khandala as two localities where he himself had seen the plant, but he gives no reference to any herbarium specimen.

In Kew Herb. there are no specimens of A. monophylla from Bombay Presidency; there are plenty of sheets from South India, and the difference between the two species is quite clear. During my exploration of Khandala I have made an intensive search for this plant, but without any positive results.

In consequence, until further evidence be obtained, I consider the existence of this plant not only in Khandala but in the whole of the Presidency of Bombay as rather doubtful.

Blatter in Revision: "Khandala (Blatter)"

Atalanta racemosa Wight & Arn., Prodr. 91, 1834; FBI. 1: 512; C. 1: 187; Talb. 1: 201, t. 123; Blatter 423.

Scleronyctis adiantoides Wight & Arn. in Wight, Icon. t. 71, 1838; D & G. 29.

One of the commonest trees on the slopes below Elphinstone Point and on the slopes of St. Xavier's Ravine, from the main road to the base of Duke's Nose. The tree in general has a rather sombre appearance, but when in full bloom the perfume of the open flowers is strong and very pleasant, somewhat reminiscent of orange-blossom. The fruit is intensely
bitter and seems to act by a sort of delayed action; in spite of its taste the fruit seems to be eaten by some animals, probably monkeys, to judge from the remains found beneath the trees.

Local name: Limhu, Ran Limhu, Makar Limhu.

Flowers.—October to February. Fruits.—December to July.

CITRUS Linn.

Citrus sp.

In the last few years an attempt has been made in St. Xavier’s Villa at the cultivation of some species of Citrus; the attempts, however, have resulted in complete failure. Trees grow up to a height of about 2 m. but do not produce flowers or fruits; local farmers attribute such a failure to a soil that is too poor and to a rainfall that is excessively heavy during the monsoon. I have not been able to determine the species or variety of Citrus with which the attempt has been made.

SIMARUBACEAE.

AIANTHUS Desf.

Ailanthus malabarica DC., Prodr. 2: 89, 1825; FBL. 1: 518; Gr. 37; D. & G. 46; C. 1: 194; Tabl. 1: 209.

The occurrence of this plant in Khandala is only given on the authority of Graham and Blatter; I have searched for it but have failed to find any specimen in the district.

Graham; Blatter in MS. catalogue.

BURSERACEAE.

GARBHA Roxb.

Garuga pinnata Roxb., Hort. Beng. 33, 1814, & PI. Cor. 3: 5, t. 208, 1818; FBL. 1: 528; Gr. 43; Wight, Icon. tt. 1594 & 1596; C. 1: 199; Tabl. 1: 217, t. 130; Engler in Pflan. (ed. 1) 9(4): 257, t. 150, & (ed. 2) 19 A: 416; id. in DC., Mon. Phan. 4: 5, t. 1, ff. 1-6.
The tree is conspicuous in the district on account of its deciduous habit and of the position of the flowers and fruits at the ends of branches; when in leaf, it is very often attacked by insects, which produce large bright red or purple galls. I have not heard of the fruits being used locally as an article of food. Common in Khuldabad in deciduous forests and on open plateaux.

**Local name:** Kakad.

**Flowers.—**November to April.  **Fruits.—**March to August.

**Haller** in MS. catalogue; **Blatt. Herb. 27908! Santapau 80|81 |
116 | 1053 | 1848 | 1859 | 2186 | 3791 | 3792 | 4455 | 8786 |

**MELIACEAE.**

**Turkeana Linn.**

**Turkeana villosa** Benn., Pl. Jav. Rar. 182, 1840; **FBE.** 1: 542;
Wight, Icon. 1: 1593; C. 1: 204; DC., Mon. Phan. 1: 442; Tabl. 1:
224, t. 124;

**T. procera** Graham, Cat. 31, 1839 (non Linn.).

*Large shrub or small tree; younger branches quadrangular. Leaves softly villous when young, hairy on the nerves and margins on the underside when old; up to 11 × 6 cms.; appearing at or shortly after the flowering time.*

*Flowers at end of branches in the axils of fallen leaves or of leaf initials, solitary or fascicled; peduncles very short, pedicles about 1 cm., occasionally up to 2.5 cms. long, pubescent. Calyx campanulate, about 3 mm. long, teeth triangular, 1 mm. long, the whole calyx being pubescent outside. Corolla pure white; petals linear spatulate, very narrow below, broadening up to 5 mm. above, and up to 45 mm. long, free. In bud the flowers are perfectly regular; but after opening, the petals seem to be pushed to one side by the staminal tube, so that when fully opened the flower seems to be bilabiate with the upper lip missing; the corolla, however, is regular except in appearance.*

*The whole flower is faintly and sweetly scented and pure white; with age it turns yellow. Cooke mentions yellow as the only colour of the flower; it is obvious that he only observed old or decaying flowers; I have not seen any freshly opened flower with any colour other than pure white or at most white with a touch of green at the base of the petals.*

*Very common on the western end of Korinda Valley, near the top of the path leading into the ravine between Echo Point and Duke’s Nose; common also near the bridge over Kune stream. Except when in full bloom, it is a poor looking shrub; even when it is in full bloom the shrub looks rather bare due to the fact that leaves only come out at or near the ends of branches.*
Local name: Pandre.

Flowers.—June. Fruits.—June to December.

Graham; Blatt. Herb. 28220 | 28222 | 27402 | Actan 155 | Santapan 181/4 | 890 | 2104 | 2109 | 2110 | 2177 | 2270 | 4535 | 5468 | 9043 | 9644 | 9045 | 9188(2).

**Cipadessa Blume**


*Cipadessa fruticosa* Blume, Bijdr. 162, 1826; FBI. 1: 545; G. 1: 296; Tabl. 1: 227, t. 135.

*Mallia Rothii* A. Juss. in Mem. Mus. Par. 19: 222, t. 13, f. 6, 1830; Gr. 31, D. & G. 37.

Woodrow and Blatter are my authorities for the inclusion of this tree; I have not seen it growing in the district, nor have I seen any herbarium sheet from Khandala.

Woodrow; Blatter in MS. catalogue.

**Dysoxylon Blume**


*Epicharis exsulata* Arn.: D. & G. 37.


*Guarea exsulata* Arn.: D. & G. 37.


On Meroli Plateau, generally a small tree; on the slopes below Elphinstone Point, one of the giants of the forest.

There is a group of these trees on the slopes below Elphinstone Point practically the largest trees in that part of the forest. At the time of flowering, the scent is strong and very pleasant; this is very noticeable on Meroli Plateau. Buds come on the tree when the fruits of the previous season are still on. Seeds seem to germinate fairly easily, for during the rainy season the floor of the forest under or near these trees is covered with very numerous seedlings.

Local name: Verindi.

Flowers.—August to September. Fruits.—September to June.

Graham; Woodrow; Talbot; Blatt Herb. 27402 | 28437 | Santapan 1894 | 1896 | 1896 | 2575 | 3280-3284 | 3529 | 3520 | 3672 | 3673 | 4012 | 4673 | 4674 | 6014 | 6015 | 10599.
Amoora Roxb.

Amoora lawii (Wight) Bedd., in Fl. Sylv. t. 133, 1869-1872
FBL. 1 : 561; DC., Mon. Phan. 1 : 585; C. 1 : 212; Tabl. 1 : 239, t. 142;
Nimmoii Lauri Wight, in Calcutta Nat. Sci. 7 : 13, 1847.
Epinaxis mexicana Nimmo ex Graham, Cat. 31, 1839 (non Am.).
Nemodia Nimmoii Dalz. in D. & G. 37, 1861.
A small-sized tree, rather hard-wooded.

A very common tree in Khandala. A peculiarity of this tree is that
flowers and fruits are present almost throughout the year, both flowers
and fruits being on a particular branch at the same time. Fruits are very
abundant and often branches are heavily weighed down by them.
Normally this is a small to middle-sized tree, but on May 26, 1846, I
measured a specimen in St. Xavier's Ravine that was one of the biggest
trees in that part of the forest, its height reaching 22 m.

Local name: Télya.

Flowers.—November to June. Fruits.—January to September.
Graham; Blatt. Herb. 1892: 1 27004! 28488! 28490! Santapau 1811
1751! 1778! 1779! 2097! 3216! 3217! 3261! 3301! 3302! 3305! 3879!
3880! 3881! 3889! 4444! 4474! 6034! 6035! 8782! 9035

Amoora rohituka (Roxb.) Wight & Arn., Prodr. 119, 1834; F.B.I.
1 : 569; DC., Mon. Phan. 1 : 581; C. 1 : 211; Tabl. 1 : 238, t. 141;
G. 181.

Andersonia Rohituka Roxb., Fl. Ind. 2 : 213, 1832.
Amoora macrophylla Nimmo ex Graham, Cat. 31, 1839.

Male flowers not seen. Female or hermaphrodite flowers in racemes
up to 30 cm. long; calyx 5-partite; petals 3, creamy yellow in
colour; staminal tube of the same colour as the petals; anthers included
or just exerted; style 0. The whole flower is about 6 mm. diam. Fruit
spherical, yellowish; seeds 3, brown, ovoid, with a scarlet aril.

There are only two trees of this species in Khandala, as far as I have
been able to ascertain.

Local name: Shémod.

Flowers.—August to November. Fruits.—December to June.
Graham: “A solitary tree, grows in the ravine at Kandala below the
old Toll House”; Blatt., in MS. catalogue; Santapau 31! 957! 1110!
1446! 1993! 3975! 4953! 5126! 5127! 5128! 7439! 7443! 8103! 8104

Heynea Roxb.

Heynea trijuga Roxb., Hort. Beng. 33, 1814; Bot. Mag. t. 1738,
1815; Fl. Ind. 3 : t. 260, 1819; Fl. Ind. 2 : 390, 1832; F.B.I. 1 : 565;
Gr. 31; D. & G. 38; DC., Mon. Phan. 1 : 713, t. 9, t. 6; C. 1 : 214; Tabl.
1 : 242, t. 144; G. 183.
Walera trijuga (Roxb.) Kurz, in JASB. 44: 148. 1875; Adelbert in Blumea 6: 322.

In the whole of Khandala district I have observed but a solitary specimen at the Saddle, about half way between Echo Point and Boma Hill. Even at a distance this tree stands out on account of the colour of its leaves.

Flowers.—April 1944. Fruits.—April to October.

Graham; Woodrow; Giannini 19481 (in Herb. Econ. Bot., Poona!)
Blatter in MS. catalogue; Santapau 2396! 2497! 2840-2844! 4094!
4593! 5177! 5196! 6802! 6853! 8925! 8926! 8927!

Chukrasia Juss.

Chukrasia tabularis Juss., var. velutina King in JASB. 64: 88,

Plagiotaxis velutina Wall., Cat. 1270, 1829.

Chukrasia velutina Roem., Syn. Mon. 1: 136, 1846 ("Chukrasia");

Chukrasia Nummonii Graham, in Wight, Ill. 1: 148, 1839 & Cat
253, 1839; D. & G. 38.

The leaves of the Khandala trees are all pubescent or at times even
subhispid with fairly stout, stiff hairs, especially on the nerves above,
much more pubescent but not so hispid beneath.

A rare tree in Khandala; I have only seen four or five specimens
on the slopes below St. Mary's Villa. It is an elegant tree, except for
the colour of the leaves, which is rather dull, at least when the leaves are
old.

Flowers.—April to May. Fruits.—May to the next flowering season.
Santapau 81/1! 892! 1392! 3674! 3990!

Toona Roem.

Toona ciliata Roem., Syn. Hosp. 139, 1848; Harms in Pflm. 3(4):
278, t. 151 D & (ed. 2) 19 b 1 : 45 & 42, t. 2 D.

Cedrela Toona Roxb., ex Rottl. & Willd. in Ges. Naturl. Fr. Neue
Schr. 2: 198, 1803; FBT. 1: 668; Wight, Icon. t. 151; Gr. 246; D. & G.

Widely scattered through the district, in evergreen and deciduous
forests, but nowhere abundant. Both in flower and in leaf this is a
fine tree of majestic appearance.

Local name: Nim.

Graham; Dale. and Gibs.; Woodrow; Blatter in MS. catalogue;
Blatt. Herb. 19738! Santapau 464! 194! 1767! 1768! 1769! 3290-3294!
4045! 4046! 4047! 8693!
OLACACEAE.

OLAX LIND.

*Olax scandens* Roxb., Pl. Cor. 2: 2, t. 102, 1798; FBl., 1: 575; Wight & Arn., Prodr. 89; Gr. 22; C. 1: 221; Talb. 1: 257; Sleumer in Pfam. (ed. 2) 16 B: 27.

Cooke, on the authority of Graham and Woodrow, gives this plant as occurring in Khandala; Blatter in his MS. catalogue probably copies Cooke. In the course of several years I only found one specimen that seemed to belong to this species, but the specimen was immature and scarcely fit to form the basis of any conclusion. Talbot, loc. cit., writes: "I can find no record of this climber having been found in the Bombay Presidency, and have never observed it myself in the Khandesh Satpudas. Cooke in his FL Bombay. Pres. I, 221, states that it has been found in N. Karnataka (Nikund) and on the Khandala Ghatu by Mr. Woodrow. The specimens collected by Woodrow from Khandala in the Poona College of Science Herbarium are all *O. Wightiana* Wall."

Graham; Woodrow; Blatter in MS catalogue; Santapau 1951.

*Olax wightiana* Wall., Cat. 6779, 1832; Wight & Arn., Prodr. 89, 1834; L. & G. 27; C. 1: 221; C. 190.

*Olax scandens* Roxb.: Sleumer, loc. cit.

Among the authors who have dealt with this plant, Sleumer is the only one to fuse *O. wightiana* with *O. scandens*. The materials at my disposal are too scanty to allow me to reach any conclusion.

Not common in Khandala.

Local name: Kukharbit.


Santapau 3675-3680! 6049-6052! 7443! 8839!

STROMBOSIA Blume.


*Strombosia leprosa* Talbot, in JBNHS. 11: 235, 1897.

A fine tree with spreading branches and fairly tall trunk; abundant on the slopes below Echo Point at an altit. of 600 m., rare elsewhere in the district.

Local name: Ráktrórur or Rágatrórur.

*Flowers.*—December to January. *Fruits.*—March to May.

OPILIACEAE.

CANSJERA Juss.

_Cansjera rheedii_ Gmel., Syst. 2: 289, 1781; Wight, Icon. t. 1861; C. 1: 223; G. 193; Sleumer in Pflan. (ed. 2) 10 B: 36, t. 19.

Fairly common especially on the slopes from Forbay to the Saddle; common also within the grounds of Convalescent Home. It is neither a conspicuous nor an attractive plant.

_Local name_: Lal Kukarbit, Taroli, Tarli.

_Flowers._—October to December. _Fruits._—November to March.


ICACINACEAE.

MAPPIA Jacq.

_Mappia toetida_ Miers, Contrib. 1: 64, 1851; FBl. 1: 589; C. 1: 235; G. 196.

_Mappia oblonga_ D. & G., Bomb. Fl. 28, 1861.

Blatter’s mention of this plant is my only authority for including it among Khandala plants; I have not seen it in the district or in any of the botanists consulted.

Blatter in MS. catalogue.

HIPPOCRATEACEAE.

PRISTIMERA Miers.


_Hippocrates Grahamii_ Wight, Ill. 1: 134, 1840; FBl. 1: 624; Wight, Icon. t. 380; D. & G. 32; C. 1: 236; Tahl. 1: 283, t. 168.

Cooke gives as one of the characteristics of _H. obtusifolia_ Roxb. that the style overtops the stamens; I have examined many flowers from Khandala and in every case the style does overtop the stamens, the style, however, in the present species is considerably shorter than in _H. obtusifolia_; this I have also confirmed by examination of the type sheets in Kew Herb.
Common on the slopes below Elphinestone Point; there is a very
good specimen growing in the grounds of Convalescent Home. I find this
shrub an attractive one.

Local name : Dáushir. Lokandi.
Flowers.—December to March. Fruits.—March to September.

Salacia 16155! Blatter in MS. catalogue; Santapau 87/4, 11 ! 11:11
1562 ! 1639! 1640! 1641! 1962! 2124! 2125! 3958! 3958!
4065! 5842! 6005! 8650! 8651! 8745! 8746! 8804!

Salacia Linn.

Salacia primoides DC. Prodr. 1 : 571, 1824; FBI. 1 : 626; Gr. 27;
D. & G. 33; C. 1 : 236; Talb. 1 : 286; Gr. 215.

For several years I have searched for this plant on the spot indicated
by Graham, but have failed to find it; I give this plant on the authority
of Graham and Blatter. There are no specimens from Khandala in any
of the herbaria consulted.

Graham: "On the Corinda side of the Hill above Kandla tank ";
Blatter in MS. catalogue.

CELASTRACEAE.

CELASTRUS Linn.

Celastrus paniculata Willd., Sp. PI. 1 : 125, 1788; FBI. 1 :
617; Gr. 39; D. & G. 47; Wight, Ill. t. 72 & Icon. t. 156; Leschen in
Pfam. 3(5) : 194, t. 120 E. H. & t. 122 K-L; C. 1 : 231; Talb. 1 : 276, t.
163.

Common in Khandala, particularly in evergreen forest near Khandala
Cemetery, conspicuous because of the colour of the arils and of the
pendulous panicles.

Local name : Pingui or Pingwi.
Flowers.—April to May. Fruits.—May to October.
4102 ! 8719 ! 8720 !

GYMNOSPORIA Benth. & Hook.

Gymnosporia rothiana (Wight & Arn.) Laws. in FBI. 1 : 619, 1875;
C. 1 : 232; Talb. 1 : 278, t. 104.

Celastrus rothiana Wight & Arn., Prodr. 1 : 159. 1834 : D. & G.
47 & 318.
Colusurus coumargineata Graham, Cat. 39, 1839 (non Roth).

Shrubby, usually about 2-1 m. high, occasionally a small tree; unarmed, sparingly armed with an occasional spine or heavily armed. The leaves are often attacked by a yellowish orange rust.

A very common shrub in deciduous and evergreen forests; particularly abundant in the higher parts, from St. Xavier's Villa upwards. This shrub is conspicuous by its leaves and by the fruit's shape and colour. When in bloom this shrub is visited by numerous insects. The local name suggests that monkeys eat the fruit, but I have never seen any traces showing that the fruit has been touched by such animals.

Local names: Leuchi, Makhar Khana, Wandar Roti.

Flowers and fruits.—More or less throughout the year.

Rinti. Herb. 17950! 15839! 15559! 25397! 25534! 25535! 27536!
Acard. 171! Santapau 87/3! 553! 1856! 1956! 2024! 2065! 2111! 3009! 4035! 4887!

RHAMNAEAE.

VENTILAGO Gaertn.


A pretty climbing shrub, very common on the slopes below Echo Point at an altit. of about 500 m.; common also below Elphinston Point about half way down to the ravine. During the fruiting season fruits may be seen scattered over large tracts of forest; but in spite of careful search I have failed to find any germinating seeds.

Local name: Lôkhandi.

Flowers.—December to January. Fruits.—February to March.


Ventilago madraspatana Gaertn., Fruct. 1: 223, t. 49, f. 2, 1788; FBL. 1: 631; Gr. 49; Wight, Icon. t. 163; D. & G. 48; C. 1: 238; Tabl., For. Fl. 1: 290 (excl. It. 172-173).

A large woody climber, occasionally seen in ravines going over the top of high trees, but generally of smaller dimensions than V. bombaiensis.

Common all over the district, in dense forests and in open country; young seedlings are erect, but the climbing habit develops very early in the life cycle of the plant.

Local name: Lokhandi.

Flowers.—November to January.
Graham; D. & G.; Blatter in MS. catalogue; Gammie 16261 (in Herb Coll. Sci. Poona); Herb. Coll. Sci. Poona, 16116; Meijann 4412; 4413; 4414; Santapaau 90/14; 15; 1150; 1703; 1777; 3258; 3259; 3897; 3973; 4274; 5813; 5923; 5924; 8081.


Very similar in most respects to V. madraspatana Gaertn., from which it differs in having the wing of the fruits more or less deeply bifid. The apex of the wing is divided for 10 mm., the two portions being somewhat divergent, and their apices rounded, subrounded or acute, occasionally one side being longer than the other. The type of this variety is Garade i, in the herbarium of the College of Science Poona, and was collected in Khandala by Garade on March 22, 1905. Iso- and para-type in Blatt. Herb., Bombay.

Zizyphus Linn.

Zizyphus horrida Roth, Nov. Pl. Sp. 159, 1821; FBI. 1: 636; Ch. 1: 243.

Regarding the specimen listed below, Blatter remarks: "This is a noticeable plant. With its round leaves with marked apiecti, and profuse armature I think it may certainly be assigned for the present to Z. horrida Roth. If this could be collected again in flower and fruit it would be an advantage."

The full wing are the characteristics of the specimen: prickles twin, one straight and 15 mm. long, the other hooked and 6 mm. long, both arising from broad bases, glabrous, brown. The leaves are practically sessile and conspicuously mucronate; young branches tomentose.

Blatter 93051.

Zizyphus jujuba Lamk., Encycl. 3: 318, 1789; FBI. 1: 639; Cr. 39; D. & G. 49; Weberbauer in Pflan. 3(5): 403, t. 198 A-D; C. 1: 249; Tabl. 1: 294, t. 175.

In Khandala this plant is not found in a truly wild state; it is common along the railway line, especially along the disused line below Gilpin stone Point and by the sides of the main road. I have noticed a few small trees reaching 2–3 m. in height, but generally it is a small shrub. The fruits are edible.

Local name: Bor or Ran Bor.

Flowers.—April to June. Fruits.—June to March of the following year.


Zizyphus oenoplia Mill., Gard. Dict. (ed. 8) no. 3, 1788; FBI. 1: 634; Cr. 59; D. & G. 48; C. 1: 242; Tabl. 1: 290, t. 176.
Not common. I have only seen it on Battery Hill Plateau. Every specimen of this plant seen in Khandala exhibited remarkable examples of the proliferation known as "Witches' Broom"; the leaves of affected branches are similar in structure to the normal ones, but in size they are only up to 10 x 4 mm. Plants so affected do not seem to bear flowers or fruits.

_Blatter Herb._ 28338! _Santapau_ 1455! 4303! 4304! 8826!

**Zizyphus rugosa** Lamk., _Encycl._ 3: 319, 1789; _FBL._ 1: 636; _Gr._ 39; D. & G. 49; C. 1: 243; Tabl. 1: 398, t. 177.

A very common plant all over the district, especially in open country. During March it is one of the commonest plants in flower. The strong prickles make it a difficult plant to handle. The fruit is edible when ripe.

_Local name:_ Toran.

_Flowers._—January to April. _Fruits._—January to May.

_Woodrow:_ Halyberg in _MS. catalogue_; _Blatter_ 9315! _Blatt. Herb._ 9303! 9329! _McCain_ 3707! _Santapau_ 90/2, 17! 1664! 3599! 3618! 3709! 3861! 4339!


An erect small tree up to 4 m. high, very sparingly armed, often unarmed or nearly so. Leaves acute to obtuse, strongly 3-nerved from the base (the nerves not converging at the apex of the leaf), acute or rounded at the base, very unequal-sided, entire glabrous on both sides except for a few hairs which occasionally are found on the nerves of the lower surface; margins irregularly denticulate; petioles up to 6 mm. long, tormentose. Stipules 2, filiform, up to 5 mm. long, very easily caducous, but leaving a scar that is recognizable even in dry herbarium specimens.

Flowers mostly 5-merous, pale greenish. Calyx lobes triangular, acute. Petals spathulate and somewhat cucullate, caducous. Anthers opposite the petals, greenish. Disc large and prominent. Stigmas usually 3; fruits at first green, at length dark brown or black and glabrous, up to 21 mm. diam., globose or slightly compressed at the "poles".

A common tree in Khandala, growing in open country; especially abundant on Battery Hill and Patanmal Plateaus. The glabrous leaves, the almost complete absence of prickles and the size of the fruit distinguish this new variety from all the other species of _Zizyphus_ found in the district.

_Local name:_ Golt.

_Flowers._—March to June. _Fruits._—May to September.

Scutia Commes. ex Broun.

**Scutia myrtina** (Burman) Kurz., in JASB 44: 168, 1875; G. 223.

*Rhamnus myrtina* Burm., Fl. Ind. 60, 1768.

*Scutia indica* Broun., in Ann. Sc. Nat. 10: 363, 1827; FBL. 1: 440; Gr. 39; Wight, Ill. t. 73; D. & G. 50; C. 1: 244; Tabl. 1: 302, t. 179.

Blatter's mention in his catalogue is my only authority for the inclusion of this shrub, I have not seen it growing either at Khandala or elsewhere near Bombay.

*Blatter in MS. catalogue.*

**Columbina** Rish.

*Columbina asiatica* (Linn.) Broun., in Ann. Sc. Nat. 10: 369, 1827; FBL. 1: 642; Gr. 39; D. & G. 50; C. 1: 246; Tabl. 1: 304, t. 170.

*Conephotus asiaticus* Linn., Sp. PI. 196, 1753.

The occurrence of this plant is given on the authority of Blatter; I have not seen the plant in the district. At Purandhar it is fairly common, at an altitude of about 1000 m., but in all probability it has been planted there; it is found only along one of the paths within the fort area and does not occur on any of the neighbouring hills.

*Blatter in MS. catalogue.*

**Amelocissus** Planch.


*Cissus latifolia* Graham, Cat. 32, 1839; D. & G. 39 (au Vahlii?).

This is the most common species of *Amelocissus* on Battery Hill Plateau, where it is abundant. Elsewhere in the district it is a rare plant.

*Flowers.*—May to June. *Fruits.*—May to August.

*Synapem 392! 394! 350! 2093! 4261! 4263! 4426! 4488! 4626! 4485! 4626! 9199!*

**Cissus** Linn.

*Cissus discolor* Blume, Bijd. 151, 1825; D. & G. 19; Bot. Mag. t. 4783; Planch. 490; G. 235.

An elegant climber with red or reddish stems; leaves spotted white above, deep red or purple beneath. A rare plant in Khandala found only occasionally in deep forests, usually trailing along the ground or climbing on neighbouring shrubs.

Flowers and Fruits.—September 1942.
Blatt. Herb. 28223! 28224! Santapau 91/18! 815! 11037-11039!

Cissus elongata Roxb., Fl. Ind. 1: 411, 1820; Planch. 621.
Vitis elongata Wall., Cat. 616, 1837-1838; Wight & Arn., Prodr. 125, 1834; FBL. 1: 688; C. 1: 256; Tabl. 1: 320, t. 190.

This is the commonest species of the whole family in Khandala; abundant everywhere. Stems are sometimes used locally as ropes for grass or firewood bundles.

Flowers.—April to October.

Fruits.—May to January.


Cissus repanda Vahl, Symb. 3: 18, 1794; Gr. 32; D. & G. 39; Planch. 474; G. 234.
Vitis repanda Wight & Arn., Prodr. 125, 1834; FBL. 1: 648 (excl. C. vitiflava L.); C. 1: 215; Tabl. 1: 312, t. 164-165.

This is one of the finest vines of Khandala; with the help of the sucker-like tendrils it climbs along thick trunks of trees and covers them with its beautiful foliage. At all times when in leaf, but especially when the foliage is young and brightly coloured, this plant is a pleasant sight in the district.

Flowers and Fruits. April to June but rare. Leaves. May to November.


Cissus vitiflava D. & G., Bomb. Fl. 40, 1861 (non Roxb.).

An erect shrub with thick trunk and large leaves. This plant has often been observed by me in Khandala, but was often taken for C. repanda, from which it clearly differs by its erect habit. It is also closely allied to C. pallida Planch., from which it differs by its erect habit and the total absence of tendrils. It is a very conspicuous and common shrub at Panandhar Fort, Poona Dist. In Khandala it is common on Kun-Plateau.

Flowers and Fruits.—May to June.

Santapau 3128!
**Cissus tenuifolia** Heyne ex Wall., Cat. 6022, 1831-1832; Planchon 563, 1887.


Scandent; tendrils leaf-opposed, forked. Leaves typical; leaflets usually 5, the lateral ones pedately arranged, the terminal leaflet bigger and with longer petiolule. Flowers all 1 merous, bisexual; petals falling off very easily. Fruit not seen. The tendrils and young parts of the plant are reddish in colour.

Seen only on two occasions on Battery Hill Plateau; on the second occasion, August 1945, the plant was very abundant on the whole plateau in fairly dense forest.

**Flowers.**—August 1945. **Fruits.**—Not seen.

*Santopou 5370 ! 5371 ! 6994 ! 6995 ! 6996 !

**Tetragastrinca Planch.**

**Tetragastrinca canarensis** (Dalz.) Gamble, in Fl. Madr. 228, 1918.


*Cissus canarensis* Planchon in DC., Monogr. Phan. 5(2): 620, 1887.

A large climber, going over the tops of high trees in the forest and hanging down in long pendulous festoons. Fruits at first green, then cadmium yellow, at length scarlet.

A very elegant climber, common below Echo Point, along the ravine stream; elsewhere in the district rare. Leaves dry to a paler yellow than most other leaves and remain on the parent plant for some time; this renders the plant rather conspicuous.

**Flowers.**—December to January.

**Fruits.**—December to April.

*Santopou 91/3 ! 1856 ! 1857 ! 1858 ! 1855 ! 3236 ! 3403 ! 3579 ! 4223 ! 4224 ! 4443 ! 4808 !

**Leea Linn.**

**Leea edgeworthii** Santopou, nov. nov.


A shrub 0.75-1.50 m. high; stems not winged. Leaves simply pinnate, occasionally the lower pair of leaflets or one of them compound; leaflets elliptic, often fairly long acuminate, somewhat hairy above, hairy on the nerves beneath, rounded at the base, side nerves parallel.
THE FLORA OF KHANDALA.

among themselves and straight or nearly so; stipules large adhering to
the petiole, easily caducous.

Flowers white or whitish; cymes pubescent, at length glabrous or
subglabrous. Lower bracts long, filiform; higher ones much smaller.
Calyx shallowly lobed, lobes rounded and gland-tipped. Petals about
twice as long as the sepals. Staminal tube divided about half way down
or a little less. Berry black, depressed-globose, not at all or only slightly
lobed.

Rather rare in the district, except on Bebran’s Plateau.

Flowers and fruits. — August to November.

Cooke; Blatter in MS. catalogue; Sedgwick 2609! Santapau 91/14 !
2834 ! 2618 ! 4722 ! 5113 ! 9139 ! 9131 ! 9156 !

Leea robusta Roxb., Hort. Beng. 18, 1814, & Fl. Ind. 1 : 655,
1832; Clarke, 164 ; King in JASB 05 : 417; C. 1 : 261; G. 240.
Leea diffusa Laws. in Hook. FBI. 1 : 667, 1875.
Leea aspera Wall., Cat. 625, 1831-1833 (non Edg.).

A shrub about 1 m. high. Leaves pinnate to tripinnate. Petioles
angled, channeled but not winged. Flowers pure white; bracts caducous.
Berry at first green, then red, at length black, lobed.

Not a common plant. I have seen it mainly on Battery Hill Plateau.

Flowers and Fruits. — August to October.

Blatt. Herb. 23590! Santapau 91/18 ! 2617 ! 2618 ! 2632 ! 2633 ! 2876 !
4577 ! 5114 ! 6997 !

& Enum. 2 : 11, 1923.

Stapylea indica Burm., Fl. Ind. 75, t. 24, f. 2, 1768.

Aquilica sambucina Linn., Mant. 2 : 211, 1771.

Leea stapylea Roxb., Hort. Beng. 18, 1814 & Fl. Ind. 1 : 658, 1832 ;
Gr. 33 ; Wight, Icon. t. 78; D. & G. 41.

Leea sambucina Willd., Sp. Pl. 1 : 1177, 1797; Clarke 139; FBI. 1 :
666 pro parte; C. 1 : 260; G. 240.

A shrub, occasionally a small tree, 1-5-6 m. high; stem up to 30
 cms. diam, at 20 cms. from the ground level; branches striate.

A very common shrub found in open country or in dense forest.
The largest specimens seen and measured were observed in secondary
forest about Forbay. The young shoots are gathered by local people
and eaten as vegetables. The large pith of the stem and branches is
often used in place of elder pith in biological laboratories. The aerial
roots mentioned by Cooke and Talbot have been observed on plants
 growing on Bebran’s Plateau but only during the rainy season.

Flowers. — February to October. Fruits. — The whole year.

Cooke; Blatt. Herb. 19611 ! 19625 ! 19650! Hallberg in MS. catalogue !
Santapau 91/12 ! 361 ! 3702 ! 3703 ! 9984 !

A shrub about 1 m. high. Leaves compound, bipinnate; petioles channelled above; leaflets purplish or vinaceous beneath when young, at length green; lateral leaflets sessile or nearly so. Stipules adnate to the petioles, up to 2 cms. long. The hairs on the leaflets have a large almost bulbous and shining red base.

Flowers 5- and 4-merous, in small compact umbellate cymes; bracts linear subulate, caducous; peduncles 2-6 cms. long, rather stout; pedicels 1 mm. long or shorter. Calyx glabrous, divided to about the middle, lobes subacute or obtuse. Corolla very pale green, almost white. Staminal tube deeply lobed almost down to the base, each lobe shallowly notched; stamina deep purple in colour.

This is a rare plant in Khandala, and to judge from the fact that there is but one sheet in Herb. Kew, very rare elsewhere too. My specimens have been compared with Clarke's type at Kew and they match perfectly.

Flowers.—June 1946. Fruit.—Not seen.
Sanatau 9152 ! 9133 !

SAPINDACEAE.

Lepisanthes Blume.


Sapindus tetraphyllus Vahl, Symb. 3 : 54, 1794; Gr. 29; D. & G. 35.


A common tree in the ravines; particularly common below St. Xavier's Villa. A poor looking tree.

Local name: Harki.

Flowers.—March to May. Fruits.—April to May.

Graham; Gemmle 21st March 1903! Blatt. Herb. 18919! 18927! 24629! 28908! 28728! 24267(2)! Sanatau 85! 83! 83/7! 8! 10! 1780! 1781! 1875! 3716! 3784! 3785! 4010! 4228! 4229!

Allophyllus Linn.

Allophyllus serratus (Roxb.) Radlk. in Pfam. 3(5): 313, 1895 & Pfreich. 562; C. 246.

Ornithopha serrata Roxb., Pl. Corom. 1 : 44, t. 61, 1795.
Schmidelia serrata Wight & Arn., Prodr. 110, 1834; Wight, Ill. 141.
Sapindus Cobbe Graham, Cat. 29, 1839.
Allophyllus Cobbe Hiern in FBI. 1: 674, 1875 (pro parte, nec Blume); C. 1: 255; Tabl. 1: 334, t. 197.

Common all over the district in low forest, especially towards the edges of the forest. In Khandala I have not noticed the climbing habit mentioned by Cooke.

Flowers.—April to August. Fruits.—July to September.


Schleichera Willd.


Pistacia oleosa Lour., Fl. Coch. 2: 615, 1790.

Schleich. trifluga Willd., Sp. Pl. 4 (2): 1096, 1805; FBI. 1: 681; Gr. 29; Wight, Ill. t. 141; D. & G. 35; C 1: 266 (excl. Sup. triflilata L.); Radlk. 874; Tabl. 1: 335, t. 198.

One of the largest trees in the district. Leaves “ox-blood Red” (Ridg. 1, k) when young, later red beneath, dark green above, at length brightly and uniformly green. Flowers greenish yellow, often on short branches. Calyx 4-merous; corolla 0. Fruit up to 18 x 12 mm., sharply pointed, often subulate with sharp prickles which are nearly as long as the diameter of the fruit or occasionally longer; the points of the prickles often break away at maturity and then the prickles seem to be blunt.

The fruits seem to be eaten by monkeys, I have not noticed the local people eating them.

One of the most conspicuous trees in St. Xavier’s ravine, the young leaves giving it a bright red colour which is distinguishable for long distances. When the tree is in flower it is visited by a large number of insects.

Local name: Kôshimb or Kôshimb.

Flowers.—March to April. Fruits.—April to June.

Woodrow; Bhide 28th May 1909; Blatt. Herb. 25329! 28427! 24265(2)! Sandvepan 83/2, 6, 10! 1963! 3772! 3773! 3774! 3775! 3773! 3774! 3775!

Sapindus Linn.

Sapindus trifoliatus Linn., Sp. Pl. 367, 1753; FBI. 1: 662; Radlk. 656.

S. laurifolius Vahl, Symb. 3: 54, 1794; Gr. 29; D. & G. 34; C. 1: 266.
A tall tree, scarcely branched below, not extensively branched above, about 15 m. high. Leaves paripinnate; leaflets somewhat leathery, pale green. Inflorescence terminal in rusty pubescent, close panicles; bisexual flowers as many as or more than male ones. Sepals 5, unequal in length, fulvous-pubescent outside, glabrous inside. Petals 4-5, pure white when fresh, dull white later on, villous on both sides, distinctly twisted to the right. Disc very hairy all over. Stamens 8; filaments villous, white; ovary hairy. Fruit not seen in Khandala.

In the whole district I have only seen a group of tall trees growing in dense forest below Echo Point. At the flowering time the trees were observed to be covered by a veritable cloud of small white butterflies.

Flowers.—November to May.
Santana 493 ! 1317 ! 1873 ! 5148 ! 5447 !

**Dodonaea Linn.**

*Dodonaea viscosa* (Linn.) Jacq., Enum. Pl. Car. 19, 1760; FBI. 1 : 657; Wight, III. t. 52; C. 1 : 269; Tbl. t. 324, t. 202; Radlk. 1863.


*Dodonaea Burmanniana* Graham, Cat. 30, 1839; D. & G. 36.

Graham, loc. cit., and Blatter are my only authorities for the inclusion of this plant. I have not seen it in the district.

Graham; Blatter in MS. catalogue.

**Blichia Koen.**

*Blichia sapida* Koenig, in Koen. & Sims, Ann. Bot. 2 : 571, t. 16-17, 1806; Gr. 30; D. & G. Suppl. 13; C. 1 : 262; Radlk. 1142, t. 32.

An introduced plant, sometimes found in cultivation. Blatter mentions it in his MS. catalogue as growing in Khandala. I have not seen it in the district.

**Anacardiaceae.**

**Mangifera Linn.**

*Mangifera indica* Linn., Sp. Pl. 300, 1753; FBI. 2 : 13; Gr. 41; D. & G. 51; Engler in DC., Monogr. Phan. 4 : 198, t. 4, f. 10-12; C. 1 : 273; Tbl. 1 : 348.

A large tree with spreading branches; the largest specimens seen measured well over 25 m. in height. Leaves in young seedlings up to
50×15 cms., usually much smaller, purplish green when young, dark green above and paler beneath when old. Flowers in dense, many-flowered panicles. Petals, when fresh, pure white with a yellow spot near the base on the inner side; in old ones the spot turns brown, the rest of the petals yellow. Trips up to 7×4×3 cms., rarely larger on wild trees; the 'stone' is very fibrous; the fleshy part of the fruit is considerable; young fruits are pickled and eaten in curries; when untreated, they taste very strongly of turpentine; ripe fruits are eaten raw, and are very pleasant, but not of good quality on account of the large 'stone' and the many fibres; they are collected and sold locally in the bazar; the fleshy part is often used in the preparation of 'Mango Poo'.

A very common tree in jungles all over the district; particularly common in St. Xavier's Ravine and in 'Mango Valley' on Kune Plateau.

Local name: Amb.

Flowers.—January to March. Fruits—March to May.
Blatter in MS. catalogue; Santapau 82/1! 3790 ! 3912 !

ANACARDIUM Linn.

Anacardium occidentale Linn., Sp. Pl. 585, 1753; FDI. 2: 29; Gr. 40; D. & G. Suppl. 18; C. 1: 274; Talb. 1: 356, t. 205.

Cultivated in Khandala; not seen wild. In the grounds of St. Xavier's Villa it flowers and fruits practically the whole year. Generally there are flowers and fruits at all stages of development at the same time. Flowers are reddish or red; fruit is either pure green or green with a touch of pink, especially on the greatly enlarged thalamus. When immature the fleshy thalamus is very acid; when ripe it is said to be very tasty.

Local name: Kaju.
Blatter in MS. catalogue; Santapau 82/2 ! 5 ! 8935 ! 8937 !

Lannea A. Rich.

Lannea grandis (Donnatt.) Engl. in Plam., Nachtr. 1: 213, 1870.
Odina Wodier Roxb., Hort. Beng. 29, 1814 & Fl. Ind. 2: 293, 1832; FDI. 2: 29; Gr. 42; Wight, Icon. t. 60; D. & G. 51; Engler in DC., Monogr. Phan. 4: 267, t. 8, f. 27-29; C. 1: 277; Talb. 1: 363, t. 207; G. 263.

Rare in Khandala; there are several fairly good specimens on the north side of Monkey Hill, but these are doubtfully wild.

Flowers.—February to March. Fruits.—March to June.
Blatter in MS. catalogue; Santapau 3898 ! 3899 ! 3900 ! 3901 ! 4307 ! 4431 ! 8883 ! 8881 ! 9033 !
Holigarna Buch.-Ham.

Semeurpus grahami Wight, Icon. t. 235, 1839; Ill. 1 : 185; D. & G. 52.

A large evergreen tree, growing up to 18 m. in height in dense forest. In six years I have only found one specimen in Meroli, where collection of specimens was very difficult on account of the many spiny climbers round its trunk.

Local name: Bibu.
Woo-drow, Flatt. Herb. 27509! Santapau 4700!

Papilionaceae.

Heylandia DC.

Heylandia latebross DC., Mem. Leg. 201, 1825; FBI. 2 : 65; Gr. 44; D. & G. 84; C. 1 : 291; G. 280.

This is one of the commonest among the Papilionaceae all over the Deccan; but it is also one of the rarest in Khandala. Neither Blatter nor McCann have found it in the neighbourhood of Khandala; I have found it on but one occasion, although careful search has been made for the purpose. It is a plant growing in districts which are much drier than Khandala.
Santapau!

Crotalaria Linn.


This is one of the commonest of the Papilionaceae in the district; it is particularly common in grass fields, especially when the grasses are not too tall.

Flowers.—September to April. Fruits.—October to April.
Hallbery in MS. catalogue; Blatt. Herb. 10169! 10499! 10572! 10990! 11127! 10268! Segdwick 6026! Santapau 102/25, 92, 96! 1025! 1256! 1299! 2966! 5065!

Crotalaria filipes Benth., var. trichophora (Baker) T. Cook, in Fl. Pres. Bomb. 1 : 293, 1902.

Crotalaria trichophora Baker in FD1. 2 : 67, 1876.

Except for the hairiness of the stems and leaves and a more luxuriant habit, this plant resembles C. filipes.
THE FLORA OF KHANDALA. 61

Flowers and Fruits. 4th November 1941.
Santapau 102/96 !

**Crotalaria vestita** Baker in FBI. 2: 67, 1876; C. 1: 293; Fruit in JABB 66: 349.

This is not easy to distinguish from other very similar species of *Crotalaria*; the following characteristics make it possible clearly to separate the species: absence of stipules, large leafy bracts, glabrous pods and number of seeds (15-20).

Specimen No. 4954 is heavily infected with fungal spots, which have been kindly identified for me by Dr. B. B. Mundkur as *Parodiella paraguayensis* Sp.)

**Flowers and Fruits.**—October to March.


**Crotalaria bifaria** Linn. f. Suppl. 322, 1781; FBI. 2: 69; Gr. 45; D. & G. 55; Wight, Icon. t. 30; C. 1: 294.

I have not seen this plant in Khandala; there are no specimens in either Blatter or Sedgwick herbaria; neither Woodrow nor Cooke mentions it as occurring in Khandala; the plant is given on the authority of Hallberg. *Hallberg* in MS. catalogue.

**Crotalaria mysorensis** Roth, Nov. Pl. Sp. 388, 1821; FBI. 2: 70; C. 1: 294; G. 295.

This is not a common herb in Khandala; it grows among grasses and generally attains a much bigger size that is mentioned by Cooke. The size and structure of the stipules, and the colour of the hairs on the inflorescence distinguish it from any other species of *Crotalaria* growing in Khandala.

**Flowers.**—September to December. **Fruits.**—October to December.

*Blatt. Herb.* 10620 | 10621 | 10651 | 10652 | 10264 | *Sedgwick* 3941 | *Santapau* 1196 | 2789 | 2790 | 2791 | 5063 | 5044 | 5221 | 7433 !


Common about Khandala; very conspicuous especially when it grows among tall grasses; under such conditions the stems are often unbranched, the leaves are large and bright green and almost bifarious, the whole plant is strictly erect.

**Flowers.**—October to December. **Fruits.**—October to April.

*Hallberg* in MS. catalogue; *Blatt. Herb.* 10091 | 10092 | 10571 | 11103 | 11107 | 10645 | *Acland* 319 | *Santapau* 1107 | 1225 | 1280 | 2948 | 2949 | 2950 | 3025 | 3030 | 3746 | 5988 !
C. punctata Graham, in Wall., Cat. no. 5401, 1831-1832.
This species has only been found on two occasions in Khandala, growing on or near the railway line. It is clearly an introduced plant in the district, the railway being the means of introduction.
Flowers.—April 1942, October 1944. Fruits.—October 1944
Santalaps 108/123 ! 5156 ! 5127 ! 5139 !

Crotalaria nana Burm., Pl. Ind. 156, t. 43, f. 2, 1753; FBI. 2: 71; D. & G. 56; C. 1: 296; G. 294.
C. umbellata Wight in Wall., Cat. No. 5383, 1831-1832; Gr. 45; D. & G. 56.

Both the branched and the unbranched varieties mentioned by Cooke occur in Khandala, though not abundantly. Stems hairy with spreading or somewhat appressed hairs. Leaves subacute or acute, apiculate with a small tuft of hairs at the tip.
Flowers small, yellow, in dense capitulate racemes.

This plant is rather noticeable on account of the type of inflorescence and of the colour of its pods.
Flowers and Fruits—September to October.
Blatt. Herb. 10262! Santalaps 1044! 5065! 5067! 5197!

Crotalaria linifolia Linn. f., Suppl. 322, 1781; FBI. 2: 72; Gr. 45; D. & G. 56; C. 1: 297; G. 294.
C. subulifera Graham, in Wall. Cat. 5429 A.

This plant has not been found by me in Khandala; it is a common herb further inland. It is included on the authority of the following:
Graham; Dalzell & Gibson; Hallberg and Blatter in their MS. catalogues.

C. Leschenaultii Graham, Cat. 14, 1839; D. & G. 54 (non DC.).

A robust shrub 0.6—3 m. high; generally the Khandala plants are from 1 m. to 1.5 m. tall but one may find plants 2 or 3 m. high especially on the plateau below Echo Point. Branches striate, appressed pubescent; the glabrous form has not been seen in Khandala. Leaves oblong-oblanceolate oblong, subacutate, obtuse or sometimes emarginate, occasionally mucronate; glabrous above, hairy with appressed hairs beneath; margins entire. Petioles very short or O. Stipules up to 4 mm. long, subulate, persistent, reflexed, hairy. Size of the leaves up to 13 × 2.5 cms.

Flowers very showy, in terminal erect racemes up to 30 cms. long. Pedicels from 2-5 to 12 mm. long. Bracts up to 5 mm. long, subulate; bracteoles 2, about half way up the pedicel, 2.5 mm. long. Corolla "Pale Lemon Yellow" to "Fiorio Yellow" (Ridg. 236-d) without any traces of purple; occasionally the nerves on the corolla show a little
tinge of purple. Pods at first green, later purplish, finally black; the style and stigma persist on the pod practically till dehiscence.

A very common plant in Khandala, especially on the plateau below Echo Point; it is in such a locality that the plant reaches its largest size. When the plants are in full bloom, they are one of the finest sights about Khandala.

Local name: Gágra, Kulkula.

Woodrow; Hallberg in MS. catalogue; Blatt. Herb. 10568 | 10589 | 11921 ! Acland 303 ! Santapan 102/10 ! 308 ! 1276 ! 1428 ! 3191 ! 5493!


Not common on this part of India; specimens in Blatter Herbarium have been collected at Pen, Karjat, Khandala, Purandhar, Poona. In Khandala solitary patches of a few plants are found scattered over a wide area.

Flowers.—October 1944. Fruits.—Not seen in Khandala.

Cooke | Woodrow; Blatt. Herb. 10658 | 10296 ! Santapan 5383! 8082!


Rare in Khandala; the fact that the only specimens were collected along the main road confirms the idea that this is but a cultivated species. Inflorescence and young leaves shine with golden silky hairs, and this renders the plant very easy of identification.

Santapan | October 1944 !

TRIGONELLA LINN.


According to Cooke, this is a very rare plant outside Sind; Woodrow has collected it at Luncwla, 3 miles away from Khandala; Blatter has also collected it at Khandala itself, but there are no specimens preserved in Blatt. Herb.; I have not seen the plant in Khandala.

Flowers.—November to March. Fruits.—November to May.

Blatter, in MS. catalogue.

MELILLOTUS Juss.

Mellilotus indica All., Fl. Pedem. 1: 508, 1785; C. 1: 305; G. 303. M. parviflora Desf., Fl. At. 2: 192, 1800; FBI. 2: 89; Gr. 46; D. & G. Suppl. 32.

A small erect herb, reaching 8-30 cms. high; flowers in very close racemes, minute, yellow or yellowish. A rare plant in Khandala, which
seems to be spreading; in Febr. 1951, this plant was seen growing rather abundantly along the old railway line near the village talao.


*Santapau 9996! 12208! 12221-12224.*

**Indigofera Linn.**

**Indigofera linifolia** Retz., Obs. 4: 29, 1780 & ibid. 6: 2, 1791; FBI. 2: 92; Gr. 46; D. & G. 58; Wight, Icon. 333; C. 1: 310; G. 309.

Common in the drier parts of the Deccan and on the Konkan plains; but very rare in Khandala proper, the nearest specimen coming from about half way down from Khandala to Kampoli along the main road.

*Blatt 1064!*

**Indigofera siandulosa** Roxb. ex Willd., Sp. Pl. 3: 1227, 1803; Roxb., Pl. Ind. 3: 372, 1832; FBI. 2: 94; D. & G. 58; Wight, Icon. 330; C. 1: 311; G. 310.

Common on the drier plains of the Deccan Plateau, but very rare in Khandala.

*Blatt. Herb. 12718(2)! 10276!*


This is about the only species of *Indigofera* that is somewhat common about Khandala; a group of plants have been observed for a number of years growing at a spot not far from the railway line. Owing probably to the dense growth of grasses in the neighbourhood, this plant seems to be practically erect; it grows in dense clumps.

This plant comes under *I. trifoliata* Linn. in Cooke's Flora; Gamble has separated *I. prostrata* Willd. from Linn's *I. trifoliata* in his Flora of Madras. Whilst writing his Flora, Gamble corrected many of the sheets in Kew Herb., even those which he himself had originally identified as *I. trifoliata.* I have followed Gamble in separating these two plants; *I. prostrata* has long and slender stems, and very thin, almost filiform pods, which are so deflexed that they are practically parallel with the stem. *I. trifoliata* has much stouter pods, and their deflexion is never so pronounced as in the former species. The general slender habit of the former and the stoutness of the latter species render them quite distinct even at first sight.

*Flowers and Fruits.*—October.

*Blatt. Herb. 10274! Santapau 1042! 5069! 5070! 5086!*

**Psoralesa Linn.**

**Psoralesa corylifolia** Linn., Sp. Pl. 764, 1753; FBI. 2: 108; Gr. 46; D. & G. 60; C. 1: 321; G. 314.
THE FLORA OF KHANDALA.

Rare in Khandala; I have not collected it from anywhere in the district. In the Blatt. Herb. there is but one specimen from Khandala. The plant is very common further inland, and the flowers are either purple or pure white. This plant is cultivated for its seeds, which are used as an article of food.

Flowers.—October 1918.
Blatt. Herb. 10251 !

Tephrosia Pers.

Tephrosia tinctoria Pers., Syn. 2: 329, 1807; FBL. 2: 111; Wight, Icon. t. 38; C. 1: 324; G. 319.

In the Khandala specimen, leaflets are only 9-11. Peduncles up to 14 cm. long, bare in the lower part, bearing 3-12 flowers at the upper end. A rare plant of which I have only seen one specimen from Khandala.
Blatt. Herb. 10251 !

Tephrosia coccinea Wall., Cat. 5633 & in Pl. As. Rar. 1: t. 60, 1830; C. 1: 324.

T. tinctoria var. coccinea Baker in FBL. 2: 112, 1876.

Leaves up to 13 cm. long; stipules subulate from a broad base, persistent. Leaflets usually 5, the terminal leaflet solitary, the lower ones opposite; the terminal leaflet up to 9 x 2-9 cm., the lower ones gradually decreasing in size downwards, the lowest being about 12 mm. long and about 5 mm. broad; all membranous; lateral nerves almost parallel among themselves, very close, slender, conspicuous. Petiole of leaf about 2-5-4 cm. long; petiolules of lateral leaflets very short, about 1-5 mm., those of the terminal leaflet slightly longer, up to 2-5 mm. Petals nearly straight, slightly curved upwards near the apex; dehiscing violently and the valves curving 4 or 5 turns.

Flowers.—October. Fruits.—October to December.
Blatt. Herb. October 1918 ! Santapau 22nd December 1943 !

Sesbania Scop.

Sesbania hispina (Jacq.) Fawcett & Rendle, Fl. Jam. 4: 24, 1920.
Aeschynomene hispina (Jacq., Icon. Pl. Rar. 3: t. 564, 1793.


A weak-stemmed plant, up to 3 m. high, sparsely branched, gregarious; it is very abundant along the railway line from the base of the Ghats up to about 10 Km. from Khandala. In December 1949 for the first time I found the plant on Battery Hill Plateau, in open ground.
This is a common herb growing in grass fields or on grassy slopes, often together with S. sensitiva, which it much resembles.

Flowers and Fruits.—August to October.

Blatt. Herb. 10094 | 11711 | 10263 | Suntapan 882 | 1305(2) | 2652 | 5253 | 7422 \\

Smithia purpurea Hook., Bot. Mag. t. 4283, 1847; PRI t. 149; D. & G. 56; C. 1: 337.

A rare plant, but conspicuous on account of the colour of its flowers. In my Field Diary for 18th October 1911 I find the following entry: "Flowers of a beautiful blue, the same colour as that of Eucalyptus pumilum; when examined in the evening, they had turned into a beautiful purple, between "Royal Purple" and "Hyacinth Violet" (Ridg. 59, 9–61, 1). Seen only one specimen in the whole of today's excursion."

The colour of the flowers is very characteristic among the Smithias; but the structure of the plant, especially the arrangement of the stamens is the typical of the genus.

Rare. Among low grasses, on Bhoma Hill.

Flowers and Fruits.—October.

Cooke: Blatt. Herb. 10243 | 10253 | Suntapan 2984 | 5108 | 5181


A very gregarious plant, very showy on account of its size and of the bright colour of its flowers. It grows generally among grasses in well-drained situations. The large patches of bright yellow colour over the Saddle towards Bhoma Hill overlooking Korinda Valley can be seen from a long distance. Among Papilionaceae, this plant is remarkable for the ease with which good specimens can be pressed for the Herbarium.

Flowers and Fruits.—September to November.

Blatt. Herb. 10096 | 10667 | 10260 | 12496 | Suntapan 1009 | 1010 | 1009 | 1006 | 1061 | 1002 | 2830 | 2832 | 5000 | 5019 | 5014 | 5193

Smithia psycantha Benth., ex Baker in FBI. 2: 150, 1876; C. 1: 333.

A rare plant in the district; I have not collected it from anywhere near Khandala. In the Blatt. Herb. there are only two specimens collected in 1918; Cooke also mentions the plant as rare.

Blatt. Herb. 10653 | 10246


The corolla is either pure yellow or yellow with two bright scarlet spots or streaks at the base of the standard on the inner side.
Fairly common among grasses during the rainy season or that immediately following the rains, or during the dry season in moist spots, Sedgwick found it in moist fallow fields "closely interwoven with Geissaspis aristata, which it resembles."

Flowers and Fruits.—March to June and September to October.


Smithia blanda var. racemosa Baker in FBI 2 : 151, 1876 ; C. I : 338.

S. racemosa Heyne ex Wall., Cat. 5670, 1831-1832 ; D. & G. 65.

Rare in Khandala ; I have seen no living specimens in the district. It is fairly common further inwards in the Deccan.

Fruits.—Oct. 1918.

Blatt. Herb. 10644 !


S. dichotoma Dalz., M.S. ex Baker in FBI 2 : 150, 1876.

An erect or semi-erect herb ; specimen no. 2782 shows several of the lower nodes giving off adventitious roots. The colour of the corolla in the Khandala specimens is very pale yellow almost white.

Not common in Khandala. Cooke, loc. cit., states that the plant is rare. This is not correct ; this herb is very common about Andheri in Salsette Island ; Sedgwick in a marginal note to his own copy of Cooke’s Flora wrote: "Very common in Kanara below the Ghats". In Khandala it is not common except on the railway line at the base of Behran’s Plateau.

Flowers and Fruits.—September to October.

Santapau 2622 ! 2781 ! 2782 ! 2783 !

ALYSICARPUS Neck.

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

Alysicarpus vaginalis (Linn.) DC., Prodr. 2 : 353, 1825 ; FBI 2 : 158 ; D. & G. 64 ; C. I : 346 ; G. 338 ; Merrill, in Enum. Phil. Leg. in Phil. Journ. Sci., Bot. 5 : 92.

Hedysarum vaginale Linn., Sp. Pl. 746, 1753.
Erect or prostrate, 20-90 cms. long, leaflets very variable in shape and size, from suborbicular or broadly ovate to oblong or oblong-lanceolate. Fruit not at all or only faintly moniliform, massed at the ends of branches. Common in Khandala.

**Flowers and Fruits.**—April to October.

*Blatt. Herb.* 10796 | 8789 | 9366 | 12689 | Santapau 102/42 | 2518 | 4167 | 4336 | 4339 |

**Alysicarpus bupleurifolius** (Linn.) DC., *Prodr.* 2: 352, 1825; *FBI.* 2: 158; *Gr.* 50; *D. & G.* 64; *C. 1:* 347; *G.* 338.


Stems profusely branched from near ground level. Pods included or slightly exerted. Not common in Khandala. I have not seen it in the living condition.

**Fruits.**—October 1918.

*Blatt. Herb.* 12695 | 12709 |

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

A rare plant, found occasionally among grasses in open country.

**Flowers.**—Not seen. **Fruits.**—October 1918, October 1943.

*Blatt. Herb.* 12696 | 50254 | Santapau 2982 | 5241 |

**Alysicarpus rugosus** (Willd.) DC., *Prodr.* 2: 353, 1825; *FBI.* 2: 169; *C. 1:* 348; *G.* 338.


The only specimen in *Blatt. Herb.*, from the district was collected in October 1918 from Khandala to Kampoli; there are no specimens from Khandala itself.

**Fruits.**—October 1918.

*Blatt. Herb.* 12688 |

**Alysicarpus rugosus** var. *judens* Baker in *FBI.* 2: 159, 1876.

This variety is not mentioned by Cooke; it was collected by Blatter, probably in October 1918, in the neighbourhood of Khandala. I have seen no other specimen from the district.

*Blatt.* 12691 |

**Alysicarpus belgaumensis** Wight, *Icon.* t. 92, 1840; *FBI.* 2: 160; *D. & G.* 65; *C. 1:* 349.

Common among grasses, very conspicuous on account of the colour of its flowers and of the shape and colour of the leaves. When the plant grows among dense, tall grasses, it attains its greatest height, and the stem is then often unbranched.

**Flowers.**—September to November. **Fruits.**—October to November.
**THE FLORA OF KHANDALA.**


**Alysicarpaceae sp.**  
**Blatt. Herb.** 12694 ! Santapau 912 ! 1040 ! These specimens are with flowers but without fruits; Blatter identified his specimen as *A. bupleurifolius*; my specimens are possibly *A. rugosus*. But in the absence of fruits, it is not easy to decide the correct species; they are definitely *Alysicarpus*.

**Desmodium Desv.**

*D. Cephalotes* var. *congestum* Prain, in JASB 66 : 389, 1898; C. 1 : 352; G. 344.

Branches appressedly hairy, very clearly trigonous. Corolla 8 mm. long, creamy white in colour. Leaflets acuminate.

Cook, loc. cit., gives the colour of the corolla as red, and that of *D. umbellatum* as white. It would seem, therefore, as if the identification of the specimen from Khandala had been wrongly given by Blatter. His specimen, however, shows the characteristic acuminate leaflets and trigonous stems, both of which are typical of *D. triangulare var. congestum* (*D. Cephalotes var. congestum*); the colour of the corolla was noted as white by Blatter at the time of collection. There is no doubt, then, that the colour of the flowers of *D. triangulare var. congestum* is at least occasionally white.

**Rare in Khandala.** I have not found it in the district. The nearest spot where I have found it is along the Ulhas river at Karjat, about 30 Kms. from Khandala; it is to be noted, however, that the river Ulhas is the continuation of the stream that passes through Kune Plateau and St. Mary’s Ravine in Khandala.

**Flowers.—**September 1918.  
**Fruits.—**Not seen in Khandala.

**Blatt. Herb.** 12492 ! 12494 !

**Desmodium lanillorum** DC. in Ann. Sci. Nat. 4 : 100, 1825, & Prodr. 2 : 335, 1825; FRI 2 : 164 ; C 1 : 363

*D. recurvatum* Wall., Cat. 5717, 1831-1832, Gr. 49; Wight, Icon. t. 274.

This is a common plant in the ravines by the sides of paths. The distinguishing characters of this *Desmodium* are the narrow, long, straight or falcate pods with their hooked hairs; when walking through the ravines, one may easily get covered with the segments of the pods of this plant, and it is not easy to remove them from one’s clothing or person.
The size of the terminal leaflet is up to 15 x 7.5 cms., that of the lateral ones up to 11.5 x 5 cms.; the terminal leaflet is regular at the base; the lateral ones are conspicuously unequal-sided and oblique at the base.

Standard white or whitish; wings lilac or even pure blue. Pods very thin, long, easily separating at the joints.

**Flowers and Fruits.**—September to November.

**Blatt. Herb.** 1061! 1088! 10829! Aceland 328! Santapau 102/100! 1045! 1069! 1095! 2847! 45!

**Desmodium polycarpum** (Poitev.) DC., Prodr. 2: 334, 1825; FBI. 2: 171; Gr. 49; D. & G. 69; Wight, Icon. t. 404; G. 1: 354.

**Hedysarum polycarpum** Poiret, Encycl. 6: 419, 1804.

Stipules very persistent. Colour of corolla purple or purplish-blue.

This a conspicuous plant on account of its massed fruits; when dry, the pods easily break into separate pieces at the joints, and the segments are practically square, at least those in the middle of the pod.

**Flowers.**—September to October. **Fruits.**—October to November.

**Blatt. Herb.** 12690! 19278! 10267! Santapau 4957! 5461!

**Desmodium trirafurcum** (Linn.) DC., Prodr. 2: 334, 1825; FBI. 2: 173; Gr. 49; D. & G. 67; G. 1: 352; Wight, Icon. t. 292.

**Hedysarum trifurcum** Linn., Sp. Pl. 749, 1753.

A common herb particularly in waste lands, where either the grass does not grow or is so grazed upon by cattle and goats that it never reaches any considerable height. With its branches spreading in all directions from the stem, and its leaves being flat on the ground, this is a pretty little herb; its flowers are so minute that they can scarcely be seen unless carefully sought for; the fruit is even more "invisible", on account of its small size and its being covered by the leaves.

**Flowers.**—March to November. **Fruits.**—March to June and October to November.


**Desmodium triquetrum** (Linn.) DC., Prodr. 2: 326, 1825; FBI. 2: 163 (excl. syn. D. auric., D. pseudot., & D. alat.); Gr. 49; D. & G. 66; G. 1: 355; G. 345; Merrill, Enum. Phil. Leg., loc. cit. 86.

**Hedysarum triquetrum** Linn., Sp. Pl. 746, 1753.

A very distinct species on account of the winging of the podde and of the broad pods. It is common among grasses in open grass lands, and by the sides of paths in forest clearings.

**Flowers and Fruits.** October to December, occasional during the hot season in forest clearings.

Desmodium gangeticum (Linn.) DC., Prodr. 2 : 327, 1825; FBI. 2 : 165; Gr. 49; D. & G. 66; C. 1 : 556; G. 345.

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

An undershrub, up to 1 m. high; stems and branches striate. Leaflets up to 20 x 0.5 cm., petioles up to 2.5 cm. long. Corolla purplish-pink or violet, sometimes white; perhaps the difference in colour is due to the age of the flowers, but this I have not been able to prove satisfactorily. Pods deep brown-purple.

Fairly common by the sides of paths in dense forests. The shape of the pods and of their joints is characteristic.

Flowers and Fruits.—October to December, occasionally during the hot season in dense forest.

Local name: Leuchi.

Blatt. Herb. 1116! Santapau 102/103! 1194!


Hedysarum reniforme Linn., Syst. Nat. (ed. 10) 2 : 1169, 1759.

H. reniforme Linn., Sp. Pl. (ed. 2) 1051, 1763.

Desmodium reniforme DC., Prodr. 2 : 327, 1825; FBI. 2 : 173; D. & G. 67; C. 1 : 357.

Cooke gives the plant as occurring in the Presidency on the authority of Dalzell and Gibson, but as the plant has not been found by any subsequent collector, and there are no specimens at Kew from Bombay, its existence in this part of the country is considered very doubtful.

The specimen mentioned below seems to belong to the present species. From its flowers it is clearly a Desmodium; its leaves are unifoliate, broader than long, slightly emarginate; the petioles, however, are slightly hairy just below the leaf blade, and the calyx teeth are not triangular but subulate, very hairy and ciliate and about three times as long as the calyx tube. On this last characteristic, the plant may perhaps be a specimen of Desmodium parviflorum, or an intermediate species. Absence of fruit renders complete identification impossible.

Hallberg in MS. catalogue; Santapau 1074?

Desmodium rotundifolium Baker, in FBI. 2 : 172, 1876 (non Wall.); C. 1 : 357.

At first sight this plant might be confused with D. parviflorum; the colour of the corolla, the shape and size of the calyx and the pod are about the same in both species. It is easily distinguished by the leaves, which in the present species are rounded or orbicular and simple, from D. reniforme it is distinguished by the shape of the leaves and by the size and shape of the calyx teeth.

Rare in Khandala.

Flowers and Fruits.—March 1917, October 1918.

Blatt. Herb. 11956! 12699! 12699(2)!
Desmodium parviflorum (Dalz.) Baker in FBI. 2: 172, 1876; C. 1: 368.

Cooke mentions that this species is a connecting link between the two genera Alysicarpus and Desmodium. Dalzell placed it in the genus Alysicarpus; Blatter and myself have had no slight difficulty in identifying the plant as a Desmodium and not as an Alysicarpus.

Flowers and Fruits.—July to October.
Blatt. Herb. 12701 | 8822 | 28589 | 12700 | 12702 | 12704 | 12705 | 12706 | 12708 | Santapau 1939 | 2983 | 7487 !

Teramnus Sw.

Glycine labialis Linn. f., Suppl. 325, 1781; D. & G. 68; Wight, Icon. i. 156.


Petioles up to 7·5 cms. long; terminal leaflet up to 10 × 3·5 cms, the lateral leaflets slightly smaller.

The colour of the corolla seems to vary considerably, and probably is dependent on the age of the flower; sometimes it is reddish, or it may be bluish purple, or deep violet, all these colours being present at the same time on different flowers but the same inflorescence.

Common, especially in deep forest, under the shade of tall trees; the thin and long stems, with long internodes, the variation in the colour of the flowers and the recurved and stout, upward bent beak of the pod are characteristic.

Flowers.—October to November. Fruits.—October to November, persisting throughout the dry season.

Blatt. Herb. 11133 | 10260 | 10598 | 10631 | 10292 | 28458 | Santapau 1380 | 2875 | 3033 | 3014 | 4243 | 4244 | 4245 !

Mucuna Adams.

Mucuna prurita Hook., Bot. Misc. 2: 348, 1830-1831; Gr. 53; D. & G. 70; G. 356.

M. pruriens Baker in FBI. 2: 187, 1876; C. 1: 365 (non DC. 1825).

The colour of the corolla is purple, almost black, i.e. “Aster Purple” to “Dahlia Purple” (Ridg. 67, i-k). The fruit in its young stages is almost straight; with age it bends so as to form almost a perfect S.

Except for Kune and Battery Hill Plateaux, this plant is not common about Khondala. The irritation caused by the fine bristles on the pods
is very intense, and may last for several hours; handling of this plant requires great care, as the stinging hairs come off readily and may spoil the whole of a day's collection. I have found application of Ammonia considerably to reduce the burning sensation produced by this plant.

***Flowers.***—October to January. ***Fruits.***—October to March.

*Cook.*: Blatter in MS. catalogue; *Santapau* 1294 | 2962 | 1388 | 5460 | 5505!

**ERYTHRINA Linn.**


*E. indica* Lamk., Encycl. 2: 391, 1786; FRI. 2: 788; Gr. 54; D. & G. 70; C. 1: 366; G. 533.

Graham, loc. cit. states that this tree "grows common throughout the Concans"; Talbot, For. Fl. 1: 401, 1909, mentions that it grows "in the deciduous forest of the Konkan and North Kanara, probably an escape from plantations." In several years of intensive search through the district of Khandala I have been unsuccessful in finding the tree except in a garden near the Railway station. It is, then, a rare tree in Khandala; in Bombay and Salsette Islands it is about the commonest species of the genus *Erythrina*.

***Flowers.***—February 1946, 1951.

*Santapau* 8698!

*Erythrina stricta* Roxb., Hort. Beng. 53, 1814, & Fl. Ind. 3: 251, 1832; Wight & Arn., Prodr. 260, 1834; Gr. 54; D. & G. 70; C. 1: 367; G. 334.

Small or middle-sized tree; the following notes are extracted from my Field Diary for 17 March 1944:

"Calyx split down one side, the tip of the calyx entire. Colour of the flowers "Scarlet" (Ridg. 5). Flowers full of water; pedicels come out from all sides on the peduncle, but buds turn upwards, so that the inflorescence seems to be one-sided on the peduncle. Plenty of birds about the tree, which at present is leafless. Standard up to 46 mm. long, 25 mm. broad; keel 23 × 18 mm., greenish with strong parallel or fan-like venation; wings 5 × 2.5 mm. of the same colour as the keel (measurements taken from the top of the calyx cup after the removal of the limb). Stamens 10 in number, 9 + 1 in arrangement, alternating long and short, the two stamens united to the rest by about half its length; stamens about 41.5 and 36 mm. long, forming a tube in the lower quarter of their length, then opening out like a hand or spatula. Style incurved, as long as the longer stamens, greenish, tomentose. Colour of the filaments same as that of the standard, but slightly paler; anthers
greenish yellow, small. Standard with strong, whitish nerves, about 25 in number."

A very common tree in Khandala, in open country or in dense jungle; usually the tree stands out very clearly on account of its flowers which are of a much deeper red colour than those of Salvia malabarica, or S. insignis or Bryophyllum colorata. In young specimens, the size of the leaflets is considerably larger than is mentioned by Cooke. Collection of flowers from these trees is difficult on account of the stem prickles and the soft nature of the wood.

Local name: Pāngara.

Flowers.—January to May. Fruits.—March to May.

Santapau 590 ! 1660 ! 1720 ! 1920 ! 3332 !

Butea Roxb.

*Butea parviflora* Roxb., Hort. Beng. 53, 1814, & Fl. Ind. 3 : 245, 1822 ; DC., Prodr 2 : 415, 1825 ; Gr. 54 ; D. & G. 71 ; Wight, Icon. t. 210 ; Blatter in JIB. 8 : 137.


One of the largest climbers in the district ; stem as thick as a man’s body, climbing over the tops of some of the highest trees, and fluted all along the lower parts.

When the plant is in flower it is quite clearly distinct from any other plant in the district ; when in fruit, it might be mistaken for *B. monosperma* except that in the latter pods are bigger, more greenish-yellowish and the calyx is larger. In the district around Khandala this plant attains much bigger size than any other *Buteas*.

Flowers.—October to March. Fruits.—December to March.


*Butea monosperma* (Lamk.) O. Kuntze, Rev. Gen. Pl. 909, 1891 ; Blatter, loc. ult. cit., 134.

*Bryophyllum monosperma* Lamk., Encycl. 1 : 391, 1783.

*Butea fremonti* Koenig ex Roxb., in As. Res. 3 : 489, 1792 ; id. in Pl. Cor. 1 : 21, t. 21, 1795 ; FBL. 2 : 194 ; Gr. 54 ; D. & G. 71 ; C. 1 : 371 ; G. 357.

Common; when it is in full bloom, it is a passably good sight; but at any other time it looks poor, except perhaps when the young velvety leaves come out. Insects seem to have a particular liking for the seeds of this tree, and hence it becomes somewhat difficult to secure good herbarium specimens when the fruit has reached maturity. The gum is not collected in Khandala.

Local name: Pallas.
Flowers. December to March. Fruits. February to April, occasionally to June.

*Butes superba* Roxb., Pl. Cor. 1: 23, t. 22, 1795 & Fl. Ind. 3: 247, 1832; FBI. 2: 185; Gr. 54; D. & G. 71; C. 1: 372; Prain in Kew Bull. 1908: 305; Blatter 135.

A very large climber, going over the tops of high trees in dense jungle. The main difference between this species and *B. monosperma* is its climbing habit.

This is not common in Khandala; I know of but two groups of this plant, one in S. Xavier's Ravine, the other in dense jungle below Duke's Nose. For a number of years, I have been watching them both, and have been unable to find any flowers; only on one occasion did I find the remains of the fruit on the ground, the seeds being all eaten away by insects as mentioned for the preceding species. The group of plants below Duke's Nose I have watched more carefully, as the plants are not so tall and therefore specimens can be easily collected; unfortunately I have seen nothing but leaves in nearly ten years of observation.

*Local name*: Pallasuval, or Pallas vel.


*Santapa* 3992!

**Canavalia DC.**

*Canavalia decumbens* Dunal. in D. & G. 69, 1851; C. 1: 372; Chatterjee in JIB. 28: 93.

From the description given by Dalzell it is impossible to determine with certainty the actual identity of the plant; Chatterjee is of opinion that it may be *C. microcarpa* Phip., or *C. viosa* Wt. & Arn.; Chak remarks that this plant is very rare; I have not seen it in Khandala; Blatter recorded it for Khandala, but left no herbarium specimen in his herbarium; there are no specimens in Sedgwick or Acland herbaria.

*Krishna* "Hills near Lonoli"; Blatter in MS. catalogue.

*Canavalia gladiata* (Jacq.) DC., Prodr. 2: 404, 1823; Gr. 52; D. & G. Suppl. 29.


*Canavalia ensiformis* Baker in FBI. 2: 195, 1876, et alior, auct. (non DC, non *Delichos ensiformis* Linn.).

The whole of this plant is often covered with red ants, which make collection rather dangerous. Such ants seem to attack flowers and young fruits, so that the number of fruits reaching maturity is very small indeed in comparison with the number of flowers produced. The seeds are used locally as an article of food.
There is, to my knowledge, but one large plant in the neighbourhood of a small Kaskari village, on Battery Hill Plateau, at a spot locally known as "New Number." The plant may have escaped from cultivation.


*Santapau 5501 | 5827 |

**Pueraria DC.**

*Pueraria tuberosa* (Roxb.) DC., Prodr. 2: 240, 1825; FDI. 2: 197; D. & G. 67; Wight, Icon. t. 412; C. 1: 374.


Abundant along the stream passing through Kuno Plateau; elsewhere very rare. The young stems are very attractive with their bluish bloom and long internodes. The pods are said to cause almost as much irritation as those of *Macuna pruriens*, but I have not experienced this personally.

*Flowers.*—March. *Fruits.*—March to April.

*Santapau 3799-3809 | 4077 | 4078 |

**Phaseolus Linn.**


*Phaseolus grandis* Dalz. in D. & G. 73, 1861; FDI. 2: 202; C. 1: 375 (non Wall., nec Benth.).

The name *Phaseolus grandis* was first used by Wallich, Cat. 5692, and by Benth., in MIq., Pl. Jungh. 239, in note, 1852 for quite a different plant. Dalzell's name, therefore, is a later homonym and according to the Rules, an illegitimate one. I have called it *Ph. khandalensis* to commemorate the fact that this, so-called rare plant, is abundant in Khandala.

The seed is eaten by the Katkarias in times of scarcity, but the quality is poor.

This plant is very abundant along the banks of Kuno stream, and on the top and slopes of Bhoma Hill; at Purandhar, Poona Dt., it is one of the most abundant plants along the northern slopes of the Fort. The plant may be said to be restricted in its occurrence, but abundant wherever it occurs.

*Flowers and Fruits.* October to November (in Purandhar up to the end of December).

_Bhat. Herb. 10131 | Santapau 1285 | 1286 | 2895-2901 | 3039 | 3040 | 3041 | 5163-5191 | 5210 |

Ph. pauciflorus Dalz. in Kew Journ. Bot. 3: 209, 1851; FBI. 2: 202; D. & G. 72 (non Benth., 1840).

This plant is very similar to Ph. radiatus Linn. (=Ph. sublobatus Roxb.) but differs in the following characters: (a) It is glabrous all over, including the pods; (b) Occasionally the leaflets show some tendency to lobing, the lobes being very shallow, but quite distinct.

Not common about Khandala. The absence of hairs on stems, leaves and fruits makes it quite a distinct plant among the Phaseoli.

Flowers and Fruits.—April to May and October.

Sedgwick 7176 ! Santapau 4150 ! 5233 ! 5261 !


Ph. sublobatus Roxb., Hort. Beng. 54, 1814 & Fl. Ind. 3: 288, 1832; Ppain in JASB. 66: 423; C. 1: 377.

Ph. triflorus Hayne in Wall., Cat. 5603, 1831-1832; Gr. 51, 1839; FBI. 2: 203; D. & G. 71.

In the young stages, this herb is erect or suberect; then, when it grows a little in length and meets some support, it turns into a climber. Leaves trifoliolate; petioles up to 15 cms. long. In Khandala I have found two different kinds of leaflets: (a) Ovate or rhomboid-ovate leaflets, reaching in size up to 9-5 × 7-5 cms.; (b) Lanceolate leaflets, reaching 11-5 × 2-5 cms.; all leaflets acuminate or at least acute, the terminal one equal-sided and generally larger than the laterals; the latter unequal sided, the lower side being nearly half as large again as the upper side. Stipels very conspicuous, persistent, subulate, spreading at right angles to the petioles. Pulvinus and petioles up to 12 mm. long together; peduncles up to 16 mm. long; bracts 6-8 mm., bracteoles up to 15 mm. long.

Flowers of a pale yellow; pods cylindric or nearly so, with the sutures slightly thickened, very hairy. Corolla up to 18 mm. diam.

One of the commonest species of Papilionaceae in Khandala; very abundant along edges of grass fields, by paths in the forest, etc. The seeds are eaten by the Katakars in times of scarcity, but they are said to be of inferior quality.

Local name: Burro or Boro.

Flowers.—August to November. Fruits.—September to December, occasionally also during March and June.


Ph. Mungo auctorum, non Linn.

Ph. radiatus auctorum, non Linn.
Sterna suberect or flexuose, but not twining.

Fairly common along the railway line, especially at the base of Behran’s Plateau. Probably an escape from cultivation, or the seeds may have fallen from some passing train. I have not seen the plant anywhere else in the district.

**Flowers.**—August 1942 and 1945. **Fruits.**—July 1943.

**Blatt. October 1918! Santapau 716 ! 2251 ! 6948 !**

**Phaseolus aconitifolius** Jacq., Obs. 3 : 2, t. 52, 1768 ; FBI. 2 : 202 ; Gr. 52 ; C. 1 : 378 ; Q. 363 ; Piper, loc. cit. 28, t. 7, f. 5.

Only seen along the railway line, where it grows abundantly, even in the midst of ballast stones; under such conditions the plant is invariably erect. When it grows by the side of the line among grasses, it assumes the climbing or twining habit.

**Flowers and Fruits.**—October to November.

**Blatt. Herb. 12379 ! Santapau 748 ! 2211 ! 3078 ! 7417 ! 7418 !**

**VIGNA Savi.**

**Vigna cuspensis** Walp., in Linnacea 13 : 583, 1839 ; C. 1 : 279.


**Phaseolus sapharius** Dalz. in Kew Journ. Bot. 2 : 22, 1851.

About the middle of the rainy season, this is one of the commonest plants in flower; the fruits, too, can be seen for a long time clustered at the end of long peduncles. The Katakars and Marathas eat the seeds. The flowers very nearly resemble those of the Sweet Pea of our gardens, but they have no perceptible scent.

**Flowers and Fruits.**—September to November.

**Santapau 102/53 ! 631 ! 927 ! 1174 ! 2643 ! 2752 ! 2753 ! 4076 !**

**Vigna sinensis** (Linn.) Savi, ex Hashek, Cat. Hort. Bogor. 279, 1844 ; Merrill, Enum. 2 : 32.

**Dolichos sinensis** Linn., Cent. Pl. 2 : 28, 1756.


This is a new record for the Presidency.

Annual, erect (in Khandala) or suberect or twining; stipules attached above their base which project downwards for about 1/4 of their lengths. Leaflets membranous, up to 6-5 × 5 cms. ; petioles up to 8 cm. long, prolonged for 12 mm. after the insertion of the lateral leaflets. Flowers axillary, peduncles up to 7 mm. long, pedicels very short or 0. Corolla purplish in colour, about 2-5 cms. diam. Pods softly tomentose in the young stages.

Only found on one occasion along the railway line.
Flowers and Fruits.—October 1944.
Santapau 50721

CLITORIA LINN.


This is a conspicuous plant in Khandala; there is no other Papilionaceae plant with such a colour on the corolla, or with the pair of deflexed flowers or fruits. It is fairly abundant along the railway line at the foot of Behran’s Plateau; it generally grows among grasses by the side of the line; on one or two occasions I have seen it growing among the ballast stones of the railway line.

Flowers.—July to October. Fruits.—August to October.
Santapau 102/47 1043 2245 2624 2650 4765

DOLICHOS LINN.

Dolichos bracteatus Baker in FBL. 2: 210, 1876; C. 1: 381.

A fairly large perennial climber; stamens tetra, smooth, glabrous or with a few hairs. Leaves trifoliolate; stipules up to 12 x 8 mm., parallel-veined; petioles up to 20 cms. long, channelled above, pubescent when young, nearly but not quite glabrous later on; pulvinus at the base of the petiole conspicuous. Leaflets up to 18 x 16 cms., the terminal one equal-sided, the rest distinctively unequal-sided; leaflets all ovate, cuneate, acuminate; petiolules up to 6 mm. long, channelled, hairy; stipels up to 12 x 3 mm.; subulate, persistent; all leaflets strongly 3-nerved at the base, with about 4-5 pairs of nerves higher up on the blade.

Flowers in racemes up to 20 cms. long; pedicels very long, in some specimens reaching 33 cms. in length (excluding the raceme in the upper part of the peduncle), pubescent; pedicels 12-18 mm. long. The number of flowers in a raceme is generally small, as the lower flowers fall off before the upper ones open; in all there may be about 25 flowers in a raceme.

Corolla up to 6 x 3 cms. in diam.; colour of corolla is “Hortense Violet” (Ridg. 61, b); occasionally some plants have pure white flowers in some of their branches, other branches on the same plant bearing violet flowers. Standard broader than long, emarginate or almost 2-lobed, the division or lobing reaching about 1/4 of the total length of the standard. Style filiform below, broadening upwards into a very broad, triangular stigma, which is generally lateral with a strong line of hairs on one side; the broad end of the style, and therefore the stigmatic surface, is on some good specimens 6 mm. broad, but thin. Pods up to 16 cms. long, nearly 1.2 cms. broad, flattened, slightly recurved.
This is one of the finest flowers in Khandala. It is not a common plant, but I have found two groups of them on top of Bhoma Hill; the Katkaris eat the pods (when fresh as a vegetable, later on they use the seeds); one of the groups was of easy access, and in consequence was destroyed by Katkaris during the fruiting season of 1944.

In the past few years I have collected the plant from Purandhar Hill, Poona Dt., where it has been growing fairly abundantly on the South slopes of the upper fort.

*Flowers.*—August to October. *Fruits.*—October to November.

Sedgwick 7944 | Santapau 1145-1148 | 2821-2823 | 5007-5009 | 5169-5173 | 5192-5290


**D. uniflorus** Lamk., Encycl. 2: 299, 1786; Gr. 52; D. & G., Suppl. 23.

**Johnia congoeca** Dalz. & Gibbs., Dom. Pl. 69, & Suppl. 29, 1861.

Freet or suberect, with long branches which tend to become scandent if near support.

Corolla pale yellow; style filiform, bearded just below the stigma, but “beard” not decurrent down into the style; pods flat, somewhat falcate. Generally flowers appear in pairs in the axils of leaves, each flower being borne on a short pedicel, but there is no common peduncle. I have found this plant only along the railway line, and this on but one occasion.

*Flowers and Fruits.*—November 1943.

Santapau 3082 | 3083


This is a new record for the Presidency; its occurrence is not mentioned by Cooke, nor by any of the earlier floras. I have found this plant growing in Khandala and at Purandhar Hill, Poona Dt.

A climbing herb. Stems very slender, glabrous. Leaves trifoliolate; petiole up to 11 cms. long; stipules basifixed, lanceolate. Leaflets entire, about as broad as long, up to 7-5 cms., acute or acuminate, the terminal leaflet equal-sided at the base, the lateral ones distinctly unequal-sided, all 3-nerved from the base, with two or three pairs of nerves higher up. Peduncles about 2-5 cms., slender, axillary.

Corolla about 18 mm. in diam.; Baker gives the colour of the flowers as yellow; Gamble gives it as lilac or pink; my observations agree with those of Gamble, my Khandala plants all showing pink or lilac flowers. Corolla strongly nerved with parallel nerves. Stamens diadelphous, anthers uniform; style thin, filiform, bearded just below the stigma, but not along the inner edge; stigma terminal, small, greenish, somewhat peltate. Pods up to 8 cms. long, 1-2 cms. broad, more or less recurved, flattened; seeds about 8, reniform, brownish. After dehiscence the valves twist conspicuously in opposite directions; the pods are tipped with the remains of the style.
Not common in Khandala; but the localities where the plant has been found suggest that the plant is native in the district, being as they are far away from the main road or railway line.

*Flowers and Fruits.*—October 1943, 1944.

*Cassava* 9909-9909 | 5924-5939 | 10404-10404

**Dolichos lablab** Linn., Sp. Pl. 725, 1753; FBI. 2: 209; G. 36.

*Lablab vulgaris* Savi, Diss. 19, 1821 & Obs. Phan. & Del. 19, 1822; Gr. 52; D. & G. Suppl. 23.

A rare plant in Khandala; in the Blatter Herb. there is but one specimen from Khandala; I have not seen the plant growing in the district, either wild or cultivated.

*Flowers and Fruits.*—November 1916.

*Blatter* 12570.

**Atylosia Wight & Arn.**


A very common plant in grass fields and elsewhere; it is conspicuous on account of its erect, unbranched (or very sparingly branched) habit and the form of its leaves; fresh or dry plants can be seen throughout the year, the dry stems (occasionally with fruits still on) remain aloft in places from which practically every other form of vegetation has disappeared during the dry season.

*Local name*: Ran Tur or Rantur.

*Flowers.*—September to December, occasionally during the hot season.

*Fruits.*—October to January, but undehisced fruits may be seen until May.

*Blatt. Herb.* 10925 | 10926 | 10927 | 10928 | 11128 | 11927 | 11102 | 10929 | 10921 | 10922 | 10923 | Acland 348 | *Santacruzi* 102/16, 96 | 1341 | 1221 | 1243 | 1342 | 2980 | 3134 | 4037 | 5195 | 5195


*Caesalpinia lineata* Graham, in Wall., Cat. 5578, 1831-1832.

*Glycine lineata* Heyne in Wall., Cat. 5578, 1831-1832.

*Atylosia Lunata* Wight, Icon. t. 93, 1893; Gr. 63; D. & G. 74.

Common and abundant on top and upper slopes of Bhma Hill, not seen elsewhere in the district. It is generally more branched than the preceding species, and the lower part of the stem and branches are often bare of leaves.


*Blatt. Herb.* 10929 | 10930 | Hallberg in MS. catalogue; *Santacruzi* 3132 | 3133 | 4240 | 4241 | 4491 | 5874 | 5875 | 5876
**CYLISTA Ait.**


Calyx white, scarious, strongly nerved; corollas yellow.

One of the commonest plants about Khandala during the December-February season; it is a good climber, overtopping many of the shrubs and trees in the forest, and very conspicuous on account of its white calyces. Some parts of the forest, like the slopes of Echo Point, seem to turn almost white when this plant comes into flower.

*Local name*: Gaura.

*Flowers.*—December to April. *Fruits.*—February to April.

Sabapau 102/19, 108|1435|1844|3576|3717|8777|8773

**MOGHANIA St. Hil.**


*Flemingia strobilifera* R. Br. ex Ait., Hort. Kew. (ed. 2) 4 : 350, 1812 ; FBI. 2 : 227 (excl. vars.) ; Gr. 51 ; D. & G. 75 ; C. 1 : 390 ; G. 371.

An erect, much-branched shrub, reaching 4-8 m. high.

Common all over the district, in dense forest, in clearings towards the edges, or in open country. The persistent large bracts are the most conspicuous part of the plant. There seem to be plenty of insects attacking the fruits of the plant, so that in general it is rather difficult to obtain whole fruits.

*Flowers.*—December to March. *Fruits.*—March to May.

Hutten in Ms. catalogue, *Blatt Herb., 1039|11149|11355|1505|1431|1506|1727|3588|3795|3796|5780|5782|6055|6668|8659|8660|

*Moghania gracilis* Mukerjee, spec. nov.

Nova haec species *M. nilgeriensis* inter et *M. tuberosum* media est; a priori differt foliis sparse pubescentibus et remotis, petiolis longioribus, stipulis minutiis atque caducis, calyce lobis minoribus; a *M. tuberosa* vero foliis minoribus, capitulis flororum pluribus, calyce minore et corolla majore atque exserta inter alia recedit.

Typus lectus est a cl. Bell in loco Castle Rock, in montibus Western Ghats, altit. 700 m., mense septembris anni 1918 (Bell No. 4347) et positus in Herb. Calcuttensi; paratypus lectus a H. Santapau, in loco Khandala, in ima parte collis Echo Point, die 14. septembris anni 1942 (Santapau No. 949) et positus in Blatter Herb., Bombay.

Trailing herb with slender strigose stems. Leaves digitately 3-foliolate; petiole 1-5-3-5 cms. long, densely strigose; stipules caducous,
DALEBERGIA LINN. f.

**Dalbergia latifolia** Roxb., Pl. Cor. 2 : 7, t. 113, 1798 ; Fl. Ind. 3 : 221, 1832 ; Wight, Icon., t. 1196 ; Gr. 55 ; D. & G. 77 ; Prain in ABGC. 10(1) : 80 t. 62 ; C. 1 : 396.

A small tree scarcely reaching 9 m. high in Khandala. Leaves imparipinnate; on the 19th August 1944 I found a young shrub or seedling up to 3 m. high, with very large leaves. In normal plants the whole leaf, including the petiole, may reach up to 30 cms. long, the leaflets 15 x 11-5 cms.; generally, however, the leaves and leaflets are smaller, as stated by Cooke.

Corolla pure white, or creamy white; calyx white.

Fairy common in Khandala; it grows in open country or at the edges of the forest; I have seen no specimen growing in dense forest.

Local name: Sissu.

**Flowers and Fruits.**—March to April.

**Blatt. Herb.** 10247 ! 10642 ! Santapau 102/18 ! 1699 ! 3977 ! 3978 ! 3979 ! 4036 ! 4698 ! 8786 ! 8787 !

**Dalbergia sympatthetcus** Nimmo ex Graham, Cat. 55, 1839 ; FBI. 2 : 234 ; D. & G. 78 ; C. 1 : 398.

*D. multiflora* Hayne, ex Wall., Cat. sub 5848, 1832 (nom. nud.) ; Prain 43, t. 18, 1904.

A common climber in Khandala; when the plant meets support, it becomes a climber; if there is no such support, it is an erect plant with long branches. The main points separating this species from *D. volubilis* Roxb. are the arrangement of the stamens (10, and not 5 + 5) and
the pubescence of the leaflets ; the colour of the corolla, when present, may also serve as a distinguishing character.

Local name : Lokhandil.

Flowers.—November to April. Fruits.—December to August.

Woodrow; Gummic 16109 ! Blatter 11120 ! 11131 ! Santapau 102/93, 97 ! 1429 ! 1473 ! 1508 ! 1509 ! 1353 ! 1398 ! 2070 ! 3203 ! 2594 ! 5791 !
5857 ! 8087 !

Dalbergia lanceolata Linn. f., Suppl. 316, 1781 ; FBI. 2 : 233 ; D. & G. 78 ; C. 1 : 399 ; Prain, loc. cit. 93, t. 76.

D. frondosa Roxb., Hort. Beng. 53, 1814 & Fl : Ind. 3 : 236, 1832 ;
Wight & Arn., Prodr. 265.

Rare in Khandala ; up to April 1948, I have been able to find only one specimen in the whole district.

Flowers.—April to June. Fruits.—June to October.

Santapau 2070 ! 4251-4256 ! 4415 ! 4416 ! 8814 ! 8915 ! 8916 !

Dalbergia volubilis Roxb., Pl. Corom. 2 : 43, t. 191, 1798 ; FBI. 2 : 235 ; Gr. 55 ; D. & G. 78 ; C. 1 : 400 ; Prain, loc. cit. 109, t. 85.

A large woody climber, with typical spiral hooks on the branches. Flowers in axillary and terminal panicles ; corolla bluish or purplish ; stamens in two bundles of 5 each.

Common in Khandala ; it is easily confused with D. sympattherica Nimmo from which it can be distinguished by the glabrous apiculate leaflets, and the arrangement of the stamens.

Flowers and Fruits.—December to April.

Dalzell and Gibson, loc. cit. ; Woodrow ; Blatt. Herb. 23472 ! Santapau 102/118 ! 1472 ! 3574 ! 3575 ! 3842 ! 3843 ! 3844 !

Pterocarpus Linn.

Pterocarpus marsupium Roxb., Pl. Corom. 2 : 9, t. 116, 1798,
var. acuminata Prain, in JAB. 68 : 455, 1898 ; C. 1 : 402.

P. Marsupium Graham 56, 1839 ; D. & G. 76 (non Roxb.).

In nearly ten years I have only found one specimen of this tree, on the south side of St. Xavier’s Villa ; I kept the tree under observation but failed to see when it comes into flower or fruit.

Leaflets are distinctly acuminated, the acumination reaching 12-18 mm. in length, and ending up suddenly in a blunt point.

Santapau 4517 ! 4518 !

Pongamia Vent.

Cytinus pinnatus Linn., Sp. Pl. 741, 1753.

Pongamia glabra Vent., Jard. Malm. 28, 1803 ; FBl. 2 : 240 ; Gr. 55 ; D. & G. 77 ; Wight, Icon. t. 59 ; C. 1 : 402.

In open country this tree reaches a height of 12-15 m. ; in the dense forest of Merofi I have found specimens over 31 m. high.

Flowers in racemes which are up to 20 cms. long.

The following variations in the colour of the corolla have been noted in Khandala : (a) all the petals pure white, or at most, creamy white ; (b) all the petals white with a touch of lilac on the wings ; (c) standard and wings pale lilac or violet, the keel white ; (d) the whole flower of a deep reddish purple. These colour variations do not seem to depend on the age of the flowers, though these generally pale down with age ; generally all the flowers on a particular tree are of a uniform colour.

New pods seem to begin to set about the beginning of June and may remain green even after they reach their full size. At maturity, they may persist on the parent tree even after leaf fall till well into the next flowering season. It is unusual for the pods to be destroyed by insects ; on the other hand, germination takes place easily at the beginning of the rainy season, when the pods may be brought down by the strong prevailing winds.

Common in Khandala ; planted in many gardens as a fine shade-tree. It is found in dense forest away from all human habitation, so that in all probability the tree is native to the district.

Local name : Kāranj.

Flowers.—February to June. Fruits.—The whole year.

Blatt. Herb. 10209 ! 10211 ! Santapau 1038/18, 136 ! 1836 ! 1892 ! 8670 ! 8711 ! 8712 !

Derris Louf.

Derris scandens (Roxb.) Benth., in JLS. 4 (Suppl.) : 109, 1880 ; FBl. 2 : 240 ; C. 1 : 404.

Dalbergia scandens Roxb., Pl. Cor. 2 : t. 102, 1798 ; Gr. 55.


Stems dark-purple, lenticellate. Inflorescence, before the opening of the flowers, and in general all young parts, rusty pubescent. Flowers white. Pods 1-4-seeded, slightly constricted laterally between the seeds, strongly reticulately veined on the parts covering the seeds.

An extensive climber, going over some of the high trees on Monkey Hill Plateau ; this is the only place in Khandala where I have found the plant growing. With its long, hanging branches, and its dark green leaves, this plant is a fine sight in the forest.

Flowers.—June to August. Fruits.—July to August.

Blatt. Herb. 27939 ! 28109 ! Santapau 4319-4325 ! 4662 ! 4663 ! 6989 ! 6990 ! 6991 ! 10194 !
ARACHIS Linn.

*Arachis hypogaea* Linn., *Sp. Pl.* 741, 1753; *FBI.* 2 : 161; *C.* 1 : 408.

Cultivated, not a native.

An important crop in many parts of India; I have not seen it cultivated in Khandala; in Blatt. *Herb.* there are two specimens from the district, collected on the railway line.

*Flowers.*—October 1918 and 1944.

*Blatt. Herb.* 10280 ! *Santapau* 5043 !

CAJANUS DC.


*Cajanus indicus* Spreng., *Syst.* 3 : 248, 1826; *C.* 1 : 408.

A rare plant in the district; I have found it only on or near the railway line, and have not seen it cultivated anywhere near Khandala.


*Santapau* 102/95 ! 5879 !

CICER Linn.


Cultivated in some low-lying fields near Khandala railway station; the mature pods were being sold together with the rest of the plant to passengers in passing trains in Khandala station. The seeds were eaten raw. On several occasions I have found the plant growing along the railway line, obviously the result of accidental dropping of the seeds by railway passengers.

*Local name:* Harbara.

*Blatt. Herb.* 11706 ! *Santapau* 102/124 !

CAESALPINIACEAE.

PELTOPHORUM Vogel.

Caesalpinia inermis Roxb., Hort. Beng. 90, 1814. & Fl. Ind. 2 : 387, 1832.

This is a tree of recent introduction in Khandala; it is found in several gardens. It grows into a tall tree and flowers profusely during April and May. Leaves are deep green, flowers bright yellow. The appearance of the tree is rather sombre.

Flowers.—April 1946. Fruits.—I have observed them on several occasions but have not recorded the times.
Santapau 8754 | 8755

**Menoneuron Desf.**

*Menoneuron occulatum* (Roxb.) Wight & Arn., Prodr. 283, 1834; FBJ. 2 : 258; Gr. 61; D. & G, 80; C. 1 : 414.

*Caesalpinia occulata* Roxb., Fl. Ind. 2 : 358, 1832.

An extensive rambler, rather than a climber; in Khandala it covers large areas at the edge of the forest, but I have not seen this plant going over high trees. Leaves after the flowering season.

Common in St. Xavier's Ravine and on Battery Hill Plateau. Both when in bloom and when in leaf, this is a very fine shrub, but the presence of very sharp spines on the stems, leaf rachises and peduncles makes handling of this plant a dangerous enterprise.

**Local name**: For about three years all my Katkari collectors gave Wákiri or Wágati as the name of this plant; but when their attention was called to the fact that this was not *Wagatesa ericata* Dals, but *Menoneuron*, they changed the name and informed me that the proper name is Rágí; many people in Khandala, however, call the present plant Wágati.

Flowers.—December to January. Fruits.—January to May.

Graham; Blatter and Hallberg in MS. catalogues; Santapau 102/114, 126 | 1480 | 1521 | 3248 | 3568 | 3848 | 5814

**Delonix Raf.**

*Delonix elata* (Linn.) Gamble, Fl. Madr. Pres. 396, 1919; Blatter & Millard, Beaut. Ind. Tr. x & 89.

*Poinciana elata* Linn., Cent. Pl. 2 : 16, 1756; FBJ. 2 : 266; Gr. 61; D. & G., Suppl. 28; C. 1 : 414; Blatt. & Mill., loc. cit. 90.

Flowers are at first creamy white; at length they turn yellow.

Blatter in MS. catalogue remarks that he has seen the plant in Khandala growing in a garden.
**Delonix regia** (Boj.) Raf., Fl. Tell. 2 : 22, 1836.


Common in gardens in Khandala; there is a fine number of these trees along the main road near the railway station. I have not seen the tree outside gardens.

*Local name*: Gul Mohor.

*Blatter* in MS. catalogue; *Santapau* : cultivated in gardens.

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**Wagatea Dalz.**

*Wagatea spicata* Dalz., in Kew Journ. Bot. 3 : 89, 1851; FBI. 2 : 261; D. & G. 80; Wight, Icon. t. 1095; C. 1 : 416. *Cecalpinia digyna* Graham, Cat. 60, 1839 (non Rottl.).

I have not seen this plant in Khandala. Graham, Cat. no. 477, remarks that the plant is "pretty common on the Ghauts". On several occasions, during the months of January-February, when the plant is supposed to be in flower, I have searched for it, and had the Katkaris search for it practically all over the district; I have so far failed to find the plant in Khandala. There are no specimens in the Blatter Herb.

*Blatter* in MS. catalogue.

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**Cassia Linn.**


Generally this is a small tree; in dense forest at Meruli, it reaches a height of 18 m.

This is one of the finest trees in the jungle about Khandala, a tree worthy of cultivation in gardens. Flowers come out before the leaves, and the tree becomes then covered with long pendulous racemes of bright yellow flowers. The pods are very persistent; they are very often attacked by insects.

The pulp of the pod is used locally as a mild purgative.

*Local name*: Bahau.

*Flowers.*—March to June. *Fruits.*—The whole year.

*Blatter* in MS. catalogue; *Santapau* 1023/24! 2007! 2447! 4125! 7002! 8700!

Common in waste ground along the road or in the forest in open spaces. I have not seen it in the ravines. The plant has a typical scent especially when the leaves are bruised; this scent is strong enough at times to show the presence of the plant even when otherwise it would pass unnoticed; the scent is particularly strong in bright sunny weather.

*Flowers and Fruits.*—Most of the year, except at the beginning of the rainy season.

*Santapu* 633! 1312! 2395! 2396! 4269!

**Cassia abaca** Linn., *Sp. Pl.* 376, 1753; *FBL.* 2: 265; C. 1: 424.

A rare plant in Khandala; in Blatt, *Herb.* there is but one specimen collected by Blatter himself, possibly in the neighbourhood of the railway line. In general this plant is very similar to the preceding species; it differs mainly in the following: leaflets 2 pairs, corolla reddish yellow or orange, pods short, broad, thin and practically erect. When the plant is in fruit, its appearance is very characteristic.

*Fruits.*—October 1918.

*Blatter* 15659!

**Cassia pumila** Lamk., *Encycl.* 1: 651, 1784; *FBL.* 2: 265; *D. & G.* 82: C. 1: 424.

Uncommon in Khandala; in the Blatt, *Herb.* there is but one specimen collected by Blatter. There is great similarity between this plant and *C. mimosaoides* Linn. The main difference between these two species seems to be that *C. pumila* has short pedicels, whilst *C. mimosaoides* has long pedicels when in flower.

*Fruits.*—October 1918.

*Blatter* 156601.

**Cassia mimosaoides** Linn., *Sp. Pl.* 379, 1753; *FBL.* 2: 266; Prain in *JASD.* 60: C. 1: 426.

Prostrate or erect, up to 1-30 m., high when erect; stems densely hairy; leaves up to 33 cms. long; stipules up to 12 mm. long, strongly nerved with parallel nerves.

On September 10th, 1944 I found a large clump along the railway line; the following description was written from the fresh specimens:

'Erect stems, covered with short, recurved hairs; gregarious, and up to 4½ ft. high. Leaves compound; leaflets about 30 pairs; leaf rachis up to 5 in. long, hairy with thin spreading hairs. Flowers and fruits supra-axillary, 2 or 3 together; peduncle very short, almost O; pedicels up to 1 in. long with fine spreading hairs; colour of the corolla pale yellow. Stamens 5, anthers opening by apical pores; three of the anthers orange red, the other two yellow. Pods finely hairy, many-seeded, obliquely separte, straight when young, at length somewhat falcate. There is but one gland on the leaf rachis, and that is sessile, just below the lowest pair of leaflets. Corolla included or scarcely exerted. The flower is definitely one of the *Cassapinicae,* and *Cassia.*
Local name: Baki.
Flowers and Fruits.—September 1944.
Blatt. Herb. 10243! Santapau 4870-4875!

Saraca Linn.

Joninia Asaka Roxb. : Gr. 62; D. & G. 82.

Woodrow, side Cooke, states that the tree is common in the Western Ghauts; Blatter recorded the occurrence of the tree in Khandala, but as he left no specimen in his herbarium, it is probable that he saw it in a garden.
Blatter in MS. catalogue.

Bauhinia Linn.

Bauhinia racemosa Linnk., Encycl. 1 : 390, 1783; FBL 2 : 276; Gr. 84; D. & G. 82; Hook. Icon. t. 341; C. 1 : 431.

Not a common tree in Khandala; there are a few of them on Monkey Hill Plateau, and on the top part of Bhoma Hill. There is a constant defoliation of the tree due to the fact that its leaves are used in place of cigarette paper; this constant defoliation may account for the rugged appearance of the tree.
Local name: Apia
Flowers.—June 1944. Fruits.—August to October.
Blatt. Herb. 11814! Hallberg in MS. catalogue; Santapau 2969! 4413! 4458! 4459!


A middle-sized, or, in dense forest, a very large tree. Leaves up to 20 cms., broader than long; lobes rounded. Petioles up to 5 cms. long. On the underside of the leaves there are numerous pits between the main nerves; on this character alone it is impossible to separate this species from B. forsetata Dalz. Nerves of the leaves generally 11, occasionally 13.

Common in St. Xavier’s Ravine; at the edges of the forest it is a small tree; in dense forest it is one of the tallest and largest trees, with large spreading branches. Fruits can be seen on the floor of the forest.
most of the year; their colour, reddish brown, and their venation, long ascending wavy lines from the centre to the edges, are very characteristic. Once the pods have fallen from the parent plant, they are easily attacked, possibly by insects, so that it is not easy to find an undamaged fruit after a time.

Flowers.—October 1914. Fruits.—January to April.

*Bauhinia foveolata* Dalz. in JLS. 13: 183, 1873; Prain in loc. cit. 496; C. 1: 432.

*B. Lawii* Benth. ex Baker in FBI. 2: 277, 1876.

One of the largest trees growing in St. Xavier's Ravine, with a straight trunk and plenty of nearly horizontal branches. Leaves suborbicular, up to 30 cms. diam.; nerves generally 17, occasionally 18; petioles up to 9 cms. long, thickened at both ends. There are numerous small pits on the underside between the main nerves, each pit being "stopped" with an elliptical or fusiform structure held in position by a thin filament; these pits, from which the specific name is derived, are not exclusively characteristic of the present species of *Bauhinia*.

Flowers not seen in Khandala. Fruits up to 2½ x 2½ cms., much twisted, reddish, velvety, not at all or very faintly veined; seeds about 25.

Local name: Châmbul.

Fruits: January 1943.

*Blatt. Herb.* 10203! 10221! 10222! 10223! *Santapau* 1531! 1031 (2)!

*Bauhinia wahlii* Wight & Arn., Prodr. 297, 1834; FBI. 2: 279; Gr. 64; D. & G. 83; C. 1: 433.

A very large climber, with typical opposite circinate tendrils, and all young parts clothed with rusty tomentum.

Rare in Khandala; I have seen it but once, and then only in leaf. The plant was seen about the middle of St. Xavier's Ravine. There are no specimens from Khandala in the *Blatt. Herb*.

Graham: Blatter in MS. catalogue; *Santapau* November 1942.

*Bauhinia purpurea* Linn., Sp. Pl. 375, 1753; FBI. 2: 284; Gr. 64; D. & G., Suppl. 30, C. 1: 433; *Blatt. & Mill*, loc. cit. 6, & t. opp. p. 6.

This tree is occasionally cultivated in gardens on account of the relatively large and bright coloured flowers; in the *Blatt. Herb* there are but two specimens from Khandala, without any further indication of the exact locality where the specimens were found.

Flowers and Fruits.—October 1918.

*Blatt. Herb.* 28600! 106351
MIMOSACEAE.

ENTADA Adams.


* Mimosa entada* Linn., Sp. PI. 519, 1753.

* M. scandens* Linn., Sp. PI. (ed. 2) 1501, 1763.


A truly immense woody climber, the largest of the climbers in Khandala. On April 20th, 1943, I measured a stem at a point about 15 m. from where it came out of the ground, and the circumference of that stem was 135 cm.; the estimated length of the same plant is well over 1.5 km.

Flowers in spikes, which are solitary, or more generally in large panicles, terminal or axillary. I have counted over 400 flowers in a spike. Flowers at first are green, then pure white, at maturity yellow, the yellowing of the spike beginning from below upwards; the flowers are fairly strongly and disagreeably scented. Pods very large; the largest specimen measured reached $124 \times 8.6 \times 4$ cms., and weighed when fresh $1890$ gms.; peduncle of the pod enlarges to $30$ cms. in fruit. Seeds orbicular, up to $6 \times 2.8$ cms., brown, shining and very hard.

*Entada* is not common in Khandala, but where it occurs it soon spreads widely; often the presence of the plant can be detected by the numerous seeds scattered on the floor of the forest.

The pods or parts of them are used by the Katkaris as rattles or toys for their children. Young branches are often cut by Katkaris when hard-pressed for water; I have been informed by my collectors that they can easily get a litre of water in this fashion; the water is drinkable, though tainted with a definite taste.

Local name: Gharbi.

Flowers.—April to June. Fruits.—The whole year.

*Leucaena* Benth.


* Mimosa leucocephala* Linn., Sp. PI. 520, 1753.

*Acacia leucocephala* Willd., Sp. PI. 4 : 1875, 1805 ; Gr. 58.
A small tree, 3-4 m. high. Flowers in round heads; corolla at first greenish, then creamy white, then white, finally yellowish. The pods of this plant are very typical, on account of the manner in which they come from the original spherical head, and of the shape of the individual pods.

Rare in Khandala; I have not seen it in the district; but in the Blatt. Herb. there are two sheets from Khandala.

*Blatt. Herb.* 10206! 10210!

**Mimosa Linn.**

*Mimosa pudica* Linn., Sp. Pl. 518, 1753; FBI. 2: 291; Gr. 56; D. & G., Suppl. 25; C. 1: 441.

This is a rare plant in Khandala; I have only seen it once at the bottom of St. Xavier's Ravine, probably an escape from some gardens above. Neither Blatter nor Hallberg have any records of this plant.

*Santapau* April 1942.

*Mimosa hamata* Willd., Sp. Pl. 4: 1033, 1806; FBI. 2: 291; Gr. 56; D. & G. 85; C. 1: 442.

My only authority for the inclusion of this plant is the reference of Hallberg in his MS. catalogue; there are no specimens from Khandala in Blatt. Herb.

*Hallberg* in MS. catalogue.

**Acacia Wild.**

*Acacia arabica* (Lamk.) Willd., Sp. Pl. 4: 1035, 1806; FBI. 2: 293; Gr. 59; D. & G. 86; C. 1: 443.

*Mimosa arabica* Lamk., Encycl. 1: 16, 1783; Roxb., Pl. Cor 2: 26, t. 149.

A small tree, rare in Khandala. I have only found two groups of such trees, one behind Khandala Hotel, the second on the slopes of Echo Point. Along the railway line it is fairly common. In Khandala they reach 4-6m. in height, and seldom produce fruits.

*Local name:* Bābul.

*Flowers.*—May to June. *Fruits.*—June.

*Santapau* 2008! 3877!

*Acacia suma* Buch.-Ham., in Wall. Cat. 5227, 1882-1881; FBI. 2: 294; Prain, loc. cit. 66: 808; C. 1: 447.

*Ac. Catechu* Wight & Arn.: D. & G. 86; (non Willd.).

A small to middle-sized tree; young branches white-pubescent. Leaves bipinnate; petiole up to 5 cms. long, with a large sessile gland in the middle; pinnae in the Khandala specimens 12-13.

Inflorescence before the opening of the flowers, densely white-pubescent; spikes up to 15 cms. long; calyx densely white-pubescent outside; corolla at first white, turning yellowish with age; stamens at first white, then yellowish, finally brick red.

_Flowers._—June 1914.
_Sanaunia 4489._

_Acacia chinandra_ (Roxb.) Willd., Sp. Pl. 4: 1078. 1806.
_Mimosa Chinandra_ Roxb. ex Willd., loc. cit. 1079, 1806.
_M. Sundra_ Roxb., Pl. Cor. 3: t. 325, 1819; Pl. Ind. 2: 552, 1832.
_Acacia Sundra_ DC., Prodr. 2: 458, 1825; FBI. 2: 295; D. & G. 86.

On the question of the spelling of the specific name, see Chatterjee in Sci. and Cult. 14(7): 290-291, 1949.

A small tree, 3-4 m. high in Khandala. Young branches glabrous; leaf rachis pubescent; pinnae about 15 pairs.

The identification of this tree seems to have caused considerable difficulty to Indian botanists, to judge from the clear contradictions into which some of the writers of our Indian Floras have fallen.

For the separation of _A. Catechu_ from _A. Chinandra_, see Raizada, in Ind. For. 70: 437, 1944. The main differences are that the leaf rachis, calyx and corolla of _A. Catechu_ are pubescent outside, in _A. Chinandra_ they are glabrous. All the specimens from Khandala agree with the characteristics of _A. Chinandra_ except that the leaf rachis has a few small hairs on the upper side.

_Local name_: Khair.

_Flowers._—May to August. _Fruits._—May to October.

_Blatt. Herb. 10906 | Sanaunia 4316 | 4317 | 4352 | 4353 | 4354 | 4359 | 6987 | 6988._

_Acacia concinna_ (Willd.) DC., Prodr. 2: 464, 1825; FBI. 2: 296; Gr. 59; D. & G. 87: 71-450.

A climbing shrub, with brownish pubescence on the branches, especially the young ones, and with numerous spines placed irregularly on the stem. Flower heads are at first white, then yellowish; finally, when dry, brick red.

_Local name_: Shembri.

_Flowers._—March. _Fruits._—March, persistent for several months.

_Blatt. Herb. 11939 | 11959 | Sanaunia 102/116 | 1685 | 3250 | 3776 | 3777._
Acacia torta (Roxb.) Craib, in Kew Bull. 1915: 410, 1915; Santapau in JENHS. 59: 312.

Mimosa torta Roxb., Fl. Ind. 2: 366, 1832.

Acacia coccia Wight & Arn., Prodr. 278, 1834, non Willd.

The identity of the common Khandala plant, that goes under the name of Acacia Intia in Cooke's Flora, has vexed me for many years. In the nomenclature of the plant I have followed Craib loc. cit. For a full discussion of the question, see Santapau loc. cit., p. 310-312.

A fairly large shrub, generally scanty or rambling; when growing away from a support, it becomes erect in habit. Inflorescence when in bud dark purple, the buds themselves, peduncles and young branches being of the same colour. Flowers white or creamy white, or pale yellowish, when old turning brick red. Pods brown, somewhat tomentose when young, glabrous and flat at maturity, persisting into the hot season.

Local name: Chilári.

Flowers.—April to November. Fruits.—April to January.

Blatt. Herb. 10990! 10101! 10590! 10794! 12890! Salguei 7981! Santapau 1031! 1547! 2750! 3489! 4850! 4877!

Albizia Durazz.


Acacia speciosa Willd., Sp. Pl. 4: 1066, 1806; Gr. 58.

A large tree, with a general bluish green appearance. Flowers white. Pods persisting on the tree for a long time.

Not common in Khandala; there is a fine set of these trees just above the canal at Forbay.

Flowers.—May 1946, decaying. Fruits.—March to July.

Blatt. Herb. 11119! Santapau 582!


Mimosa odoratissima Linn. f., Suppl. 437, 1781.

Acacia odoratissima Willd., Sp. Pl. 4: 1063, 1806; Gr. 58.

A tall tree; leaves bluish green in colour, bipinnate, pinnae 3-5, leaflets up to 16 pairs. Corolla at first green, then white or whitish; filaments white, prominent; the calyx is very small, and both it and the corolla are densely pubescent. The flowers are arranged in large terminal panicles. Rare in Khandala.

Flowers.—April 1943. Fruits.—September 1943.

Blatt. in MS. catalogue; Santapau 1900-1904! 2802-2864!

Mimosa procera Roxb., Pl. Cor. 2 : 12, t. 121, 1798.

A tall tree with a general bluish appearance. Leaves bipinate, pinnae in Khandala 2 pairs. There is a large gland on the petiole near its base, and a smaller one near the end of the leaf rachis about 6 mm. from the last pair of pinnae; towards the apex of the pinnae there are 1-3 small glands.

Flowers in globose heads, with a peduncle up to 4 cms. long; peduncles solitary or fascicled 2-3 together in a large terminal panicle. Corolla pale yellowish white; calyx teeth glabrous, except for a tuft of whitish hairs at the apex. Pods not seen in Khandala.

Flowers.—May and June 1943.
Santapau 2005 ! 2006 ! 2051 !


Acacia stipulata (Roxb.) DC., Prodr. 2 : 469, 1825.
Albizia stipulata Boivin, in Flora of India. XIX. S. 2 : 33, 1898 ; FBI. 2 : 300 ; D. & G. 88 ; C. 1 : 453.

Very common from Porbandar upwards on the slopes of Bhoma Hill. The tree is one of the finest in Khandala. The top of the tree is flat, and during the flowering season is covered with flowers; this habit of the tree makes it very conspicuous in the forest. This tree deserves a place in gardens.

Local name: Kázará.

Flowers.—April and May. Fruits.—May onwards.

Graham ; Blatt. Herb. 10205 ! 10996 ! Santapau 102/14 ! 1921 ! 3375 ! 3394 ! 4059 !


Mimosa lucida Roxb., Pl. Ind. 2 : 544, 1832.

The occurrence of this plant in Khandala is given on the authority of Blatter, who has noticed it in his MS. catalogue; I have not seen it either wild or in gardens.

Blatter in MS. catalogue.

Pithecolobium Mart.


Inga dulcis Willd., Sp. Pl. 4 : 1106, 1806 ; Wight, Icon. t. 198 ; Gr. 56 ; D. & G., Suppl. 25.

A moderately large tree; cultivated in gardens.
The seeds are eaten raw or in curries; this tree occurs only in cultivation in the district.

Flowers.—January to March. Fruits.—March to May.

Blatt. Herb. 10204 ! 11147 ! Santalum 1681 ! 1682 ! 3524 ! 3525 ! 3526 ! 3626 ! 3627!

ROSACEAE.

Pyracantha Gaertn.

Pyracantha gardneri Hook. f. in FBI. 2 : 321, 1578 ; C. 1 : 452 ; Tahl. 1 : 505, tt. 236 & 287; G. 439.

P. acuminatum Graham, Cat. 247, 1839 (non Colebr.) ; Wight, Icon. t. 1858.

P. zeplaniicum Dalz. & Gibbs., Bomb. Fl. 89, 1861 (excl. syn. ; non Gaertn.).

The occurrence of this plant is given on the authority of Graham and Blatter. Graham in Addendum and Corrig. p. 247 says: "Mahabaleshwar and Kandalla, but rare." I have seen no specimen from Khandala either in the field or in any of the herbaria consulted.

Graham ; Blatter in MS. catalogue.

Rosa Linn.

Roses of the polypetalous varieties are commonly cultivated in gardens all over Khandala, where they seem to thrive well. The colours of the flowers vary considerably, but white or red or pink seem to be common. I have not seen any roses growing wild or as escapes from gardens, nor roses of the type of Rosa canina with only five petals. In St. Xavier's Villa roses seem to be in flower most of the year, with the exception of the monsoon time; but the rose plant in Khandala is far from beautiful, it soon turns into a wild looking shrub.

SAXIFRAGACEAE.

Vahlia Thunb.


Vahlia viscosa Roxb., Hort. Beng. 86, 1814 & Fl. Ind. 2 : 89, 1832 ; FRH. 2 : 399 ; Wight, Icon. t. 563 ; D. & G. 90 ; C. 1 : 483.

A very rare plant in Khandala, the only specimen recorded from the district being the one mentioned below. Blatter has not collected it nor has he left any record that he saw the plant in Khandala.

Flowers and Fruits.—December 1943.
Santapau 3486 !

**Hydrangea** Linn.

*Hydrangea macrophylla* (Thunb.) DC., Prodr. 4 : 15, 1830 ; Engler in Pflm. (ed. 2) 18 A : 203, t. 115.


A cultivated plant, often seen in gardens in Khandala; it thrives well in the district in spite of the heavy rainfall and produces large heads of flowers. A very showy plant.

Santapau June 1946, in several gardens !

**CRASSULACEAE.**

**Bryophyllum** Salisb.

*Bryophyllum pinnatum* (Lamk.) Oken, Allg. Naturgesch. 3 (3) : 1966, 1841 ; Kurz in JASB. 40(2) : 309, 1876 ; Merrill in JAA. 31 : 272.

*Caulophora pinnatum* Lamk., Encycl. 2 : 141, 1786.

*Bryophyl. calycinum* Salisb., Par. Lond. t. 3, 1805 & Bot. Mag. t. 1409, 1811 ; Gr. 82 ; C. 1 : 465.

In the grounds of St. Xavier's Villa there is a group of these plants that has been growing unattended for many years; there is a similar clump near Khandala station.

Flowers.—December 1949. Fruits.—Not seen in Khandala.

Hallberg in MS. catalogue ; Santapau 10068-10071 ! 10643-10648 ! 11165 !

**DROSERAECALCEAE.**

**DROSERA** Linn.

*Drosena indica* Linn., Sp. Fl. 282, 1753 ; FRH. 2 : 424 ; Gr. 11 ; Wight, Ill. t. 20C ; C. 1 : 469 ; Diels in Pflreich. 26 : 77-79, t. 29 ; G. 462.
An erect herb 4-20 cms. high; stems branched in larger specimens, unbranched or nearly so in smaller ones, glandular pubescent. Leaves canline, alternate, 2-5-4-5 cms. long, very narrow, circinate in vernation, the tip often remaining coiled up even when the rest of the leaf is fully expanded. Flowers in leaf-opposed or at least extra-axillary racemes. Pedicels up to 18 mm. long, filiform, glandular hairy. Corolla in Khandala always red or rose, never white; the corolla is 8-12 mm. diam.

A common herb during the second half of the monsoon; it generally grows in grass fields when the grass is short. It is often associated with Burmannia, Exacum pumilum, etc. Under the microscope one can see the skeletons of numerous insects on the leaves.

*Flowers and Fruits—End of August to October.*

*Blatt. Herb. 10265(2) | 28083 | Santpay 46/1 | 928 | 1015 ! 2600 ! 2770 ! 4739 ! 4814 ! 4970 ! 5034 ! 5037 ! 7424 !

**HALORAGIDACEAE.**

**MYRIOPHYLLUM Linn.**

*Myriophyllum spathulatum* Blatt. & Hallb. in JIB. 2 : 41, t. 1, 1921.

For a full description of the plant, see Blatt. and Hallb. loc. cit. Khandala is the typical locality, and the type, McCann 12034, is preserved in the Blatter Herbarium, Bombay.

*McCann 12034 !*

**RHIZOPHORACEAE.**

**CARALLIA Roxb.**


*Diocema brachiata* Lour., Fl. Cochinch. 296, 1790.

*Carallia lucida* Roxb., Hort. Beng. 92, 1814 & Pl. Cor. 2 : 8, t. 211, 1819; Tbl. 2 : 9, t. 292.

*C. integerrima* DC., Prodr. 3 : 33, 1828; FBL. 2 : 439; D. & G. 96; C. 1 : 476; G. 459.

*C. ceylonica* Wight, Ill. t. 90, 184.

*C. integrifolia* Graham, Cat. 8, 0, 839.
A large tree with a general pale, shining green, colour. Leaves rounded at the apex, or occasionally subacute; base acute or cuneate; the whole leaf shining, coriaceous; nerves 7-12 pairs, anastomosing freely among themselves.

Flowers: calyx greenish, corolla white, anthers, etc. white. Fruit bright red, when ripe, about 8 mm. diam., spheroidal or pisoliform (not "filiform" as Cooke, obviously per sphalm. puts it).

It is not easy to press specimens for the herbarium on account of a gummy substance that seems to come out of the flowers and cover the whole of the inflorescence; such a substance sticks to the drying papers and makes it almost impossible to study flowers from herbarium specimens. This gum is transparent, yellowish.

The shape and colour of its leaves give to this tree a very fine appearance; it is common in the grounds of Convalescent Home and on the plains behind Khandala Hotel: rare in the ravines.

**Flowers.**—October to March. **Fruits.**—March to May.


**COMBRETACEAE.**

**Terminalia Linn.**

**Terminalia bellerica** (Gaertn.) Roxb., Pl. Cor. 2 : 54, t. 198, 1798; FBI. 2 : 445; Gr. 69; Wight, Ill. t. 91; D. & G. 91; C. 1 : 478; Talb. 2 : 13, t. 294; Blatter in Jlls. 8 : 251.

*Myrobalanus bellerica* Gaertn., Fruct. 2 : 90, t. 97, 1791.

A common tree in Khandala and a very fine one. The fruit remains on the tree for a long time, as neither insects nor mammals seem to touch it except in times of great scarcity. This tree is not sufficiently abundant in the district to warrant the collection of its fruits for the extraction of tannin.

**Local names:** Bela or Yela.

**Flowers.**—March to April. **Fruits.**—From March onwards for the rest of the year.

**Blatt. Herb.** 28478 ! 28479 ! McCann 4467 ! 4403 ! Santapau 109/24, 29 ! 956 ! 2083 ! 8714 ! 8715 !

**Terminalia chebula** Retz., Observ. 5 : 31, 1798; FBI. 2 : 446 Gr. 69; D. & G. 91; C. 1 : 478; Talb. 2 : 14, t. 295; Blatter 203.

Flowers yellow, scented, though not strongly. Fruit 5-ribbed or 5-angled when ripe, deep purple until maturity, then it turns yellowish
brown, persisting on the tree even when the flowers of the next season are on the tree.

A fine tree and very common all over the district; in dense forest it attains very large proportions. The fruit is not collected for tannin. The fruit is not attacked by insects or monkeys, except in times of great scarcity.

Local names: Hirda or Hirad.

Flowers.—March to August. Fruits.—From April onwards.

Graham, Blatt. Herb. 28489! 27573! Santapau 109/7, 12, 18, 25, 30! 1721! 1874! 2063!


Pentaptera crenulata Roxb., Hort. Beng. 34, 1814 & Fl. Ind. 2: 438, 1832.

Terminalia tomentosa var. crenulata Clarke in FBI. 2: 448, 1879.


An much smaller tree, in open spaces, like Behran’s Plateau, this tree scarcely reaches 2 m. in height, in thick jungle it becomes bigger, but I have seen no specimen of the proportions mentioned by Cooke.

Flowers come on either before or together with the leaves, the former being more common. The colour of the flowers is yellow, and their scent is rather strong and pleasant, somewhat similar to that of honey. The flower is about 4-5-5 cms. long with usually five wings; exceptionally I have collected and measured fruits up to 9 cms. long with wings up to 2-5 cms. broad; the wings are strongly nerves with horizontal nerves, i.e. nerves that come out at right angles to the main axis of the fruit.

A very common tree all over the district; on Behran’s Plateau it is one of the commonest, and on large tracts about the only tree to be seen. Insects seem to be especially attracted to this tree, which in consequence of their attacks produces numerous and very unsightly galls on branches, leaves and inflorescence. No use is made locally of this tree except for fuel. On Behran’s Plateau this tree supports a very large population of epiphytic orchids, Eria, Aorides, Dendrobium, etc.

Local name: Aim.

Flowers.—April to August. Fruits.—June onwards.

Blatt. Herb. 27909! 28019! Hallberg in MS. catalogue: Santapau 190/8, 17, 26! 460! 505! 563! 2613! 4461! 5902!

Calycoperis Lamk.

Calycoperis floribunda Lamk., Tab. Encycl. 2: 485, 1793; FBI. 2: 448; C. 1: 481; Talb. 2: 21, t. 300.

Gelonora floribunda Roxb., Pl. Cor. 1: 61. t. 37. 1795; Gr. 70; D. & G. 91.
A very common climber about Khandala; it is easy to spot either in flower or in fruit over the tops of forest trees even from some distance away; when the fruit matures, the whole inflorescence becomes brick red, and this colour renders the plant more visible.

Local name: Ukei or Ekahi.

Flowers.—December to March. Fruits.—March to May.


Anogeissus Wall.

Anogeissus latifolia Wall., Cat. 4015, 1531; Bedd., Fl. Sylv. t. 15, 1869; FBI. 2: 450; G. 1: 482; Talb. 2: 22, t. 301.

Conocarpus latifolia Roxb., Hort. Beng. 34, 1814, & Fl. Ind. 2: 442, 1832; DC., Prodr. 3: 17, 1828; Gr. 70; Wight, Icon. t. 934; D. & G. 91.

An erect small tree, scarcely passing over 6 m. in height. Rare in Khandala except for two clumps, one on Monkey Hill Plateau near the edge of the ravine, the second at Meroli.

Local name: Dhaura.

Flowers.—October. Fruits.—October to May.

Blatt. Herb. 27511! 27004! 27605! Santapau 4202! 4203! 4204! 4514! 4315! 5041!

Combretum Linn.

Combretum ovalifolium Roxb., Hort. Beng. 28, 1814 & Fl. Ind. 2: 226, 1832; FBI. 2: 458; Gr. 70; D. & G. 90; C. 1: 484; Talb. 2: 26, t. 303.

Very common in Khandala; it is particularly common at about the altitude of Khandala, not so in the ravines.

Flowers.—December to March. Fruits.—March to June.


C. wightianum Wall., Cat. 4007, 1831; Wight, Icon. t. 227; Gr. 70; D. & G. 90.

This is the commoner species of Combretum in the ravines; it is very rare elsewhere. The size of the spikes, the scent of the flowers and the size of the leaves distinguish this species from the preceding one; the structure of the calyx often is difficult to estimate and may not easily serve for the separation of the species.

Local name: Piluki.

Flowers.—January to March. Fruits.—January to May.
Quisqualis Linn.

Quisqualis indica Linn., Sp. Pl. (ed. 2) 556, 1763; FBI. 2: 459; Gr. 70; D. & G. Suppl. 33; C. 1: 486; Talb. 2: 27-28, t. 304; G. 469.
A large climbing shrub; young parts pubescent.

The colour of the corolla changes with the age of the flower; at first it is pure white, then gradually turns pink, finally it is deep red; the colour outside is usually paler than inside. Fruits not seen in Khandala.

Frequently cultivated in gardens for the showy and large spikes or racemes of brightly coloured flowers; all the variations in colour mentioned above may be found on one and the same spike at the same time. It thrives well in Khandala, but I have not seen the plant growing in the jungle away from human habitation.

Flowers.—March to May. Fruits.—Not seen.

Hallberg in MS. catalogue; Blatter 21280! Santapau 1939/9! 1995! 6083! 6084! 8713!

MYRTACEAE.

Syzygium Gaertn.


Myrtus caryophyllaum Linn., Sp. Pl. 472, 1753 (non Thumb.).

Eugenia cymbosa Lamk., Encycl. 3: 199; 1789; C. 1: 491; Talb. 2: 37, t. 309.

Syzygium caryophylleum Wight, Icon. t. 540, 1845 (non Gaertn.);

Gr. 73; D. & G. 93; G. 480.

Eugenia caryophyllaea Wight; Ill. 2: 15, 1850; FBI. 2: 490.

The occurrence of this tree is given on the authority of Hallberg's manuscript catalogue; I have not seen the tree in Khandala; there are no specimens from the district in any of the herbaria consulted.

Hallberg in MS. catalogue.


Myrtus Cumini Linn., Sp. Pl. 471, 1753,
Eugenia jambolana Lamk., Encycl. 3: 198, 1789; FBL. 9: 492; Wight, Icon. t. 535; C. 1: 492.
Syzygium jambolanum DC., Prodr. 3: 259, 1828; Gr. 73; D. & G. 93.

Fairly common especially above Forbay; the pale green colour of the leaves, their shape and their shining surface make the tree rather conspicuous in the jungle. The fruits of the wild trees are of poor quality and possess a large stone; once the fruits have reached maturity, they easily fall off the tree.
Local name: Jambul.
Flowers.—March to June. Fruits.—April to June.
Blatt. Herb. 19108! 19157! Hallberg in MS. catalogue; Santapau 111/4! 256! 400! 444! 1542! 1840! 1926! 4018! 4109! 4228! 8623! 8999!

Syzygium phillyraeoides (Trim.) Santapau in Kew Bull. 1948; 176, 1946.
Eugenia Mooniana Wight, Illustr. 2; 13, 1850; FBL. 2: 595; Wight, Icon. t. 551; C. 1: 594; Tabl. 2: 41; C. 184 (non Gardn. 1843).

Rare in Khandala; I have found but two shrubs, one just below St. Xavier’s Villa in the ravine, the second down the ravine slopes in dense forest.
Flowers.—October & November 1944. Fruits.—October and November 1944, February 1945.
Santapau 5153! 5154! 5155! 5156! 5502! 0059!

Eugenia Jambos Linn., Sp. Pl. 170, 1753; FBL. 2: 474; C. 1: 495; Tabl. 2: 32. t. 305.
Jambosa vulgaris DC., Prodr. 3: 286, 1828; Gr. 74; D. & G., Suppl. 35.

A small tree cultivated in gardens. Leaves acuminate; nerves very faint above, slightly more clear beneath, uniting in an intramarginal nerve 1-3 mm. from the edge of the leaf.

Flowers large, fragrant, showy; pedicels jointed to the calyx, up to 12 mm. long. Fruits creamy white when ripe, about 4-6 cm. in diam.; on several occasions I have seen numbers of poor children eating the fruit with relish; the Kattaris sell them in the railway station, but I have not been able to find out where the fruit comes from; in the district I have seen but one tree in a garden near the railway station.
Local name: Jamb.
Fruits.—May 1946.
Blatt. Herb. 19109! 2562! Santapau May 1946!
EUCALYPTUS L'Herit.

In a garden near the railway station there is a tall specimen of *Eucalyptus sp.*; on the way to Lanavla there are several good specimens also in gardens. In spots where there is ample supply of soil and moisture this tree seems to grow well in the district.

*Santapau* May 1946.

**Psidium** Linn.

**Psidium guajava** Linn., *Sp. Pl.* 470, 1753; *FBI.* 2: 468; *C.* 1: 498; *Talb.* 2: 30; *C.* 472.

*P. myriferum* Linn., *Sp. Pl.* (ed. 2) 672, 1762; *Gr.* 72; *D.* & *G.*, *Suppl.* 34.

A common tree in Khandala; it occurs mainly about Forbay and along the stream from Forbay down to the bottom of the ravine, showing clearly how the tree has spread along the water courses. The fruit is of very inferior quality, small and rather hard, though Katkaris seem to eat it. The wood is hard, and young shoots from the base of the stem often come out nearly straight, and on this account are cut by Katkaris for walking sticks. Flowering and fruiting goes on most of the year.

*Local name:* Piru.

*Flowers:*—October to June. *Fruits:*—Throughout the year.

*Blatt.* *Herb.* 19098; 19100; *Hallberg* in MS. catalogue; *Santapau* 111/16; 1833!

**Myrtus** Linn.

**Myrtus communis** Linn., *Sp. Pl.* 471, 1753; *FBI.* 2: 462; *C.* 1: 498.

This shrub is occasionally found in Khandala gardens; there was one in St. Xavier's Villa in January 1951.

*Santapau,* in gardens.

**LECYTHIDACEAE.**

**Careya** Roxb.

**Careya arboresc** Roxb., *Pl. Cor.* 3: 14, t. 248, 1819; *FBI.* 2: 511; *Gr.* 74; *Wight,* *Ill.* t. 99 & 100; *D.* & *G.* 95; *C.* 1: 497; *Talb.* 2: 48-49, t. 316; *Santapau* in *JBNHS.* 46: 409.
**C. coccinea** Chev., Cat. Saig. 64, 1919; Alston, in Trin., Hand. Fl. Ceyl. 6: 120 (non *Meteorus coccineus* Lour.).

Middle-sized to large tree; its presence in the forest either during the flowering or fruiting season is given away by a strong, penetrating and unpleasant odour, which seems to be at its strongest towards the end of the fruiting season.

New leaves come out when the fruits are still on, about the middle of April; by February leaves become brick red, and gradually fall off; flowers come out about the beginning of March, when the tree is entirely leafless. For an unusual flowering due to interference, see Santapa, loc. cit.

Corolla and filaments are white; when old, the upper part of the filaments becomes red. Fruit nearly spherical, up to 9 cms. diam., crowned with the remains of the calyx and style. At the beginning of the rainy season many seeds germinate whilst still on the parent plant.

The fruit is supposed to be strongly poisonous, and this may explain why the fruit is not touched by any animal; only on one occasion did I find the fruit of a particular tree eaten by red ants.

*C. ceylanica* is one of the commonest trees in Khandala. The flowers are rather fine, but as the tree is entirely leafless at the time, the beauty of the flowers is scarcely appreciated. Moreover, large tracts of the forest seem to be impregnated with the penetrating odour of the flowers and fruits of this tree. The timber is said to be of high quality; but as far as Khandala is concerned, I have not seen any other use being made of it than for fuel.

**Local name**: Kumba.

**Flowers.**—March to May. **Fruits.**—April to August.

**Blatt. Herb.** 19152 | Santapa 111/10, 33 | 3878 | 6919 | 8895 |

**MELASTOMACEAE.**

**Osbeckia Linn.**

**Osbeckia truncata** Don in Wight & Arn., Prodr. 322, 1834; Fl. II. 2: 514; Wight, Icon. fl. t. 375; Cogniaux in DC., Mon. Phan. 7: 327; C. 1: 499; G. 494.

*C. zealanica* ? Graham, Cat. 71, 1839 (non Linn.).

*C. Leschenaultiana* D. & G., Bomb. Fl. 92, 1861 (non DC.).

Fairly common in Khandala during the second part of the rains, occasionally associated with *Burmannia*, *Drosera indica* and *Exacum pumilum*. This is particularly the case at the north end of Paoli Hill, by the side of the path; whenever one of these plants is found the rest is sure also to be found among grasses.
THE FLORA OF KHANDALA.

Flowers.—October to November. Fruits.—October to November, but dry fruits may be seen up to January.

Santapau 2768 | 2863 | 2919 | 3063 | 3117 | 5159 | 5281 | 5478 | 7412 | 7413!

Sonerila Roxb.


The following description was written in the field on August 4th 1944, from specimens just collected:

"Leaves are not radical, but come out of a stem, which is 6-12 mm. long, terete, glabrous, whitish with a touch of pink; below the stem there is a tuber about 6 mm. diam., with hair-like roots coming from all round the tuber; some of the tubers are elongated, 12 x 6 mm. Petioles, peduncles, pedicels, main nerves on the leaves and calyx reddish purple. Petioles up to 6 cms. long. Leaves up to 5 x 4 cms.; main nerves 5-7 from the base of the leaf; leaves green above, paler beneath, or olive green above, purple beneath. Flowering scapes up to 9-5 cms. long, flowers 2-11 in scorpioid cymes; pedicels up to 12 mm. long, glabrous. Calyx somewhat trigonous, not sulcate in flower; corolla "Phlox Purple" (Ridg. 65, b) with midrib of petals about "True Purple" (Ridg. 65); petals oblique. Anthers sagittate, lemon yellow; filaments of the same colour as the petals; stamens 3. Style filiform, recurved; stigma minute, purple, capitate. Plant generally pendulous from overhanging rocks. On the underside of the scorpioid cyme, there is a bract for each pedicel."

The underside of the leaves seems to be covered with minute dark dots, interspersed with whitish scales. Seeds very numerous in each fruit, elongated, cylindrical or nearly so, under a low power microscope (X 40) appearing clearly tuberculate, at maturity brown in colour.

Sonerila is not a common plant in Khanda; it is found in places where there is plenty of water with good drainage such as the underside of overhanging rocks; it is a gregarious plant. Both on account of its flowers and of its leaves this is a pretty monsoon plant.

Flowers.—July to September. Fruits.—August to September.

Woodrow; Cooke; Hallberg in MS. catalogue; Blatt. Herb. 1986; Santapau 112/2, 4 | 621 | 874 | 1065 | 2263 | 2275 | 4610 | 4611 | 4644 | 6856!

Memecylon Lind.

Memecylon umbellatum Burm., Fl. Ind. 87, 1768; C. 1: 503; G. 504.
M. edule Roxb., Pl. Cor. 1: 59, t. 82, 1795; FBI. 2: 563; D. & G. 93; Cogniaux 1175; Tabl. 2: 53, t. 318.
M. victorium Koenig ex Wight & Arn., Prodr. 319, 1834; Wight, Ill. t. 93; Gr. 71.

A small tree with pale bark; stem and branches densely lenticellate. Flowers in umbellate short cymes, from the axils of fallen leaves, on the old wood; sometimes most of the branch is a mass of flowers. Calyx whitish with a touch of lilac; petals white outside, deep blue inside; stamens and stigma blue; top of ovary purple. Flowering branches show a vivid motting of colouring; the predominant colour before the opening of the buds is whitish lilac, after opening of flowers blue or purple. Berry globose, 6-12 mm. in diam., deep purple or black at maturity.

A common tree in Khandala; especially common on Behran's Plateau, where it stands out clearly on account of the deep green colour of the leaves and the compactness of the whole tree. During the rainy season this tree supports a dense population of epiphytic orchids, among which Eria and Dendrobium are the commonest.

For further remarks, see after M. Talbotianum.

Local name: Anjan.

Flowers.—December to April. Fruits.—March to August.


M. edule Roxb. var. capitellata Clarke in FBI. 2: 564, 1879.

In every respect, except in the length of the peduncles, this tree is similar to the typical variety. Cooke wrongly attributes the name of the variety to Clarke.

Due to the length of the peduncles and of the "primary rays", the inflorescence of this tree is clearly distinct from that of the typical variety; in the present variety the inflorescence is not so compact as in the other. When the two varieties are in fruit, they cannot be distinguished from each other, since most of the peduncles lengthen out considerably in the typical variety.

Local name: Anjan.

Flowers.—March. Fruits.—March to the beginning of the rains.
Santapau 1683! 1684! 6081!

Memecylon talbotianum Brandis in Talbot, Tr. Bomb., ed 2, Append., 1902; C. 1: 504; Tabl. 2: 54, t. 320; G. 503.

The colour of the fruit of this species is yellow when ripe, and this is the main point for the separation of this species from the preceding one, which has black or very deep purple fruits. I have examined
a large number of the two species in the living condition, and, except for the fruit colour, I cannot see any difference between them. It is possible that some of the specimens listed under M. umbellatum Burm. belong to the present species but in the absence of the fruit, I find it impossible to distinguish them; in herbarium specimens, it is not easy to separate the two species from each other even when the fruits are preserved.

In my opinion the present species scarcely deserves even varietal rank.

Local name : Anjan.

Flowers.—Possibly seen, but not identified as belonging to this species. Fruits.—June to August.

Talbot loc. cit.; Santapau June 1942, 1943, August 1944.

LYTHRACEAE.

Ammannia Linn.

**Ammannia multiflora** Roxb., Fl. Ind. 1 : 447, 1820; FBI. 2 : 570; D. & G. 97; Koehne in Pfl. Reich. 17: 48, 1903; C 1: 500; Blatter & Hallberg in JBNHS. 26 : 212.

Flowers solitary or in peduncled cymes; both peduncles and pedicels very slender, variable in length. The presence of peduncles and pedicels distinguish this species from *A. bacifera* Linn., which it otherwise much resembles. *A. multiflora* grows commonly in fairly dry spots, as in rice fields during the winter months. Fruits purple.

Flowers—October to November. Fruits—October to December.

Blatt. and Hall. 3356 | Santapau 3003 | 5465

**Ammannia bacifera** Linn., Sp. Pl (ed. 2) 175, 1762; FBI. 2 : 569; D. & G. 97; C 1 : 509; Koehne 83; Blatter & Hallberg 215.

* A. vesicatana* Roxb. : Utr. 67.


Following Blatter and Hallberg, loc. cit., I have united *A. bacifera* Linn., with *A. salicifolia* Hiern (non Moutii, as Cooke et al. put it). Blatter and Hallberg remark: "We have united *A. salicifolia* as understood by Hiern and Clarke (not of Moutii) with *A. bacifera* Linn. not even retaining them as subspecies as was done before by Koehne. Clarke says: 'The only character by which *A. bacifera* can be distinguished from *A. salicifolia* are the attenuated leaves'. We have examined hundreds of specimens and found that this distinction does not hold good."
A common plant in Khandala in moist spots; under favourable conditions this plant easily reaches 1-2 m. and more in height. The stem is often tinged with purple; fruits are purple.


"Erect or suberect, up to 20 cms., simple or sparingly branched near the base. Leaves up to 30 mm. long and 4 mm. broad, subacute. Calyx 8-ribbed. Petals present, 1 mm. long, round-ovate. (In formalin the mucilage of the ovaries comes out in large masses and the formalin is stained bluish purple).” (Blatt. and Hallb. loc. cit.)

This species with all its forms approaches A. multiflora and A. baccifera; from the first it differs by the absence of style and petals; if they are present, i.e. style and petals, both are very minute. From A. baccifera it differs by its cymes being distinctly peduncled.

As Blatt. and Hallb. remark, the presence of A. senegalensis Lamk. had not been noted in India before; the localities mentioned by these two authors, besides being the type localities for the new form (forma indica Blatt. & Hallb.) they are now records for the species in Western India.

Blatt. and Hallb. 3350 ! Santapau 4364 !

Rotala Linn.


Ameletia indica DC. : D. & G. 96.

Blatter and Hallberg have united the two species R. indica and R. subrotunda of Koehne, the reason being that “the distinction which Koehne pointed out in order to establish his two species...viz. included and excluded anthers does not hold good.” The common form in Western India is the one which Blatt. and Hallb. called “Forma a. spicata”. Their description of the new form is as follows: “Stem stout 10-20 cms. high, quadrangular, not much branched, erect or ascending, rooting at the lower nodes. Leaves large, up to 15 x 8 mm., broadly obovate, attenuate at the base, penninerved, nerves prominent beneath, tip obtuse or rounded. Flowers densely crowded in axillary spikes which generally are of the length of the leaves. Bracts elliptic-lanceolate, up to 5 x 2 mm...”
Flowers and Fruits.—December to March.
Blatt. and Hallö. 3265 ! 3266 ! 3448 ! Santapan 3448 !

& Pfeirch. loc. cit. 35 & 25 t. 2a ; G. 508 ; Blatt. & Hallö. 705.

Erect or ascending or prostrate herb, growing in wet ground ; at first the plant is green, later it turns brownish. Blatter and Hallberg remark about this plant: “This is a very distinct species and it is strange that it should have been overlooked both by C. B. Clarke and T. Cooke.”

This plant is common about Khandala near the station, the village tank and at the edge of pools in St. Xavier’s Villa. Flowers are not visible without dissection, as the supporting leaf covers them entirely.

Flowers and Fruits.—October to November.
Blatter and Hallberg 3279 Santapan 5137 ! 7477 !

1880 & 4 : 388, 1883 & in Pfeirch. loc. cit. 35 & 33 t. 30.
Ammannia densiflora Roth in R. & S., Syst. 3 : 304, 1818.
A. pentandra Roxb. (pro parte ?) Fl. Ind. 1 : 418, 1820 ; FBI. 2 : 568 ; O. 1 : 507.
Rotala roxburghiana Wight, Icon. t. 260 B, 1840 ; id. in Ill. 1 : 206.
R. pentandra (Roxb.) Blatter & Hallberg, loc. cit. 707, 1919.

A very typical species and one of the most beautiful of the Ammannias or Rotalas. Stem erect or creeping at the base and rooting at the lower nodes; stem and branches of a delicate green colour. Leaves spreading, almost horizontal, supporting a number of minute sessile flowers in their axils. Corolla pink or reddish with a touch of purple. Capsule generally 3-valved; calyx with accessory teeth between the primary ones; accessory teeth may be altogether absent or if present may vary considerably in their shape and size.

Flowers and Fruits.—August to November.
Meebold 890 ! Blatt. and Hallö. 3515 ! 18876 ! Santapan 650 ! 944 !
1079 ! 1139 ! 2501 ! 2020 ! 6350 ! 6651 ! 7399 ! 7400 ! 7401 !

id. in Pfeirch. loc. cit. 42 & 35, t. 4C ; Blatt. & Hallö. 720.
Amelecia tenax Wight, Icon. t. 257, 1840 ; D. & G. 96.
Ammannia tenax Clarke in FBI. 2 : 567, 1879 ; O. 1 : 506.

A small herb common on rocks in streams with running water; the lower part of the plant may be submerged, and in such a case leaves become linear lanceolate or almost filiform. The colour of the whole plant is purple; flowers are however of a lighter shade of purple than the rest of the plant. It is a gregarious herb, at times large areas on rocks in midstream are wholly covered with this delicate plant.

No. 1165 collected on 21 October 1942 was found growing on sand near the running stream at the bottom of St. Mary’s Ravine; the stems
are purely green or whitish, not purple, all the flowers were white without any trace of pink or purple; all the specimens in a large patch were of the same colour.

Stems are often decumbent at the base, rooting at the lower nodes; the upper parts of the plant are erect and do not show any adventitious roots.

*Flowers and Fruits.*—October to January.
*Santapau 105/13! 1165! 5811!*

**Woodfordia Salisb.**

**Woodfordia fruticosa** (Linn.) Kurz in *JASB.* 49: 56, 1871; Koehne in *Pfeiff.* 78, t. 12A; G. 511.

*Grisea tomentosa* Roxb.: *Gr.* 67; D. & G. 97; *Bot. Mag.* t. 1906.

A very common plant in Khandala; it occurs almost everywhere except in dense jungle; occasionally it is found also in ravines and jungles, but then it is only in jungle clearings or by the sides of the path. When the plant is in full bloom, it is one of the finest and most showy plants about Khandala. I have not heard of the plant being used medicinally or otherwise in the district.

*Flowers.*—January to June. *Fruits.*—March to June.
*Blatt. Herb.* 6123! 6128! *Hallberg* in MS. catalogue; *Santapau 1636! 1951! 2725! 8613!*

**Lawronia Linn.**

*L. alma* Lamk., *Encyc.* 3: 106, 1789; *FBI.* 2: 573; *Gr.* 67; D. & G. 97; Wight, *ILL.* t. 87; Tabl. 2: 60.

Cultivated in gardens as a hedge plant; an extract of the plant is used as a hair dye. I have not seen the plant growing wild in Khandala.

*Local name:* Mondai.
*Blatt and Hallb.* 6131! 6132!

**Lagerstroemia Linn.**

**Lagerstroemia parviflora** Roxb., *Pl. Cor.* 1: 47 t. 66, 1795; Wight, *Icon.* t. 69; *FBI.* 2: 575; Koehne loc. cit. 258; C. 1: 512; Tabl. 2: 61, t. 328; G. 512.
*L. lanceolata* Dalz. & Gibs., *Bomb. Fl.* 98, 1861 (non Wall.).
In Khandala this is a small tree scarcely ever reaching 5 m. in height, often about 4 m. high. Leaves smaller than in the following species, pale green above, whitish or glaucous beneath, sessile or nearly so.

Calyx accrescent in fruit. Corolla white, inodorous (or at least I have failed to find any trace of scent in the flowers). Fruit persists on the tree even after the next flowering season; dehiscence takes place very late, some time immediately before or during the following flowering season.

When the tree is in flower it is a fine sight; flowers are very numerous and the whole tree seems to be covered with masses of them. In Khandala I have only seen this tree growing on Behran's Plateau.

Local name: Bondara.
Flowers.—March to June. Fruits.—May to December.

Lagrostroemia lanceolata Wall., Cat. 2120, 1529; Wight & Arn., Prodr. 309, 1834 pro parte; BCI 2: 576; C. 1: 518; Kochne 257; Tull. 2: 62, t. 324.
L. parviflora D. & G., Bomb. Pl. 98, 1861 (non Roxb.).

A large tree, in dense jungle reaching 18 m. in height; bark pale in colour, peeling off in large irregular broad strips. Young branches square in section. Leaves up to 11.5 x 6.5 cm., pale green above, hoary tomentose beneath.

When in flower this is a very fine tree; flowers are very numerous and seem to cover the whole tree. The colour of the leaves makes this tree very conspicuous even at some distance.

There is a fine set of these trees along the main road in front of St. Xavier's Villa; elsewhere in the district this tree is found scattered throughout the jungle singly or in pairs.

Local name: Nana.

Flowers.—April to June. Fruits.—Throughout the year, from May.


ONAGRACEAE.

Jussieae Linn.

J. villoosa Lamk., Encycl. 3: 331, 1789; Gr. 75; D. & G. 98

The generic name is sometimes spelt "Jussieua" as being more correct according to etymology (see Gamble, loc. cit.). Lioure in his Sp. Pl. 388 gave the name as "Jussieae" and this spelling must be retained under the Rules. See Sprague in Kew Bull. 1928: 355
A very variable plant as regards size, etc. On October 18th, 1913, I found a number of plants scarcely 15 cms. high, with all their parts proportionately reduced in size; on the other hand, on November 8th, 1942, I found other plants over 2 m. in height, with a strong woody stem 5 cms. thick near the ground; the branches in these large specimens were woody. Leaves in Khandala rather narrow for their length, up to 10.8 x 1.2 cms.

Calyx at first green, later on accrescent to the fruit and turning purplish red and finally brown; corolla always yellow, in size from 6 to 30 mm. diam. Stamens, variable in number; on April 13th, 1946, I examined 16 flowers and counted their floral parts, all had 4 sepals, 4 petals, as for the stamens 1 flower had only 4, 2 had 5, 6 had 7, 7 had 8; all these flowers came from only 2 plants, and in most cases unopened buds were selected for these counts.

Capsules up to 3.8 cms. long; seeds are liberated by the lateral splitting of the capsule whilst the "ribs" still remain in position.

Common in Khandala in moist spots; also found in dry localities, and in this case the plant assumes a shrubby habit.

Flowers and Fruits.—September to June.

Graham: "grown in moist places at Kandalla"; Blatt. Herb. 27594 ! Santapau 113/1, 2 4 ! 871 ! 1214 ! 1665 ! 2857 ! 2992 ! 2995(2) ! 3515 !

LUDWIGIA Linn.

Ludwigia parviflora Roxb., Hort. Beng. 11, 1814 & Fl. Ind. 1 : 440, 1820 ; F. B. I. 2 : 688 ; Gr. 75 ; Wight Ill. t. 101 ; D. & G. 99 ; C. 1 : 517, G. 517.

Stem and capsules reddish; corolla yellow, small; stamens 4; capsule up to 12 mm. long, 3 mm. thick.

Rare in Khandala; it is found in rice fields after the harvest or generally in moist spots. It can easily be distinguished from Justicia by the smaller size of the flowers and capsule; otherwise in general appearance it is very similar to the preceding species.

Flowers and Fruits.—September to December.

Santapau 2994 ! 2995 ! 2996 !

SAMYDACEAE.

CASSARIA Jacq.

Cassinia. . . ? (Graham, Cat. 49, 1839.  
C. glomerata Talbot, For. Fl. 2: 69, 1911 (non Roxb.).

In open country this is a shrub about 2 m. high; in dense forest I have examined specimens well over 9 m. high. Leaves in young seedlings are very large, the largest measured being 32 × 17 cms. with petioles up to 17 cms. long; stipules subulate, narrowing from a fairly broad base, up to 15 mm. long.

A very common shrub about Khandala and a pretty one when in fruit. Masses of yellow orange fruits hang from the leafless branches. Neither monkeys nor insects seem to touch the fruit, which in consequence remains on the parent plant for a long time.

Local name: Bokara.  
Flowers.—March to May, occasional in December. Fruits.—April to August.


**TURNEraceaE.**

**Turnera Linn.**

*Turnera ulmifolia* Linn., Sp. Pl. 271, 1753; Gilg. in Pflm. 3(6A) 61, t. 23 J; G. 523.

A rare Central American plant introduced in the district; in Blatt, Herb. there is but one specimen from Khandala on which Blatter remarks "Flowers yellow; 3 styles, stigma globosa". I have seen no other specimen from Khandala either in the field or in the herbarium.

Flowers.—October 1918.

Blatt. Herb. 27520 !

**CARICACaeE.**

**Carica Linn.**

*Carica papaya* Linn., Sp. Pl. 1036, 1753; Pfl. 2: 539; Gr. 90; D. & G. Suppl. 37; C. 1: 524; Harms. in Pflm. (ed. 2) 21: 512 t. 235, p. 513 t. 235, p. 517 t. 237, A., C.

A small tree of rapid growth, commonly cultivated in gardens for its fruit; throughout the greater part of the year it can be seen in fruit,
and the heavy rainfall of Khandala does not seem to upset the tree to any considerable extent.

Local name: Papaya, Popai.
Santapau 2nd March and 28th November 1945, 11th April 1946

CUURBITACEAE.

TRICHOSANTHES Linn.


*Trichosanthes pubilata* Roxb., Fl. Ind. 3: 704, 1832; FRI. 2: 606; Gr. 79; Wight, Ill. tt. 104-105; D. & G. 163; C. 1: 527; G. 529.

This plant is particularly common about St. Xavier's Villa and on the slopes below Reversing Station. A conspicuous plant on account of the size and colour of the leaves and flowers and fruits.

Local name: Kandal.

Flowers.—May to August. Fruits.—June to December.


MOMORDICA Linn.

**Momordica dioica** Roxb., ex Willd., Sp. Pl. 4: 605, 1805; FRI. 2: 617 (exc. syns.); Wight, Icon. tt. 506-506; Cogniaux in Pfreich. 66: 32; C. 1: 529; G. 432.

A common plant in Khandala; it is seldom found in the ravines or in dense jungle. The fruit is typical, and the sculpturing of the seeds is distinctive. This plant is not cultivated locally.

Flowers.—June to August. Fruits.—July to September.


LUFFA Cav.

**Luffa acutangula** (Linn.) Roxb., var. **amaras** (Roxb.) C. B. Clarke, in FRI. 2: 615, 1879; C. 1: 533; Cogniaux & Harms in Pfreich. 88: 69.

*Luffa amaras* Roxb., Hort. Beng. 70, 1914 & Fl. Ind. 3: 715, 1832; Gr. 7; D. & G. 102.
THE FLORA OF KHANDALA.

A fairly large climber; flowers yellow; fruit strongly ribbed and sharply angled, at first green, at length straw-coloured or yellowish, the apex coming off at dehiscence. Seeds numerous, black, embedded in very fibrous tissue. The dry fruits remain hanging from hedges, etc., for the greater part of the year; in shape and structure these fruits are like those of L. eggypytica but much smaller in size. Not common in Khandala.

Flowers.—November 1941. Fruits.—November till the rains.

Blatt. Herb. 27504 ! 28511 ! Santapau 4277 ! 5495 ! 5496 !

Oenociss Linn.

Oenociss callosa (Rottl.) Cogn. in Pfeiff. 88.129, 1924.

Bryonia callosa Rottl. in Neu Schrift. Ges. Nat. Freund, Berl. 4 : 210, 1802 (' collosa ').


Very common in Khandala from the end of the rains up to the end of October; the dry plant with fresh fruits can be seen almost in every part of the district throughout the year. Not common in dense jungle. In the last stages the fruit turns pale brownish and the pulp becomes almost liquid. This fruit is the most intensely bitter one which I have tasted in the district, and the bitterness seems to act by a sort of "delayed action".

Local name: Chiratu.

Flowers.—August to October. Fruits.—October to June.

Santapau 1087 ! 1116 ! 2563 ! 3641 ! 4960 ! 5961 ! 9143 !


O. pubescens Willd., Sp. Pl. 4 : 614, 1805; Wight, Icon. t. 490; D. & G. 103.

Ovary densely hairy with long, silky hairs; as the fruit ripens, the hairs gradually fall off, but they remain on the fruit practically till maturity. The fruit is green with ten longitudinal stripes which are white or yellow in colour; these fade away at maturity so that the fruit is then almost uniformly yellowish.

In Khandala I have not seen the fruit growing to more than 2-5 cms. in length, 1.5 cms. in diam. Children eat it with apparent relish, I have tasted the fruit and found it refreshing and juicy, but not remarkable for its taste.

The general appearance of the plant is very similar to that of O. callosa Cogn.; the fruit, however, is quite different, more hairy, and with a totally different taste.

Flowers and Fruits.—September to October.

Blatta; Blatt. Herb. 13345 ! Santapau 468 ! 1058 ! 2018 ! 5372 !
Melothria Linn.

Melothria maderaspatana (Linn.) Cogniaux in DC., Mon. Phaner. 3 : 623, 1881; C. 1 : 539; G. 539.
Cununim maderaspatanum Linn., Sp. Pl. 1012, 1753.
Bromia secatella Linn. f., Suppl. 424, 1781; Gr. 78; Wight, Icon. t. 501

Stems scandent or in the absence of support, at first erect, then prostrate. Corolla yellow.

The occurrence of this plant in Khandala is given on the authority of Blatter; specimen no. 28572, cited below, is rather doubtful, as it has neither flowers nor fruits. I have not seen this plant in the district; it is often confused with Dickoelspernum from which only the fruits distinguish it clearly. The plant in common about Bombay.

Blatt. Herb. 28572?

Melothria heterophylla (Lour.) Cogn. in DC., Mon. Phaner. 3 : 618, 1881 & in Pfeiff. 66 : 121-124, t. 28; C. 1 : 540; G. 539.
Bromia umbellata Klein in Willd., Sp. Pl. 4 : 618, 1805; Gr. 78; D. & G. 101.
Zehneria umbellata Thwait., Enum. 125, 1858; FBI. 2 : 625 pro parte.

A diocious, slender climber with tuberous roots and very variable leaves. The following are the commoner types of leaves seen in Khandala: a. Ovate, not lobed, subacute or acute or acuminate. b. Ovate, 3- (or occasionally 5-) lobed, the lobes being very shallow. c. Hastate, the lower lobes being very small. d. Hastate, lobes 3-5; the central lobe the largest, the others decreasing in size; the cutting of the lobes is very deep so that at times there is but the central nerve with a very narrow portion of lamina on either side. All these types intermix rather freely on one and the same plant, especially a. with b., c. with d. All leaves are cordate at the base with a large sinus, the lobes on either side of the sinus overlapping; the margin of the leaves is often revolute, and distinctly dentilicate; the apex may be acute, subacute or acuminate; in size the leaf may reach up to 15×15 cms. in the hastate types, and up to 19×11-8 cms. in the ovate types.

Common in Khandala, generally found on hedges or in open fields, rare in the forest. Flowers begin to come out before the leaves, and may continue coming out even when some of the fruits have reached maturity. Fruits are very conspicuous on account of their colour changes; they seldom reach beyond 5 cms. in length.

Local name: Gometi.

Flowers.—April to October. Fruits.—April to January.
Blatt. Herb. 18333! 19365 ! 19361 ! 27212 ; Santapau 56/1, 2, 15 ! 665 ! 641 ! 862 ! 1843 ! 1948 ! 2035 ! 2760 ! 3197 ! 3208 ! 3969 ! 4219 ! 4567 ! 5313 ! 5931 !

**Dioecelospermum** Clarke.

* Dioecelospermum ritchiei* Clarke in FBI. 2: 630. 1879; C. 1: 545.


This plant is labelled by Cooke as 'rare'; in fact, it is a very common plant all over Khandala; often it has been taken for Melothria made-
raspatana, which it much resembles.

Fruit nearly spherical; at first green with yellowish or creamy white striae running from apex to base; at maturity it is wholly and uniform-
ly red.

The seeds are typical; of the three cells of each seed, the middle one contains the embryo, the two lateral cells are said to be empty, hence
the name of the plant, but in fact they are filled with a mucilaginous,
hyaline substance, that in the dry seed seems to disappear leaving an
empty cavity; the surface of the seeds is finely sculptured with raised
points and a band that goes from apex to base and is about 1/5 as broad
as the whole seed. In the dry fruits occasionally the side cavities become
caved in, and then the resemblance to *Melothria* is very great.

This plant seems to be endemic in Western India, particularly on
the Ghats; I have not seen it below the Ghats.

* Flowers.—June to October. Fruits.—August to November.*


**Cucurbita** Linn.

* Cucurbita maxima* Duch., in Lamk., Encycl. 2: 151, 1786; FBI. 2: 622; C. 1: 547.

The occurrence of this plant in Khandala is given on the authority
of Blatter, who collected and identified it in 1918. I have not seen the
plant growing in the district; it is, however, sold in the Khandala bazaar
and this shows that the plant is grown locally.

Blatt. Herb. 27429 !

**Begoniaceae.**

**Begonia** Linn.

* Begonia extensa* D. 

Dayal in TLLS. 1: 164, t. 14, 1791; FBI. 2: 561 ; Gr. 172 ; D. & G. 104 ; C. 1: 549 ; G. 546.
Flowers vary from pure white to deep pink or rose, with all the intermediate colours. In dense forest white flowers seem to predominate; in open spaces, on old walls, etc. pink flowers are the ordinary ones.

This is one of the commonest and most abundant plants during the first half of the monsoon in Khandala. There is an old wall behind Khandala Hotel near the Soldiers’ Cricket Field which supports so many of these plants that the wall is practically hidden from view in many places. It is a beautiful plant, not unworthy of being grown in gardens.

Flowers and Fruits.—July to October.


Only found on the northern slopes of Bhima Hill, about half way up at a spot of difficult access; it is a gregarious plant.

Flowers.—July to September. Fruits.—August to September.

Santapau 506 (1-6)! 2462-2489! 4646! 4891-4893! 10126-10129!

DATISCACEAE.

Tetrameles R. Br.

Tetrameles nudiflora R. Br. in Benn., Pl. Jav. Rar. 79, 1838; FBI. 2: 657; C. 1: 551; Tblb. 2: 74; G. 544; Gilg. in Pham. (ed. 2) 21: 546, t. 2494.

Anictolea Grahamiana Nimmo, in Graham, Cat. 252, 1839.

Tetrameles — — — Dalz. & Gibbs., Bomb. Fl. 311, 1861.

Tetrameles Grahamiana Wight, Icon. t. 1056, 1853.

One of the largest trees in Khandala, reaching in open situations 30 m. and more; trunk straight, buttressed at the base, often branching only 12 m. from the ground.

This is the giant of the forest about Khandala; it is very common below Elphinstone Point at an altit. of approx. 400 m. Flowers come out when the tree is bare of leaves, about the middle of March; leaves come on about the middle of May, when the fruiting season is over.

Seeds seem to germinate rather freely; on several occasions I have seen the floor of the forest beneath one of these trees covered with small seedlings. Some of these trees often produce numerous aerial roots near their bases up to 3 m. from the ground; these roots come out in large bundles, but I have not observed them reaching the ground and anchoring the tree.
THE FLORA OF KHANDALA.

Local name : Bhend.
Flowers and Fruits.—March to June.
Santapau 182 ! 409 ! 1384 ! 1765 ! 1916 ! 2589 ! 4070 ! 4171 !

CACTACEAE.

Opuntia Haw.

*Opuntia elatior* Mill., Gard. Dict., ed. 8, no. 4, 1768; Voigt, Hort. Sub.
Calc. 63; G. 548.
*O. Dillenii* Graham, Cat. 546, 1839; D. & G., Suppl. 39; FBI.
2: 657 pro parte.
*O. nigricans* Woodrow, in RBSI. 1: 89, 1835; C. 1: 552.

When the branches are young, they bear leaves which soon fall off; leaves are green, from deltoid to oblong-lanceolate, acute, straight or
slightly curved backwards, 2.5-8×1-2 mm. in size; each leaf with two
stipule-like cushions of hairs, one on each side of the leaf base; in the
axil of the leaf there are 20 or more spine initials, which may in time
develop into regular spines; spines are all straight, about 5-6 in each
leaf-axil or cushion, straw-yellow to brownish in colour (not black),
0·6-3·5 cm. long.

Flowers generally on the upper edge of the flattened branch; occasion-
ally I have seen them on the flat surface of the branch in leaf axils.
Flowers at first are yellow or very pale flesh colour, then they turn
pink, at length they are bright red or reddish purple; the fruit is at
first green, at maturity bright red or reddish purple.

Rare in Khandala; I have only seen a large shrub near Khandala
Cemetery, where flowering and fruiting goes on for the best part of
the year. The fruit is edible.

*Blatter* and *Hallberg* in MS. catalogues; Santapau 116/1, 9068!
9167 !

MOLLUGINACEAE.

Mollugo Linn.

*Mollugo lotoides* (Linn.) O. Kuntze, Rev. Gen. Pl. 284, 1891;
Merrill, Enum. 2: 135; G. 552.
C. 1: 557.
A very common plant about Khandala, in rice fields, along the bottom of dry streams and in dried-up pools. It is also fairly frequent along the railway line.

*Flowers and Fruits.—November to June.*

*Woodrow*; *Blatt. Herb.* 19474; *Santapau* 424(2) 1691 1748 2013 2050 16607 19091 19092 19104 19129 19162


*M. hypogaea* Linn., *Syst.* (ed. 16) 881. 1759; *FBI.* 2: 662; Gr. 12.

A slender, graceful herb, common especially along the railway line. On June 16th, 1946, I observed a large patch of this plant on waste ground near the station; at 4 p.m. heavy clouds obscured the sky and rain was falling occasionally; many of the flowers in the large patch were then fully opened, white in colour and about 6 mm. in diam.; this is the only occasion when I have observed the plant growing gregariously and showing such a large number of open flowers at one time. Possibly flowers open during twilight hours or during the night.

*Flowers and Fruits.—April to June.*

*Santapau* 4258 8792 9176 10025

*Mollugo pentaphylla* Linn., *Sp. Pl.* 89, 1753; Gr. 12; D. & G. 16; C. 1: 558; G. 553.

*M. stricta* Linn., *Sp. Pl.* (ed. 2) 131, 1782; D. & G. 16; *FBI.* 2: 663.

*M. triphylla* Lour. (non Burm.): Gr. 12.

Common on rocky patches on Behran's Plateau, also common in rice fields during the cold season. In general appearance the plant is very similar to some of the Rubiaceae (Anotis, Oldenlandia, etc.) with which it associates in rice fields; it is easily distinguishable from such plants by the absence of petals, the whorling of the leaves and the peculiar structure of the seeds; the typical rubiaceous stipules are not found on the present species.

*Flowers and Fruits.—March to November.*

*Blatt. Herb.* 19469 17735 17733 17734 20196 17740 20096

*Santapau* 2126 2137 2234 4744 5042 10020

**UMBELLIFERAE.**

**Centella Linn.**


The fruit is together with the colour of the flower the distinguishing
feature between Centella and Hydrocotyle; in the latter the flowers are white, and the ridges on the fruit are only 3.

All along the western coast of India, where the plant is common, Centella, known locally under the name of Brahmì, has a great reputation as a remedy against skin diseases. I have not seen the real Hydrocotyle from these parts of India.

Flowers and Fruits.—October to July.

Blatt. Herb. 19549 ! 19549 | Santapau 118/6, 8, 10, 11 ! 423 ! 1841 ! 3062 ! 3349 ! 3742 ! 4446 ! 4377 ! 57/10 ! 8849 !

Trachyspermum Link.


Carum stictocarpum Clarke in FBL. 2 : 681, 1879 ; C. 1 : 564.

An erect herb, with finely divided leaves and white flowers.

The specimens listed below may belong to Pimpinella lateriflora Dalz. & Gibs.; the descriptions of both plants seem to fit my specimens; except that the fruit is 1-vittate in the furrows, and the colour of the flowers is white or white with a touch of lilac, not reddish, nor red; the fruits are brown, not yellow or yellowish.

In Sedgwick’s copy of Cooke’s Flora there is a marginal note against Pimp. lateriflora Dalz. & Gibs.: “Hallberg says there is no such plant. This is Carum stictocarpum”. Wolff, however, retains P. lateriflora but has to confess with Clarke that he has not seen the original or any other well authenticated specimen of P. lateriflora.

Hallberg in Ms. Catalogue : Santapau 118/6 ! 3075 ! 3450 ! 3465 !

Trachyspermum stictocarpum var. hebecarpum (Clarke) Wolff, loc. cit. 89, 1927.

Carum stictocarpum Clarke, var. hebecarpum Clarke in FBL. 2 : 681, 1879 ; C. 1 : 561.

A slender, elegant herb, common on hill slopes. Flowers white, occasionally with a touch of pink. Fruit small, densely hispidulous.

The genus Carum, as distinct from Trachyspermum, is not found in Bombay.

Flowers and Fruits.—October to November.

Blatt. Herb. 27/666 ! 28/198 | Sedgwick 7865 | Santapau 118/6 ! 5262 ! 5390 ! 5445 !

Pimpinella Linn.

Pimpinella heyneana Wall., Cat. 566, 1829 ; Kurz in JASB. 46 : 115, 1877 ; FBL. 2 : 684 ; C. 1 : 565 ; C. 560 ; Wolff, loc. cit. 277.

Holoscyadium heyneanum DC., Prodr. 4 : 106, 1830 ; D. & G. 106.

Stim internatum Moon, Cat. 22, 1824, nom. nud.
An erect herb, in favourable situations reaching 1-20 m. high; stem soft, stricate, succulent. Flowers white; the outer flowers in each umbel radiant; anthers purplish. The number of vittae on the fruit seems to vary considerably; commissural vittae generally 6, but 2 of them are so short that if the fruit be examined near its base, only 2-4 vittae are apparent; dorsal vittae 8-10.

Very common at Khandala during the second half of the rainy season. It is particularly abundant on the slopes of Behran's Plateau.

Graham in his Catalogue, no. 655, p. 84, speaks of a plant under the name of *Psychotis montana* Grah., which seems to be *Herkulaen concanense* Dalz. "Bhaphalleo. An herbaceous plant, with a strong and rather pleasant smell; flowers white; appears towards the close of the rains.—Common at Kandalla...". The colour of the flowers, the time of their appearance and the strong scent of the plant all seem to point to the present species. In view of the meagre description of Graham, I have not ventured to make the corresponding change in the name of the plant.

*Flowers* and *Fruits.*—August to October.

*Woodrow; Cooke; Blatt. Herb.* 20000! 23060! 26061! *Santarapu* 118/2! 007! 738! 755! 4676-4679! 5191! 6858! 6939! 6918!

RUBIACEAE.

**ADINA Salisb.**


*Nauclea cordifolia* Roxb., Pl. Cor. 1: 40, t. 53, 1795; Gr. 87; D. & G. 118; Bedd., Fl. Syl. t. 33.

A large tree with spreading branches. Stipules large, deciduous, up to 18 mm. long, 12 mm. broad. Floral heads about 2-5 cms. diam. Flowers yellowish when fresh, turning reddish with age. Seeds very minute, about 1-1.5 mm. long. Leaves slightly coriace at the base; margins entire; lamina glabrous or nearly so above, generally densely pubescent beneath; pedicels up to 10 cms. long, pubescent, channelled above.

Rare in Khandala; the leaf scars on the young branches are distinctive.

*Local name:* Herli

*Flowers.*—Not seen in Khandala. *Fruits.*—October to March.

*Blatt. Herb.* 7543! 7946! 28367! McCann ex Blatt. & McC., loc. cit. ; *Santarapu* March 1942! 
MITRAGYNA Korth.


*Nauclaea parvifolia* Roxb., Pl. Cor. 1: 49, t. 52, 1795; Gr. 87.

*N. parviflora* Dalz. & Gibbs., Bomb. Pl. 118.

Not common in Khandala. Leaves fall off during the cold season, but fruits remain up to and including the next flowering season. On the plateau below Echo Point there was for many years a tree very well known locally for the large population of epiphytic orchids it supported; the tree was cut down about 1945. There are some large specimens in the forest below Duke's Nose.

Local name: Kadam.

*Flowers.*—May to June. *Fruits.*—The whole year.

*Blatt ex* Blatt. & McCann, loc. cit.; *Blatt. Herb.* 7683 ! 7659 ! 20222 ! 28008 ; *Santapau* 104/43 ! 433 ! 489 ! 513 ! 2346 ! 4283 !

HYMENODICTYON Wall.

*Hymenodictyon excelsum* (Roxb.) Wall., in Roxb., Fl. Ind. 2: 149, 1834; FBI. 3: 35; Gr. 57; Wight, Icon. t. 70; D. & G. 117; C. 1: 582; Tabl. 2: 90; Blatt. & McC. 782.

*Cinchona excelsa* Roxb., Pl. Cor. 2: t. 106, 1798.

A fairly large tree, in general habit very similar to the following species, from which it differs on account of its pedicelled flowers and recurved fruits. I have only seen it on two occasions, but as the tree was growing at the very edge of a precipice, it was not possible to collect the fruit.


*Hymenodictyon obovatum* Wall., in Roxb., Fl. Ind. 2: 153, 1834; FBI. 3: 35; Gr. 88; D. & G. 117; C. 1: 583; Tabl. 2: 91, t. 337; G. 589; Blatt. & McC. 782.

Leaves up to 16x12 cms., elliptic, ovate, obovate or orbicular, abruptly acuminate, base rounded or acute or long-tapering into the petiole; petioles up to 10 cms. long.

Flowers at first greenish, later creamy white; on some occasions the odour of the flowers was strongly offensive, on other occasions the whole tree with inflorescence in full bloom was strongly and sweetly honey-scented. Flowers are pedicellate, but the pedicel is only 1-1.5 mm. long and about as thick; floral leaves paler green that the other leaves, up to 10x3-5 cms., the petiole being about 6 cms. long; the bullate shape of these leaves makes them vibrate rapidly in the breeze, so that the presence of this tree can often be detected by the rustling sound of the
floral leaves. Fruits up to 12 mm. long, shortly pedicelled, erect, persisting on the tree even after the beginning of the next flowering season. Common in Khandala especially on Behran’s, Monkey Hill and Kune Plateau.

Local name: Rac Pairi or Sherod.

Flowers.—July to September. Fruits.—September till the next monsoon.

Blatt. Herb. 17369! 26295! 2817! 3453! 4318! 4566! 4675! 4736! 4945! 6999! 9014!

On September 6th, 1942, I observed a seedling of this tree growing epiphytically on Salvia insignis; the trunk of the latter tree was erect and unbranched for about 6 m. from the ground; Hymenodietyon was seen growing on the underside of one of the main branches of Salvia. I have not observed this phenomenon on any other occasion.

Wendlandia Bart.


Catharanthus thyrsoides R. & S., Syst. 6: 207, 1820.

Wendlandia Notoniana Wall., Cat. 1273, 1832; FBI. 3: 40; Gr. 89; Wight, Icon t. 1033; D. & G. 117; G. 1: 584; Tabb. 2: 285, 2: 383; G. 585.

The occurrence of this plant is given on the authority of Hallberg; neither in the Blatter Herb. nor in Sedgwick or any other herbarium consulted have I seen specimens of this tree from Khandala.

Hallberg in MS. catalogue.

Wendlandia exserta (Roxb.) DC., Prodr. 4: 411, 1830; FBI. 3: 37; C. 1: 584; G. 587; Parkinson & Raizada in Ind. For. 59: 287, t. 19, f. 5.


"The chief characters of this species are the short corolla tube, only slightly exceeded by the reflexed corolla lobes, the exerted stamens with linear anthers, the reflexed stipules and the tomentose under side of the leaves. The flowers are generally densely fascicled. Like several light-loving Rubieaeous plants it is frequently one of the first to appear on land slips and in abandoned jhumed areas where it may be often seen growing. It is therefore useful in afforestation work. It is also worth cultivating for its ornamental flowers." (Parkinson and Raizada, loc. cit.).

This is a new record for Khandala. A large shrub or a small tree, up to 5 m. high; my Khandala plant seems to have been repeatedly coppiced, as the lower part of the stem was about 30 cms. diam., the branches only 3-10 cms. diam. Leaves mainly near the ends of the
branches, opposite and decussate, with fairly large, recurved interpeticular stipules; leaves lanceolate, acute or acuminate at the apex, acute at the base, upper surface dull but glabrous, lower one densely greyish tomentose.

Flowers in terminal panicles, white, sweetly scented with a scent like that of the European _Sambucus_; rachis and branches of the inflorescence white and densely tomentose.

Calyx minutely pubescent outside, about half as long as the corolla tube; lobes triangular or deltoid. Corolla about 5-6 mm. diam. when fully open; tube 2-2.5 mm. long; lobes recurved, 0.7-1 mm. broad. Anthers white, 1.1-1.3 mm. long, about twice longer than broad; filaments exserted for about 0.5-0.8 mm. Stigma bifid, exserted, about as long as or a little shorter than the stamens. At the base of the corolla tube on the inside, there is a bright green spot, the rest is white.

The only specimen seen in Khandala was growing on a steep slope over tunnel no. 20 of the old or disused railway line in front of St. Xavier's Villa.


_Sanatapau_ 10730-107341

**Dentella Forst.**

_Dentella repens_ (Linn.) Forst., Charact. 26, t. 18, 1776; FBI. 3: 42; Gr. 90; D. & G. 116; C. 1: 585; G. 590; Blatt. & McC. 782.

_Oldenlandia repens_ Linn., Mant. 1: 40, 1767 (non Brem.).

A fairly common plant in moist conditions throughout the year; it is conspicuous on account of the pale green colour of its leaves. The fruits are generally on the underside of prostrate branches and cannot be seen from above.

*Flowers* and *fruits.*—In moist situations it seems to flower and fruit throughout the year, with the exception of the monsoon months.

_Sanatapau_ 418 | 2130 | 4039 | 9105 | 9174 | 9175 | 10022-10023

**Oldenlandia Linn.**

_Oldenlandia corymbosa_ Linn., Sp. Pl. 119, 1763; FBI. 3: 64; C. 1: 588; G. 600; Blatt. & McC. 784.

_Hedyotis Burmanniana_ R. Br. in Wall., Cat. 868 pro parte, 1829; Gr. 90, D. & G. 116.

An erect herb. *Flowers* white, 2 or more, pedicelled, on an axillary peduncle. Capsules globose, the valves flat or nearly so, scarcely or not at all raised above the bases of the sepals.

In rice and other cultivated fields, fairly common after the rain and harvest.

*Flowers* and *Fruits.*—September to April.

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Oldenlandia herbecea (Linn.) Roxb., Hort. Beng. 11, 1814 & Fl. Ind. 1 : 424, 1820; C. 1 : 589; G. 601; Blatt. & McCo. 784.

Hedyotis herbecea Linn., Sp. Pl. 102, 1753.

Oldenlandia Heynei R. Br. in Wall., Nat. 267. 1829; Gr. 90.


Stems :trigonous, almost winged; flowers white, small. Capsules subglobe, valves protruding beyond the base of the calyx teeth.

An erect herb, very common in Khandala, especially in cultivated fields.

Flowers and fruits—October to July.


Anotis DC.

Anotis lancifolia (Dalz.) Hook. f. in FBE. 3 : 73, 1880; C. 1 : 593; G. 604; Blatt. & McCo. 786.


The general habit of the plant very closely resembles that of A. Monticoli Hook. f. Blatter remarks on A. lancifolia: "Forming pure formations on Tableland of Panchgani and other places; likes a variety of habitats: rocks, gravel, meadows, pools, dry slopes,..." With these observations I am in complete agreement from my observations in Khandala. The bright colour of the flowers and their abundance makes this plant very conspicuous wherever it occurs. In Khandala it is particularly abundant on the slopes from Forbar to the top of Echo Point.

Flowers and fruits—August to November.

Blatt. Herb. 29560! 27688; Santapau 154/29! 789! 1072! 2591! 2334! 2835! 4836! 5019! 5020! 7441! 7442!

Anotis foetida (Dalz.) Benth. & Hook., Gen. Pl. 2 : 59, 1873: FBE. 3 : 74; C. 1 : 595; G. 605; Blatt. & McCo. 786.


The colour of the flowers is generally pink, rose or purple; occasionally, on Belram's Plateau, it is pure white; when white flowers appear, all the flowers on the same plant are white. I have not noticed the white-flowered plants elsewhere.

Common on rocks or rocky ground especially during the first half of the monsoon; wherever it occurs, it is very abundant, though not in pure formations; it is often associated with Eucalyp, Cyprenus, Murdannia, Utricularia, etc.
Flowers and fruits.—July to October.

Mussaenda glabrata (Hook. f.) Hutchin. in Gamble, Fl. Madr. 610, 1921; Blatt. & McO. 786.

M. frondosa var. glabrata Hook. f. in FHL. 3: 90, 1880.
M. frondosa Linn., Sp. Pl. 177, 1753 pro parte; Gr. 88; D. & G. 121; Tabl. 2: 94, t. 339.

The enlarged calyx segment or floral leaf is up to 10×7.5 cms., creamy white or greenish white, ovate, broadly elliptic or almost orbicular in outline, acute or acuminate, parallel-veined with 5-7 conspicuous basal nerves, sides equal, subequal or distinctly unequal; base rounded or tapering into the petiole, which is up to 2.5 cms. long and hairy.

Common in Khandala in places where the undergrowth is dense, but seldom seen in dense forest. The large floral leaves even from a good distance away show the presence of this tree clearly. The plant, however, is not an attractive one; the enlarged calyx segment remains on the plant even after all the other segments have disappeared, and it persists on the apex of the fruit as long as this remains on the parent plant.

Flowers.—May to October. Fruits.—August to March.

Randia Linn.

Randia brandisii Gamble, Fl. Madr. 616, 1921; Blatt. & McO. 767.


Randia longispina DC., Prod. 4: 383, 1830; Gr. 89; D. & G. 119.

A small tree armed with spines, which however, are absent from old branches. Branches are of two kinds: (a) long, normal ones; (b) "short" branches with very short internodes and numerous stipules or stipule scars; flowers and fruits are mostly from such short branches.

Flowers at first pure white, fragrant; gradually becoming yellow with age. Calyx up to 12 mm. long, tube 8 mm., lobes 4 mm. long; occasionally there are deltoid, short teeth in between every two calyx lobes; the whole calyx is densely hairy. Corolla up to 2.5 cms. in diam.; there appear to be two types of trees or at least of flowers: on some trees the corolla is barely 12 mm. in diam., whilst on others it reaches or even goes beyond 2.5 cms.; these two types of flowers generally appear on different trees.
Very common all over the district. The Karkaria use the immature fruits as a paralysing fish-poison; the ripe fruit is also collected, the seeds extracted and after roasting may be eaten with safety; the taste of the roasted fruits is somewhat like that of almonds.

Local name: Ghela or Ghel.

Flowers.—March to June, occasionally to September. Fruits.—March to January.

Bhica; Blatt. Herb. 7637! 7631! 7634! Santapau 154/7, 63, 65! 1738! 2273! 2274! 4525! 4520!

Canthium Lamk

Canthium dicoccom (Gaertn.) Merrill, in Phil. Jour. Sci. 35: 8, 1928.

Canthium didymum Gaertn., Fruct. 3: 94, t. 196, 1805; Gr. 91.
Electronia didyma Kurz, For. Fl. 2: 35, 1877; G. 624.
Canthium umbellatum Wight, Icon. t. 1034, 1845; FBI. 3: 132.

The whole of the inflorescence and leaves are often covered with black, sooty fungi, which considerably disfigure an otherwise very fine tree.

Rare in Khandala. When in flower it is one of the finest trees in the district, except where sooty fungi or parasites of the family Loranthaceae settle on it. The wood is of a fine quality, but the tree is not sufficiently common in the district for industrial purposes.

Local name: Shambara.

Flowers.—August to December. Fruits.—November to July.

Woodrow; Cooke; Blatter in MS. catalogue; Blatt. Herb. 20174! 28570! 28388! 27558! Sedgwick 7771! Santapau 154/52-55! 1125! 1205! 1456! 5861! 6013!

Gardenia Link.

Gardenia indica Roxb., Hort. Beng. 15, 1814 & Fl. Ind. 1: 707, 1832; FBI. 3: 115; Gr. 85; Wight, Icon. t. 575; D. & G. 120; G. 1: 602; Tallb. 2: 101; G. 618; Blatt. & Mc. 788.

A very rare tree in Khandala; I have not seen it in the district: in the Blatt. Herb. there is but one specimen from Khandala.

McClure, ex Blatt. & Mc., loc. cit.: Blatt. Herb. 28178!

Meyna Link.

Vangueria spinosa Hook. f. in FBI. 3: 136, 1882; C. 1: 607; C. 626, omnes partim.

Robyns, loc. cit., p. 227 has separated M. laxiflora from M. spinosa on the following grounds:

Flowers always in lax cymes, which are distinctly pedunculate, the individual flowers being long pedicellate, buds tapering gradually upwards, obtuse at the apex; pedioles 1-2 ems. ............. laxiflora.

Flowers mostly gathered in fascicles, rarely arranged in axillary cymes; pedicels short; buds upwards abruptly rounded, distinctly spiculate at the apex; pedioles always less than 1 cm. long ........ spinosa et al.

From my own observations in Khandala, I do not feel satisfied that the new species of Robyns is very satisfactory; I find a number of trees with characters that seem to be intermediate between the two species of Meyna.

A common tree in Khandala; it is not a beautiful tree, especially, as is often the case, when it is covered with Loranthus parasites. When it is in flower, it is visited by numerous insects. The fruit is eaten by local people, but is of very poor quality.

Local name: Alu.

Flowers.—December to May. Fruits.—December to July.

B. Blatt in Rev.; Blatt Herb. 7876! 7887! Santapau 1849, 12, 51, 62! 1714! 1749! 3403! 3719! 9144!

Ixora Linn.


A very common tree in Khandala, in dense forest or in open country. I have found the identification of this tree rather difficult; after consulting the more recent Indian floras, I have based my identification on the following points: (a) Corolla tube is less than 6 mm. long; (b) buds are globose; (c) style is glabrous or with a few spreading white hairs. I have checked my specimens with those in Kew Herb., and they seem to match.

Wight in his Icones, t. 710, has drawn a plant with flowers that are obviously too large for the present species; in the text, Wight notes that the corolla is "3-4 lines" long: the buds in Wight's picture are ellipsoid and not globose. It is my opinion that the plant drawn by Wight is not the same as Ixora rhynchinta Roxb. Tabot, loc. cit., has drawn the present species correctly.

Leaves dark green; this colour together with the presence of sooty fungi on most parts of the tree, give it a rather sombre appearance.
Inflorescence purplish or reddish in colour; corolla pure white, or at times with a touch of pink. Fruit dark purple, finally black.

*Flowers and Fruits.*—December to June.

*Woodrow; Blatter in MS. catalogue; Blatt. Herb. 7694 | Santalpau 154/9(2), 44, 47 | 1434 | 1443 | 1726 | 3527 | 3528 | 3586 | 3638 | 6090 | 8610 | 9141

*Ixora arborea* Roxb. ex Sm. in Rees., *Cycl.* 19 : no. 5, 1811; Bremerk. in Pelt Jard. Bot. Britann. (ser 3) 14 : 208, 1837

*I. purpurea* Vahl, Symb. 3 : 11, t. 52, 1794 (non Lamk.); FBI. 3 : 142; Gr. 92; Wight, *Icon.* t. 711; D. & G. 113; C. 1 : 611; Talb. 2 : 114, t. 350; G. 631; Blatt. & McC. 791.

A shrub or small tree; when in fruit, it is not easy to distinguish from the preceding species; the flowers of *I. arborea* are much larger and the buds are ellipsoid. The style of *I. arborea* is densely hairy when the flower is young, at length some of the hairs may fall off, but the middle portion of the style remains densely hairy.

Fairly common, but considerably less so that the preceding species.*Flowers and Fruits.*—March.

*Cooke; Hallberg in MS. catalogue; Blatt. Herb. 7696 | 7696 | 25409 | Santalpau 149 | 1498 |


*I. affinis* Wall., Cat. 6144, 1831-1832, nom. nud.; Blatt. & McC. 791.

A small shrub, generally found in the undergrowth of forests, in Khandala it is seldom more than 2 m. high. Flowers are pure white in colour, but they, as well as the leaves, turn black on drying.*Flowers.*—April to May.*Fruits.*—Not seen in Khandala.

*Woodrow; Blatter in MS. catalogue; Blatt. Herb. 7693 | 7695 | Santalpau 154/11, 58 | 1869*

**PAVETTA LINN.**


Very common all over the district, especially in open country. It is not an attractive plant. Fresh flowers are eaten as a vegetable.*Flowers.*—October to June.*Fruits.*—The whole year.

*Woodrow; Blatter and Hallberg in MS. catalogues; Blatt Herb. 7713 | 7714 | 27906 | 28276 | Santalpau 154/4, 5, 56 | 581 | 793 | 2201 | 22101 | 3326 | 3805 | 4044 | 5375 | 8733 | 8875(2) |

*Pavetta hispida* var. *siphonantha* Hook. f., in FBl. 3: 101, 1889; C. 1: 613; G. 833; Blatt. & McC. 792.

A small shrub about 1·2 m. high; flowers white, about 13 mm. diam., style exerted for about 3·5 cms. The whole plant turns black when dry.

Not common in Khandala. Not an attractive plant.

**local name**: Papti.

**Flowers**.—January to July. **Fruits**.—July 1941.

*Blatt. Herb.* 20087! 20088! *Hallberg* in MS. catalogue; *Santapau* 154/23! 2143! 4282! 8868!

**Hamiltonia Roth.**

*Hamiltonia suaveolens* Roxb., Hort. Beng. 15, 1814 & Fl. Ind. 1: 554, 1832; FBl. 3: 197; C. 1: 621; Tabl. 2: 134, t. 564; G. 650; Blatt. & McC. 794.

*H. myosorensis* Wight & Arn., Prodr. 423, 1834; Gr. 91; D. & G. 115.

A shrub about 2·5 m. high; stems woody, up 3·5 cms. thick. Stipules interpetiolar, broad, short, suddenly acuminate with short acumination.

**Flowers** in Khandala white, inodorous.

For many years I knew of only one plant in the district; in Dec. 1949 I found about a dozen such plants growing on steep slopes below Paoli Hill facing Elphinstone Point; not seen elsewhere in the district.


**Borberia G. K. W. Mey.**

*Borberia stricta* (Linn. f.) Schum. in Pfam. 4(4): 143, 1891; G. 654; Blatt. & McC. 794.

*Spermacoce stricta* Linn. f., Suppl. 120, 1781; FBl. 3: 200; C. 1: 623.

Common on rocks and in grass fields, especially near the top of the path leading from the railway line to Behlana’s Plateau.

**Flowers**.—July to October. **Fruits**.—July to November.

*Santapau* 164/21! 2233! 4700!

*Borberia hispida* (Linn.) Schum., loc. cit. 144, 1891; G. 654; Blatt. & McC. 795.

*Spermacoce hispida* Linn., Sp. Pl. 102, 1763; FBl. 3: 200; Gr. 93; D. & G. 111; C. 1: 624.
Common in grass fields or near water on moist ground. The plant is prostrate when growing in open ground away from other support; among grasses it is procumbent; in the early stages, when the plant is but 3-6 cms. high, it is erect. Branching is rare, except from the stem at the point where it comes out of the ground.

Flowers.—May to October. Fruits.—September to November.


HAMELIA Jacq.

Hamelia patens Jacq., Enum. Pl. Car. 16, 1760; D. & G., Suppl. 44; C. 1 : 626; Schumann 85, t. 30 L-M.

In the garden in St. Xavier's Villa there is a fine specimen that seems to flower quite readily; fruits not seen.

Blatt. Herb. 7636 ! Santapau 10067 ! 10068 ! 11120-11123 !

COMPOSITAE.

CENTRATHERUM Cass.

Centratherum phyllocaenum (DC.) Benth. ex Clarke, Comp. Ind. 4, 1876; FBI. 3 : 928; C. 2 : 7; G. 667.

Decneurum phyllocaenum DC., Prodr. 7 : 264, 1838.

D. molle Dalz. & Gibbs, Bomb. Pl. 122, 1861 (non DC.).

Common in Khandala in all situations. I find in my field diary for 12 Febr. 1946 the following entry: “Very common on the slopes leading from St. Xavier's Ravine to the main road a little below Reversing Station; when walking up, the pappus hairs were disturbed, and came up in clouds, a very painful experience.” The most painful part of that experience was that breathing became difficult on account of the dense cloud of pappus hairs in the air.

Flowers.—September to November.


Centratherum tenue (Wight) Clarke, Comp. Ind. 4, 1876; FBI. 3 : 928; C. 2 : 7.

C. molle Benth. var. tenue Wight, ex Clarke, loc. cit.

Decneurum filicinum Dalz. & Gibbs, Bomb. Pl. 314, 1861.

Heads much smaller than the preceding species; outer bracts 1-2, leafy, generally smaller than in C. phyllocaenum. Corolla pale purple to purple; pappus hairs white, the reddish hairs mentioned by Cooke have not been observed in Khandala plants. Achenes strongly 10-ribbed.
The Flora of Khandala

Fairly common in Khandala especially on the grassy slopes above
For bus. Very similar in general appearance to the preceding species,
from which it differs by its smaller heads and bracts, the number of
bracts, and the size of the achenes. An attractive plant when in flower.

Flowers.—October to November.

Cooke; Blatt. Herb. 2784! 2789! Sedgewick 7986! Askland 835!
Santapau 161/37! 1162! 1314! 5259! 8060! 8061!

Vernonia Schreb.

Vernonia cinerea (Linn.) Less. in Linnaea 4: 291, 1829; FBI.
3: 293; Gr. 96; D. & G. 121; Clarke, Comp. Ind. 20; C. 2: 10; G. 676.

Annual, or more probably perennial, erect, 15-120 cms. high; stem
stiff, cylindric, striate and pubescent. There are two forms of this plant
in Khandala, depending on the time of the year and the situation in
which the plants grow: (a) Small plants, much branched, from near the
ground, with short internodes and small leaves; flowers are deep purple.
(b) Tall, erect plants, simple below, more or less extensively branched
above, leaves much larger, internodes very long, flowers pale purple.
The first form is the common one during the dry season in open fields;
the second is the more common form after the rains or in shaded spots
during the dry season.

Leaves up to 5-5 x 4 cms. obtuse or subacute or acute in form (a),
mostly acute in form (b), irregularly serrate, decurrent into the petiole,
which is consequently very short or 0; base of leaf rounded, acute or
cuneate. Floral heads small; flowers between "Light Amarapo Purple"
and "Amarapo Purple" (Bdgb. 03, d-b). Involucral bracts many-
seriate, the inner ones the longest, all ending in a weak spine; pappus
hairs white, 2-seriate.

Very common throughout the year. It is one of the first plants
to come into flower on burnt ground during the hot season, and one of the
hardest. It is questionable if the plant is an annual; when the ground is
burnt in the hot season, the aerial shoots perish, but the underground parts
survive and come into flower in a very short time; in consequence the root
and other underground parts become very thick and woody. During
the month of May this is about the only plant on burnt ground.

Flowers.—The whole year.

Blatt. Herb. 20352! 20355! 28595! Santapau 1115! 1719! 2017!
3006! 3080! 3458! 3634! 5376! 5382!

Vernonia divergens (Roxb.) Edg. in J.A.B. 21: 172, 1853; FBI.
3: 234; Benth. ex Clarke, Comp. Ind. 14; C. 2: 11.

Bupatorum divergens Roxb., Hort. Beng. 61, 1814 & Fl. Ind. 3: 414,
1552; D. & G. 123.

Decanoeura divergens DC., Prodr. 8: 64, 1836; Wight, Icon. t. 1084.
Shrubby, 1·5-4 m. high; stem unbranched and often leafless below, more or less branched above, 1·5-5·5 cms. in diam. near the base. Leaves up to 24 x 10 cms., becoming smaller on the flowering branches and gradually passing into bracts. Flowering heads very numerous in dense rounded corymbs which are terminal on the stem and branches; florets usually purple, occasionally whitish or even white (this perhaps is due to age). Pappus reddish or straw-coloured. Achemes straw-coloured, strongly ribbed, truncate above, tapering to a fine point at the base.

Common on the slopes above Purbey; the large flowering corymbs are rather attractive when in full bloom, the rest of the plant looks rather bare.

*Flowers.*—January to May.

*Cooke; Gammie 16132! Blatt. Herb. 20456! 20461! 21707! 27463! Hallberg in MS. catalogue; Santapau 161/6, 40, 43, 44! 1557! 5887! 5888! 2615! 12130-12133!

**Elephantopus Linn.**

**Elephantopus scaber** Linn., Sp. Pl. 814, 1753; FBl. 3: 242; Gr. 96; Wight, Icon. t. 1088; Clarke, Comp. Ind. 28; Hoffmann, in Pflan. 4(5): 104, t. 65 E & t. 75; C. 2: 12; G. 676.

The plant seems to be a biennial or a perennial one. New leaves come out towards the middle of June, the inflorescence or its remains from the previous season still being attached to the plant, which, therefore, must be considered at least a biennial.

Common under the shade of trees; often it is the only plant growing under such conditions together with a few ground orchids; conditions are too severe even for grasses, and this may be due to the continuous dripping from the trees and to poor lighting.

*Flowers.*—August to December.

Gammie 15488! Blatt. Herb. 21722! 28296! Santapau 161/32! 1112! 2943! 5129! 6130!

**Adenostemma Forst.**

**Adenostemma laevica** (Linn.) Kutze, Rev. Gen. Pl. 304, 1891; G. 677.


**Adenostemma viscosum** Forst., Charact. 90, 1776; FBl. 3: 242; Clarke 28; C. 2: 13; Hoffmann 132, t. 77 L-O.

A. latifolium Don: Wight, Icon. t. 1087; D. & G. 122.

Blatter mentions this plant in his catalogue; in his herbarium there is a sheet labelled as such, but the type of pappus indubitably places such a sheet in *Ageratum conyzoides* Linn. *Adenostemma* is an American introduced plant that is spreading rapidly all over India in moist places;
I have not seen the plant in Khandala, nor have I seen any herbarium sheets from the district. The plant is given on Blatter's authority. It is a common plant at Mahableshwar.

\textit{Blatter} in MS. catalogue.

\textbf{Ageratum Linn.}

\textit{Ageratum conyzoides} Linn., Sp. Pl. 839, 1759; FBI. 3: 243; Clarke 30; Hoffmann 99, t. 61C & 154, t. 78E; C. 2: 14; G. 677.

Widely spread and abundant all over the district; especially common in stream beds during the dry season. Large patches of this plant grow on the soil below Tala's pipes all along from Forbey to Battery Hill. The occurrence of this plant along stream beds at once suggests the means of distribution of the plant; at the same time, its occurrence on top of Bhuma Hill proves that it has established itself in the district.

\textit{Flowers.}—The whole year.

\textit{Blatt. Herb.} 20835! 20406! 20464! \textit{Santapau} 161/56, 65, 71! 413! F2478(3)! 3745! 6921! 9261! 9262!

\textbf{Cyathocline Cass.}


\textit{Tanacetum purpureum} Don, Prodr. 181, 1825.


A very variable plant, gregarious, erect. Leaves sessile, embracing the stem, up to 13×4-5 cms., the segments irregularly serrate. Floral heads uniformly "Mathew's Purple" (Ridg. 65).

Very common all over the district in moist situations, in stream beds, rice fields after the harvest, etc. Flowering and fruiting goes on during the greater part of the year, with the exception of the monsoon months. The whole plant is strongly aromatic.

\textit{Flowers.}—Dry months.

\textit{Blatt. Herb.} 20436! 27600! 28290! \textit{Santapau} 161/35! 3054! 3493!


In most respects this plant is similar to the typical variety, but differs mainly in having pure white flowers. There is a set of radical leaves forming a rosette on the ground; these leaves are larger than the cauline ones, but soon decay and disappear. Cauline leaves are more deeply incised than the typical variety, at times the incisions reaching nearly to the midrib. In this respect the present species is similar to the plant which Wight called \textit{C. Lowii}. Finally the Khandala variety has
much smaller leaves with narrower segments than the common plant.

Khandala is the typical locality of this plant, which is fairly common in rice fields after the harvest, often being intermixed with the purple flowered typical variety. It is particularly abundant in rice fields in St. Xavier's Villa.

**Flowers.**—November to May.

*Santapau 8094 (type) 8863 (paratype)!


In this new variety, at first the whole capitulum is purple, but as soon as the buds open, the external row or the two outer rows of florets are pure purple "Mathew's Purple" (Ridg. 65), and remain purple for the life of the florets; all the rest of the florets in the centre of the capitulum are pure white, and this colour remains for the life of the florets.

Common in rice fields in St. Xavier's Villa, in the same field as the preceding variety.

In many respects this variety approaches the typical and alba varieties; the main differences are the following: (a) Heads are white in the centre, purple in the periphery. (b) The cauline leaves are much smaller than in the two preceding varieties, in fact they seem to be about half way between the leaves of *C. purpurea* and *C. lutea* Law. (c) Plants are much smaller than those of the typical variety, and slightly larger than in *C. lutea*.

As this plant grows in rice fields together with the purple and white varieties, it is quite possible that it is a hybrid between the two. Cytological studies may help to decide this point.

**Flowers.**—November to March.

*Santapau 3421 (type) 3422 & 3423 (para- and iso-types) 3494 3903 !


*C. foetida* Clarke, *Comp. Ind.* 37, 1876.

*C. Lanoviae* Dals. & Gibb., 124 (non Wight).

Occasionally found along the main road or in grass fields; on Behran's Plateau I have observed several large patches about 10×6 m., where this plant seems to grow in almost pure formations to the exclusion of every other plant.

In grass fields about Lanovla this plant is very common, the fields appearing bright yellow for several kilometers along the road.

A very elegant little plant, with deep green leaves and bright yellow flowers; the rosettes of radical leaves seems to persist almost for the whole life of the plant.

**Flowers.**—October to December.

**Grangea Adans.**

*Grangea madrasapatana* (Linn.) Poir., Encycl. Suppl. 2: 825, 1811; FBI. 3: 243; D. & G. 124; Wight, Icon. t. 1097; Clarke 37; Hoffmann 153, t. 83 D-F; C. 2: 16; G. 650.


Common in Khandala. During the winter months it occurs in drying or dried up pools, covering practically the whole ground with a dense mat; it is also found on drier ground, but then the plant is bare of leaves. After the whole plant has dried up, the fruiting heads remain for a long time. It is not an attractive plant.

**Local name.** Bambrut or Burari.

**Flowers.**—December to June.

**Blatt. Herb.** 20354 ! 20353 ! 50929 ! Santapau 161/50, 69 ! 398 ! 5919 ! 8735 !

**Erigeron Linn.**

*Erigeron karvinskianum* DC., Prodr. 5: 285, 1836.

Cultivated in gardens in Khandala; in the last few years I have observed this plant growing on the walls of a house near the main road in front of the post office, the plant is obviously a garden escape. By 1946 it seemed to have established itself in the neighbourhood of the original garden, and was flowering and fruiting profusely.

The outer or ligulate florets are white, the inner or disc florets yellow; the whole plant may grow erect, but more generally its branches are pendulous with the floral heads turned upwards or outwards, i.e. away from the wall on which the plant is growing.

**Santapau** 6103-6107 !

**Conyza Less.**


*C. abeiuthifolia* DC. in Wight, Contrib. 16, 1834; Gr. 97; D. & G. 124; Clarke, 64.

Herbaceous, but with a thick subwoody rootstock, up to 120 cms. high; stems erect, greyish green, generally simple in the lower part, corymbose branched above, at first leafy all over, at length more or less leafless in the lower half; stem and branches pubescent and striate.

Leaves various: upper ones entire, filiform, broad at the base, gradually becoming larger downwards; the lowest leaves up to 6 x 1.5 cms., entire or more or less toothed, narrowed at the base; leaves on the middle of the stem more or less deeply and irregularly toothed or even sublobed. All leaves pubescent or hairy and sessile.
Flowers pale sulphur yellow; bracts at the forks indistinguishable from the upper leaves; pedicels hairy; involucral bracts greenish along the midnerves, scarious at the edges, hairy or pubescent. Pappus white, occasionally reddish. Achenes minutely hairy or papillose, greenish yellow at maturity.

A somewhat gorgearious plant; fairly common in open, sloping grass fields. The erect, unbranched habit, the greyish colour of stem and leaves and the pale sulphur yellow colour of its flowers render this plant rather conspicuous. Cocker gives Oct.—Nov. as the flowering time of the plant; in Khandala flowering begins about the end of September and goes on till the middle of June; on the last slopes near the top of Bhoma Hill I have observed large numbers of this plant in flower in the middle of June.

Flowers.—During the dry season.


**BLUMEA DC.**


In Kew Herb. there is one specimen from Khandala; there are no specimens in Blatter, Sedgwick or Acland herbaria; I have not seen the plant growing in the district. The plant must be considered a very rare one.

Stocks in Kew Herb!

*Blumea wightiana* DC. in Wight, Contrib. 14, 1834; FBL. 3: 261; Clarke 76; C. 2: 20; G. 686.

Stem erect, more or less extensively branched, branches terete, striate, villous. Flowers purple. Occasional in Khandala in dense jungle under the shade of forest trees or by the side of forest paths.

**Flowers.**—December to January.

*Santapau 3337 ! 5812 ! 5890 !

*Blumea lacera* DC. in Wight, Contrib. 14, 1834; FBL. 3: 263; Gr. 97; Clarke 76; C. 2: 20.

*Blumea leptocladus* Dalz. & Gibbs., Bomb. Fl. 126, 1861 (non DC.).

This is a difficult species to identify in the field; in general it bears a particularly close resemblance to *B. wightiana*, from which it differs clearly by the yellow colour of its flowers.

In the dense jungle below St. Xavier’s Villa, along the paths in the undergrowth there is a small *Blumea*, that seems to be the present species; none of my specimens is in flower, and an identification is rather difficult, but I checked them with those in Kew Herb., and the plants seem to match.

Stocks in Herb. Kew. ! Hallberg in MS. catalogue.
Blumea virgata DC., in Wight, Contrib. 14, 1834; FBI. 3 : 264; Clarke s9 pro parte; C. 2 : 21; G. 687.

Erect, slender, up to 1.5 m. high, extensively branched in the upper part; stem and branches terete, striate, glabrous; lower leaves with a petiole up to 1 cm. long; upper leaves much smaller, petiole much shorter but still distinct; all the leaves glabrous, variously renicate or lyrate. Flowers yellow; peduncles wiry, glabrous.

A very distinct species among the Blumeas; this is the only species of the genus found in Khandala that is entirely glabrous. A rare plant in the district.

*Flowers.*—June.

*Hallway in MS. catalogue; Santarana 9067!*

Blumea membranacea DC., Prodr. 5: 440, 1836; FBI. 3 : 265; C. 2 : 21; G. 687.

Annual, erect, up to 1 m. high, more or less pubescent, at times densely so; flowers yellow; heads on slender, glandular-pubescent peduncles.

It is not easy to separate this species from *B. eriantha*; both have glandular-pubescent peduncles and are highly aromatic; the present species seems to have thinner leaves and be of a much stouter character.

Common in forest clearings, especially on the slopes below Elphinstone Point.

*Flowers.*—November to January.

Woodrow; Cooke; Blu. Herb. 20350! 20442! Santarana 151/20! 1305! 1454! 3196! 3208! 3295! 3296! 3534! 4397! 4398! 8068!


*B. muralis* DC., Prodr. 5 : 440, 1836; D. & G. 125.

The differences between this and the typical variety are not very conspicuous; in general this plant is not so hairy as, and more glandular than *B. membranacea*; often the involucral bracts on the present var. are purple or reddish and remain so even on dry specimens.

Not quite so common as the typical variety; growing on old walls or on the ground in the higher parts of the district, from Khandala Hotel upwards.

*Flowers.*—November to January.

Blu. Herb. 20494! 20435! 20448! Santarana 5868! 5869! 8067!

Blumea oxyodonta DC., in Wight, Contrib. 15, 1834; FBI. 3 : 266; Clarke 85; C. 2 : 21; G. 686.

Herbaceous, prostrate, annual plant; branches wiry, numerous, striate, up to 60 cm. long. Leaves generally small (I have not observed the large leaves mentioned by Cooke), silky-pubescent especially the lower ones. The buds at the crown of the root mentioned by Cooke as
typical of B. Malcolmii are also found on this species. Flor exs yellow
The whole plant emits a strongly aromatic odour when crushed.

Very common in open fields, especially during the winter and begin-
ing of the hot season; it is often found together with Nanathamus
sericeus which it much resembles. This is about the poorest looking
Blumea in Khandala.

Flowers.—November to April.
Blatt. Herb. 20353 ! 20449 ! 20454 ! Santapau 269-271 ! 3640 ! 6070 !
6126(2) ! 8099 !

Blumea eriantha DC., in Wight, Contrib. 15, 1834; FBI. 3 : 26;
C. 2 : 22; G. 688.

A very variable herb; it is very similar to B. oxyodonts, from which
it differs by its erect habit; it is also at times rather similar to B. Mal-
colmii; under favourable circumstances it grows to 1 m. in height.
Common in Khandala, but difficult to distinguish from related species.

Flowers.—Throughout the dry season.
Cooke; Blatt. Herb. 20453 ! Santapau 293 295 ! 3704 ! 3885 ! 5132 !
6126 (2-4) ! 8096 ! 8817 ! 9098 ! 9099 !

Blumea belangeriana DC., Prodr. 4 : 444, 1836; FBI. 3: 266;
C. 2 : 22; G. 688.

Erect, annual, 20-95 cms. high; stem usually unbranched below,
more or less branched above, silky hairy in the upper part. Among the
species of the genus, this is a very clear one. The floral heads are sessile
in the axils of the upper leaves, and the involucral bracts are woolly
outside, glabrous, shining and straw-coloured on the inside; at maturity
the involucral bracts spread out until they are completely reflexed, the
floral heads then appearing yellowish or straw-coloured and shining.

Common along the sides of paths in the forest; this is about the com-
monest species of Blumea growing under such conditions.

Flowers.—December to May.
Blatt Herb. 20405 ! 20449 ! 20763 ! 20719 ! Santapau 161/42 ! 276 !
1452 ! 1453 ! 8865 !

Blumea malcolmii (Clarke) Hook. f. in FBI. 3 : 266, 1881; C.
2 : 23 ; G. 686.

Pluchea Malcolmii Clarke, Comp. Ind. 95, 1876.

A species that is very conspicuous on account of its dense hairiness;
in the young stages the silky covering of the whole plant is often white,
later it turns yellowish, the whole plant having a yellowish or straw-
coloured appearance. The silky buds at the crown of the root are not
exclusively typical of this species, but the dense woolliness of the whole
plant is typical.

Fairly common in Khandala, growing generally in open country.

Flowers.—More or less throughout the dry season.
Cooke; Blatt. Herb. 20398 ! 20407 ! 20453(2) ! Santapau 23 & 27
December 1943, 16 January and 29 October 1944, 28 January and
25 November 1945.
**LAGGERA Sch.-Bip.**


*Erigon alatum* Don., Prodr. 171. 1825.

*Bhumea alata* DC., Prodr. 5 : 448, 1836; D. & G. 125; Wight, Icon. t. 1101.

Blatter’s mention in his manuscript catalogue is my only authority for the inclusion of this plant; there are no specimens in Blatt. Herb. from Khandala; I have not seen the plant in the district.

*Blatter* in MS. catalogue.


*Bhumea aurita* DC., Prodr. 5 : 449, 1836.

Hallberg’s mention in his catalogue is my only authority for the inclusion of this plant; I have not seen any specimen from Khandala. Hallberg in his catalogue mentions that he has seen four varieties of this plant in Khandala, but he gives no further data besides the bare mention of this fact, and does not name the varieties.

*Hallberg* in MS. catalogue.

**NANO THAMNUS T. THOMS.**

*Nanothamnus sericeus* Thom. in JLS. 9 : 342, t. 2, 1867; FBI. 3 : 273; Clarke 90; Hoffmann 176, t. 31 M; C. 2 : 27.

“A monotypic genus found only near Bombay, in the mountains” (Clarke, loc. cit. p. 357). A prostrate or erect herb; branches spreading radially from the root, pubescent and finely striate. Lower leaves forming a rosette on the ground, and larger than cauline leaves, petiolate; all leaves densely woolly when young, strongly reticulately nerved and aromatic. Heads in dense axillary and terminal clusters. Flores yellow; ray florets ligulate, but the ligula is inconspicuous; disc florets tubular; corolla tube hairy outside. Pappus O.

Common in Khandala, on the ground or on old walls. In general structure it much resembles *Bhumea oxyodonta*, for which it is often mistaken; absence of pappus is typical of this plant.

*Flowers.*—March to May.

*Blatt. Herb.* 20334(2) ! 30452 ! Sandapau 3921 ! 3922 ! 4058 ! 8235 ! 8872 ! 8878 ! 10047-10048 !

**EPALTES Cass.**


One evening in October 1944, the mali or caretaker of St. Xavier’s
Villa, Khandala, brought this plant to me with the remark that we had not found the plant previously. He had found it in one of the rice fields in the grounds of St. Xavier’s Villa. I made an intense search for this plant in the same grounds the following morning, and failed to find another specimen; for the rest of the season I looked for 

*Eupites* in rice fields all over the district, but again failed to find another specimen.

*Flowers.*—October 1944.

*Santapau 330(2)!*

**Sphaeranthus Linn.**


*S. macilis* Roxb., * Hort. Beng.* 82, 1814; *Gr.* 96; *D. & C.* 123.


Heads up to 1.5 cms. diam., when in bud; up to 2 cms. when the flowers are out, glabrous or yellow, on fairly stout, terminal, winged peduncles. At first the whole head is green, then it turns purple, but when the florets open out, it is white, this being the colour of the corollas and anthers. The corollas seem to decay rather early, so that the predominant colour of the heads is purple.

Common on moist ground all over the district; it is especially common in rice fields after the harvest. When growing in crowded conditions the stems may be erect or suberect, elsewhere they are prostrate.

*Flowers.*—October to March.

*Santapau 2998! 3747! 3857!*

**Gnaphalium Linn.**


In general appearance this plant is very similar to *G. indicum* Linn., but its leaves are sessile and more or less cuneate, the lower ones attenuate near the base then enlarged to a broad base embracing the stem; heads in dense, leafless, more or less spherical clusters up to 1.4 cms. diam., straw-coloured.

Growing in ditches or moist soil, together with *G. indicum* L. Not common in Khandala.

*Flowers.*—February to March.

*Santapau 3746! 6046!*

*Gnaphalium indicum* Linn., *Sp. Pl.* 852, 1753; *FBI.* 3: 289; *Gr.* 97; *D. & G.* 130; Clarke 114; C. 2: 30; *G.* 697.

Erect or prostrate herbs, the former when growing in moist, the latter when in drier situations. The whole plant is densely white-woolly, glaucous more often than green. Upper leaves sessile, lower ones narrowed at the base into the petiole, which is up to 1.5 cms. long. Floral heads
THE FLORA OF KHANDALA.

in spikes up to 1 em. long, straw coloured (this colour being due to the shining inner bracts of the involucre).

Common about the talao and station; gregarious and growing in dense patches in moist soil; during the dry season it may be found growing on dry ground, but it is not so abundant as during the moister seasons.

Flowers.—December to June.

Blatt. Herb. 20337 ! 20389 ! 27456 ! 28529 ! 50093 ! Hallberg in M3. catalogue ; Santapau 161/64 ! 3475 ! 3767 ! 8739 !


An erect, unbranched herb, up to 42 ems. high; stem striate, woolly; leaves up to 7 x 1.5 ems., spatulate, obtuse, attenuated at the base into an obscure petiole, then suddenly enlarged near the stem and amplexicaul; upper leaves not attenuated, more conspicuously enlarged at the base.

Floral heads in globose clusters in the axils of the upper leaves, about 1-1.5 ems. in diam., the whole inflorescence 12 ems. long.

A Central American plant, naturalized in several parts of India. I have only seen one specimen from Khandala.

Santapau 161/65 ! in flower, near the railway station, on 21 April 1942.

VICOA Cass.

Vicoa indica (Willd.) DC. in Wight, Contrib. 10, 1834 ; Gr. 97 ; D. & G. 126 ; Wight, Icon. t. 1145 ; Clarke 127 ; G. 701.


Fairly common on the upper slopes leading the Bokran's Plateau; it is conspicuous on account of its erect unbranched habit, the colour and structure of the leaves and the bright colour of the florets. Grows best on rocky soil where grasses are not too dense.

Flowers.—Throughout the dry season.

Santapau 161/27, 35 ! 3084 ! 3450 !


Fairly common all over the district, especially on the higher parts.

Flowers.—October to January.

Blatt. Herb. 20327 ! Acoland 583 ! 591 ! Santapau 161/36 ! 1217 ! 1275 ! 2854 ! 3032 ! 5394 ! 5891 ! 8058 !

CAESULIA Roxb.

Caesulia axillaris Roxb., Pl. Civ. t. 54, t. 93, 1785 ; FRI. 3 : 291 ;
Very common. After the rains it is frequent in most rice fields and is then suberect or prostrate; during the dry season it is still common in moist situations, e.g. the ditch near the railway station, etc.

Flowers.—Throughout the dry season.


**Lagasaea Cav.**

*Lagasaea mollis* Cav., in Anal. Cienc. Nat. 6 : 332, t. 44, 1803 ; *FBL.* 3 : 302 ; Gr. 96 ; D. & G., Suppl. 16 ; Clarke 131 ; C. 2 : 36.

The whole plant has a glaucous look, especially the leaves, floral heads and young stems. Flowers white.

Rare in Khandala; in *Blatt. Herb.* there is but one specimen from the district; it is a common plant further in the Deccan, or down in the Konkan plains along the main road.

*Blatt. Herb.* 27943 !

**Xanthium Linn.**

*Xanthium strumarium* Linn., *Sp. Pl.* 987, 1753 ; *FBL.* 3 : 303 ; Clarke 132 ; C. 2 : 37 ; G. 703.


Rare in Khandala; I have only found it on two occasions near the main road; the plant is too scarce in the district for any use to be made of it medicinally or otherwise.

Flowers.—October 1944, February 1946.

*Santapau* 5362 ! 8039 !

**Eclipta Linn.**

*Eclipta alba* (Linn.) Hask., *Pl. Jav. Rar.* 528, 1849 ; *FBL.* 3 : 304 ; Clarke 134 ; Hoffmann 227, t. 115 E-H ; G. 705.


*E. prostrata* Linn., *Mant.* 2 : 286, 1771 ; Gr. 99 ; D. & G. 127.

Very common, in almost every part of the district and under diverse conditions; it thrives best, however, in moist ground. When crushed, the plant is strongly and not pleasantly scented.

Flowers.—Throughout the year.

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Wedelia Jacq.

**Wedelia urticaefolia** DC. in Wight, Contrib. 18, 1834; FBI. 3 : 306; Wight, Icon. t. 1166; C. 2 : 41; G. 707.

*Wollastonia biflora* D. & G., Bomb. Fl. 128, 1861 (excl. syn. ; non DC).

*Verbescina biflora* Wall., Cat. 3207 B, pro parte; Gr. 100.

This plant is included on the authority of Blatter and Hallberg, who mention it in their MS. catalogues; I have seen no specimens from Khandala.

*Blatter & Hallberg* in MS. catalogues.

Bidens Linn.


*Coneplosis biflora* Lour., Fl. Cochinch. 504, 1790.

*Bidens Wallichii* DC., Prodr. 5 : 508, 1836; Gr. 101; D. & G. 128.

* B. pilosa auctor., non Linn.; C. 2 : 44; O. 709.

This is the plant that is commonly known to the writers of Indian floras as *Bidens pilosa* Linn. Sherff in his recent monograph on the genus *Bidens* has shown that the common Indian plant is not the Linnean plant.

Not common in Khandala; the leaves and floral heads appear very small in relation to the size of the plant, and for this reason *B. bidentata* in the field always looks rather bare.

*Flowers.*—September to November.

*Blatt. Herb.* 28074 | *Santapau* 2667 | 5021 | 5022 | 5304 !

Tridax Linn.

**Tridax procumbens** Linn., Sp. Pl. 900, 1753; FBI. 3 : 311; Clarke 142; Hoffmann 246, t. 120 E; C. 2 : 45; G. 711.

Common in Khandala, especially along the railway line or the main road, and this shows the means by which this American plant has been introduced into the district.

*Flowers.*—Throughout the year.

*Santapau* 2609 | 5378 !

Artemisia Linn.

**Artemisia parviflora** Buch.-Ham. ex Roxb., Hort. Beng. 61, 1814 & Pl. Ind. 3 : 420, 1832; FBI. 3 : 322; D. & G. 314; Wight, Contrib. 20; Clarke 159; C. 2 : 47; G. 713.

A. glabrata* DC. in Wight, Contrib. 20, 1834; Wight, Icon. t. 1111.

This is a very typical plant, with leaves which distinguish it at once from all the rest of the Compositae of Western India; it is quite common at Purandhar, but I have not found it in Khandala; I include it on the authority of Hallberg.

*Hallberg* in MS. catalogue.

A. vulgaris Linn. var. nilagiricae Clarke, Comp. Ind. 182, 1876.
A. vulgaris auct., non Linn.; F.B.I. 3: 325; Clarke 161; C. 2: 47;
G. 715.

A. indica Wight, Icon. t. 418 (non Willd.).

Perennial, about 1.5 m. high, at times up to 2 m.

A gregarious plant growing in dense clumps; not common in Khandala.

It is found at the outskirts of dense forest but growing by itself; the
best clumps of this plant in Khandala are at the edge of St. Xavier's
Ravine just where the railway line crosses over Tata's Pipes and also
at the other end of the same ravine just below Duke's Nose.

Pampanini, loc. cit., has demonstrated that none of the Indian
species of Artemisia corresponds to the European A. vulgaris of the Lin-
nean herbarium, and in this case the oldest valid name for the plant is
that of Clarke, which is therefore raised to specific rank.

Flowers.—October to January.

Blatt. Herb. 20446! 20455! Hallberg in MS. catalogue; Santapau
3778! 3779! 5990-5993! 9667!

Gynura Cass.

Gynura angulosa DC., Prodr. 6: 286, 1837; F.B.I. 3: 334;
Clarke 170; C. 2: 49.

G. simplex D. & G., Bomb. Fl. 130, 1861.

Common all over the district, but nowhere abundant. The colour
of the florets renders this plant unique among the Compositae of
Khandala. Found on grassy slopes, especially towards the edges; very
rare in the ravines. An elegant plant.

Flowers.—September to November.

Blatt. Herb. 28017! 28342! Santapau 800! 1108!

Emilia Cass.

Emilia sonchifolia (Linn.) DC. in Wight, Contrib. 24, 1834; &
Prodr. 6: 302; F.B.I. 3: 336; Clarke 174; C. 2: 49; G. 715; Garabe-
dian in Kew Bull. 1924: 141.

Cachalia sonchifolia Linn., Sp. Pl. 835, 1753; Cr. 36.

Heads similar to those of Gynura, but much smaller and without
the free bracts below the involucre; flowers reddish light purple to deep
purple. The whole plant at times has a glaucous or bluish appearance.

Common and gregarious in shaded moist spots. It is particularly
abundant under the shade of Tata's Pipes from Porbey to Campoli Power
Station.

Flowers.—Throughout the year in shaded moist spots; July to Octo-
ber everywhere in the district.

Blatt. Herb. 20061! 27401! Sedgwick 2566! Santapau 161/70! 412!
479! 1218! 2461-2463! 2519-2521! 2664! 3061! 3823! 3863! 4079!
4387! 4388! 9259! 9260!
Notonia DC.


N. corymbosa DC., Prodr. 6 : 442, 1837 ; Wight, Icon. t. 484.

N. balsamina D. in D. & G., Bomb. Fl. 133, 1861.

This plant is very common at Purandhar, where it attains large proportions; but in Khandala, it is rare, the only authority for its inclusion in this flora being Blatter, who mentions it in his MS. catalogue. There are no specimens in Blatt., Sedgw., or Aeland herbaria from Khandala.

After examining the type of Dalzell's N. balsamina in Kew, I cannot see the difference between the pappus of N. balsamina and that of N. grandiflora.

Blatter in MS. catalogue.

Senecio Linn.

Senecio tenuifolius Burm. f., Pl. Ind. 181, t. 60, f. 4, 1768 ; FBI. 3 : 345 ; C. 2 : 51 ; G. 722.


Doronicum tenuifolium Wight, Icon. t. 1129, 1846.

This plant has not been seen by me in Khandala; there are no specimens from that district in any of the herbaria examined.

Blatter in MS. catalogue.

Senecio dalzellii Clarke, Comp. Ind. 201, 1878 ; FBI. 3 : 346 ; C. 2 : 52 ; G. 723.

S. Lawii Clarke, loc. cit. 201, 1878 ; FBI. 3 : 347.

This is a conspicuous plant; it begins to appear towards the end of October and persists in places until the following rainy season. It is much less abundant that S. Grahami, from which it is easily distinguished by the structure of the leaves, by the flowering times, and by its pappus, which is hairy and not paleaceous. S. Dalzellii is nowhere abundant, but it occurs practically all over the district.

Flowers.—October to June.


Senecio grahami Hook. f. in FBI. 3 : 347, 1881 ; C. 2 : 52.

S. reticulatus Clarke, Comp. Ind. 199, 1876 (non DC.).


This is one of the commonest and most abundant plants in the whole district; during the second half of September and early October, most of Behran's Plateau is a mass of vivid yellow colour, and this is due to
the great abundance of this plant on the Plateau. At the end of the rains, many of the old rooks in Khandala support a large population of Senecios; it occurs also on tree trunks, but this only happens where debris have accumulated at the forks. During the dry season it is occasionally seen in flower in moist spots.

Flowers.—September to November, occasionally throughout the dry season.


**Tricholepis DC.**

**Tricholepis radicans** DC., Prodr. 6 : 564, 1837 ; FBl. 3 : 380 ; D. & G. 131 ; Clarke 239 : C. 2 : 56 ; G. 726.

There are no specimens from Khandala in Blatter Herbarium; this plant is included on the authority of Hallberg.

*Hallberg in MS. catalogue.*

**Tricholepis glaberrima** DC., Prodr. 6 : 754, 1837 ; FBl. 3 : 381 ; D. & G. 131 ; Clarke 240 ; Hoffmann 325, t. 128 D ; C. 2 : 56 ; G. 722.

*Serrata indica* Willd. ! Sp. Pl. 3 : 1642, 1804 ; Gr. 95.

Not as common as the following species, from which it can be distinguished by the smaller heads and leaves, in general it is a much smaller plant.

*Flowers.—October to January.*

Blatt. Herb. 20384 ! 50690 ! Hallberg in MS. catalogue ; Santapau 161/33(1-2) ! 2856 ! 3464 ! 5203 ! 5809 ! 8062 !

**Tricholepis amplexicaulis** Clarke, Comp. Ind. 249, 1876 ; FBl. 3 : 391 ; C. 2 : 57 ; C. 727.

Erect, annual, 90-200 cms. high; stem up to 2.5 cms. diam. below, unbranched and more or less leafless in the lower part, corymbose branched and leafy above; leaves sessile; lower leaves obovate to elliptic oblong, attenuated at the base; higher leaves elliptic oblong, up to 22 x 8.5 cms., acute, irregularly spinous-serrate, base dilated and auricled, half amplexicaul, conspicuously punctate; highest leaves very narrow and long, broadest at the base.

Heads up to 4.5 cms. diam.; corollas light purple or pinkish purple; each head is furnished with several narrow, leafy bracts much longer than the floral head itself. Pappus 0 or of a few hispiduous hairs; achenes very dark brown or black, smooth, with small apical mucro, large.

A very common plant in Khandala; in St. Xavier’s Villa a clump of very stout plants has been growing near the house for several years. When the plant is covered with leaves and is in full bloom during the rainy
season, it is a fine sight; but generally it looks rather bare especially when all the lower leaves have disappeared, in which condition it lasts for months.

**Flowers.**—October to December, occasionally to February.

Woodrow; Cooke; Hallberg in MS. catalogue; Blatt. Herb. 28239 !
Santapau 1106 ! 179 ! 1465 ! 2946 ! 2947 ! 5491 !

**Sonoehus Linn.**

*Sonoehus oleraceus* Linn., Sp. Pl. 794, 1753 ; FBI. 3 : 414 ; Gr. 94 ;
Clarke 275 ! Hoffmann 114, t. 71C ; C. 2 : 61.

*S. annumus* Lamk. : Wright, Icon. t. 1141.

Not common in Khandala; only found near the main road and along the railway line.

**Flowers.**—October to April.

Blatt. Herb. 20439 ! Santapau 4007 ! 4008 ! 5075 !

*Sonoehus asper* (Linn.) Hill, Brit. Herb. 1 : 47, t. 3f. f 2, 1769 ;
FBI. 3 : 414 ; Clarke 275 ; C. 2 : 62.

*Sonoehus oleraceus asper* Linn., Sp. Pl. 794, 1753.

Annual, erect herb; stems with occasional glands all along, terete, coarsely striate. Radical leaves considerably attenuated at the base, then somewhat enlarged near the stem; cauline leaves with large, rounded, appressed auricles. Flowers pale yellow, all ligulate but ligules very small; achenes much compressed, about one and a half times as long as they are broad, ribbed, but not transversely muricate; of the Indian species of *Sonoehus*, this has the most typical achenes, on account of which this plant can easily be distinguished from all species of *Sonoehus* *Lactuca* and *Launaea*. Pappus abundant, white.

Rare in Khandala.

Blatt. Herb. 28239 !

**Launaea Cass.**


*L. obtusa* Clarke, Comp. Ind. 261, 1876 (excl. plur. syn. ; non Ranth.).

A prostrate or suberect annual herb; flowering branches not rooting at the nodes. Radical leaves forming a rosette on the ground; sessile or nearly so, attenuated at the base into a short petiole. Heads much narrower than in *Sonoehus* and very similar to *Lactuca runcinata*, from which it can be distinguished by the absence of any beak on the achenes. Flowers very pale, whitish yellow, all ligulate. Inner achenes very strongly ribbed, sharply truncate at both ends.

Tolerably common in Khandala especially in Kune stream bed.

The leaves are used locally in curries.

Local name: Pathari.

**Flowers.**—March.

Santapau 1711 ! 3923 !
CARATHAMUS LINN.

Carthamus tinctorius Linn., Sp. Pl. 830, 1753; FBI. 3 : 386; Gr. 39; D. & G., Suppl. 49; Clarke 244; Hoffmann 329, t. 148G. & 551, t. 150; C. 2 : 68.

Cultivated in several parts of the Deccan for the dye that is extracted from the flowers; cultivation, however, seems to have been given up in Khandala, as I have not seen a single field of Carthamus from 1939 to 1949. Blatter in his MS. catalogue mentions having seen it in cultivation in the district.

Blatt. Herb. 28221!

FLAVERIA JUS.


My only authority for the inclusion of this plant is Hallberg; there are no specimens from Khandala in any of the herbaria consulted.

Hallberg in MS. catalogue.

GUZOTIA CASS.


G. oleifera DC., Prodr. 5 : 551, 1836; D. & G. 128; Clarke 139.

This plant is cultivated for the sake of the oil that is extracted from the seeds. It is an annual, erect herb, 0.5-1 m. high; flowers bright yellow, outer florets ligulate, inner ones tubular.

A rare plant in the district; I have only seen it in cultivated fields, on the one occasion mentioned.

Santapau 1204! In flower during October 1942.

HELIANTHUS LINN.


A garden plant flowering profusely in Khandala; generally it is the variety with the smaller capitula that is seen in Khandala gardens. This plant has not been seen outside gardens.

Flowers.—March to April.

Santapau March and April 1946!
THE FLORA OF KHANDALA.

Tithonia Desf.


An American plant that has become naturalized in Khandala. It grows to 2 m. in height and flowers profusely during most of the year. In Khandala there is a large clump along a ditch near the railway station; there is a second larger clump along the path leading to Kuno village on Kuno Plateau. In both places it flowers and seeds abundantly particularly during the cold season of the year.

Flowers.—October to February.

Blatt. Herb. 50694 ! Aeland 618 ! Santapau 52381

Acanthespermum Schrank.

Acanthespermum hispidum DC., Prodr. 5: 522. 1838; G. 704; Santapau in JBNHS. 54: 445.

For a full description of this plant, see Santapau, loc. cit.

This is a recent introduction in Khandala; it was only found for the first time on Dec. 29, 1948, in waste land in one of the streets of the village. Florets are minute, pale yellow; the plant is a stiff, erect herb, dichotomously branching. Previous to Khandala I had found it along the railway line at Karjat, and along the main road near Mumbai; it seems to be spreading very rapidly, but in Bombay it seems to be still a rare plant.

Flowers and Fruits.—December 1948.

Santapau 9765-9767 1

LOBELIACEAE.

Lobelia Linn.

Lobelia nicotianaeformis Heyne in Roth, Nov. Pl. 3p. 143, 1821; FBI. 3: 327; Gr. 102; D. & G. 133; Wight, Icon. t. 135; C. 2: 72: G. 736.

Stems stout, up to 5 cms. thick below, hollow, simple all through or simple below and profusely branched above; generally up to 2 m. high, occasionally up to 4-5 m. high.

Abundant on Bhoma Hill, especially just above Forbay; also common on slopes near railway line about 1 km. above Khandala station. It is a gregarious plant, and a fine sight when in leaf or in flower, especially when the stem is extensively branched. The sap is thick and yellowish, and is said to be strongly poisonous. The odour of the plant is rather unpleasant.

Flowers.—October to March. Fruits.—November to March.
Woodrow; Blatt. Herb. 21127! 21136! 21137! Sedgwick 2011!
Santapau 159/1! 1419! 1420! 1564! 3383! 3384! 3385!

Lobelia haeveana Room. & Sch., Syst. 5: 50. 1819; Wimmer in Ann.

L. *trialata* Buch.-Ham., in Don, Prodr. 187, 1826, et autq. plur.
I have only found this plant in Khandsa on one occasion; at Purandar
it is the commonest species of the genus. It is separated from
*L. alsinoides* by its erect habit, larger and petiolate leaves, structure of
anthers, 3 being naked, 2 penicillate, and the shape of the seeds.

Blatt. Herb. 21859! Santapau 2797!

Lobelia alsinoides Lamk., Encycl. 3: 588, 1791; Wimmer, loc.
cit. 360.

*L. trigona* Roxb., Hort. Beng. 85, 1814 & Fl. Ind. 2: 111, 1824; DC.,
Prodr. 7: 359, 1839, excl. *L. Haeveana*; FBI. 3: 423; D. & G. 133;
Wight, Icon. t. 1170; C. 2: 72; G. 736.

A common weed in rice fields after the harvest; common also in
moist situations during the rest of the year.

*Flowers and Fruits.*—September to March in moist places.

Blatt. Herb. 21859! 28398! Santapau 2769! 3092! 3446! 3616! 3852!
4826! 5007! 5136! 5585! 5405! 5406! 5523! 5524! 7420! 8123!

**CAMPANULACEAE.**

Wahlenbergia Schrad.

*Wahlenbergia gracilis* Schrad., Blumeub. 33, in obs., 1827; DC.,
Monogr. Campanul. 142. 1839; FBI. 3: 429; C. 2: 74; G. 738.

*W. agrestis* DC., Prodr. 7: 434, 1839; Wight, Icon. t. 1175; D. & G.
154.

*Campanula delhicaens* Graham, Cat. Bomb. Pl. 103, 1839 (non Roxb.,
nee Wallich).

Fairly common along the stream bed near Kune Plateau, and on
the old railway line near the village tank; elsewhere in the district rare.
After the disappearance of the radical leaves, the plant looks rather bare.

*Flowers and Fruits.*—December to May.

Kaniskar; Hallberg; Blatt. Herb. 21138! 21860! Santapau 3478!
3479! 3754! 3755! 3820! 3831! 3913! 4084! 4085! 4164! 4380! 45903-
5905! 6001! 6044! 6071! 8837! 8841!

**PLUMBAGINACEAE.**

Plumbago Linn.

*Plumbago zeylanica* Linn., Sp. Pl. 151, 1753; FBI. 3: 480; Gr. 166;
D. & G. 220; Wight, iii. 179; Pax in Pflan. 4(1): 120, t. 66E; C. 2: 78;
G. 744.
A common plant about Khandala, growing mainly in the undergrowth of the forest or in forest clearings, or in open country.

**Flowers.** October to March. **Fruits.** December to March.

Cooke; Blatter & Holler in MS. catalogues; Santapau 128/1; 2531-2533! 2970! 3275! 3276! 5101!

**PRIMULACEAE.**

**Anagallis Linn.**


*Centunculus pendulus* R. Br., Prodr. 427, 1810; FBI. 3: 506.

*C. tenellus* Duby in DC., Prodr. 8: 72, 1844; C. 2: 80.

*Micropyxis tenella* Wight, Icon. t. 1585.

A fairly common herb, but difficult to spot on account of its small size. It grows abundantly in rice fields after the harvest, and the dry plants can be seen till before the rains.

**Flowers.**—September to October. **Fruits.**—October to December, very rarely to January.

Santapau 1034! 3419! 3420! 3470! 3471! 3547! 5052! 5176! 5365! 7419! 7444! 7458! 7459!

**MYRSINACEAE.**

**Embella Burm.**

*Embella tristis-cottam* A. DC. in TLS. 17: 131, 1834; Gr. 104; Wight, Icon. t. 1209; Mez in Pfreich. 9: 319, t. 53, 1902; G. 753.

*E. robusta* Clarke in FBI. 3: 515 (non Roxb.), 1832; C. 2: 85.


Very common especially from St. Xavier’s Villa to the top of Bhima Hill; the strong odour of the flowers seems to attract numerous flies at the time of flowering. Locally no use is made of the plant.

**Local name:** Yellangi; Yarengi; Waurung.

**Flowers.**—June to September. **Fruits.**—August to May.


**Maesa Forsk.**

*Maesa indica* Wall. in Roxb., Fl. Ind. 2: 230, in note. 1824; FBI. 3: 509; Gr. 105; D. & G. 136; Mez 29.

A shrub about 1·1-5 m. high; stem and branches woody; leaves serrate- or crenate-dentate, somewhat unequal-sided at the base. Flowers minute, white, 5-merous.

Recently this plant has been collected by me probably about the same spot where Arbuckle found it as reported in Graham's Catalogue. It is a place between Echo Point and Duke's Nose, at the top of the ravine path, about 1·5 kms. from Korinda village. At that spot the plant was fairly common.

_Fruit._—April 1943.

_Graham_: "One or two plants grow at Corinda, near Kandalla, (Dr. Arbuckle)." _Blatter_ in MS. catalogue; _Santapau_ 1865-1867; 1872; 10601-10604.

**SAPOTACEAE.**

**Madhuca Lam.**


_Buxia latifolia_ Roxb., Pl. Cor. 1: 20, t. 19, 1795; FBI. 3: 544; Gr. 107; D. & G. 139; C. 2: 92.


In ten years I have only found two trees in Khandala, in St. Xavier's Villa, where they were possibly planted; the tree is fairly common lower down on the Ghats. Sometime during 1948, both trees in Khandala were almost completely decorticated by Katkari, who use the bark for the production of alcohol after fermentation; fortunately both trees seem to have survived.

_Local name: Mawa._

_Flowers._—April. _Fruits._—May to June.

_Woodrow; Blatt. Herb. 21883! Santapau 129/1 ! 1994 ! 3976 ! 8935 !

**Mimusops Linn.**

*Mimusops elengi* Linn., Sp. Pl. 549, 1753; FBI. 3: 548; Gr. 106; D. & G. 140; Wight, Icon. t. 1586; C. 2: 95.

Occasionally found about Khandala in ravines; there are several fine specimens in St. Xavier's Villa, probably planted. The fruit, when ripe, is edible but of poor quality; it is seldom collected except by local children.

_Local name: Waoli._

_Flowers._—February to July. _Fruits._—The whole year.

_Graham; Blatter_ in MS. catalogue; _Santapau_ 129/6, 9! 1567! 1992! 4004! 4128! 4139! 8635!
Pouteria Aubl.

Pouteria tomentosa (Roxb.) Baehni, in Mem. Sap. 2: 368, 1942.

Sideroxylon tomentosum Roxb., Pl. Cor. 1: 28, 1795; FBl. 3: 538
Gr. 105; C. 2: 99.

Sapota tomentosa DC.: D. & G. 139.
S. elongoides DC.: Wight, Icon. t. 1218.

A small tree with about the hardest wood in the district. Generally
unarmed. Flowers "dirty" white, not conspicuous; fruit exuding
milky juice when bruised before maturity; persistent for a long time
on the tree even after the appearance of the flowers of the following
season.

No use is made of the wood locally except for fuel, the tree being
too small for any other useful purpose. The fruit is not eaten even by
monkeys, and therefore is left to rot on the tree. Very common all
over the district especially in the ravines and their slopes. Often it is
parasitised by one or more species of the family Loranthaceae.

Local name: Katkumbar, Kumbar.

Flowers.—November to May. Fruits.—Most of the year.

Cookes; Hallberg in MS. catalogue; Blatt. Herb. 21204 ! 21308 !
24270 (2) ! 24271 (2) ! 28046 ! Santapau 149/7; 8 ! 1208 !

EBENACEAE.

Diospyros Linn.

Diospyros montana Roxb., Pl. Cor. 1: 37, t. 48, 1795; FBl
3: 555, pro parte; Gr. 107; D. & G. 142; Wight, Icon. t. 1215;
C. 2: 105.


Common all over the district. Graham remarks that the tree
"flowers in March and April, when Bees resort in great numbers to the
bloesom, which seem to possess peculiar favour with them"; this I
have also observed, but it is only the male tree that is so favoured by
bees.

Local name: Goindu.

Flowers.—March to April. Fruits.—April to December.

Graham; Blatt. Herb. 27596 ! Santapau 130/2, 4 ! 745 ! 1693 !
1693 ! 3533 ! 4042 ! 4943 ! 6091 ! 6098-6100 !

Diospyros sylvatica Roxb., Pl. Cor. 1: 37, t. 47, 1795; FBl
559; Hiern, Monogr. Eben. 101; C. 2: 100.

A sombre tree with dark green leaves; not as common as the preced-
ing species.
Local name: Goindn.

Fruits.—October 1942, April 1943.

Santapau 1206 ! 1877 !

Diospyros candolleana Wight, Icon. t. 1221, 1848; FBI. 3: 566; D. & G. 142; C. 2: 190.

A very rare tree in the district; I have not seen any specimen from Khandala either alive or in any of the herbaria consulted. The type sheets in Wight’s Herb., at present in Kew Herb., show this to be a very characteristic plant, mainly on account of the globose clusters of male flowers in the axils of the leaves at the ends of the branches.

Blatter in MS. catalogue.

SYMPLOCACEAE.

SYMPLOCOS Jacq.


Myrtus laurina Retz., Obs. 4: 26, 1786.

Symplocos spicata Roxb., Hort. Beng. 40, 1814 & Fl. Ind. 2: 541, 1832; FBI. 3: 573; Wight, I. t. 150; C. 2: 108.

The occurrence of this plant is given on the authority of Blatter, who mentions it in his MS. catalogue. In the Blatt. Herb. there are no specimens from Khandala. As regards nomenclature I have followed Merrill, although Wallach did not definitely base his name on that of Retz.; for further details on the subject, see Merrill, loc. cit.

Blatter, in MS. catalogue.

OLEACEAE.

JASMINUM Linn.

Jasminum malabaricum Wight, Icon. t. 1250, 1850; FBI. 3: 594; C. 2: 111; Santapau in JBNHS. 46: 563.

J. latifolium Graham, Cat. 110, 1839 (non Roxb.); D. & G. 138.

A very common plant all over the district; very conspicuous when in flower on account of the large numbers of flowers; the plant, however, cannot be said to be beautiful, as it has a rather wild look.

Local names: Mogra, Ran Mogra.

Flowers.—February to May, occasionally to June. Fruits.—April to September.

Blatt. Herb. 21276 ! Santapau 133/7 ! 503 ! 1537 ! 3617 ! 3717 ! 5806 ! 5807 ! 6078 ! 6915 ! 8789 ! 8790 !
Jasminum pubescens (Retz.) Willd., Sp. Pl. 1: 37, 1797; FBI. 3: 92; Gr. 110; D. & G. 138; C. 2: 112.

J. hirsutum Willd., loc. cit. 36, 1797; Wight, Icon. t. 703; Smith, Ex. Bot. t. 118; Bot. Mag. t. 1991.

Nyctanthes pubescens Retz., Obs. 5: 9, 1789.

During December 1949 and 1950 a large specimen of this plant was observed on the station platform; the plant flowered the two winters during which it has been kept under observation.

Flowers.—December 1949, December 1950, January and February 1951.

Sanapau, cultivated!

Nyctanthes Linn.

Nyctanthes arbor-tristis Linn., Sp. Pl. 8, 1753; FBI. 3: 503; Gr. 111; D. & G. Suppl. 51; C. 2: 115.

Occasionally planted in gardens.

Hallberg in MS. catalogue.

Linociera Swartz.

Linociera malabarica Wall., Cat. 2828, 1831, nom. nud.; Don, Syst. 4: 53, 1838; FBI. 3: 607; Gr. 109; D. & G. 159; Wight, Icon. t. 1246; C. 2: 117.

A small tree. Leaves pale green, coriaceous, with a very distinct midnerv. Flowers pure white, the "odour of ripe apples" occasionally very strong; peduncles fascicled in the axis of present or past leaves. Calyx reddish or greyish, pubescent. Corolla at first pure white, turning yellowish with age; petals cohering in pairs but only at the base. Anthers sessile or nearly so; ovary velvety, stigma bifid, sessile. Fruit very similar to that of Olea dioica, but slightly smaller; black when ripe, and persistent on the parent tree for a fairly long time.

When the tree is in full bloom, it is a fine sight, as the flowers are massed together towards the ends of the branches, and the tree is practically covered with them. The odour of ripe apples seems to be very fugacious, for it is only on one occasion that I noticed it, although I did search for it for several years. This tree is widely spread over the district, but it is nowhere abundant.

Local name: Kumli, Parjamb.

Flowers.—October to January. Fruits.—November to June.

Graham; D. & G. ; Blatt, Herb. 18771; 27602; Santapau 133/111437; 538; 1187; 1496; 1497; 3058 3060; 3871; 5450; 5458; 6087; 4068 !
OLAE Linn.

Olea dioica Roxh., Hort. Beng. 3, 1814 & Fl. Ind. 1: 108, 1832; FBI. 3: 612; Gr. 109; D. & G. 159; Wight, Ill. 151; C. 3: 118; G. 796.

Drupe up to 16 x 13 mm.; the fleshy epicarp is intensely bitter to taste. The fruits seem to be eaten by some animals, the stones passing indigested. By the middle of the rainy season many seeds germinate on the ground below the parent trees; large numbers of seedlings may be seen in such conditions.

A fine evergreen tree, often planted as a shade tree. It is attacked by numerous parasites: Cystopsora Olea Butler causes much damage in Khandala; several plants of the Loranthaceae are also found on Olea. A very common tree in the whole district.

Local name: Parjamb.

Flowers.—November to January. Fruits.—January to May.

Woodrow; Chibber; Blatter and Hallberg in MS. catalogues; Blatt. Herb. 1905! 1911! 21271! Santapa 133/5, 9, 10! 1437! 1441! 1639!1641! 1665! 1837! 1963! 2119 (2)! 2209! 3190! 3632! 4294! 4295! 4723! 5849! 5850! 8781! 8785! 9062! :

APOCYNACEAE.

CARISSA Linn.

Carissa congesta Wight, Icon. 1299, 1848; Haines in Ind. For. 45: 386, 1919; G. 803.

O. Carandas Graham, Cat. 116, 1839; D. & G. 143; FBI. 3: 630 (pro parte); C. 2: 124 (non Linn.).

All the specimens in Kew Herb. mentioned by Cooke in his Flora as Carissa Carandas, have been corrected by O. Stapf as C. congesta. These two species seem to have been confused by most of the authors of Indian Floras. The basic differences between these two species are the following: in C. Carandas Linn. the leaves are elliptic or elliptic-oblong and rounded at both ends, the number of seeds being normally 8; in C. congesta Wt. the leaves are broadly ovate, subacute or obtuse, occasionally slightly emarginate at the apex, and acute, cuneate or sub-truncate, or occasionally rounded at the base, the number of seeds being normally 4.

A very variable plant. Leaves 3-5 x 2-7 cm. Simple above, compound below. 2-6 cm. long, straight or curved; all the spines are supported by a sort of a minute bract, which is repeated for every branch spine in the case of compound spines, the angle between two spines of a pair varies between 110 and 180 degrees.

Fruit very variable, 8-25 mm. long, spherical or ellipsoid, sweet to taste; there seem to be two forms of plants depending on the size of the fruit: the smaller fruits when over-ripe improve in sweetness, the
larger fruits deteriorate very considerably when old, their taste then being that of fermenting sugar. The colour of the fruit is at first green, then purple, at length deep purple or black.

A large shrub, erect, suberect or scandent; occasionally climbing over high trees in the forest. It is one of the commonest plants in Khandala; in open country it is erect or suberect; in dense forest it becomes a climber or the branches may be seen trailing along the ground.

The fruit is collected and sold in the bazaars; it has a pleasant taste and is mildly laxative. Good jam is made of the fruit.

Local name: Karvanda.

Flowers.—December to March. Fruits.—March to June.

Woodrow, Kunthakar; Cooke; Santapau 136/2, 1087, 4050-4052; 4155, 4186, 4213, 4263, 4264, 4695.


The main differences between this variety and the typical plant can be summarized thus: (1) This variety is a erect shrub or small tree, I have not seen any specimen with scandent or subscandent habit. (2) The flowers and fruits come considerably later than those of the typical plant. (3) The colour of the fruits is at first green, at length very pale greenish yellow or creamy white, the pulp of the fruit being of the same colour. In shape the fruit is almost spherical, often 20 x 19 mm., seeds usually four, occasionally only three develop, but the remains of the fourth seed are clearly visible. (4) In taste, this fruit is considerably sweeter than that of the common variety.

This new variety is not common; so far I have only seen three specimens in the whole district; the Katkaris sell the white karvanda fruits in the railway station, and charge higher prices for the better size and quality of these fruits.

Local name: Safed Karvanda.

Flowers.—February to April. Fruits.—May to June.

Santapau 4401, 4402, 4407, 4408, 8930, 8934, 8935.

Rauwolfia Linn.

Rauwolfia densiflora (Wall.) Benth. ex Hook. f. FBI. 3: 633, 1882; O. 2: 127; G. 808.

Tobroonia montana densiflora Wall. in Edw. Bot. Reg. 15; t. 1273, 1829.

Ophiocodon zeylanicum Wight, Icon. t. 1292, 1848.

An erect shrub, 1-5-3 m. high; stem and branches distinctly marked with abundant lenticels; sap milky white, thick. Leaves with numerous nerves, conspicuous beneath, coming out almost at right angles to the midrib and opposite or alternate with each other, meeting in an intramarginal nerve; petioles often obscure on account of the
decurrent blade. Branches with a ring of minute, finger-like, purplish glands going round the branch at the node; the ring just passing inside the axil of the leaf; these glands are only visible on young branches.

Flowers not seen in Khandala. Fruit a drupe, single or paired, at first reddish, then purplish, at maturity purplish black.

A rare plant in the district; there are some good specimens at the edges of dense forest near Forbay. The arrangement of the leaves in whorls of 3 or 4 seems to be very characteristic.

Fruits.—June to October.

Blätter in MS. catalogue; Santapau 136/14! 2094-2098! 2466! 2059! 4411! 13381-13385!


Ophiogryllon serpentinum Linn., Sp. Pl. 1043, 1753; Gr. 118; D. & G. 143; Wight, Icon. t. 849.

A small shrub, 30-50 cms. high, with white flowers and scarlet peduncles; the fruits are also scarlet.

During the monsoon of 1950 several specimens were collected on Monkey Hill Plateau; they were growing more or less in the open, or under the shade of trees, but not in dense jungle. The plant is reputed of high medicinal value in the district.

Blatt. Herb. 23588! Santapau 11138-11141!

Lochnera Reichb.


Vinca rosea Linn., Syst. (ed. 10) 944, 1759; FBL 3 : 640.

Catharanthus roseus G. Don, Syst. 4 : 95, 1837; Gr. 115; D. & G. Suppl. 53.

A garden plant, very often cultivated in Khandala, especially in St. Xavier's Villa and Convalescent Home. Flowers are rose coloured or pure white, but the colours are not mixed on the same plant. I have observed these plants in flower almost throughout the year for several years.

Santapau, passim.

Alstonia R. Br.

Alstonia scholaris (Linn.) R. Br. in Mem. Wern. Soc. 1 : 76, 1811; FBL 3 : 642; Gr. 118; Wight, Icon. t. 422; D. & G. 145; O. 2 : 132; G. 810.

Echites scholaris Linn., Mant. 1 : 53, 1767.

As Graham remarks, the local inhabitants are in fear of this tree, hence the local name; the milky white sap of the tree is said to be very
Poisonous. No local use is made of any part of the tree. Common all over Khandala; an elegant tree on account of its regular branches and whorls of leaves.

Local name: Shaitan.

Flowers.—December to February. Fruits.—January to June.

_Santapau_ 136/3, 4, 17 ! 656 ! 1657 ! 1991 ! 2186 ! 3356 ! 8646 ! 8649 !

_Holarrhena_ R. Br.

_Holarrhena antidysenterica_ (Linn.) Wall., Cat. 1872, 1829; G. Don, Syst. 4: 78, 1837; FBI. 3 : 644; D. & G. 145; C. 2 : 133; G. 811.

_Echites antidysenterica_ Roxb.: Gr. 249.
_Holarrhena Codaga_ G. Don: Wight, Icon. t. 1297.

A very common shrub all over Khandala; the largest specimen measured 5 m. in height. The scent of the flowers is almost unnoticeable after April-May.

Local name: Kuda, Kala Kuda.

_Matt. Herb._ 21297 ! Hallberg in MS. catalogue; _Santapau_ 136/7, 12 ! 454 ! 903 ! 2186 ! 4331 ! 4961 ! 6916 ! 8827 ! 8950 ! 8968 ! 9026 ! 8184 !

_Tabernaemontana_ Linn.


_Tabernaemontana coronaria_ Willd., Enum. Hort. Berol. 275, 1809; FBI. 3 : 648; Gr. 115; D. & G. 144; Wight, Icon. t. 477.

A shrub about 1-1.5 m. high. Leaves appearing either shortly before or at the same time as the flowers; petioles often obscure on account of the decurrent blade of the leaf. Flowers at first creamy white, later pure white with a small yellow spot in the centre, strongly and sweetly scented, more so in the evening or early morning. Corolla up to 4-5 cm. diam. Fruits not seen in Khandala.

There is but one clump of several plants growing together near the old railway line below Elphinstone Point. A garden escape. Cultivated in St. Xavier’s Villa.

Flowers.—During the dry season.

_Santapau_ 2120 ! 3278 ! 8791 ! 9100 !
Wrightia R. Br.

**Wrightia tinctoria** R. Br., in Mem. Wern. Soc. 1: 47, 1811; FBI. 3: 663; Gr. 114; D. & G. 145; Wight, Icon. 5. 444; C. 2: 187; G. 315.

Common in Khandala, especially from Thakurwadi up to Behran’s Plateau. Flowers appear generally when the tree is leafless and they are very abundant; fruits persist even when the young fruits of the following season have appeared; the large bunches of pendulous fruits are very noticeable during the cold and dry seasons.

This tree is easily confused with *Holarrhena*; locally both plants bear the same name. The presence of exerted anther and of the corona clearly separate this tree from *Holarrhena*. No use is made of this tree locally except for firewood.

**Local names**: Dhdadkar, Kala Kuda.

**Flowers**.—March to June. **Fruits**.—April to December.

**Cook**: Blatt. Herb. 21337! 21340! 27606! Santapau 536! 1913! 1914! 2132! 3963! 4072! 4391! 4392! 4606!

**Beaumontia** Wall.

**Beaumontia grandiflora** (Roxb.) Wall., Tent. Fl. Nepal. t. 7, 1824; FBI. 3: 660; Gr. 113; D. & G. Suppl. 52; C. 2: 123.

**Echites grandiflora** Roxb., Hort. Beng. 20, 1814; Fl. Ind. 2: 14, 1832 (excl. fruct.).

There was only one specimen in the whole district, just behind Khandala Hotel; unfortunately the tree supporting it died and was cut down for firewood, and with the support *Beaumontia* was also cut. Thus perished one of the finest plants in Khandala.

**Flowers**.—December to March.

**Santapau 1633! 1634! 1635!**

On 27 December 1949 the plant was observed to have survived in its former habitat; at that date it seemed to be thriving, but was only in leaf.

**Chonemorpha** G. Don.


**Echites fragrans** Moon, Cat. 20, 1821.

**E. macrophylla** Roxb., Hort. Beng. 20, nom. nud., 1814; Fl. Ind. 2: 13, 1832 (non H.B.K., 1819).

**Chonemorpha macrophylla** G. Don, Gen. Syst. 4: 76, 1837; FBI. 3: 661; Gr. 113; D. & G. 149; Wight, Icon. t. 432; C. 2: 139.

A very large and beautiful climber, going over high trees in dense forest; the sap is milky white and thick. Both in flower and merely in leaf, this is a very showy plant. It does not seem to produce much
fruit in proportion to the large number of flowers. Common below Elphinstone Point; there is another large specimen below Duke's Nose, about half way between the village path and the bottom of the ravine.


Santapau 810 ! 1332 ! 8090 ! 12374-12879 !

ANODENDRON DC.

Anodendron paniculatum DC., Prodr. 8: 444, 1844; FBI. 3: 668; D. & G. 147; C. 2: 141.

Echites paniculata Roxb., Fl. Ind. 2: 17, 1832; Wight, Icon. t. 396 (non Poir.).

Gymnema nepalense Graham, Cat. 120, 1839 (non Wight).

This is one of the commonest plants about Khandala. When it grows near a support, it climbs very high; in the open, it is an erect or suberect shrub with very long branches. All parts of the plant possess abundant latex. At dehiscence, seeds with their comas are very often seen floating in the air. The local name is Kauli.

Flowers.—January to May. Fruits.—The whole year.

Graham; Thurston; Blatter and Hallberg in MS. catalogues; Sedgwick 1772 ! Santapau 136/6, 19 ! 566 ! 1128 ! 1646 ! 1647 ! 1945 ! 1955 ! 2090 ! 3611 ! 3612 ! 5805 ! 8615 ! 8989 ! 14044 !

PLUMERIA Linn.

Plumeria acuminata Ait., Hort. Kew. (ed. 2) 2: 70, 1811; Gr. 119; G. 321; Merrill, Enum. 3: 321.


Cultivated in gardens; there is a good specimen on Monkey Hill Plateau in fairly dense forest away from any habitation.

Local name: Champa.

Flowers.—December to June. Fruits.—Not seen in Khandala.

Santapau 9025 !
NERIUM Linn.


N. odorum Ait., Hort. Kew. 1 : 297, 1789; FBI. 3 : 655; Gr. 114; C. 2 : 143; G. 821.

A garden plant often seen in Khandala gardens. There is a good specimen in St. Xavier's Villa, which I have kept under observation for a number of years; it seems to flower and fruit regularly.

Merrill, loc. cit., writes “A native of tropical or subtropical Asia now pantropical; not satisfactorily distinguished from the oleander, Nerium oleander Linn.”

Santapau, passim in gardens.

ALLAMANDA Linn.

Allamanda cathartica Linn., Mant. 2 : 214, 1771; C. 2 : 144; Bor & Raiizada, in JBNHS. 45 : 270, f. 3.

A. Aubletii Pohl, Pl. Bras. 1 : 75, 1827; Gr. 116; D. & G. Suppl. 53.

A shrub about 1.5 m. high, erect or suberect, growing on old walls in St. Xavier's Villa garden. Flowers bright yellow. Fruit not seen in Khandala. The leaves are in whorls of 4, occasionally towards the end of the branches they are opposite, subopposite or even alternate.

Flowers.—October to January.

Hallberg in MS. catalogue; Santapau 5264 ! 8091 ! 8092 !

ASCLEPIADACEAE.

HEMIDESMUS R. Br.

Hemidesmus indicus (Linn.) Br. in Mem. Wern. Soc. 1 : 57, 1811; FBI. 4 : 5; C. 2 : 147; G. 825; Blatt. & McCanna, Revis., in JBNHS. 36 : 524, 1922.

Periploca indica Linn., Sp. Pl. 211, 1753.

Prostrate, semi-erect or climbing shrub, one of the most variable plants in the district. Stems purplish or vinaceous. Leaves up to 11.4 cms. long, varying in width from 6 to 51 mm., dark green above, whitish beneath, often with white veins above, especially when the plant grows in open fields.

A very common plant about Khandala, in flower practically throughout the year. The leaves are sometimes chewed as “Pan Sopsri” and are said to be very refreshing. In general the narrow-leaved forms grow in open country and are the ones preferred for chewing; the broader leaved forms are the commoner during the cold season.
Local names: Duduril, Pan Sopari.
Flowers.—Throughout the year. Fruits.—Only seen on 21st April 1944 and 3rd September 1949.

Blatt. Herb. 21408! 27635! 28048! 28163! Santapau 137/32, 46! 778! 1180! 1231! 1924! 2978! 3051! 4903!

Cryptolepis R. Br.
Cryptolepis buchanani Roem. & Sch., Syst. 4: 409, 1819; FBI. 4: 5; Gr. 113; D. & G. 148; Wight, Icon. t. 194; G. 2: 147; G. 826; Blatt. & McC. 524.

Fairly common in the district, and easily confused with Anodendron when in leaf or flower; the fruit of either plant is, however, very typical. The stems and branches are used as ready-made ropes for grass or firewood bundles. The excoriating bark is typical of this plant, and on this characteristic alone Cryptolepis may be identified.

Flowers.—April to June. Fruits.—September to January.

Blatt. Herb. 20612! 20215! 20305! Blatt. in Revis.; loc. vit., Santapau 137/7, 275! 524! 1099! 1350! 1469! 1927! 2036! 2576! 2577! 3011! 1430! 1522! 8920! 9155!

Calotropis R. Br.
Calotropis gigantea (Linn.) R. Br. in Ait., Hort. Kew. (ed. 2) 2: 78, 1811; FBI. 4: 17; Gr. 120; D. & G. 149; Wight, Ill. t. 165, 158A; C. 2: 152; G. 832; Blatt. & McC. 536.


In open country, this shrub is about 1-1.5 m. high; below St. Xavier’s it attains a height of 4 m. with a stem 15 cms. in diam.

The whole plant is intensely “milky”; any bruise produces abundant latex that soon solidifies and seals the bruise. Locally the latex is used for sterilising and sealing of wounds on men and cattle, and seems to be very effective in preventing wound infection.

Common in waste places; it is also common along the sides of stream beds. Often these plants are covered with aphids.

Local name: Ak.

Flowers.—The whole year. Fruits.—January to June.


Holostema R. Br.


Asclepias annularis Roxb., Hort. Beng. 20, 1814 & Fl. Ind. 2: 27, 1832.
Holostemma Rheodei Wall., Cat. 4469, 1828; FBI. 4: 21; Gr. 121: D. & G. 148; Wight, Icon. t. 597.

H. Rheideanum C. 2: 156, 1904 (non Spreng.).

The whole plant contains abundant latex, which when drying yields an elastic residue. Rare in Khandala. The flowers are eaten by local people and this may account for the relative scarcity of the plant in the district.

Flowers.—5th July 1942. Fruits.—19th October 1943.

Santapau 579 | 2988 | 2989 | 2990 |

Cynanchum Linn.

Cynanchum callialata Ham. in Wight, Contr. 56, 1834; FBI. 4: 24; Wight, Icon. t. 1279; C. 2: 157; G. 236; Blatt. & McC. 529.

Fairly common at the elevation of Khandala, rare below; the colour of the corona and the shape of the fruit is distinctive among the Asolepiads of the district.

Flowers.—September to December. Fruits.—October to May.

Cookes: Blatt. Herb. 27917 | Santapau 1227 | 1238 | 1292 | 1900 | 2544 | 2836 | 2911 | 3015 | 3488 | 3601 | 4363 | 5844 |

Gymnema R. Br.

Gymnema sylvestre (Rotz.) R. Br., in Mem. Wern. Soc. 1: 33, 1811; FBI. 4: 29; Gr. 120; D. & G. 151; Wight, Icon. t. 349; C. 2: 160.

Periploca sylvestris Rotz., Obs. 2: 15, 1781.

Generally a woody climber, but in Khandala seldom going over 6 m. in height; if it meets no support, it may grow as a prostrate, trailing shrub.

Abundant about St. Xavier’s Villa and on the slopes of Echo Point. When in leaf it is an elegant plant. Chewing the leaves of this plant has the effect of destroying all taste for sweet things, and this effect may last for nearly half a day; the plant is reputed a good remedy against diabetes.

Flowers.—April to June. Fruits.—October to March.

Santapau 137/30, 40 | 1222 | 1445 | 1988-1990 | 2064 | 3515 | 3967 | 2668 | 4208-4218 | 1486 | 6777 | 8874 | 8873 | 8874 | 9019 |


A powerful climber going over the tops of high trees in dense forest; stem in the lower part 12 cms. diam., and marked with wing like ridges of cork; young branches yellowish green, densely pubescent, terete, older ones lenticellate. Stem and branches with plenty of latex.
Leaves up to 15 x 11 cms., broadly ovate, acute or acuminate; young ones densely pubescent above, rufous pubescent beneath, at length glabrous or nearly so above except for the nerves, pubescent or rufous pubescent beneath especially on the nerves; margins entire; base rounded, truncate, or subacute; petioles up to 1 cms. long, densely pubescent.

Flowers in pedunculate cymes; peduncles shorter than the petioles, up to 12 mm. long, pubescent, interpetiolar but arising near the petiole; pedicels up to 8 mm. long, densely pubescent, supported by minute, pubescent bracts. In general the flower is remarkably like that of O. sylvestre.

Calyx densely pubescent, divided nearly to the base; lobes 1.5 mm., orbicular, obtuse, ciliolate, shorter than the corolla tube. Corolla yellow, 4-5 mm. diam.; tube 1.5 mm. long, about equalling the lobes. Lobes thick, deltoid, acute, recurved, pubescent on both sides, more densely so on the inner side, margins ciliolate; corona of 5 processes inserted on the corolla tube and alternate with its lobes, the ridges of the corona not protruding beyond the mouth of the corolla. The lower adnate portion of the corona decurrent, channelled and with ciliolate margins. Staminal column arising from the base of the corolla tube, anther tips obtuse; pollen masses erect, oblong, subsessile on the pollen carriers; style apex exerted beyond the anther tips, conical, bifid.

Follicles 8-9 cms. long, 5 mm. diam., gradually tapering to the apex, which is often recurved or beaked; young follicles densely pubescent, yellowish green; older ones brown, pubescent, straight or slightly falcately curved. Seeds about 12 in number, 10-12 mm. long, 3-4 mm. broad (including a 0.5 mm. broad wing), flat. Commas silky, white or reddish white, up to 4 cms. long.

The type of this new species (Santapau 5434) was collected in flower in Khandala on the slopes below Duke's Nose, at an altit. of about 550 m., on the 1st November 1944; and in fruit (Santapau 5798) in the same place on the 20th January 1945.

**Tylorhiza** R. Br.

*Tylorhiza fasciculata* Ham. in Wight, Contr. 50, 1834; FBl. 4: 40; D. & G. 151; Wight, Icon. t. 848; C. 2: 162; G. 842; Blatt. & McC. 530.

There is a large rootstock or rhizome-like underground structure giving off a number of aerial shoots at one end and more numerous fibrous roots at the other; this rootstock is perennial or at least biennial, for new shoots have been observed towards the end of the dry season coming out from a rootstock which was still supporting one or more of the previous season's dry aerial shoots.

Abundant on Behran's Plateau, especially along the south spur by the path leading to the Plateau; abundant also on the plateau itself in
patches. Elsewhere I have only seen it on one occasion on the slopes of St. Xavier's Ravine. The erect habit of this plant makes it a conspicuous plant among the Asclepiads of Khandala.

*Flowers.*—June to September. *Fruits.*—September to December.


*Tylophora cornosa* Dalz. & Gibs., *Bomb. Fl.* 150, 1861 (non Wight).

A very common plant all over the district, and flowering most of the year; it is not easy to distinguish from *T. indica* Merr., except by the shape of the membranous appendage above the anthers, which in the present species is rounded, whilst in *T. indica* it is rounded with a free, more or less subulate structure above.

*Flowers.*—More or less throughout the year. *Fruits.*—September to January.


*Cynanchum indicum* Burm. f. *Fl. Ind.* 70, 1768.

*Asclepias aristata* Linn. f., *Suppl.* 171, 1781.


Blatter in his MS. catalogue states that this plant is “fairly common in Khandala”. For nearly ten years I have searched for it in vain; it is possible that Blatter mistook *T. dalzellii* for the other species, for dissection of numerous specimens from Khandala has failed to show the distinctive appendiculate corona which is the typical character of *T. indica*. This plant is, therefore, included here only on Blatter’s authority.

Blatter in MS. catalogue.

**Marsdenia R. Br.**


*Asclepias volubilis* Linn. f., *Suppl.* 170, 1781.


There is only one group of such plants observed near St. Xavier's Villa; these plants possess abundant latex, which is watery or colourless. On June 14th, 1946, I collected a branch in bud; on dipping the branch in a saturated solution of mercuric chloride in alcohol, most of the buds opened fully at once.

*Local name:* Shendri, Gharphul.

*Flowers.—*April to June.  *Fruits.—*August to October.

*Santapau* 137/6! 523! 2062! 2063! 2991! 3972! 4682! 9154!

**Cosmostigma** Wight.

*C. racemosum* Wight, Contr. 42. 1834; FBI. 4: 46; Gr. 119; D. & G. 151; Wight, Icon. t. 591; C. 2: 167.

Only one specimen has been seen in the district. It is a large climber, particularly attractive when in leaf. The fruit is the largest among the Asclepiads of Khandala.

*Flowers.—*August 1944.  *Fruits.—*December to March.

*Santapau* 1476! 1487! 1491! 1754! 2040! 2047! 3847! 4622–4625!
12838–12841! 12848!

**Hoya** R. Br.


*H. pendula* Wight & Arn., in Wight, Contr. 36 (excl. syn.; non Wight, Icon. t. 579).

*H. pallida* Dalz. & Gibs., Bomb. Fl. 152, 1861.

*H. parasitica* Graham, Cat. 119, 1839. (non Wall.).

In habit this plant shows considerable variation; on June 16, 1944, I found a number of young seedlings each with one or two leaves growing on the bark of several trees, and the seedlings had no connection with the ground. In August, 1944, another large plant had numerous adventitious roots from most of the upper nodes, especially those near the ends of the branches. On several occasions I have noticed plants in the ravines growing on rocks. This plant, then, may be considered as a geophyte that on occasions may also live as an epiphyte; is it also a parasite?

Very abundant on trees on Babana’s Plateau and Bhuma Hill; also abundant on rocks in Echo Point Ravine. When in full bloom, there is no finer plant in Khandala. Plants growing on rocks often have their leaves infected with *Phyllosticta Hoya* died.

*Flowers.—*June to August.  *Fruits.—*August to November.

*McCann. ex Blatt. & McC., Revis.*: *Santapau* 137/15. 23, 31, 34!
499! 578! 636! 926! 1284! 1438! 1537! 1538! 2165! 2154! 2245!
2248! 2596! 2913! 4116! 4479! 4513! 4682! 9007! 9171–9173!
CEROPEGIA Linn.

*C. attenuata* Hook., Icon. Pl. 9: t. 867, 1852; FBI. 4: 67; D. & G. 154; C. 2: 174; McCann, in JBNHS. 45: 211.


An erect herb, 15-72·5 cms. high; root tuberous, spherical or somewhat flattened, up to 47 × 25 mm.; stems generally one, occasionally two, very rarely three from the same tuber, simple or very exceptionally branched. Leaves up to 10 cms. long, 5-10 mm. broad, tapering at both ends; the smallest leaves are near the base, the largest about the middle of the stem.

Peduncles up to 18 mm. long, one-flowered, with a small bract in the lower half or third. Calyx green, sepals hirsute along the middle of the back. Corolla up to 7·7 cms. long, straight or occasionally slightly curved; tube up to 4 cms. long, 6 mm. diam. near the base, 2·6 mm. in the middle, greenish; lobes up to 3·7 cms. long, purplish in upper, greenish in lower half, more or less pubescent on both sides; the inside of the tube is striated with purple striae, glabrous, the lower inflated part dark purple. Outer corona lobes purple, subclavate. Pollinia yellow. Follicles single or paired (when paired, they diverge but slightly), straight, up to 7·5 cms. long, 3·4-5 mm. diam., tapering to a fine point.

A gregarious plant, relatively common in patches on rocky ground among grasses; this plant is particularly abundant on Behran's Plateau. It is a pretty plant, easy to spot among grasses on account of the habit of its leaves which are opposite and decussate and rather close together.

**Local name**: Tilori.

**Flowers**.—July to October. **Fruits**.—September to October.

*Santopau* 137/16 ! 850 ! 2258 ! 2430 ! 2431 ! 2432 ! 2502 ! 2573 ! 2599 ! 2630 ! 2795 ! 4605 ! 4730 ! 4933 ! 5928 !

*C. lawii* Hook. f. in FBI. 4: 67, 1883; C. 2: 175; McCann 211.

*C. punchogoniensis* Blatt. & McC., in JBNHS 36: 534, 1933.

This is a very rare plant in Khandala; in the company of Mr. C. McCann and alone I have carefully searched for it for a number of years without success; this plant is common on Purandhar Hill.

**Flowers**.—July 1919.

**Woodrow**; *Blatt. Herb. 27398 ! 27424 !

*C. oculata* Hook., Bot. Mag. t. 4093, 1844; FBI. 4: 72; C. 2: 177; McCann 211.


Root tuberous, up to 48 × 25 mm., compressed perpendicularly to the axis. Stem herbaceous, branched, twining, up to 4·62 m. long; petioles up to 4·9 cms. long, with a few dark glands at the point of insertion into the leaf.
Flowers up to 9 in a cyme; peduncles clothed with many-jointed, spreading, hyaline hairs; pedicels glabrous. Calyx divided to the base or nearly so; sepals green, subulate; calyx as well as corolla hairy with spreading hairs when young, at length glabrous. Corolla up to 7.25 cms. long, base of the tube green for 6.9 mm., higher up purple, the depth of colour increasing from below upwards; segments of the corolla with recurved margins and united tips, greenish yellow in colour with purple spots on the lower third, the rest green; the inside of the tube is yellowish green with purple longitudinal striæ; the lower part of the tube is inflated, up to 7.8 mm. diam., the widest part of the corolla being near the base of the free segments and reaching 11 mm. Outer corona lobes shortly bifid, the teeth acute or subacute. Follicles not seen in Khandala.

Rare in Khandala. Conspicuous on account of the dark colour of the whole plant. The tubers are eaten by local people.

Flowers.—July to October. Fructs.—Not seen.

Blatt, Herb. 28203! Santapau 2264! 2265! 1828-1833! 4942-4948!

Ceropogia hirsuta Wight & Arn., in Wight, Contr. 30. 1834: FBI. 4: 71; C. 2: 177; McCann 211.

C. Jacquemontiana Dalz. & Gaba., Bomb. Fl. 153, 1861 (non Decne.).


The following notes were written by Blatter in the presence of a fresh specimen from Khandala: "Flowers cymose, about 5 flowers, peduncles 6 mm. long, with spreading hairs; pedicels 5 mm. long, lanceolate, almost subulate, glabrous, purplish. Corolla 2 cm. long, lower part depressed globose, greenish, upper part of tube beneath the lobes 1 cm. cream tinged with purple with the veins distinct, enlarged near the mouth, lobes about half the length of the tube (tips annulate), fiddle-shaped (i.e. folded on back a little above the middle), cream, margins of lobes and about the upper third of lobes purplish. Inside lower part purplish, the purple veins running up to the lobes, the upper part light green. Outer corona 10-toothed, purple. Inner corona lobes white, slender, cleft, hooked at the tip."

The specimen in Blatt. Herb. 28422 consists of but a few scraps including several complete leaves and two fruits. Judging from the leaves alone, this specimen seems to belong to C. intermedia Wt., the hairiness of the whole specimen being almost negligible as compared with that of C. hirsuta Wt. & Arn.; the leaves and fruit match those of the type of C. intermedia in Kew Herb. Mr. C. McCann, whilst writing his hitherto unpublished monograph on the Indian Ceropogias, has examined the present specimen and pronounced it to be C. hirsuta Wt.

Hullberg 28422 in Blatt. Herb.!

Ceropogia evansii McCann in JBNHS. 45: 209, 1945.

Ceropogia Graham, Cat. 117, 1839.
Climbing or twining herb, up to 2.74 m. long or a little longer; root tuberous, spherical or compressed, up to 6 cms. diam., 2 cms. thick. Internodes very long, thin, striate, somewhat twisted. Leaves thin, green above, paler beneath, glabrous on either side, ovate, margins ciliate, entire or suberect, base acute or subacute; the lower leaves up to 20.5 × 15 cms., becoming smaller upwards.

Flowers in many- to few-flowered umbellate cymes; peduncle hispid when young, at length hispid or glabrous, green or purplish, up to 4.5 cms. long, usually interpetiolar; pedicels up to 1 cm. long, slender, more or less hispid; bracts up to 6 mm. long, subulate, from a somewhat broad base, more or less hairy.

Calyx tube very short, almost 0; lobes subulate, glabrous, green. Corolla variable in colour; usually purple or greenish purple below, gradually becoming paler upwards, lobes yellow or pale yellow, the margins of the lobes occasionally tinged with red; the inside of the tube purple with a yellow circle at the base of the expanded tube; the tube, itself is glabrous, the lobes pubescent on the inside, the whole corolla glabrous on the outside. Outer corona lobes deeply bid, deltoid, the margins ciliate with short hairs directed towards the central axis. Pollinia yellowish, caudicle tinged with red in its upper quarter. Follicles divaricate, up to 15-5 cms. long and 5 mm. thick, gradually tapering at both ends, glabrous, straight or slightly falcately curved. Seeds up to 8 × 3 mm., compressed, brown; coma up to 20 mm. long, white or very slightly brownish, shining.

This is the commonest of the Ceropogias in Khandala. It is abundant on the lower slopes below Duko's Nose, twining on Ceratoc caucaea Bremek. (=Strobilanthes callous Nees). Locally the tuberous roots are eaten.

Flowers.—July to September. Fruits.—August to October.

McCowan 4647 (type) 14644 14645 14646 14648 14649 14650 1Sanapau 137/24 137/21 22 (cotypes) 1 697 1 83 1 919-522 (cotypes) 1 4553-4559 1 4552 1 6803-6805 1 6975 1 6908 1 6909 1 6922-6927 1 7438 1 9201-9208 1

Asclepias Linn.

Asclepias curassavica Linn., Sp. Pl. 215, 1753; FBL. 4: 18; Gr. 120; D. & G., Suppl. 54; C. 2: 180.

Common along the stream from Forbay to Soldiers' Cricket Field; common also along the stream beds in ravines. It is in flower most of the year.

Flowers.—Dry months of the year, occasionally during the rains.

Fruits.—Dry months of the year.

Sanapau 137/3 1 466 1 1154 1 1329 1 3204 1 8756 1 8757 1
LOGANIACEAE.

**Mitrocola** Linn.

*Mitreola petiolata* (Walt.) Torr. & Gray, Fl. N. Amer. 2: 45, 1846; Solander in Pflan. 4 (2): 34, f. 18 G-H; Merrill, Enum. 3: 311, 1929.


*Mitreola oldendiioides* Wall., Cat. 4350, 1831; DC., Prodr. 9: 9, 1845; FBI. 4: 79; D. & G. 155; Hook., Icon. t. 827; C. 2: 181.

A very rare plant in Khandala; I have only found it on the occasion mentioned below; it was growing under the shade of *Carvia callosa* Brenek., and was in fruit. All the fruits from Khandala are of the straight variety, i.e. var. orthocarpa Hochreut. Blatter and Hallberg do not mention this plant in their MS. catalogues.

*Fruits.*—November 1944.

*Santarcan 5444!*

**Strychnos** Linn.


*S. bicirrhosa* Graham, Cat. 112, 1839 (non Leach).

A fine climber going over the tops of trees, with long pendulous branches; the shape and texture of the leaves and the cinnate tendrils are very typical. Common in St. Xavier's Ravine; not seen at the alt. of Khandala or above. Locally no use is made of any part of the plant.

*Fruits.*—October 1943. *Fruits.—December in June.*

*Graham; Blatter in MS. catalogue. Santarcan 1599! 2870/2979! 3227-3229! 3578! 3689! 3870! 4130! 8857! 8858!*

**GENTIANACEAE.**

**Exacum** Linn.

*Exacum bicolor* Roxb., Hort. Beng. 88, 1814 & Bl. Ind. 1: 418; 1820; FBI. 4: 96; Gr. 129; D. & G. 158; Grisbach in DC. Prodr. 9: 45; Wight, Icon. t. 1321; C. 2: 187; G. k73.

*Sebaea carinata* Graham, Cat. 124, 1839 (non Spreng.).

The root is perennial, or at least biennial: on several occasions I have found fresh leaves coming out from a rootstock still bearing the previous season's inflorescence or remains of it. Stem about 60 cms.
high, occasionally reaching 110 cms.; root fairly thick, somewhat tuberous or enlarged; stems sharply quadrangular, at times winged down to the root, generally unbranched. Leaves acute above, subacute or obtuse lower down, 3-7-nerved, glabrous, shining green; main veins parallel. The largest leaves are those about the middle of the stem.

Flowers very showy, in dense terminal cymes; on September 2nd 1949 I counted 28 open flowers with at least as many buds on a large plant. Calyx green. Corolla up to 6-5 cms. diam.; at first pure white, then white with purple tips, at a later stage the whole petal is pale lilac, and finally it turns dirty white; fresh petals have "Amethyst Violet" (Ridg. 61) tips. Anthers "Primrose Yellow" (Ridg. 19), up to 16 mm. long, curved; filaments short, greenish yellow; style filiform, stigma minute, globose; both style and stigma yellowish.

Very abundant on the western slopes of Monkey Hill among grasses. A very elegant and attractive plant.

On March 24th, 1949, I found a very large number of small plants on Monkey Hill; the ground was totally bare of vegetation except for this plant, a few specimens were collected in flower at the time.

*Flowers.*—August to October, exceptionally in March 1949.

*Fruits.*—August to October.

*Eriacum nummum* Griseb. in DC., Prodr. 9: 46, 1845; Fl. 4: 68; Wight, Icon. t. 1324; D. & G. 157; C. 2: 188.

Herbaceous, erect, up to 26 cms. high; stem at the beginning of the season simple, from October onwards extensively branched, four-angled, occasionally winged. Leaves up to 25×6 mm., those about the middle of the stem the largest. Flowers of varying shades of blue-purple, usually "Roselyn Blue" to "Dark Violet" (Ridg. 57 to 59), sometimes pure white; pedicels slender, up to 25 mm. long. Calyx wings about 1 mm. broad; corolla up to 22 mm. diam.; anthers bright yellow; capsules about 5 mm. diam., subglobose.

One of the commonest and brightest of the herbs growing in grass fields. Locally this plant is used against malaria and other fevers.

*Flowers.*—August to November. *Fruits.*—October to November.

*Eriacum petiolare* Griseb. in DC., Prodr. 9: 46, 1845; Fl. 4: 98; Wight, Icon. t. 1324; D. & G. 157; G. 874.

THE FLORA OF KHANDALA.

Fairly widespread in the district, but nowhere abundant; on earth banks in shaded spots. When fresh, the whole plant is somewhat succulent and pale green in colour; on wilting, the leaves become very difficult to handle on account of their thinness.

Flowers.—September to October. Fruits.—October to January.

Blatt. Herb. 28188 | Sedgwick 7475 | Santapau 1052 | 2767 | 2845 | 2860 | 2864 | 2907 | 4908 | 5016 | 5160 | 5410 | 7406 | 7460 |

Exacum lawii Clarke, in FBI. 4: 98, 1883; C. 2: 189; G. 874.

An erect annual herb, reaching 24 cms. high, but generally much smaller; stems simple at the beginning of the rainy season, somewhat, though not extensively, branched at the later part of the rains. Leaves sessile, up 16 mm. long and nearly as broad, subobtuse.

Pedicels up to 45 mm. long. Calyx 4-partite, the nerves very prominent. Corolla up to 15 mm. diam., but generally much smaller, "Spectrum Violet" to "Dark Violet" (Ridg. 59 a-k), occasionally pure white; capsule 2-valved, globose to subglobose; style about as long as the capsule.

A very slender herb often found associated with Drosera indica Linn. and Byrmanthus pusilla Thw. among grasses. The habit of the inflorescence is quite different from that of E. sessile, which it otherwise much resembles.

Flowers.—September to November. Fruits.—October to November.

Santapau 964 | 1011 | 1012 | 2561 | 2515 | 5033 |

CENTAURIUM HILL.


Erhythrea roxburghii N. Don, Syst. 4: 206, 1837; FBI. 4: 102; Wight, Icon. t. 1325; D. & G. 157; C. 2: 190; G. 876.

Common and very abundant in rice fields after the harvest from November to the end of May; common also on the old railway line near the village tank. One of the prettiest plants in Khandala; it is often found associated with Anagallis pumila Swartz and Wahlenbergia gracilis Schrad.

Flowers.—October to May. Fruits.—January to May.

Blatt. Herb. 21476 | 28190 | Hallberg in MS. catalogue; Santapau 3089 | 3425-3427 | 3469 | 3755 | 3757 | 3914 | 3915 | 4163 | 4371 | 5877 | 5916 | 8764 |

CANCECRA LAMK.

Cancecra diffusa R. Br., Prodr. 421, in Observa., 1819; FBI. 4: 103; Gr. 123; D. & G. 158; C. 2: 191; G. 878.

C. Lawii Wight, Icon. t. 1327, 1848 (non Clarke).
Plants growing under moist conditions show very large leaves at the base and middle of the stem; such leaves soon fall off, and this may be the reason why in herbaria one very seldom sees them; all the specimens in Kew Herbarium have only small leaves, and this shows that the specimens have been collected during the dry season.

Common in Khandala, in shaded spots.

Flowers.—October to June, occasionally also during the rains. 

Fruits.—About the same time, and often together with flowers.

Blatt. Herb. 18659 | 18663 | 21528 | 27571 | 28023 | 28238 | 28444 | Hallberg in MS. catalogue; Santapau 135/1 1757A 1313 1 3069 1 3113 1 4378 1 5484 1 6069 1 8705


The wings of the stem are very clear when the stem is green and the wings fresh; at a later stage, they become rather obscure. Leaves sessile or very shortly petiolate. Flowers rosy purple or very occasionally white.

A common herb in rice fields after the harvest and during the winter season; it grows together with the preceding species, from which it is at once distinguished by the winged stem and the more restricted branching.

Flowers.—September to January. Fruits.—November to January.

Santapau 2757 | 3482 | 5463 | 5826 | 5917 | 8095


Both in the field and in the herbarium, I have always found this plant very difficult of identification; it is very closely allied to, if not identical with, C. decurrens Dalz. Examination of the type specimen in Kew Herb. has, if anything, increased my difficulties.

Flowers seem to be in dichotomous cymes; pedicels more or less clearly winged, up to 3 cms. long, somewhat thickened at the apex just under the flower. Calyx strongly nerves but not keeled; corolla paler in colour than C. diffusa.

Seems to be fairly common in Khandala in rice fields during the winter and early part of the hot seasons; it grows in the same fields as and together with all the other species of Canscora of Khandala.

Flowers and Fruits.—October to November.

Blatt. Herb. 27537 | 28187 | Santapau 5418 | 5464 | 7446


The following is the translation of the specific characters of this plant: "Similar to C. pauciflora and C. decurrens, from both of which it differs mainly by its larger flowers and capsules and by its calyces which are strongly keeled; it differs also in the flowering time, which in this
new species is much earlier than in the other species of Canescora. It seems to be an intermediate species between Sect. I and Sect. II of Clarke's Gentianaceae in Fl. Brit. Ind.

"An erect herb; slender, 10-25 cms. high; stem 4-winged or very strongly and acutely quadrangular; branches opposite or alternate. Leaves sessile or subsessile, those about the middle of the stem the largest, up to 6×2-5 cms., ovate, elliptic or lanceolate, subacute or obtuse, attenuated towards the base, decurrent into an obscure petiole; upper leaves much smaller, acute or subacute, sessile. Flowers in dichotomous cymes; pedicels quadrangular, obscurely winged, 1-5-10 mm. long; bracts minute, ovate, acute. Calyx not winged, but sharply quadrangular, 4-keeled, 9-10 mm. long; teeth 1.5 mm. long, triangular, acute. Corolla pale rose in colour, 10-13 mm. long; tube 6-7 mm. long, lobes obtuse. Ovary oblong; stigma 2-lobed, the lobes oblong, recurved; style 1.4-5 mm. long. Capsule 7×3 mm.

The type, Santapa 5015, was collected in Khandala on October 2nd, 1944 and is kept in Blatter Herb., Bombay; paratypes, 2653, 2750, 2779, 5044, 4045, 5073, 5423 are kept in Blatter Herb.; other paratypes 2880 and 1969 are kept, the former in Kow Herb., the latter in Arnold Arbor., U.S.A."

Swertia Linn.


Ophelia minor Griseb. in DC., Prodr. 9 : 126, 1845; Wight, Icon. t. 1302; D. & G. 156; Clarke in JLS. 14 : 448.

Pleuragynum minor Clarke in Hook. f., Fl. 4 : 120, 1893.

Common in grass fields; the flowers open only when the light is fairly strong; they close for the night, and in cloudy days they may fail to open altogether. This plant locally is used as a substitute for Chireta in the treatment of malaria and other fevers; it seems to give satisfactory results.

Local name: Chireta.

Flowers.—July to October. Fruits.—August to October.

Bhiva ex Cooke; Blatt. Herb. 21196 | Santapa 136/2, 6 | 631 | 724 | 763 | 2335 | 2414 | 4612 | 4653 | 4720 | 6876 | 6790 | 9244 |

Limnanthemum Gmel.


Villoresia indica Vent., Gr. 123, 1839.

O. Kuntze in Rev. Gen. Pl. 429, 1891, gives Nympheodes in place of Limnanthemum; Merrill and Perry in JAA. 30 : 45, 1949 list two species under Nympheodes, thereby indicating that they accept the publication
of the generic name in Hill's British Herbal, 1756, as valid; on the other hand, Hill did not consistently employ the Linnaean system of binary nomenclature in his book, and in consequence names therein published must be considered illegitimate in accordance with Art. 68 (4) of the Rules.

Abundant in deep water in the village tank; roots, stems and petals are used as a vegetable in Khandala.

Flowers and Fruits.—October to March.

Santapau 1143 ! 3028 ! 3028 ! 7474 !


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

Villarsia cristata Spreng., Syst. 1: 582, 1825; Gr. 123.

Generally a much smaller plant than the preceding species, growing in shallow water towards the edges of the tank. Leaves up to 15 cm. diam., in structure and colour like those of the other species.

Flowers much smaller, white, erect above the surface of the water or of the muddy soil at the edges of the tank. Seeds few, 6-10, considerably larger and much more strongly muricate than in the other species, straw-coloured and dull when dry.

Locally this plant is not collected, and this is on account of its shorter stems and branches; it is fairly abundant over the whole surface of the village tank at Khandala, but it is more abundant at the edges; under such circumstances it is often damaged by birds or animals.

Flowers and Fruits.—Hot season before the rains.

Cooke; Blatter in MS. catalogue; Blatt. Herb. 21436 ! 27445 !

Santapau, passim !

HYDROPHYLLACEAE.

Hydrosera Linn.

Hydrolea zeylanica (Linn.) Vahl, Symb. Bot. 2: 46, 1791; FBI. 4: 133; Wight, Icon. t. 601; Brand, in Friesch. 59: 174-175; C 2: 197; G. 884.


A gregarious annual herb, suberect, decumbent and often rooting at the nodes all along the stem or branches; when the plant grows in moist soil, the stem is succulent; when growing elsewhere, the stem is thinner, tougher and somewhat hairy.

A common plant in rice fields after the harvest, along the margins of tanks, in ditches and other moist situations. It is a fine plant, but the odour of stagnant water seems to permeate the whole plant.

Flowers and Fruits.—October to May.

THE FLORA OF KHANDALA.

BORAGINACEAE.

CORDIA LINN.

CORDIA DICHOTOMA Forst. f., Prodr. 18, 1786; Merrill, Enum. 3 : 373.


C. latifolia Roxb., Fl. Ind. 2 : 330, 1824; Gr. 133; D. & G. 173.

C. myxa auct. plur.; C. 2 : 199; Wight, Ill. t. 169 (non Linn.).

Not common in Khandala, but found both in open country and in dense forest. The unripe fruit is pickled; the ripe fruit is eaten and has a sweet flavour, but is very mucilaginous. Both monkeys and birds seem to be attracted by the young fruits and in consequence such fruits are seldom found on trees.

Local name: Bhokar.

Flowers.—March to May. Fruits.—April to June.

Blatt. Herb. 21599 v 21667 v 21668 v 21683 v 28469 v Santapau 182 (2) v 1/26, 29 v 432 v 1658 v 1742 v 3991 v 4230 v 4231 v 4232

COLDENIA LINN.

COLDENIA PROCUMBENS Linn., Sp. Pl. 125, 1753; FBI. 4 : 144; Gr. 135; D. & G. 171; C. 2 : 205.

A procumbent herb; branches radially spreading up to 25 cms. long; stems, branches and leaves greyish or ashy green, very hairy. Flowers white, inconspicuous. Fruit brown when ripe, usually hidden by the surrounding leaves.

Common on the dry sides of the village tank during the hot season; common also in rice fields after the harvest.

Flowers.—May 1942, June 1946. Fruits.—March 1944, April 1946, May 1944.

Blatt. Herb. 19514 v 19515 v 23633 v 21635 v Santapau 482 v 3768 v 4157 v 8750

ROTULA LOUR.

ROTULA AQUATICA Lour., Pl. Coch. 121, 1790; Robinson in Phil. Journ. Sci. 4 : 693; Merrill, Enum. 3 : 376; G. 893.


R. viminea Dals. in Hook. Icon. t. 823; D. & G. 170.

ECHINIA CRUSCATA Wight, Icon. t. 1880, 1848.
Fairly common in the stream bed in Kune Plateau and along St. Mary's Ravine; not seen elsewhere in the district.

Local name: Sheri.

*Flowers.*—September to November. *Fruits.*—October to December.

Blatt. Herb. 25221 ! 23474 ! 23649 ! 28109 ! 28104 ! 29559 ! Santapau 141/16 ! 1168 ! 2807 !

**Heliotropium?**


*Tiaridium indicum* Linn., Asperif. 14, 118; Wight, Ill. t. 171; Gr. 135; D. & G. 172.

Common and abundant in waste places especially near the village tank and the railway station. The main road and the stream passing along Kune Plateau into St. Mary's Ravine seem to be the main lines of distribution of this plant in the district. An unattractive and ill-smelling plant.

*Flowers.*—March to November. *Fruits.*—April to November.


*Heliotropium supinum* Linn., Sp. Pl. 130, 1753; FBI. 4: 149; D. & G. 171; Wight, Icon. t. 1387; C. 2: 209; G. 896.

*Piptoclava malabarica* G. Don: Gr. 135.

A prostrate, softly and densely villous herb. Nutlets 2-3; when the fruit consists of 2 nutlets, these are plano-convex; when of three, one nutlet is plano-convex, the other two sharply right-angled on the inner side.

A rare plant in Khandala.

*Flowers and Fruits.*—June 1946.

Blatt. Herb. 21674 ! 21676 ! Santapau 9085 ! 9086 !


*H. coronandelianum* Retz., Gbs. 2: 9, 1781; Gr. 135; D. & G. 171; Wight, Icon. t. 1388.

There seem to be two forms of this plant, according to the situation in which it grows. In dry ground the plant is small, at times only 6 cms. in diam., and prostrate with erect inflorescence; under more favourable conditions, it grows erect or suberect, and branches reach up to 25 cms. (including the inflorescence). Under the latter form, the plant is gregarious and forms dense clumps; on dry ground, it is an inconspicuous small herb.

*Flowers.*—February to June. *Fruits.*—February to June.

Santapau 4152 ! 4155 ! 4201 ! 4296 ! 3270 ! 4385 ! 8603 ! 8747 !
THE FLORA OF KHANDALA.

TRICHOIDESMA R. Br.


Common in waste ground about the railway station and village tank, and along the roadsides near the Reversing Station. When in full bloom it is a pretty plant.

In a large number of specimens examined at Kew, it was found that the most typical part of the plant are the auricles at the base of the calyx segments, which in the present species are curved inwards; in T. indicum they curve and spread outwards and upwards.

Flowers.—August to November. Fruits.—September to November.

Blatt. Herb. 21671 | 21608 | 21685 | 27587 | Sedgwick 2570 | Andrews A 304 in Kew Herb. | Santapau 141/15 | 904 | 2478 (4) | 9263 | 9264

CYNOGLOSSUM Linn.

Cynoglossum glochidiatum Wall., Cat. 922, 1828; Lindley in Bot. Reg. 27: t. 15, 1841; FBl. 4: 156; Brand 133.

C. dentiscutatum DC., Prodr. 10: 150, 1846; FBl. 4: 156.

Annual, erect, more or less extensively branched, up to 1-2 m. high; stem and branches terete, striate, hairy, sometimes strigose. Lower leaves up to 17 x 6-5 cm., oblong or lanceolate; apex acute; margins sub-denticulate or entire; the whole surface of the leaf is scabrous above with stiff hairs from minute bulbous bases. Petioles up to 6 cm. long. Higher leaves smaller, lanceolate, shortly petioled, the highest leaves being sessile or subsessile.

Flowers in terminal racemes, which are up to 50 cm. long with an occasional leaf among the flowers along the axis of inflorescence; pedicels 2-7 mm. long, filiform; rachis and pedicels appressedly hairy. Calyx green, about 3 mm. long, hairy, divided to about the middle, lobes acute, subacute or obtuse; the whole calyx persistent in fruit and somewhat enlarged; nerves very obscure. Corolla 2-5-5 mm. long, about 4 mm. diam., pale blue or lilac with deeper blue centre. Nutlets up to 3 x 2 mm., ovoid, strongly margined with a few glochidia on the outer surface and more densely glochidiate over the rest of their surface except for the small basal scar.

Fairly common in Khandala especially about St. Xavier's Villa; an unattractive herb with a wild appearance.

Flowers and Fruits.—June to November.

Blatt. Herb. 21692 | 21638 | 21640 | 21641 | 28191 | Santapau 141/15, 18 | 905 | 1123 | 2272 | 2400 | 2651 | 5133 | 6974 | 8105 | 9142 | 9237

C. denticulatum var. reyniana Clarke in FBI. 4: 157, 1883; C. 2: 217.

C. canescens Graham, Cat. 135, 1839 (non Willd.).

C. glochidiatum Dalz. & Gibbs., Bomb. Fl. 172, 1861 (non Wall.).

The following is Brand's description supplemented with my own field notes.

Stems erect, thick, extensively branched, up to 1-30 m. high, hispid or glabrate. Basal leaves up to 20 × 7 cms., petioles up to 6 cms. long; these leaves soon fall off. Leaves about the middle of the stem petiolate, obovate, 12-18 cms. long (including the petiole), 5-6 cms. broad, setose on both sides, shortly cuspidate at the apex, base gradually passing into the petiole, lateral nerves very clear. Higher leaves sessile, smaller.

Inflorescence terminal, at first capitate-paniculate, later elongated into a panicule; pedicels in fruit shorter than the calyx. Sepals ovate, obtuse, pilose, 1-nerved, 3 mm. long. Corolla shortly and broadly hypocrateriform, 6 mm. long, 9 mm. diam., limb divided up to the base, lobes ovate obtuse, longer than the tube; scales at the mouth of the tube subquadrate, emarginate, attached to the middle of the tube by a filament; the whole corolla pale blue, with deeper centre; anthers ovate, not going beyond the scales; style shorter than the calyx. Nutlets cohering with the style, ovoid, 2 mm. long, equally glochidiate all over except on the small basal scar, marginate with a margin which is at times very clear and at other times scarcely distinguishable.

It is somewhat difficult to distinguish this species from C. glochidiatum Wall., and the difficulty has not been removed after examination of all the specimens from India in Kew Herb.; the distinguishing features seem to be the length of the pedicels, the size of the corolla and the even distribution of the glochidia all over the nutlet.

Flowers and Fruits.—July to August 1945.

Meebold 8815 in Kew Herb.; Blatt. Herb. 21584! 21585! 21584! Sankupon 8830! 6931! 6840! 6910! 6911!

Adelocaryum Brand.

Adelocaryum coelestinum (Lindl.) Brand, in Fedde, Rept. 18: 640, 1915 & in Pfeurich. 78, f. 8.


Echimospermum coelestinum Wight, Icon. t. 1394, 1850.

A tall, gregarious and very conspicuous plant, common during the second half of the monsoon; very abundant near trees on the high slopes and on top of Bhima Hill; the dry stems remain standing for a long time after the plant has withered. When abundant, it is a fine sight.

Flowers.—August to November.  Fruits.—September to November.

CONVOLVULACEAE.

CUSCUTA Linn.


In the Blatt. Herb, there is but one specimen labelled in Blatter's hand "Bombay-Khandala" without date or more precise locality. I have not seen the plant growing in the district, and hence consider its occurrence in Khandala as rather doubtful.

Blatt. Herb. 22177 !

ERYCIBE Roxb.

Erycibe wightiana Graham, Cat. 137, no. 1024, 1839; D. & G. 170; Hall. f. in Bull. Herb. Boiss. 5: 737; G. 920; Santapau 339.

E. paniculata Roxb., var. wightiana C. B. Clarke in FBI. 4:181, 1883; C. 2: 236.

A very rare plant in Khandala; I have not found it growing in the district. My only authority for the inclusion of the plant is the statement of Graham, which in all probability was also the reason for the inclusion in Blatter's catalogue. There are no specimens from Khandala in Blatt. Herb.

Graham: Blatter in MS. catalogue.

PORANA Burm.

Porana maiabarca Clarke in FBI. 4: 223, 1883; C. 2: 226; G. 921; Santapau 339.

P. racemosa Graham, Cat. 133, 1839; D. & G. 162 (non Roxb.).

When comparing the specimens of my Khandala collections with the types in Kew Herb., I found that in my plants the sepals in fruit are much narrower and the hairs like spiculation more distinct than in Delsell's plants from Parr, the type of the species.
A very elegant plant, particularly attractive towards the end of October when it is in full bloom, and when it covers large patches of the slopes below St. Xavier’s Villa. For the rest it is not a common plant in the district.

*Flowers.*—October to November. *Fruits.*—November to January.


**Evolvulus** Linn.


**Convolvulus alsinoides** Linn., *Sp. Pl. 157, 1753.

**Evolvulus hirsutus** Lamk.; Gr. 133; D. & G. 162.

A small prostrate or suberect herb with branches spreading radially from a woody rootstock; the whole plant is densely hairy. Leaves distichous and closely arranged on prostrate branches. Flowers light blue, solitary or in pairs from an axillary peduncle. Seeds glabrous, very dark brown.

A rare plant in Khandala. Grows on very dry, open ground.

*Flowers and Fruits.*—May 1944, June 1946.

*Santapau* 4336-4338! 9084!

**Convolvulus** Linn.


A very typical trailing or climbing plant with hastate leaves. Rare in the district; on the only occasion when I have seen the plant in Khandala, it was growing along the railway line among ballast stones, there were about 20 plants in a short distance.

**Blatt. Herb.** 22312! *Santapau* 15 June 1946!

**Merremia** Dennst.


**Convolvulus umbellatus** Linn., *Sp. Pl. 155, 1753.


One of the commonest plants of the family growing in the district; it is often found on hedges in open country, or towards the edges of dense forest. The whole plant is rather variable, and on this account it is not an easy one to identify in the field.
Flowers.—January to March. Fruits.—January to May.

Blatt. Herb. 22306 | 22319 | 22323 | 22346 | Gammie 16127 | Santapau 138/59 | 1618 | 1755 | 3570-3572 | 9619 | 3620 | 3845 | 4028 | 4026 | 5801 | 5802 | 6005 | 6006 | 8617 | 8618 | 8962 | 8963 !

Merremia vitifolia (Burm. f.) Hall. in Engl. Bot. Jahrb. 16 : 552, 1893 ; C. 2 : 239 ; Q. 928 ; Oostroorn 329 ; Santapau 344.

Convulvulus vitifolius Burm. f., Pl. Ind. 45, t. 18, f. 1, 1768.

Ipomoea vitifolia Blume, Bijdr. 709, 1825 ; FBL. 4 : 213 ; Gr. 192 ; D. & G. 163.

A rare plant in Khandala, except on Battery Hill Plateau, where it is fairly abundant in dense forest. Its leaves are very similar to those of several species of Vitis, but the spreading hairs on the stem and the absence of tendrils readily identify this plant. Graham, loc. cit., quoting Dr. Lush calls this plant "The Prince of Convulvuli"; it is indeed a very fine plant when in bloom.

Flowers.—January 1945, February 1946. Fruits.—March 1943.

Blatt. Herb. 22314 | 28477 | Santapau 714 | 1479 | 1756 | 5818-5821 | 8679 !

Ipomoea Linn.

Ipomoea clarkei Hook. f. in FBL. 4 : 734, 1885 ; C. 2 : 245 ; Santapau 346.

I. Stockesi Clarke in FBL. 4 : 207, 1889 (non Clarke, ibid. 204).

Rare in the district. Only seen once on the upper slopes behind Khandala Cemetery, twining among grasses. An elegant plant.

Flowers.—15 October 1914.

Santapau 5149 !

Ipomoea muricata (Linn.) Jacq., Hort. Schoenbr. 3 : 40, b. 323, 1794 (non Cav. 1799) ; FBL. 4 : 197 ; Oostroorn 551 ; Santapau 349.

Convulvulus muricatus Linn., Mant. 44, 1767.


A rare plant in Khandala, easily distinguished by the muricate stems. It occurs only in open country or in clearings in the forest.

Flowers.—September to October. Fruits.—October to December.

Blatt. Herb. 28272 | Gammie 15410 | Santapau 854 | 2653 | 3338 | 7402 | 7409 | 7410 !

Ipomoea quamoclit Linn., Sp. Pl. 153, 1753 ; FBL. 4 : 199 ; Oostroorn 555 ; Santapau 349.

This plant is very common on the Konkan plains, ascending up to Thakurwadi station along the C. I. P. Railway line; I have not seen it above Thakurwadi, but as this is the limit of the district which I have been exploring, I include the plant here as occurring at the extreme limit of Khandala.

*Flowers and Fruits.*—28 November 1945.

*Samvat*, Thakurwadi, 28 November 1945!

**Ipomoea angulata** Lamk., Tabl. Encycl. 1: 464, 1791; Ooststroom 553; Santapau 349.


**Ipomoea cocinea** Clarke in FBI. 4: 199, 1833 (non Linn.).

**Quamoclit cocinea** Cooke, Fl. Bomb. Proc. 2: 261, 1904 (non Moench.).

A very pretty plant, very abundant on the slopes below St. Xavier’s Villa and on Battery Hill Plateau; very showy when in bloom.

Ooststroom, loc. cit., 565, remarks: “Several authors have confounded this species with the North American *I. cocinea* Linn. Sp. Pl. 160; **Quamoclit cocinea** (Linn.) Moench. (1794, p. 453). For a discussion of the differences between the two species see Hall. f. in Bull. Herb. Boiss. 7: 415, 1899.”

*Flowers.*—October to March. *Fruits.*—November to March.

*Santapau* 178! 1495! 1735! 3108-3111! 3339! 5391! 5499! 5500! 1

**Ipomoea nil** (Linn.) Roth, Cat. Bot. 1: 36, 1797; Hall. f. in Engl. Bot. Jahrb. 18: 136; Ooststroom 497; Santapau 348.

**Convolvulus Nil** Linn., Sp. Pl. 219, 1762.

**Ipomoea hederacea** Clarke in FBI. 4: 199, 1833; C. 2: 252 (et al. plur. auct., non Jacq.).

A common plant in the district, in open country by the road or at the edges of dense forest. The colour and size of the corolla render this one of the most showy plants in Khandala. From its distribution in the district, and especially on account of its occurrence on the highest parts of Bhoma Hill, this plant must be considered native in the district; I have not seen any of the introduced plants spreading upwards towards Bhoma Hill.

Ooststroom remarks: “Several authors have interpreted this species as being identical with the North American *Ipomoea hederacea* (Linn.) Jacq...and have mentioned it under that name...The true *I. hederacea* is probably now and then cultivated in gardens...”

*Flowers.*—September to November. *Fruits.*—October to November.

*Santapau* 1092! 1232! 2915! 2986! 2993! 5023! 5024! 5177! 5389! 5494! 1
Ipomoea soluta Kerr, in Kew Bull. 1941 : 16, 1941; Santapau 346.

I. campanulata Clarke in FBI. 4 : 211 (excl. var. illustris Clarke), 1883; Gr. 131; D. & G. 165; C. 2 : 247, et alior. aut.;, non Linn.

Among the authors of Indian floras, it is customary to include this plant as I. campanulata Linn., as Kerr has shown, the Linnean plant is not an Ipomoea at all, but Theophrastus populnea Soland.

Abundant on Battery Hill Plateau and on the slopes near Forbay; the venation of the leaves is so distinctive that it suffices for the identification of the plant. Young seedlings often show trailing branches which may run for several meters along the ground. When in full bloom, this is a showy plant, on account of the color and size and massing of its flowers.

For the full synonymy of this plant, see Kerr, loc. cit.

Flowers.—January to February. Fruits.—March 1962.

Blatt. Herb. 27468 ! Santapau 3984 ! 3985 ! 5822 !

Ipomoea diversifolia R. Br., Prodr. 487, 1810; Oosttroom 385; Santapau 347.


Ipomoea laxinata Clarke in FBI. 4 : 200. 1883; C. 2 : 250.

A slender, elegant plant growing on grassy slopes, prostrate and closely appressed to the ground, but not climbing or twining. The only spot where this plant has been found is in open grass lands at the highest part of the Saddle.

Flowers.—October 1944. Fruits.—December 1943.

Cookt ! Blatt. Herb. 28455 ! Santapau 3376 ! 5174 ! 5175 !

Ipomoea pes-tigris Linn., Sp. Pl. 162, 1753; FBI. 4 : 204; Gr. 132; Wright, Icon. t. 936; D. & G. 165; C. 2 : 250; G. 918; Oosttroom 504; Santapau 348.

I. pes-tigris var. hepaticifolia Clarke in FBI. 4 : 204, 1883.

Common in Bombay, rare in Khandala. The number of lobes in leaves seems to depend on the age of the leaf; near the end of the branches, leaves are 3-lobed, lower down they are mostly 5-7-lobed.

Blatt. Herb. 28267 !


Convulvulus caeruleus Linn., Syst. (ed. 10) 923, 1759.


I. pulchella Wight, Icon. t. 156, 1839 (non Roth).
Stone ariata, twisted, often rough with lenticels. Leaves up to 5-5 cms. diam., petioles slender. Peduncles up to 2-2 cms. long, 1-4-flowered. Corolla lilac or pale violet, tube paler in colour.

Not common in Khandala. I have only seen it growing in a sheltered cutting near water behind the Inspection Bungalow above Khandala.

Flowers.—March 1944. Fruits.—Not seen.

Blatt. Herb. 22308 ! Santapau 3831 !


Convolvulus Batatas Linn., Sp. Pl. 154, 1753.

Batatas edulis Choisy : Gr. 129.

Occasionally but rarely cultivated in Khandala for its tuberous roots. I have seen it only once under cultivation in St. Xavier's Villa.

Santapau 15 March 1945 !

ARGYREA LOUB.

Argyreia nervosa (Burm. f.) Boj., Hort. Maurit. 224, 1837 ; Ooststroom in Blumea 5 : 364 ; Santapau 360.

Convolvulus nervosus Burm. f., Fl. Ind. 48, t. 20, f. 1, 1768.

Argeira speciosa Sweet, Hort. Brit. 289, 1827 ; FBI. 4 : 185 ; Wight, Icon. t. 861 ; Gr. 128 ; D. & G. 168 ; C. 2 : 255 ; G. 907.

Blatter's reference in his catalogue is my only authority for the inclusion of this plant; there are no specimens from Khandala in Blatt. Herb.

Blatter in MS. catalogue.


The occurrence of this plant is given on the authority of Hallberg; I have seen no specimens from Bombay Presidency either in the Blatt, or Kew Herb. See Cooke's remarks, loc. cit., on the identity and occurrence of this plant.

Hallberg in MS. catalogue.

Argeira serica Dall. in D. & G. 169, 1861 ; FBI. 4 : 188 ; C. 2 : 256.

Ipomoea bracteata Graham, Cat. 131, 1839 (non Don).

A very showy plant with fine, large silvery leaves and large flowers. There is great variation in the size of the flowers. Only seen in Khandala on the upper slopes and top of Echo Point.

Flowers.—July to September. Fruits.—25 July 1943.

Blatt. Herb. 23343 ! Santapau 894 ! 943 ! 2269 !
v, 1836; FBl. 4: 193; C. 2: 257.

The specimen listed below is but a young branch without flowers or
fruits; in my field book I find an entry made at the time of the collec-
tion: "Flowers pale pink, deeper in the tube"; such flowers could not
be collected on account of the position in which they grew. I have
compared this specimen with the type of A. pilosa Wt. & Arn. in Kew
Herb., and find that both match perfectly; hairs arising from bulbous
bauce seem to be present especially on the upper side of the leaves. I
consider my specimen as belonging to A. pilosa but in the absence of
flowers and fruits, identification cannot be definitely settled.

Santapau 530

6: 417, 1833; Gr. 128; D. & G. 169; Santapau 351.

Leucospermum ellipticum Wight, Icon. 4 (2): 12, 1850; FBl. 4: 192;
C. 2: 259.

Very common in Khandala and abundant, conspicuous on account
of the size of the flowers and the structure of the leaves. The size of
the flowers is larger than that of any specimen in Kew Herb.; the leaves
are also larger and the angle formed by the lateral nerves with the midrib
is much smaller. For these reasons the plant may be considered as a
new variety of the species, but in view of the extreme variability of the
plant, it is not advisable to speculate matters by the erection of new
varieties.

Flowers.—July to October. Fruits.—October to January.

Blatt. Herb. 22222 ! 2279 ! 223028 ! 225428 ! Santapau 138/22, 53 !
131/41 1 875 ! 903 ! 1008 ! 1158 ! 1281 ! 2486 ! 4061 ! 5179 !

SOLANACEAE

Solanum Linn.

Solanum nigrum Linn., Sp. Pl. 186, 1753; FBl. 4: 229; Dunal
in DC., Prodr. 13 (1): 50; G. 2: 263; G. 936; Santapau in
JBNHS. 47: 453.

S. rubrum Mill.: Wight, Icon. 1. 344.
S. incertum Dunal: Gr. 137.

Specimens Nos. 9107-9109 are remarkable for their pubescence.
Stems, petioles, peduncles and pedicels and calyx are densely pubescent;
the corolla is pubescent on the outside and along the margins; leaves
are more or less hairy on both sides, especially along the nerves. All
the hairs are simple, fairly stout, appressed or curving upwards.

Not common in the district; from the localities where the plant
has been found, it would seem that the plant is an introduction with the
railway station as the centre of its distribution.
Flowers.—March to June. Fruits.—April to June.

Solanum xanthocarpum Schrad. & Wondl., Sert. 1 : 8, t. 2, 1795; FBL. 4 : 236; G. 2 : 265; G. 928; Santapau 653.

S. Jacquinii Willd.; Graham, 139.

Diffuse, but not creeping, biennial or perennial, often woody at the base. Prickles compressed, yellow, shining, up to 2 cms. long, very numerous on all the vegetative parts of the plant and also on the pedicels and calyx.

Very common along the roadsides and in waste places.

Flowers.—Throughout the year, except during the rains. Fruits.—February to May.

Solanum indicum Linn., Sp. Pl. 187, 1753; FBL. 4 : 234; Gr. 138; D. & G. 174; Wight, Icon. t. 346; C. 2 : 266; G. 938; Santapau 653.

Very common all over; in the undergrowth or in small clearings in forest, seldom in open country by itself. During the rainy season, this plant produces plenty of fairly large leaves and flowers of a fine purplish blue; as the dry season advances, the leaves become smaller and the whole plant assumes a typically xerophytic appearance. Locally immature fruits are curried or even eaten raw.

Local name: Chichardi.

Flowers and Fruits.—The whole year.

Graham; Woodrow; Cooke; Hallberg in M.G. catalogue; Blatt. Herb. 2002! 2003! 2004! Santapau 144/3! 589! 746! 769! 1248! 4965! 6947! 8676! 8933!

Solanum tuberosum Linn., Sp. Pl. 185, 1753; FBL. 4 : 229; Gr. 137; D. & G. Suppl. 60; C. 2 : 269; G. 938; Santapau 655.

The Potato, cultivated, though not extensively, in the district. Some good crops were obtained near the Kune Katkari Settlement. Santapau, 1942!

Solanum melongena Linn., Sp. Pl. 186, 1753; FBL. 4 : 235; Gr. 138; D. & G. Suppl. 61; C. 2 : 269; G. 937; Santapau 655.

The Brinjal or Egg-plant, cultivated fairly extensively about Khandala; on several occasions I have seen it under cultivation in St. Xavier's Villa and in vegetable gardens near Khandala. This plant has not been observed wild in the district.

Santapau, passim!

For a full description, see loc. cit.

This is clearly a distinct species approaching *S. xanthocarpum* but differing mainly in the following particulars: its erect or suberect habit, with fairly long internodes; stem and branches woody or subwoody, not herbaceous; branches sharply angular and either not at all or only very faintly striate; prickles not so dense as and generally smaller than in *S. xanthocarpum*; petioles longer; corollas larger, calyx smaller; pedicels both in flower and fruit longer and stouter; fruits of about the same size or slightly larger; the whole plant much less pubescent.

*Flowers and Fruits.*—18th October 1943.

*Santapau* 2972 1 2973 1

**Physalis** Linn.

*Physalis minima* Linn., Sp. Pl. 183, 1753; FBI., 4 : 233; Gr., 146; C. 270; Santapau 657.

*P. pubescens* Wall., Ill. t. 166 B, f. 6 (non Linn.).

A rare plant in Khandala; I have only seen the plant mentioned below from the district. My plant was about 55 cms. high, with small yellow flowers with a purplish dot near the base of each petal, on the inner side.

*Flowers and Fruits.*—14th March 1943

*Santapau* 1690 1


Blatter's mention of this plant in his catalogue is my only authority for its inclusion among Khandala plants. There are no specimens in any of the herbaria consulted from Khandala. In general the two species of *Physalis* are rather similar, except for their sizes, the present species being much larger than the preceding one.

*Blatter* in MS. catalogue.

**Datura** Linn.


*D. fastuosa* Linn., Syst. Nat. (ed. 10) 2 : 932, 1769; FBI. 4 : 242; Gr. 141; Wight, Icon. t. 1399; C. 2 : 273; G. et al. recent. auct. Indici passim.

*D. alba* Nees in TLS. 17 : 73, 1837; Wight, Icon. t. 852; Gr. 141; D. & C. 174.

*D. fastuosa* var. *alba* Clarke, in FBI. 4 : 242, 1855; C. et al. recent. auct. Indici passim.
For the complex problem of the nomenclature of this plant, see Santapau loc. cit.

The occurrence of this plant in Khandala is given on the authority of Blatter and Hallberg: I have not collected it in the district.

Blatter and Hallberg in MS. catalogues.


The pubescence of the whole plant, the 10-toothed corolla and the character of the prickles on the fruit clearly distinguish this plant from D. Metel Linn. (D. fastuosu Linn. or D. alba Nees).

Gregarious, flowering and fruting through the dry parts of the year; common on low lying fields between the railway station and the main road in Khandala; occasionally it is also found on the dry banks of the village tank and fields nearby. This is an American plant, introduced into India and passing up to recently under the name of D. Metel Linn.

Local name: Dhatura.

Flowers and Fruits.—Throughout the dry season.

Santapau 144/2 ! 1998 ! 1999 ! 8758 !

Capsicum Linn.


U. frutescens Hrb., Pl. Ind. 1: 574, 1832; Gr. 139; D. & G. Suppl. 61; FBI. 4: 299 (non Linn.).

The Chili or Mirchi plant, occasionally seen in gardens or nearhouses in Khandala; I have noticed it on several occasions in St. Xavier's Villa, on the Kune Plateau, and in flower pots in the village. It flowers and fruits readily enough in the district; the fruits are used in curries, but I have seen children eating them raw with apparent relish. The fruits are relatively small and green at first, later they are bright red and extremely spicy.

Santapau, passim, cultivated.
PETUNIA Juss.

*Petunia* sp. (probably *P. nyctaginiflora* Juss. in Ann. Mus. Par. 2 : 216, t. 17, f. 2, 1803) ; Santapau 664.

A garden plant often seen in the better gardens near some of the Khandala Villas; it flowers profusely in the district, but the plant has not been observed growing wild.

*Santapau,* in gardens!

**LYCOPERISCON Mill.**


*Lycoperiscon ocellatum* Mill. : Clarke, in FHL. 4 : 237 ; Grc. 139 ; C. 2 : 275 ; G. 941.

The Love-Apple or Tomato plant. Often cultivated in the district and occasionally found wild about the village streets and in ravines along the stream beds. This clearly shows the means of distribution of the plant in Khandala. Tomatoes can be bought in the local bazaar throughout the year, and on inquiry they are found to be grown locally; the type of plant cultivated seems to be the one that gives fairly small fruits.

One of the main difficulties in the cultivation of tomatoes in Khandala seems to be that the plant produces large numbers of flowers but relatively few fruits, unless pollination is effected artificially. Moreover, locally produced seeds seem soon to lose their vitality, so that very few, if any, do germinate when planted in subsequent seasons.

*Local name:* Tambatu.

*Flowers.—* February to April.  *Fruits.—* April to May.

**NICANDRA Adams.**

*Nicandra physaloides* (Linn.) Gaertn., Fruct. 2 : 237, t. 141, f. 2, 1791 ; FHL. 4 : 240 ; Gr. 140 ; D. & G., Suppl. 62 ; C. 2 : 275 ; Santapau 660.


Rare; the only specimens so far seen from Khandala are those mentioned below, they were collected in St. Peter's School Garden.

*Flowers.—* 9th September 1944.

*Santapau* 4847 ! 4848 !

**NICOTIANA Linn.**

*Nicotiana tabacum* Linn., Sp. Pl. 180, 1753 ; FHL. 4 : 245 ; Gr. 140 ; D. & G. Suppl. 62 ; Comes, Mon. Gen. Nicot. 7 ; C. 2 : 276 ; G. 941 ; Santapau 660.
A rare plant in Khandala; it is found occasionally in gardens, where it is cultivated for the sake of its flowers.

Blatt. Herb. 28284 Santapau in gardens!

Cestrum Linn.

Cestrum nocturnum Linn., Sp. Pl. 191, 1753; Bor & Raizada in JBNHS 43: 8, f. 4, & t. opp. p. 8

An elegant shrub, occasionally planted in gardens; it flowers profusely in Khandala.

Local name: Rat-ki-xani.

Flowers.—December 1948.

Santapau 9773! 9774! 9775!

SCROPHULARIACEAE.

Verbascum Linn.


Common in waste lands about the talao and station, also common along the dry stream beds during the dry season. During the rains this plant disappears almost completely from Khandala, but as soon as the rains come to an end, new seedlings appear. It bears flowers and fruits throughout the dry season. A rank and unattractive plant.

Flowers and Fruits.—February to June.

Blatt. Herb. 1660! 1661! 1662! 29659! Santapau 141/2! 145/26, 27, 30! 1688! 2108! 3657! 6891! 8742!

Sutera Roth.

Sutera dissecta (Del.) Walp., Repert 3: 271, 1844; Bruce in Kew Bull. 1940: 63-64; Santapau 28.

Caparrisia dissecta Del., Fl. Egypte 96, t. 32, f. 2, 1812.

Sutera glandulosa Roth, Nov. Pl. Sp. 291, 1821; Fl. B. 4: 258; Wight Icon. t. 856; C. 2: 285.

It is only along the stream passing through Kune Plateau that this plant is somewhat common; it grows on moist ground during the dry season. When the plant is fresh, it has a strong scent, similar to that of the common Pogostemon.

Flowers and Fruits.—January to June.

Blatt. Herb. 1608! Santapau 3812-3815! 3822! 4379! 4908! 4909! 6074! 6075!
Bacopa Aubl.


Lysimachia Monnieri Linn., Cent. Plant. 2 : 9, 1756.


Herpestis Monniera Benth., Scroph. Ind. 30, 1836 ; FBI. 4 : 272 ; Gr. 144.

Herpestes Monniera Dals. & Gibs., Bomb. Fl. 178, 1861.


Common in stagnant water or in damp soil; abundant in ditches near the railway station and in shallow water in the village tank. It is a gregarious plant, and due to its creeping habit, it soon covers large surfaces in the tank or ditches. Flowers are not showy, but the erect habit of the branches and the colour and shape of the leaves make a clump of these plants rather pleasing.

Local name: Brami.

Flowers and Fruits.—Practically the whole year.

Kanikhar ; Blatt. Herb. 1674 ! Santapau 145/33 ! 868 ! 1680 ! 3025 ! 3344 ! 4523 !

Stemodia Linn.

Stemodia viscosa Roxb., Fl. Cor. 2 : 33, t. 163, 1798 ; FBI. 4 : 265 ; Gr. 143 ; D. & G. 176 ; Wight, Ic. t. 1408 ; C. 2 : 268 ; G. 949 ; Santapau 32.

The whole plant with the exception of the corolla is viscidly and glandular pubescent. A rare plant in Khandala.

Flowers and Fruits — April to October.

Santapau 3004 ! 3119 ! 4161 !

Limnophila R. Br.


Hottonia indica Linn., Syst. Nat. (ed. 10) 919, 1759.

Limnophila gratioloides R. Br., Prodr. 442, 1819 ; FBI. 4 : 271 ; Gr. 143 ; D. & G. 177 ; C. 2 : 291 ; G. 952.

L. racemosa Benth., Scroph. Ind. 26, 1835 ; FBI., C., G., 11. cc.

The identification of the two species L. racemosa and L. gratioloides has always been a source of difficulty; to me they are identical, neither the pubescence nor the size of the plant nor the strong turpentine odour being constant characters of any species in particular. See Santapau, loco cit.
Common in Khandala, in the village tank and elsewhere in stagnant water. The more common form is that with aerial entire leaves either opposite or in 3's, the submerged leaves being capillaceo-multifid; when the tank level begins to go down, a number of plants appear which correspond to L. myriophylloides Roth (—var. myriophylloides of L. gratioloides); such forms seem to be due not so much to specific distinctions as to the environment in which they grow.

Flowers and Fruits.—October to February.


Dopatrium Buch.-Ham.

Dopatrium junceum (Roeb.) Buch.-Ham. ex Benth., Scroph. Ind. 31, 1835; FBI. 4 : 274; Gr. 149; D. & G. 178; C. 2 : 292; Blatt. & Hallb. in JBNHS. 25 : 425; G. 954; Santapau 35.

Gratiola juncea Roeb., Pl. Cor. 2 : 16, t. 129, 1793.

An elegant, fleshy herb, up to 40 cms. long, simple or much branched from near the base, with long internodes and few and small leaves. Flowers minute, inconspicuous, light purple or violet.

A rare plant in Khandala; for several years this plant was only seen among grasses near the village tank and along the old railway line near the station; in 1949 and 1950 two tanks were discovered in the grounds of St. Xavier's Villa the surface of which was practically covered with the branches of this plant. When growing among grasses this plant is not easy to distinguish.

Flowers and Fruits.—August to October.

Santapau 6978-6979 ! 7455-7457 ! 10448-10453 !

Torenia Linn.

Torenia cordifolia Roeb., Pl. Cor. 2 : 32, t. 161, 1798; FBI. 4 : 276; Gr. 144; D. & G. 180; C. 2 : 292; Blatt. & Hallb. 422; G. 956; Pennell, Scroph. West. Himal. 32; Santapau 35.

A rare plant in Khandala; I have found it only on one occasion; there are no other specimens in Blatt. Herb. from the district. In my field book I noted at the time that the flowers are 2-lipped, the corolla tube purple, the lobes whitish and the wings of the calyx so large that the calyx is much broader than long.

A small herb growing on grassy slopes at the foot of Echo Point near the main village path. Not seen elsewhere in Khandala.

Flowers.—October 1943.

Santapau 2874 !
THE FLORA OF KHANDALA.

**Lindernia All.**

*Lindernia crustacea* (Linn.) F. Mueller, Cens. Austr. Pl. 97, 1882; Penrell 29; Mukerjee in JIB. 24 : 180; Santapau 37.

*Capraria crustacea* Linn., Mant. 87, 1767.

*Vandelis crustacea* Benth., Scroph. Ind. 35, 1835; FBL. 4 : 279; Gr. 144; D. & G. 180; Wight, Icon. t. 863; C. 2 : 295; Blatt. & Hallb. 420; G. 959.

Common in open grass lands, especially on moist paths during the monsoon and post-monsoon period. A rather elegant plant.

**Flowers.**—August to October. **Fruits.**—September to October.

Blatt. Herb. 1744 ! 1746 ! 1747 ! 29660 ! Santapau 145/9 ! 726 ! 5056 ! 6865 ! 6389 !

*Lindernia viscosa* (Willd.) Merrill, Enum. 3 : 439, 1923; Santapau 37.


*Vandelis hisura* Buch.-Ham. ex Benth., Scroph. Ind. 36, 1835; FBL. 4 : 280; D. & G. 179; C. 2 : 295; Blatt. & Hallb. 421.

*Lindernia hisura* Weiratt. in Plam. § 3 b) : 19, 1853; Mukerjee 131.

A rare plant in Khandala; I have found it only on one occasion, and have seen no other specimen from the district in the various herbaria consulted.

**Flowers and Fruits.**—May 1944.

Santapau 4162 !

*Lindernia hyssopoides* (Linn.) Haines, Bot. Bh. & Gr. 635, 1922; Mukerjee 132 : Santapau 38.

*Orozola hyssopoides* Linn., Mant. 174, 1767.

*Ilysanthes hyssopoides* Benth. in DC., Prodr. 10 : 419, 1846; FBL. 4 : 283; D. & G. 179; C. 2 : 296; Blatt. & Hallb. 419; G. 961.

*Bonnaya hyssopoides* Benth., Scroph. Ind. 34, 1835; Gr. 148.

This plant I find difficult of identification; it is very nearly allied to *L. parniflora*, if at all distinct from it; the size of the corolla in relation to the calyx is of little help, as one often finds large and small corollas on one and the same plant. I do not feel confident in assigning the plants listed below to this species, in spite of Blattner's authority for the first two specimens.

See Blatt. & Hallb. for a key to the species of *Ilysanthes* of Bombay. The colour of the corolla may be of help, but then plants belonging to this family are so very variable in their colours that little reliance can be placed on them for the purposes of identification.

**Flowers and Fruits.**—August to October.

Blatt. Herb. 1527 ! 1528 ! Santapau 2894 ! 6874 !
Lindernia parviflora (Roxb.) Haines, Bot. Bib. & Or. 635, 1922; Pennell 29; Mukerjee 132; Santapau 38.

Gratiola parviflora Roxb., Pl. Cor. 3: 3, t. 203, 1819.

Hyssaphes parviflora Benth. in DC., Prodr. 10: 419, 1846; FBI. 4: 283; C. 2: 296; Blatt. & Hallb. 420; G. 961.

Bonnaya hyssopioides Wight, Icon. t. 857 (non Benth.).

Common at all times of the year, on moist ground. Flowers are small and inconspicuous; but the plant seems to be very resistant to drought, as it is able to thrive even in rice fields during the months of April and May, at which time this is one of the few plants alive in such fields.

Flowers and Fruits.—August to November everywhere; the whole year in moist spots.


Lindernia oliata (Colsm.) Pennell, in JAA. 24: 253, 1913; Mukerjee 133; Santapau 39.


Bonnaya brachiata Link & Otto, Icon. Pl. Sel. 25, t. 11, 1820; FBI. 4: 418; Gr. 143; J. & G. 178; C. 2: 291; Blatt. & Hallb. 418.

This is one of the commonest plants of this family in Khandala during the monsoon and post-monsoon periods; on footpaths in St. Xavier's Villa it is one of the earliest and most persistent of the monsoon plants coming into flower when the stem is just above ground. The smallest specimen in my collection measures but 13 mm. long, and it bears one flower and two pairs of leaves; smaller specimens have been observed, but their collection is rather difficult as such small specimens easily get lost in the usual vascula. An attractive and very delicate little plant.

Flowers.—July to November. Fruits.—August to November.


Lindernia anagallis Pennell, var. grandiflora (Retz.) Mukerjee, in JIB. 24: 133, 1945; Santapau 39.

Gratiola grandiflora Retz., Obs. 4: 8, 1785.

Bonnaya grandiflora Spreng., Syst. 1: 41, 1825; Blatt. & Hallb. 418; Gr. 143; D. & G. 179.

B. veronicaefolia var. grandiflora Hook. f. in FBI. 4: 286, 1884; C. 2: 298.

Fairly common in grass lands on paths, etc., during the rains; also fairly common in moist spots at other times of the year. Stems rather stout, somewhat fleshy below. I have found it actually growing in water in rice fields or near slow running streams.

Flowers and fruits.—Throughout the year.

Santapau 474! 2603! 3094! 3854! 4368! 6981!
Lindernia sessiliflora (Beath.) Wettst., in Fl. Am. 4(3b): 79, 1895; Mukerjee 132; Santapan 40.

Vandella sessiliflora Beath., Scrip. Ind. 37. 1895; PBI. 4: 282.

Bonnaya micrantha Blatt. & Hallb., loc. cit. 417, 1918.

An erect small herb; stems 5-10 cms. high, with a few pairs of decussate leaves, occasionally branched from below, but generally simple. Stems and branches sharply quadrangular, almost winged, the angles being hairy with stiff hairs. Leaves subsessile, broadly-ovate to suborbicular, subacute or obtuse, serrate, glabrous or with a few scattered hairs especially on the nerves beneath and on the edges, nerves 2-3 from the base of the leaf.

Flowers not seen in Khandala. Fruits from most of the axils, even from the lowest, solitary or several from the same axil; pedicels 0 or very short; calyx in fruit about 2-3 mm. long, divided to a little below the middle, split down one side to the base. Capsule elongate, ellipsoid, up to 6-7 mm. long, 2-2.5 mm. diam., acutely beaked with the remains of the style, 2-valved, the valves at dehiscence separating in the middle but remaining united at the tip. The capsule is typical, as before dehiscence it shows not only the outline of the seeds but even their sculpturing. Seeds numerous, very minute, brownish, ovoid, longitudinally obscurely ribbed, transversely rugose or punctate.

The above notes were taken on examination of my own specimens and agree very closely with the description of the new species published by Blattert and Hallberg. Dr. S. K. Mukerjee kindly examined the type of Blatt. and Hallf.'s species, and compared it with Vandella sessiliflora Beath. and found that both sheets referred to the same species. Recently I have had occasion to compare the types of both species in Kew Herb. and am satisfied that both are one and the same species; in consequence Blattert and Hallberg's name must be consigned to the synonymy of Bentham's species.

Fruits.—August to October.

Blatt. Herb. 29689! Santapan 727! 777! 2922! 9048! 5457!

Buchnera Linna.

Buchnera hispida Buch.-Ham. in D. Don, Prodr. Fl. Nep. 91, 1835; PBI. 4: 298; D. & G. 182; Wight, Icon. t. 1413; C. 2: 301; G. 966; Pennell 96; Santapan 42.

A fine herb, in Khandala always found growing among grasses; but I have not been able to prove the parasitic connection between this plant and neighbouring grasses. Normally it is an unbranched herb, erect and keeping pace in its growth with surrounding grasses; when, however, the main stem has been damaged, most of the buds in the axils of leaves near the seat of damage produce long, simple branches. The whole plant is hispid with stiff hairs. A common plant in Khandala, freely flowering and fruiting from October to March, although the best time for its growth seems to be the end of the monsoon.
Flowers and Fruits.—October to March

Cooke; Blatt. Herb. 2762 ! 28268A ! Santapau 1197 ! 2796 ! 2963 ! 3005 ! 3033 ! 3063 ! 3518 ! 5364 ! 8066 !

Striga Lour.


Striga prochaneoides Renth. in Comp. Bot. Mag. 1 : 361, t. 19, 1826; FRL. 4 : 299; D. & G. 181; Wight, Icon. t. 1414; C. 2 : 302; G. 967.

In Khandala (and Purandhar, Poona Dist., where the plant is abundant) I have always found this plant parasitic on Lopidea pachystis, usually on L. cuspidata, on one occasion on L. trinervis. On drying, all parts of the plant turn black, even those that were green on the fresh plant.

Flowers and Fruits.—October to January.

Santapau 2702 ! 2793 ! 5497 ! 5498 ! 5901 !


The following is the translation of the original description: "Similar to S. gesneroides Vatke, from which it differs in the following points: This new variety is a parasite on the roots of Hygrophiella serpyllum Anders. and so affects the host that Hygrophiella only comes into flower or fruit much later, and the number of flowers or fruits is much smaller; rarely, however, does the parasite entirely cause the suppression of them. At the flowering time this new variety is 1-8-5-9 cms., including the underground parts, so that small specimens scarcely appear above ground. The flowers are much smaller than in the typical species, generally 2-5-3-5 mm. diam. The bracteoles below the flowers are either totally glabrous or only sparsely and minutely ciliolate. Branching of stems is either altogether absent or very rare. The colour of the whole plant is generally purple, and the flowers purplish; not seldom however one finds green plants with white flowers; on drying all the plants turn black or very dark.

The type, Santapau 3072, the isotype 3073, and the paratypes 3416, 3417, 3418, 3438, 3451, 5061, 5462 collected in Khandala are kept in Blatt. Herb., Bombay; other paratypes 3477 and 3545 collected at the same place have been placed in Herb. Kew and in the Arn. Arb., U. S. A."

A common plant in Khandala, but easily missed on account of its small size, often it scarcely appears above ground. The white-flowered plants I have found scattered among numerous purple ones in a rice field near Kune Katkari Settlement. There seem to be no hybrids or intermediate forms between the two plants, to judge from the colour of the flowers.

Flowers and Fruits.—October to January.

Buchnera asiatica Linn., Sp. Pl. 630, 1763.

Striga butea Lour., Fl. Coch. 22, 1790; FBI. 4: 299; C. 2: 303; G. 966; Penkall 96.

Striga hispida Benth. in DC., Prodr. 10: 502, 1848; D. & G. 181.

A common plant in grass fields, occasionally also in cultivated fields, but nowhere abundant. The 10-ribbed calyx is a distinguishing feature of this species.

Flowers and Fruits.—September to November.

Bhiva; Blatt. Herb. 1701! 1702! 27418! Santapau 145/10! 837! 2651! 2794! 2823! 5205! 5416! 7473!

Striga asiatica var. albiflora Kuntze, Rev. Gen. Pl. 466, 1891; Santapau 44.

Striga lutea Lour., Hook., Cooke, Gamble, pro parte, loc. citatis.

Erect, much more vigorous than the usual yellow variety. Stems 15-30 cms. high, seldom simple, often much branched, more densely strigose than the yellow variety. Lower leaves small, scale-like, those of the middle of the stem much longer, bract-like.

Flowers in lax spikes up to 22 cms. long; bracts up to 31x3 mm., 1-3 nerved, acute; bracteoles 3-5 mm. long, subulate, strigose. Calyx 10-ribbed, 6-7 mm. long in flower and narrow, widening in fruit; corolla pure white, generally slightly larger than that of the yellow variety; tube pubescent with minute stiff hairs; lobes pubescent or puberulous like the tube. Capsules very finely punctate; seeds very numerous, minute, faintly longitudinally or spirally striate or smooth.

As a variety of S. asiatica this is quite a distinct plant, as it differs from the typical plant in the colour of the flowers, the size of the whole plant and especially the size of the leaves and bracts.

A common plant in Khandala, usually parasitic on the roots of Eleusine coracana Gaertn.; the host plant suffers much from the attacks of the parasite, often failing to come into flower or fruit and the whole plant being much reduced in size. Farmers in Khandala pay little attention to such pests, even when they have been instructed on the methods of dealing with the pest; in consequence some of their fields are so poor, that they scarcely make cultivation a paying proposition.

Flowers and Fruits.—October and November, 1944.

Santapau 5201-5204! 5458!

Striga densiflora Benth. in Comp. Bot. Mag. 1: 363, 1836; FBI. 4: 299; D & G 181; C. 2: 303; G. 967; Santapau 43.

Buchnera densiflora Benth., Scroph. Ind. 41, 1835.
The occurrence of this plant in Khandala is given on the authority of Cooke and Blatter; I have not seen the plant in the district or in any of the herbaria consulted. The plant looks very similar to *S. asiatica var. albiflora*, but is typically distinguished by the number of ribs of the calyx, which in the present species is always 4-5.

*Cooke*: *Blatter* in MS. catalogue.

*Striga euphrasicoides* (Vahl.) Benth. in *Comp. Bot. Mag.* 1: 364, 1836; *FBI.* 4: 299; *Gr.* 145; *D. & G.* 182; *C.* 2: 303; *G.* 968; *Pennell* 96; *Santapau* 44.


*Hallberg* in MS. catalogue.

*Striga sulphurea* *D. & G.* 182, 1861; *FBI.* 4: 300; *C.* 2: 304 *Santapau* 44.

*Hallberg* in MS. catalogue.

*Rhamphicarpa Benth.*

*Rhamphicarpa longiflora* (Arn.) Benth. in *Comp. Bot. Mag.* 1: 368, 1836; *FBI.* 4: 300; *Gr.* 145; *D. & G.* 182; *Wight*, *Icon.* t. 415; *C.* 2: 304; *G.* 969; *Santapau* 44.


A very elegant plant, always found in grass fields. Flowers open in the evening and remain open throughout the night up to about 9 a.m.; if the day be cloudy, they may remain open till about noon. On numerous occasions I have observed them fully open at about midnight. This plant may be a root parasite living on grasses; but I am unable to prove or disprove this point from my observations in the field.

*Flowers.*—August to November. *Fruits.*—September to November.

*Kanitkar*; *Cooke*; *Blatt. Herb.* 1875; 1880; 1881; 1882; *Santapau* 145/3, 7, 8, 11; 91; 93; 24; 25; 25; 48; 50; 69;

*Soparia Buch. Ham.*

*Soparia delphinifolia* (Roxb.) G. Don., *Gen. Syst.* 4: 560, 1837; *FBI.* 4: 302; *Gr.* 145; *D. & G.* 182; *C.* 2: 305; *Blatt. & Hallb.* 428; *G.* 970; *Santapau* 45.

*Gerardia depaumosa* Roxb., *Pl. Ur. I.* t. 90, 1795.

A very variable plant; for the various forms, see *Blatt. & Hallb.* *loc. cit.* In cultivated fields or grassy lands from September to December; it is possibly a root parasite of grasses. Fairly common and an elegant plant. "This is one of the prettiest of Indian wild annuals." (Graham).

*Flowers* and *Fruits.*—September to December.

*Graham*; *Kanitkar*; *Blatt. Herb.* 1775; 27637; 29208 B; 29563; *Santapau* 145/12; 885; 1119; 2552; 3037; 3481; 5407; 5455;
CENTRANTHEBA K. Br.

Centranthera uspalaensis D. Dou, Fl. Nep. 38, 1875; Pannell 33: Santapau 46.

C. hispida Graham, Cat. 145, 1839; D. & G. 182; FBI. 4: 301; C. 2: 308.

A variable plant, 12-32 cms. high; stems simple or sparsely branched above, hispid with stiff spreading hairs from bulbous bases. Leaves about the middle of the stem are the largest, those above or below diminishing gradually, all about elliptic-oblong in shape.

Flowers axillary or in terminal spikes; bracteoles up to 6 mm. long, linear lanceolate. Calyx up to 8-9 mm. long, ovate, split down one side, the other side entire or with 3-5 short lobes or teeth. Corolla infundibuliform, straight or slightly incurved in the tube; the following variations have been recorded in Khandala as regards the colour of the corolla: 

(a) The commonest colour is pale red in the limb, deep red with a touch of purple in the tube. (b) Uniform deep purplish red. (c) Uniform white or creamy white. (d) White in the limb, very pale pinkish in the tube. These variations were recorded on one day in October 1944. On drying most of the flowers turn reddish or brick red. Capsules enclosed in the persistent and enlarged calyx, up to 9 x 8 mm. Seeds numerous, straw-coloured, strongly and spirally reticulate.

A pretty plant, always found in Khandala among grasses; it may be a root parasite, but I am unable to prove or disprove this point satisfactorily.

Flowers and Fruits.—October to November.

Blatt. Herb. 27966 | 28223 | 25561 | Santapau 1279 | 2662 | 2308 | 2009 | 3116 | 5234 | 7472

MAZUS Lour.

Mazus sp. (an McCasii Blatt. & Hallb.)

My specimen seems to agree with the description of the plant given by Blatt. & Hallb. in JBNHS. 25: 423, 1918. The following notes were taken with the fresh specimen in view, soon after collecting it: "Leaves opposite, petiolate, but the blade is decurrent to the base of the petiole; glabrous but for a few hairs at the edge of the blade; punctate. Stems and inflorescence hairy. Inflorescence terminal on the main stem and branches. Flowers pedicelled; ovary superior in relation to calyx. Calyx with 5 segments which are equal in length to the tube. Corolla 2-lipped; upper lip 3-lobed, lateral lobes twice as large as the midlobe. There are two raised processes or bulges on the midlobe, spotted yellow, hairy. Stamens 2 x 2, unequal in length by pairs, all included. Fruit seems to be a capsule included in the calyx, compressed. Stems, etc., triangular. General colour of the flower purplish. Filaments without appendages at the base."
This plant has been found only once; the plant is decidedly one of the
Scrophulariaceae, and seems to be a Mazus.

Flowers and Fruits.—January 1945.
Santapau 5907 !

Scoparia Linn.

*Scoparia dulcis* Linn., Sp. Pl. 116, 1753; FBL. 4: 329; C. 3: 310; Blatt. & Hallb. 426; G. 964; Pennell 22; Santapau 47.

An American plant introduced in India and spreading very rapidly; for the distribution of the plant, see Blatt. & Hallb., loc. cit. Flowers white; stems woody below.

Rare in Khandala, but spreading. It is very common all over Bombay and Salsette Islands; the railway line and main road seem to be the means of distribution.

Flowers and Fruits.—September 1944.
Santapau 4846 !

OROBANCHACEAE.

Aegimnetia Linn.

*Aegimnetia indica* Linn., Sp. Pl. 632, 1753; FBL. 4: 320; Gr. 146; Wight, Icon. t. 895; D. & G. 202; C. 2: 311; G. 974; Beck-Mannag. in Pflteich. 96: 17, t. 3 A.D.


A fairly common parasite in Khandala; I have found it generally in dense jungle, or under dense clumps of mixed trees or shrubs, and in consequence am unable to state the name of the host plant. It is not an easy plant to find in the jungle, due to the dark colour of the whole plant and to the dim lighting of its favourite habitats.

Flowers.—August to October. Fruits.—September to October.

Graham; *Blatt. Herb.* 29673 ! Santapau 548 A! 902 ! 1028! 2412 ! 2631 ! 4813 !


The following is the translation of the original description: "Similar to the typical species, but differing in the colour of the corollas, which is completely white, that of the calyx and scape being yellowish or straw-coloured, and all the parts of the plant being somewhat smaller.

An erect herb, annual (4), small, conspicuous especially on account of the colour of the flowers and scape; the scape and calyx are pale orange or yellowish green or straw-coloured; the corolla is uniformly white; the stamens and stigma yellow or creamy. On drying the whole plant becomes black. In size this new variety is about 2/3 of the typical species. The type, Santapau 2412, was collected in Khandala on the 21st
August 1943 and placed in Blatt. Herb., Bombay; the paratypes 4812, 4955 and 4956 have been placed in Blatt. Herb., Kew Herb., and Am. Arbor., U. S. A., respectively."

*Flowers and Fruits.* September to October.

*Santapau 4812 | 4955 | 4956 | 10272!*

At the beginning of September 1949 I visited the spot where the type had been collected in 1943, and found that the plant had spread to an area of about 20 x 10 m.; there were literally hundreds of specimens in flower and fruit within that area, and nowhere was any of the typical purple plants to be seen.

*Aegimelia pedunculata* (Roxb.) Wall., Pl. As. Rar. 3: 13, t. 219, 1832; FBI. 3: 320 (excl. syns.); Wight, Ill. 1: 11, t. 158 b. & Icon. t. 1421; G. 874; Beck-Manag. 18, t. 3E; Santapau in JBNHS. 45: 447.


The occurrence of the plant in Bombay Presidency is not mentioned by Cooke; there are no specimens from Bombay in Kew Herb. I have found it on numerous occasions in Khandala; for a full description of the plant, see Santapau, loc. cit.

Generally a root parasite growing on grasses; the hosts on which I have found it are *Thermodia* sp. and *Sekima nervosa* Stapf. It is found on the slopes leading to Behran’s Plateau, on the grassy slopes near Monkey Hill and near the top of Bhoma Hill.

*Flowers.* August to October. *Fruits.* September to October.

*Santapau 1007 | 2605 | 2606 | 2607 | 2774 | 2775 | 2799 | 5038 | 7429 | 10236!*

*Christisonia Cardis.*

*Christisonia lavisii* Wight, Icon. t. 1427, 1849; FBI. 4: 322; D. & G. 202; C. 2: 312; Beck-Manag. 313.

Parasitic on the roots of *Carica callosa* Bremek. Not common.


*Santapau 6957 | 10138!*

*Christisonia calcarea* Wight. Icon. t. 1426, 1849; FBI. 4: 322; C. 2: 312; Beck-Manag. 312.

*C. Stockii* Hook., Icon. t. 856 (tide Cooke); D. & G. 202.

Common in Khandala, always parasitic on the roots of *Carica callosa* Bremek.; on the slopes of Echo Point this plant is so common that there is scarcely a specimen of *Carica* without its parasite. Flowers are rather showy, but the plant as a whole is somewhat inconspicuous due to the fact that it is almost hidden under the ground; when present it occurs in rather dense clumps, 15 or more cm. in diam., and each clump shows flowers or fruits in various stages of development.

*Flowers.—* July to August. *Fruits.—* August.

*Blatt. Herb. 22557 | 22779 | Santapau 427A | 622 | 271*
LENTOBULARICEAE.

Utricularia Lindb.

Utricularia uliginosa Vahl, Enum. 1: 293, no. 25, 1804; G. 931; Santapau in JBNHS. 49: 218.


U. decipiens Dalz. in Kew Journ Bot. 3: 279, 1851.

Small, glabrous herbs. Leaves with much fewer bladders than those of U. articata Wight; bladders do not turn black on drying. Sepals broadly ovate to suborbicular, the lower sepal occasionally notched at the apex. Corolla purplish blue or violet, occasionally very pale almost white; the lower lip has a prominent bullate process in the centre near its base and such a process is much paler in colour than the rest of the petal; spur straight or nearly so, fairly stout.

A rare plant in Khandala; it occurs in grass fields or on grassy slopes, or in general in places not so exposed to flooding as those frequented by other terrestrial species in Khandala.

Flowers.—July to October. Fruits.—September to October.

Gobel, loc. cit.; Blatt. Herb. 22555! 22787! 28192! 28193! Santapau 499A! 4816! 4857! 6863!

Utricularia articata Wight, Icon. t. 1571, f. 1, 1850; FBI. 4: 330; D. & G. 136; C. 2: 318; G. 981; Santapau 218.

A very striking plant, one of the largest-flowered among the Utricularia of Khandala and abundant in large patches. On several occasions I have observed the plant growing epiphytically in the same fashion as U. striatula does; as a rule, however, this plant seems to favour rocky ground with plenty of surface water. Very common in Khandala.

Flowers.—August to October. Fruits.—September to October.


Utricularia reticulata Smith, Exot. Bot. 2: t. 119, 1805; FBI. 4: 331; D. & G. 135; Wight, Ill. t. 143; Oliver 180; Gobel 79, f. 80-83; & 86; C. 2: 319; G. 981; Santapau 219.

U. graminifolia Graham, Cat. 165, 1839 (non Sprung).

A gregarious plant, twining among grasses or other small herbs or in the absence of other support several strands may twine together to form a fairly stout rope like mass of as many as 12 strands, the resulting structure being erect or suberect. A very elegant herb. The colour of the flowers as illustrated in Smith, Exot. Bot. t. 119, is rather poor and scarcely represents the bright colours of the original.

Flowers.—August to October. Fruits.—October.

Graham; Blatt. Herb. 27562-27566! Santapau 3112! 5419! 0420! 6421!

The following is the translation of the original description: “Similar to *U. reticulata* Smith, from which it differs by the scapes, flowers and fruits being less than half in size. Scapes 6-12 cms. long, filiform, scanty; bracts and bracteoles as in the typical species, but much smaller; pedicel filiform, up to 9 mm. long, in fruit winged for the upper third; calyx in flower 2-2.5 mm. long, broadly ovate, the upper sepal being a little larger than the lower one, both acute; sepal acuminate in fruit, up to 6 × 4 mm. Corolla 6-8 mm. broad, the lower lip bullate, in structure and color as in the typical species. Capsule 3-5-5 mm.

The type, Santapau 5422, was collected in Khandala on the 31st October 1944, and placed in Blatt. Herb., Bombay; part of the same sheet was deposited in Kew Herb.”

A gregarious little herb, growing in association with small grasses (*Dimeria diandra* Stapf, *Dactyliopopsis griffithiana* Bor, etc.) and other small herbaceous plants (*Lomus mysorensis* Heyne, *Oldenlandia* sp., *Erica cinerea* sp., *Campanula diffusa* R. Br., etc.).

This plant has only been seen once in Khandala, on Behram’s Plateau: it was growing together with *U. reticulata* Smith; the reduction of all the parts of the plants is very striking, as there were no intermediate forms between the two plants when this new variety was collected. The reduction cannot be said to be due to ecological conditions, as both plants grew on the same soil and had about the same amount of water.

*Flowers and Fruits.—*October 1944.

*Santapau 5422, type*.

Utricularia striatula Sm. in Rosa, Cyclop. 37: no. 17, 1819; f. 2* 320; G. 963; Santapau 220.

*U. pusilla* Graham, Cat. 165, 1839 (non Vahl).

*U. orbiculata* Wall., Cat. 1600, 1828; Oliver 187; FBL. 4: 331; D. & G. 146; Gopel 53-60, ff. 28-36 & 68-70.

*U. glochidiata* Wight, Icon. t. 1581, 1850.

The following are the variations observed in the colour of the corolla: (a) The commonest colour is blue or bluish purple or rose with a yellow spot at the base of the lower petal; (b) the outer edge of the lower petal blue or bluish purple; then there follows a ring of white surrounding a bright yellow spot which is near the base of the petal; (c) the whole corolla is uniformly white with a yellow centre on the lower petal. The spur is slender, very acute, straight or nearly so, sometimes falcately curved, of the same colour as the rest of the corolla. Seeds glochidiate, the glochidia being as long as the seed is thick or a little longer.

This is the first *Utricularia* to appear in flower and the most abundant species in Khandala. On June 19, 1912, I recorded the presence of some flowers on the rocks near the railway station, the first rains of the season having fallen on the 12th in the evening.
Common and very abundant on rocks, tree trunks and old walls. When the plant grows on tree trunks, it grows together with several mosses, and on this account it is very difficult to collect the leaves and bladders; when it occurs on rocks, it covers large patches and is found in almost pure stands. A pretty and attractive little herb.

**Flowers.**—June to October. **Fruits.**—August to October.

*Graham; Goebitz; Woodward; Cooke; Santapau* 482A 544 782 820 836 2473(2) 4735 4815 6862

**GESNERIACEAE**

**Klugia** Schl.

*Klugia notoniana* (Wall.) A. DC., Prodr. 9: 276, 1845; FBL. 4: 366; Wight, Icon. t. 1353 & Ill. t. 159 bis; Bot. Mag. t. 492; Clarke in DC., Mon. Phan. 5: 159; C. 2: 323; Santapau in JBNHS. 48: 490.


*Klugia scabra* Dalz. & Gibs., Bomb. Fl. 134, 1861.

The occurrence of this plant is given on the authority of Cooke; there are no specimens from Khandala in any of the herbaria examined. Externally the plant is rather similar to *Rhynchosia longiflora* Blume and its var. *parviflora* Clarke; from either plant it may be distinguished by the larger flowers and the presence of a fairly large wing in place of one of the calyx ribs. In immature or small specimens it is only by the number of stems that the two plants can be separated.

At the beginning of my exploration of Khandala I did take *Rhynchosia longiflora* var. *parviflora* for *Klugia*, and it seems to me that it is quite possible that other collectors may have also mistaken one plant for the other. For this reason I consider the presence of *Klugia* in Khandala as rather doubtful.

*Cooke, loc. cit.*

**Rhynchosia longiflora** Blume.

*Rhynchosia longiflora* Blume, var. *parviflora* Clarke in DC., Mon. Phan. 5: 162, 1853, & in FBL. 4: 367; C. 2: 324; Santapau 491.

*R. obliquum* DC., Prodr. 9: 274, 1845, pro parte; Wight, Ill. t. 150 bis, f. 7; Clarke, Commel. & Cyrtandr. Beng. t. 88.

Common all over the district, on old walls, on rocks and occasionally on trees; gregarious, in damp, shaded places. An elegant herb, in which leaves and flowers are very pretty.

**Flowers.**—July to November. **Fruits.**—August to November (exceptionally to January).

*Blatt. Herb.* 22511 22560 22794 29571 29662 *Arend* 863 *Santapau* 86A 776 884 1087 2404 2514 2515 2747 2864 2865 1 4772 5157 5158
BIGNONIACEAE

Oroxyllum Vent.


Bignonia indica Linn., Sp. Pl. 625, 1733; Gr. 125.

Celosanthes indica Blume, Bijdr. 761, 1825; Wight, Icon. t. 1337, 1338; D. & G. 161.

Not common in Khandala. It is a difficult tree from which to collect flowers or fruits without damaging the whole tree; the inflorescence is terminal and often the stem breaks at the slightest attempt at climbing; the wood is very soft. A strange looking tree with an erect simple stem and very large leaves near the top. "When in flower, this tree has a most singular appearance" (Graham, loc. cit.). Locally no use is made of the wood or of the bark.

Local name: Tutu.

Flowers.—August to October. Fruits.—October to May.

Santapau 1081 ! 1476 ! 1628 ! 8866 !

Dulichium Rehd.

Dulichium falcatum Seem., var. Lawii (Seem.) Haines, in Bot. Bib. & Or. 658, 1922; G. 996.


D. falcatum Cooke, Fl. Pres. Bomb. 2: 329, 1904 (non Seem.).

Bignonia spathacea Graham, Cat. 125, 1839 (non Roxb., non Linn. f.).

Spathodea falcatum Dalz. & Giba., Bomb. Fl. 160, 1861 (non Wall.).

Generally a small and not particularly attractive tree, even when in flower; in the whole district I have seen but about 20 trees on the northern portion of Monkey Hill Plateau and along the railway line at the foot of Behran's Plateau. It grows on poor rocky ground. The ripe fruits usually remain on the tree throughout the winter and hot dry seasons, and may even stay on when the following season's flowers are in bloom. The largest tree in the district was cut down in June 1946, as it seemed to interfere with some electric or telephone lines along the railway line.

All the Khandala specimens belong to the var. Lawii (Seem.) Haines, which is the typical variety of the Western Ghats. It differs from the typical species in the glabrousness and shape of its leaflets, those of the typical species being pubescent and generally emarginate.

Flowers.—April to June. Fruits.—June onwards.

Graham; Bhaka; Santapau 495.497 ! 2000 ! 4450 ! 8709 ! 9006 !
Heterophragma DC.

Heterophragma quadriloculare (Roxb.) K. Schum. in Pflan. 4(3b): 343, 1895.

Biguonia quadrilocularis Roxb., Pl. Cor. 2: 24, t. 145, 1798; Gr. 125.
Heterophragma Roxburghii A. DC., Prodr. 9: 210, 1845; D. & G. 160; FBL. 4: 381; C. 2: 330.

A very common tree all over Khandala; it seems to grow best on rocky ground or on sharp slopes; its leaves are absent throughout the rains; new leaves appear at the beginning of October and remain on the tree till the beginning of the flowering season of the following year, occasionally till the monsoon. The softness of the wood is very deceptive, as branches 15 cms. in diam. are unable to support a man's weight.

During the hot season many of the trees are heavily infected by a rust, Santapauella Heterophragmae Mundk. & Thirum., which attacks the leaves. For several years I have observed the development of the fungus and its effect on the infected trees; the fungus does not extend to the inflorescence, but infected trees generally fail to produce any flowers.

On account of the greyish colour of the leaves, this tree stands out very clearly in dense forests. Graham, loc. cit., calls this "a large timber tree, used for a variety of purposes"; in Khandala, however, the wood is only used for fuel, it being too soft for any other practical purposes. During the rains the tree is leafless and supports a large number of orchids, among which the commonest are Dendrobium barbatulum Lindl. and Acridis sp. 

Local name: Waras.

Flowers.—January to April. Fruits.—March to June.

Blatt. Herb. 19481 92587 22612 27574 Santapau 1671-1674 1943 1944 1955 2196 2207 3245 3246 3678 3679 3680 3905-3906 3966 4715 9168 9169 9170.

Stereospermum Cham.


Dipterospermum personatum Hassk. in Flora 25(2), Beibl. 28: 1842.
Stereospermum chelionoides auct., non nisi partim A. DC.

Not common in Khandala; when growing in the open, it is but a small tree or large shrub; in dense forest, it attains rather large proportions. The ripe fruits remain on the tree till long after the following year's flowers have come into bloom. After dehiscence the valves of the fruit may twist rather sharply.

For the question of nomenclature affecting this plant, see Chatterjee, loc. cit.

Local name: Padri.

Flowers.—April to June. Fruits.—April onwards.

Graham; Woodrow; Blatt. Herb. 28307 Santapau 302 528 1862 1942 4327-4330 4430.
RADERMACHERA Zoll. & Moritz.

**Radermachera xylocarpa** (Roxb.) K. Schum. in *Pflanzen* 4(3b) : 243, 1896; C. 2 : 333; G. 999; Chatterjee 72.


A small to middle-sized tree. Flowers appearing either before or at about the same time as the leaves; on the only two occasions when I have seen this tree in flower in Khandala, it was in full bloom whilst the leaves were still very young.

The only place in Khandala where this tree has been observed is in the ravines below Echo Point, along the course of which there are several good specimens. Flowering takes place about the beginning of June, when the tree is bare of leaves or with but a few small ones. The tree is too rare in the district for any practical use to be made of its timber, etc.; for the same reason I have been unable to find any local name.

**Flowers.**—June 1943 and 1946.

*Santalum* 2152!

TECOMA Juss.

**Tecoma stans** (Linn.) H.B.K., *Nov. Gen. & Spec.* 3 : 144, 1819; Chatterjee 79; Bor & Raizada in *JRNS* 41 : 683, 7 : 1; *t. opp.* pp. 683 & 684.


Occasionally seen in Khandala gardens; not observed wild in the district.

**Biall. Herb.** 236! *Santalum*, in gardens!

PEDALIACEAE.

**Sesamum Linn.**


A rare plant in Khandala; it is not cultivated in the district. The only specimens collected in Khandala were found growing along the railway line, showing how the plant is being introduced into the district. Lower down on the Konkan plains this is a common plant during the rains, but it does not seem to climb higher than Thakurwadi, except occasionally. All my specimens are from the railway line at the foot of Behran's Plateau.

**Local name:** Til.

**Flowers.**—August to October, occasionally to February. **Fruits.**—November to February.

*Santalum* 2784! 5800! 6039!
ACANTHACEAE.

THUNBERGIA Retz.

_Thunbergia fragrans_ Roxb., Pl. Cor. 1: 47, t. 67. 1795; FBl. 4: 390 (excl. syn. Malay.); Gr. 163; D. & G. 183; C. 2: 342; Bor & Raizada in JDNHS. 42: 630, t. 4.

Contrary to what the specific name would indicate, the plant is scentless; only on one occasion did I detect any trace of perfume in the flowers of this plant.

Flowers are axillary and solitary; but on several occasions I have observed them coming out not singly but 5-6 in each axil, the pedicels being arranged fan-like in one plane with the stem, and usually one-flower being in bloom at a time.

The size of the corolla is usually about 4-5 cms. diam.; some plants show corollas only 2-5 cms. diam., and may prove to be at least a new var., but more observations are required on this point.

Very common and showy during September to November; fruits are relatively rare, and this may be due to insect attack. This plant is particularly abundant about Convalescent Home and on the slopes below St. Xavier's Villa.

_Flowers._—July to December. _Fruits._—September to January.


_Thunbergia grandiflora_ ( Roxb. ex Rotth.) Roxb., Hort. Beng. 45, 1814 & Fl. Ind. 1: 84, 1832; FBl. 4: 392; Gr. 163; Wight, Icon. 2: 872; D. & G. Suppl. 70; Bor & Raizada 693, t. 84.


A very showy climber with large purplish blue flowers, with a white tube; cultivated in gardens and possibly runs wild on the slopes behind St. Mary's Villa and elsewhere. Not common except in gardens.

_Flowers._—September to April. _Fruits._—October to December.

_Blett. Herb._ 22180! Santapau 692 A!

CARDANTHERA Buch.-Ham.

_Cardanthera anomala_ Blatter in JASB. (N.S.) 28: 350, 1930.

I have not seen the plant in Khandala or in the _Blett. Herb._ The occurrence of this plant is given on the authority of Blatter. From the description of the plant given by Blatter, it is very doubtful if the plant belongs to this genus at all; but in the absence of the actual type specimens it is scarcely possible to settle the position of the plant.

Blatter, loc. cit.
The Flora of Khandala.

**Blepharis Juss.**

*Blepharis asperrima* Nees in DC., Prodr. 11: 267, 1847; FBI. 4: 478; D. & G. 192; Wight, Icon. t. 1534; C. 2: 349; G. 1013.

A common herb in the undergrowth of the forest, or on grassy banks with flowers, though small, abundant and fragrant.

*Flowers and Fruits.—October to January.*

Aetana 304 | Santapau 693A | 1182 | 2810 | 3052 | 5951 | 8120 | 9618 | 9620 | 9850

**Asteracantha Nees.**

*Asteracantha longifolia* (Linn.) Nees in Wall., Pl. As. Rat. 3: 40, 1892; Wight, Icon. t. 449; D. & G. 190; C. 2: 352; G. 1015.


Not common in Khandala, except in some ditches near the village tank and railway station. When growing under favourable conditions, the plant is rather attractive, but often it emits an unpleasant odour, which may be due to the soil or stagnant water in which it grows.

*Flowers.—October to February. Fruits.—November to February.*

*Hubbeey in MS. catalogue, Blatt. Herb. 37110! 27446! Santapau 1144! 5270!

**Hygrophila R. Br.**


*Hemiadelphie polysperma* Nees in Wall., Pl. As. Rat. 3: 80, 1832; Wight, Icon. t. 1492.

Not common in Khandala; it is one of the first to appear on the sides of the village tank when the level of the water goes down. In general appearance it is almost indistinguishable from *H. serpyllum* Anders.; the number of seeds in the capsule and the more robust habit together with smaller flowers seem to be constant characters of this species as opposed to those of the following species.

*Flowers and Fruits.—November to May.*

Blatt. Herb. 27507! 28423! 28427! Santapau 3166! 3771! 3123! 8640! 10045!


Very common in the whole district and very variable. Occasionally it grows as an erect plant up to 30 cms. high; at times it is found in running water forming dense mats over rocks. It is sometimes parasitized by *Striga gesnerioides* var. *minor* Santapau, and under such conditions the plant seems to be prevented from flowering.

On several occasions I have found plants with pure white flowers growing in the same fields as the common purple-flowered plants; the white-flowered *Hygrophila* require further study, and may prove to be a new species or at least a new variety.

**Flowers and Fruits.**—Throughout the dry months of the year.


*Hygrophila* serpyllum var. *hookeriana* Clarke in FBI. 4: 407, 1884; C. 2: 354.

A prostrate or creeping plant with orbicular or reniform leaves, which are cordate at the base and strongly nerved with 5-7 pairs of nerves. Except for the shape of the leaves, the plant is entirely like the typical variety. In the field, however, I have had considerable difficulty in distinguishing this plant; the leaves are very variable and the orbicular and ovate types seem to be found on one and the same plant. I am inclined to consider the orbicular or reniform leaves as a juvenile stage of the normal plant.

**Flowers.**—November. **Fruits.**—November 1941, June 1943.

*Santapau* 740(2)A! 1298! 3472! 9103

**Dipteracanthus Nees,** emend. Brem.


*Ruellia prostrata* Poir. in Lam., Encycl. 6: 349, 1804; FBI. 4: 411.

*R. prostrata* var. *dejecta* Clarke in FBI. 4: 412, 1884; C. 2: 355.

Hallberg's mention of this plant in his catalogue is my only authority for its inclusion; I have not seen it in the district nor in any of the herbaria examined.

*Hallberg* in MS. catalogue.

**Hemigraphis Nees.**

*Hemigraphis latebrosa* Nees var. *heineana* Brem. in Mat. Mon. Strob. 139, 1944.

*H. latebrosa* Nees in DC., Prodr. 11: 723, 1847; FBI. 4: 423; Wight, Icon. t. 1501; C. 2: 358.

*Ruellia elegans* Bot. Mag. t. 4489, 1835; Gr. 162; D. & G. 186.
THE FLORA OF KHANDALA.

The following colours of the corolla have been noted in Khandala: (a) Pure white; rare; (b) White with a touch of pink; (c) Pale violet; (d) Deep purple blue; this is the commonest colour. There does not seem to be any relation between the colour of the corolla and the locality in which the plant grows; younger flowers are brighter in colour, older ones pass from deep blue to dull lilac, but white flowers remain constantly white.

A common plant in the undergrowth or in clearings in the forest, seldom seen in open country. The plant on drying remains bright green.

Flowers.—Throughout the dry season.

Cook ; Woodrow ; Blatt. Herb. 22693 ! Santapau 15 ! 150 ! 3051 ! 3087 ! 3438 ! 3875 ! 3876 ! 5942 ! 8656 !

PETALIDIUM Nees.

Petalidium barlerioides (Roth) Nees in Wall., Pl. As. Rat. 3 : c2, 1832 ; FBI. 4 : 416 ; D. & G. 185 ; C. 2 : 359 ; G. 1024.


R. bracteata Roxb., Fl. Ind. 3 : 47, 1832 ; Gr. 162.

The occurrence of this plant is given on the authority of Blatter in his MS. catalogue; in the Blatt. Herb. there is a specimen, 22655, collected in March, 1917, which has been labelled as belonging to the present species, but the specimen is actually a fruiting, leafless branch of Barleria Lauve. I have searched for this plant for several years without success; in view of the evidence I consider its occurrence in Khandala as rather doubtful.

Blatter in MS. catalogue.

PHEMOPSIS Willd., emend. Spr.


Ruellia dorsiflora Retz., Obs. 6 : 31, 1791.


Aethelema reniforme Nees in Wall., Pl. As. Rat. 3 : 94, 1832 ; Wight, Icon. t. 1535 ; D. & G. 192.

Ruellia imbricata Forsk., Fl. Aeg.-Arab. 113, 1775 ; Gr. 102.

Phaulopsis imbricata Cordem., Pl. Ille Reun. 496, 1895 (non Sweet, 1827).

A specimen in Blatt. Herb., No. 22960 of May, 1917, is labelled as Microanthus oppositifolius, but is too imperfect a specimen for exact determination, as it has neither flowers nor fruits. The plant is included on the authority of Hallberg.

Hallberg in MS. catalogue.
Eranthemum Linn.

Eranthemum roscum (Vahl) R. Br., Prodr. 477, 1810; D. & G. 195; G. 1024.

Justicea rosea Vahl, Enum. 1: 165, 1804.

Daedalacanthus roseus Anders. in JLS 9: 487, 1867; FBI. 4: 419; C. 2: 363.

Common on grassy slopes or under the shade of trees towards the edges of the forest, seldom seen in open country; gregarious and rather showy when in full bloom.

Flowers.—November to April. Fruits.—December to May.

Cooke: Blatt. Herb. 27538! 28381! Santapau 1392! 1303! 1422! 3198! 3498! 3903! 5881!

Nilgirianthus Brem.

Nilgirianthus reticulatus (Stapf) Brem, in Mat. Mon. Strob. 173, 1944.


Blatter in his MS. catalogue mentions this plant from Khandala; it is probable that he based himself on a specimen kept in Blatt. Herb. 28425, of October 1918. This specimen has no flowers and does not agree too well with Stapf's type sheet in Kew Herb. I have, however, compared Blatter's specimen with all the species of "Strobilanthes" from Western India in Kew, and the present species seems to be the nearest to the Khandala sheet.

Blatter in MS. catalogue; Blatt. Herb. 28425?

Mackenziea Nees.

Mackenziea integrifolia (Dalz.) Brem. loc. cit. 182, 1944.


Leptacanthus alatus Wight, Icon. t. 1527, 1850.

Strobilanthes perforatus Anders. in JLS 9: 471, 1867; FBI. 4: 458; C. 2: 371; Santapau in JBNHS. 44: 606, 1944.

On the 8th June 1946 I found a clump of these plants where new leaves were coming out of the old stems; this seems to suggest that the plants do not die after flowering, that is to say, they are not strictly "plantcias"; the previous year there had been a general flowering, but I could not make certain if the apparently dead stems had flowered previously.

A very gregarious plant, found scattered in clumps over the whole district: the plant has a peculiar "Lavender Blue" (Ridg. 41' h) hue, and this together with the characteristic shape of the leaves is sufficient
for identification even in the absence of flowers or fruits. From the data collected in ten years, I am unable to fix the length of the period between two flowering seasons; the local forest people cannot give any indication of the frequency of flowering.

Local name: Wātī.

Flowers.—November to March. Fruits.—January to May.


THELEPAPELE Brem.

Thelepaepale rixicepsa (Bent.) Brem., loc. cit. 188, 1944.

Strobilanthes rixicepsa Bent. in Flora 32: 537, 1849; FBI 4: 441; C. 2: 372; Talb. 2: 320; Santapau 605.

S. Neesiana Wight, Icon. t. 1623, 1850; D. & G. 188.

S. glutinosa Graham. Cat. 162, 1839 (non Nees).

Ruellia imbricata Graham, Cat. 162, 1839 (non Roxb.).

This plant has flowered every year from 1941 to 1946, with a peak in 1943-44 and 1944-45. I have not been able to decide whether the plant is truly one of the "plinosauris". Talbot, loc. cit., states that it flowers annually during the cold season, and my findings seem to confirm Talbot's view; but whether the plant dies after flowering is a point that has yet to be settled in the field.

Very common and abundant in Khandala: it is gregarious, and is found in large patches about half way down St. Xavier's Ravine, at an altit. of 566 m., it is also fairly abundant above Furby and the Saddle, at an altit. 700-900 m. The scent of the oily substance exuded by the glandular hairs is most penetrating and persistent.

Local name: Wātī.

Flowers.—October to June. Fruits.—December to June.


PLEOCAULUS Brem.

Pleocaulus ritchiei (Clarke) Brem., loc. cit. 185, 1944.

Strobilanthes sessilis Nees, var. Ritchiei Clarke in FBI 4: 452, 1884; C. 2: 366.

S. sessiloides Dols. & Oiba., 167 (non Wight), 1961.

Sedgwick labelled his specimen "Strobilanthes sessilis Nees" but this seems to be a mistake for the var. Ritchiei, since the typical species does not occur in Bombay.

Sedgwick 7991!
Carvia Brem.

Carvia callosa (Wall.) Brem. loc. cit. 187, 1944.


S. Grahanianus Wight, Icon. t. 1520, 1850; D. & G. 188.

S. ciliata Graham, Cat. 162, 1839 (non Nees).

This is the "King" of Khandaia slopes covering very large areas almost to the complete exclusion of every other plant; generally it grows in open country in pure formations, or in the undergrowth of the forest where trees are not too dense. The inflorescence is glabrous during the flowering period, but densely glandular hairy from December onwards. Seeds are shed and the parent plant decays at the beginning of the next rainy season. A very showy plant when in flower, and a great nuisance at all times. There was a general flowering in Khandaia in 1943-44, covering the lower slopes; in the rainy season of 1944 flowering extended to the rest of the district; the year immediately before and the one after general flowering there was sporadic flowering in several parts of the district. In November 1948 a few plants were seen in flower on Bhoma Hill, in all about 30 plants; on July 23, 1949, most of the plants on top of Bhoma Hill, southern portion, were covered with buds, apparently a more or less general flowering was being introduced.

Local name: Kervi.

Flowers.—August to November 1942, 1943, 1944, 1945, 1948. (1949 ?). (In my absence from India during 1946–1948, I was unable to obtain data for these years.) Fruits.—From December onwards till the rains, 1942-1945.


Calacanthus T. Anders.


Calacanthus Dalzelliana Anders. ex Benth. & Hook., Gen. Pl. 2: 1088, 1876; FBl. 4: 478; C. 2: 373; G. 1044.

An elegant, shrubby plant, Gregarious and growing in fairly dense clumps, with very distinct leaves, up to 1 m. high. Rather rare in the district, except on Behran's Plateau.

Flowers.—October to December. Fruits.—November to December.

Haplanthus Nees.

**Haplanthus verticillatus** (Roeb.) Nees in DC., Prodr. **II**: 513, 1847; **FBI.** 4: 506; **D. & G.** 197; **C. 2**: 376; **G. 1063** ("verticillatus").

**Justice verticillata** Roeb., Fl. Ind. 1: 135, 1832; Graham, 165.

Common in Khandala, often seen along the forest paths, or in forest clearings. When young the plant is leafy and rather attractive; as the leaves fall off, the cladodes develop until the plant has a savage look. During the dry months of the year the plant grows gragaramously in large clumps.

*Flowers.*—December to April. *Fruits.*—December to May.

Armuckie ex Graham; **Cooke** / **Blatt. Herb.** 22646! 22861! 27503! **Santapau** 761A! 298! 1341! 1424! 1425! 1461! 3207! 3532!

**Haplanthus neigberryensis** Wight, Icon. t. 1556, 1850; **G. 1052.**

**H. tentaculatus var. neigberryensis** Clarke, in **FBJ.** 4: 507, 1884.

**H. tentaculatus** Nees in DC., Prodr. **II**: 513, 1847; **C. 2**: 376, pro parte tantum.

This plant has been restored to specific rank by Gamble, and justly so. The inflorescence is not scattered through the plant, but is gathered in fairly dense spikes at the ends of the stem or branches.

Common during the dry months of the year; when the flowers come out, most of the large original leaves have fallen off, so that the plant is then leafless or nearly leafless. At each node there may be two or more branches spreading out almost horizontally bearing a spike at their end, the spike being erect and nearly at right angles to the branch. Found in the undergrowth of the forest, by the sides of paths or in clearings, occasionally in open country.

*Flower and Fruits.*—February to May.

**Blatt. Herb.** 22826! 22831! 29635! **Santapau** 4287! 8694!

**Haplanthus tentaculatus var. plumosa** (Anders.) Clarke, in **FBJ.** 4: 507, 1884.

**H. plumosa** T. Anders. in JLS 9: 504, 1867.

**H. tentaculatus** Cooke, Fl. Bomb. Pres. 2: 376, 1904, pro parte.

Fairly common during the drier months of the year, in about the same situations as the two preceding species. When it is in leaf, it is scarcely recognizable, and looks rather attractive, but most of the leaves fall off before the flowers appear.

*Flowers.*—November to May. *Fruits.*—December to May.

**Woodroof** 28 December 1890! **Santapau** 22! 1804! 1460! 1780! 3169! 5833! 6687! 5035! 6038! 8661! 6662! 8779! 8806! 9700-9709! 17
Barleria Linn.

Barleria priomitis Linn., Sp. Pl. 636, 1753; FBI. 4: 482; Gr. 60; Wight, Icon. t. 452; D. & G. 189; C. 2: 379; G. 1058.

There are two kinds of leaves on this plant: during the rains and the first part of winter, they are large, glabrous and membranous; for the rest of the dry season they are much smaller, and densely silky hairy. These two forms correspond to the two varieties Hystrix and Heteroclada of O. Kuntze (Rev. Gen. Pl. 486); but it is clear that these cannot be maintained as varieties, they are mere forms depending on climatic conditions.

Common in Khandala. During the rains it is a large showy shrub with many large flowers; from February to May the flowers are much smaller and fewer in number. It is found in open situations.

Flowers.—October to June. Fruits.—November to June.


Barleria cuspidata Heyne ex Nees in Wall., Pl. As. Bar., 3: 93, 1832; FBI. 4: 483; Wight, Icon. t. 451; C. 2: 380; G. 1059.

This plant is included on the authority of Blatter; I have not seen it in Khandala; there are no specimens from that district in any of the herbaria consulted.

Blatter in MS. catalogue.


This plant is given on the authority of Blatter; I have not seen it in the district.

Blatter in MS. catalogue.

Barleria longiflora Linn. f., Suppl. 289, 1781; FBI. 4: 485; Talbot 2: 386; G. 1056.

This plant is given on the authority of Hallberg. Cooke does not mention it in his Flora; Talbot, however, mentions it from Mahabaleshwar. There are no specimens from Khandala in Blatt. Herb.

Hallberg in MS. catalogue.


B. longiflora Graham, Cat. 181, 1839 (non Linn. f., nec Roxb.).

Common in Khandala, growing in open country or at the edge of the forest. The flowers are rather similar to those of B. grandiflora, from which it differs by the rounded or obtuse corolla lobes and the strong nerves of the corolla in the dry condition.
Flowers.—October to January.  Fruits.—November to January.


B. terminalis Nees in DC., Prodr. 11: 225, 1847; D. & G. 188.

B. cerulea Graham, Cat. 161, 1839 (non Roxb.).

When in full bloom during October, this is a very showy shrub with masses of flowers at the ends of the branches. It is nowhere abundant in the district, but some good specimens have been observed for a number of years along one of the streams that come out of Forbey. "This is a shrub worthy of cultivation, on account of its showy flowers" (Graham, 184).

Flowers.—October to December.  Fruits.—End of October to December.

Graham; Blatt. Herb. 28095! 28096! 28097! 28098! Sedgwick 7960! Aaland 941! Santapau 710A! 1155! 2785! 2788! 2850!


The following is the translation of the specific characters of the new species: "Very similar to B. nummularus Nees, from which it differs by its much smaller bracteoles, and the glabrous and smaller seeds; similar also to B. gibsoni, from which it differs by its smaller seeds, its inflorescence being axillary or only very shortly pedunculate or racemose, and by the structure of the leaves.

Stems and branches terete or more or less quadrangular, glabrous or subglabrous, with long internodes. Leaves 6-12 x 2-5 cm., membranous, ovate or elliptic, entire, glabrous or subglabrous, minutely punctate, with very many raphides irregularly scattered on the upper side of the leaf, attenuated at both ends, decurrent into the petiole; lateral nerves 5-6, making an angle of 60 degrees with the midrib; petiole 0-5-2 cm. long, often obscure on account of the decurrent blade.

Flowers solitary, axillary, opposite, or forming a very short and few-flowered terminal raceme or spike; pedicels 0-5 mm. long, each with two bracteoles about the middle. Bracteoles linear or subulate, the lower ones sometimes subspathulate, all acute, more or less acute, 6-13 mm. long, rarely longer, pubescent or subglabrous, the midner clear, margins ciliolate, serrate.

Outer sepals leafy, up to 37 x 20 mm., subequal or clearly unequal, ovate; the larger sepal acute or subacute, the smaller one obtuse or subobtuse, generally entire, occasionally shortly 2-fid, both sepals glabrous or subglabrous, somewhat hairy near the apex. Inner sepals 10-16 mm. long, linear-lanceolate, very acute, pubescent or subglabrous.
Corolla up to 8-5 cms. long, glabrous; tube 3-4-5 cms. long; lobes obovate, obtuse, subequal, or one of them suborbicular, the rest obovate, all up to 20 mm. long. The colour of the corolla in Khandala is always rosy purple. Stamens 2, staminodes 2 without anthers. Capsule brownish, glabrous, up to 20 mm. long, attenuated at the apex, 4-seeded in the lower part. Seeds black or blackish, orbicular, much compressed, about 4 mm. diam., 0.5 mm. thick, very rarely slightly thicker.

The type, Santapau 1228 and the isotype 1228 B, were collected in Khandala on the 25 October 1942 and placed in the Blatter Herb., Bombay; the paratypes, Santapau 7435, 7436, 3055 and Blatter 28274 have been placed in Blatt. Herb., Bombay; other paratypes, Santapau 1169(1) and 1169(2), have been deposited in Kew Herb. and in the Arb., U. S. A., respectively."

This new species of Barleria is fairly common in Khandala. The general structure of the plant places it near B. montana Nees, but the seeds are never silky and the bracteoles are much smaller and shorter. In the structure of the bracteoles and seeds it approaches B. Gibsoni Dalz., but the latter is a much stouter plant, its leaves more coriaceous, its terminal spike or raceme longer, and its seeds considerably larger.

Examination of the material in Kew Herbarium shows that the new species is rather common in other parts of India outside Khandala; of the specimens in Kew from the Concan labelled B. montana Nees, the majority belong to the new species. So does also a sheet from the Anamalayas collected by Beddome, and on which Gamble has attached this remark "Perhaps the specimen from which Bedd. t. 297 was drawn. The glabrous seeds prove that it is not montana:" both the specimen and the plate of Beddome represent the new species and not B. montana Nees. The two right-hand specimens on Wallich 2391 in Kew Herbarium belong also to this new species.

**Flowers and Fruits.**—October to November.

Blatt. Herb. 27770 | 28058 | 28066 | 28274 (paratype) | 28280 | Santapau 15278 | 1169 (paratype) | 1228 (type) | 1228B (isotype) | 2772 | 2773 | 3055 (paratype) | 5046 | 5163 | 7435 and 7436 (paratypes)

**Neuracanthus** Nees.

**Neuracanthus trinervius** Wight, Icon. t. 1532, 1850; FBI. 4: 491; D. & C. 190; C. 2: 397.

* N. tetragonostachyus Dalz., MS. in Kew Herb. (non Nees).

An elegant herb found by the sides of paths or in clearings in the forest; not very common, but generally abundant wherever it occurs. A fine group of these plants has been flowering for years on the slopes near the top of Echo Point Ravine by the village path. When in leaf and flower this is one of the more "refined" wild plants c. Khandala.

**Flowers.**—December to March. **Fruits.**—December to April.
Neuracanthus sphaeroestachyum (Nees) Dalz. in Kew Journ. Bot. 2: 140, 1850; D. & G. 190; FBI. 4: 491; C. 2: 337; Bole & Sastapau in disc. 50: 428.

Lepidagathis sphaeroestachyum Nees in DC., Prodr. 11: 254, 1847.

Neuracanthus laui Wight, Icon. t. 1531, 1850.

On several occasions I have observed new leaves on old stems of the previous season; some of these plants, therefore, must be considered at least as biennial.

Dalzell and Clarke mention that the plant rarely seeds. This is not so in Khandala; but it is only from December onwards that the fruits become common and remain on the dead parent plant till the following monsoon, when many of the seeds germinate on the parent plant. Many plants, however, are destroyed when the fields are set on fire shortly before the monsoon.

On Behran's Plateau and on the upper parts of Bhuna Hill this plant grows in very great abundance in large patches; in the rest of the district it is rather rare. In general this plant thrives well in open situations, and is seldom found under the shade of trees.

Flowers.—August to November. Fruits.—October onwards, persisting and often germinating on the parent plant at the coming of the rains.

Woodrow; Cooke; Blatt. Herb. 28039! 28072! Santapau 725A! 710! 791! 923! 332! 1019! 2597! 2598! 6038! 9265! 9994!

Asystasia, Blume.


A. violacea Dalz., MS. ex C.B. Clarke, in FBI. 4: 494, 1884 (non Dalz. 1850); C. 2: 399; G. 1063.

This is a difficult plant to identify in the field; it is so near A. gangetica Anders. and there seem to be so many intermediate stages that in my opinion both species should be considered as one, or at most as varieties of one and the same species.

The following seem to be the characteristics of A. dalzelliana: leaves up to 18 x 9, seldom less than 9 x 4 cm.; inflorescence terminal in solitary or twin racemes; calyx up to 10 mm. long, divided nearly to the base; sepals hairy and eiliate, but in old age they may become glabrous or subglabrous. The colour of the corolla is not characteristic: in Khandala I have found lilac flowers with a deeper spot of the same colour in the centre, or pure white with a purple spot near the throat, or lilac flowers with the lower lip spotted with irregular darker spots in the middle.
In habit this plant is erect and inclined to ramble, at times the total length of the branches reaching up to 2-3 m. A very common plant in the undergrowth all over the district; abundant and persisting in flower from August until December.

*Floweers.*—July to December. *Fruits.*—August to December.


*Asystasia gangatica* (Linn.) Anders in Thwait., Enum. 235, 1859-64 ; G. 1063.

*Justicia gangetica* Linn., Amoen. Acad. 4 : 299, 1759.

*Asystasia coronandeliana* Wight ex Nees in Wall., Pl. As. Bar. 3 : 89, 1832 ; FBI. 4 : 193 ; Wight, Icon. t. 1506 ; D. & G. 186 ; C. 2 : 358.

*A. violacea* Dalz. in Kew Journ. Bot. 2 : 139, 1850 (non Dalz. ex Clarke).

*Ruellia zeylanica* Koen. ; Gr. 161.

As stated above, it is not easy to separate this plant from the previous species, and it appears that both species have often been confused. Acc. to Gamble, *A. gangatica* is a coastal species, whilst *A. dalechelliana* is a rain-belt species from the hills.

Graham ; Blatter in MS. catalogue.

**Psederanthemum Radlk.**

*Psederanthemum malabaricum* (Clarke) Gamble, Fl. Madr. 1064, 1924.

*Eranthemum malabaricum* Clarke in FBI. 4 : 497. 1884 ; C. 2 : 390.

F. crenulatum Wall. : D. & C. 195 (non Lindl.).

A rare plant in Khandala, only seen in the undergrowth in deep jungle on the slopes below Elphinstone Point.


Santapau 8687 ! 8688 ! 8689 ! 8690 ! 8608 !

**Lepidagathis Willd.**


There are two forms of this plant: when growing on rocky soil with little or no competition, the plant is diffuse, much branched from near the root and flat on the ground; when there is much competition, as, e.g., when the plant grows among grasses, it is erect and practically unbranched, with long internodes and with leaves reaching 65-7 mm.

Common on Behran's Plateau. After the decay of the leaves and of the surrounding vegetation, the dry spikes persist for several months on the ground as straw-coloured spinous balls.
Flowers.—October to December. Fruits.—November to January.

Lepidagathis cuspidata (Wall.) Nees in Wall., Pl. As. Rar. 3: 97, 1832; FBI. 4: 519; C. 2: 396; G. 1097.

Ruellia cuspidata Wall., Cat. 2405, 1830.
An erect or procumbent undershrub, up to 1-5 m. high; in overcrowded conditions it is erect, in open country with plenty of room, it is procumbent. Stems in large specimens up to 2-5 cms. thick, terete or nearly so below, more or less quadrangular and pubescent or glandular-pubescent above.

Leaves on the main stem large, up to 11-5 x 4-5 cms., acute or acuminate, base cuneate and decurrent into the long petiole to nearly its base; petiole up to 6 cms. long; nerves about 5 pairs, rather regular and conspicuous on both sides. Leaves of the branches much smaller, sessile or subsessile, softly pubescent, spinous-pointed.

Flowers in terminal spikes; rachis, bracts and bracteoles pubescent and glandular pubescent; bracts and bracteoles sharply spinous pointed. Corolla white or pale brown in colour, remaining on the plant long after drying.

During the rains and the first part of winter this plant grows in large clumps and is erect and covered with large leaves; at that time it is often parasitized by Striga gesneroides vatke, and is so affected by the parasite that it seldom produces flowers. During the hotter part of the year Lepidagathis turns dark or olive green and becomes covered with ordinary and glandular pubescence. The spines on the leaves, bracts, etc., render handling of this plant difficult.

Common in Khandala; very gregarious and abundant on the upper part of Bhoma Hill.

Flowers.—December to March. Fruits.—December to May.


The occurrence of this plant is given on the authority of Blatter; I have not seen the plant in the district or in any of the herbaria consulted. Blatter in MS. catalogue.

Lepidagathis fasciculata (Retz.) Nees in Wall., Pl. As. Rar. 3: 95, 1832; id. in Lepid. Illust. Mon. 10; FBI. 4: 522; C. 2: 397; G. 1068.

Ruellia fasciculata Retz., Obs. 4: 25, 1786.

A diffuse herb, creeping and rooting at some of the nodes. Leaves in unequal pairs, acute, softly hairy, irregularly crenate or dentate. Flowers in paniculate spikes; bracts leafy, acute or subacute; bracteoles linear. Corolla whitish lilac with purplish pink spots or lines.

A rare plant. I have only seen it on the one occasion mentioned below: there are no other specimens from Khandala in Blatt. Herb. I have checked my specimen with the type in Kew Herb., and am satisfied about the correctness of the identification; this is a new record for Khandala.

_Flowers and Fruits._—April 1944.

_Santapau_ 4103!

**Rungia Ness**

*Rungia pectinata* (Linn.) Ness in DC., Prodr. 11: 469, 1847; Wight, Icon. t. 1547; Brenek. in Neder. Akad. Wet. Verh. (II) 45(2): 73.

*Justicia pectinata* Linn., Amoen. Acad. 4: 229, 1759; Gr. 106.

*Rungia parviflora* Nees, var. _pectinata_ Clarke in FBI 4: 550, 1885; C. 2: 400; G. 1071.

From the evidence gathered in Khandala I am inclined to consider the two varieties _pectinata_ and _muralis_ as mere forms of the same plant under different climatic conditions, _pectinata_ being the form under favourable conditions, _muralis_ that of the drier part of the year.

_Flowers and Fruits._—October to June.

_Woodrope: Blatt. Herb._ 22659! 22133! 22963! 28092! _Santapau_ 94A! 258! 315 | 491 | 1207 | 1337 | 1464 | 2964 | 2975 | 2981 | 3050 | 3206 | 3455 | 3582 | 3583 | 3874 | 4207 | 4208 | 5393 | 5378 | 5940 | 5941 | 6032 | 6033 | 6058 | 6065 | 6076 | 839 ! 8871!

*Rungia repens* (Linn.) Nees in Wall., Pl. As. Rar. 3: 110, 1832; FBI 4: 549; D. & G. 196; Wight, Icon. t. 465; C. 2: 401; G. 1370.

*Justicia repens* Linn., Sp. Pl. 15, 1753; Gr. 165.

The occurrence of this plant is given on the authorities mentioned below: there are no specimens from Khandala in Blatt. Herb., I have not seen the plant in the field.

_Cooke; Blatter and Hallberg_ in MS. catalogues.

**DICLIPTERA Juss.**

*Dicliptera zeilanica* Nees in DC., Prodr. 11: 474, 1847; FBI, 4: 562; C. 2: 403; G. 1073.

*Dicliptera biulvis* Nees, loc. cit. 475, 1847; Wight, Icon. t. 1551; D. & G. 196 (non Juss.).

*Justicia biulvis* Graham, Cat. 164, 1839 (non Linn.).

A rare plant in Khandala; the only place where it is common in the district is the path along the slopes below Elphinstone Point. It is in flower from December to May, but fruits seem to be rare.

_Flowers._—December to May. _Fruits._—Only seen in April 1946.
Woodrow; Haldberg in MS. catalogue; Blatt. Herb. 22826; 23959; Santapau 1459; 1915; 3297!

Dieliptera micranthes Nees in Wall., Pl. As. Rar. 3: 112, 1832; FBI. 4: 553; D. & G. 197; C. 2: 402.

An erect herb, only seen once growing on the dry banks of the village tank. It has not been recorded from Khandala up to now. Flowers in axillary clusters; bracts distinct in that the lower half of their margins is scarious and ciliate, the upper half may be green, the whole bract is loosely covered with papillose. Corolla minute, white in colour. Seeds at first light brown, at length dark brown.

Flowers and Fruits.—November 1945.

Santapau 8124!

Echolium Kurz.

Echolium linnleannum Kurz, var. lacteirens (Vahl) Clarke in FBI. 4: 545, 1885; C. 2: 405; G. 1074.


J. Echolium Linn., Sp. Pl. 15, 1753 pro parte; Gr. 164; D. & G. 194.

Fairly common in Khandala, but not nearly as common as the following variety. Found in dense forest among the undergrowth, very occasionally in open country.

Flowers.—September to May. Fruits.—October to May.

Graham; Blatt. Herb. 28090! Santapau 556A! 742A! 121! 1309! 3223! 3490! 3500! 5451!

Echolium linnleannum var. dentata (Klein) Clarke, loc. cit.; C., G. 11. cc.


Var. dentata is the commoner of the two in Khandala. It occurs in large clump; scattered through the forest or in open country; often it is found on the banks of streams. The flowers are of the same colour as those of the preceding variety, i.e., sea-green. These plants look rather wild especially during the dry season, when most of the leaves have fallen away.

Flowers.—September to March. Fruits.—September to May.

Blatt. Herb. 28099! 28330! Santapau 844! 859! 878! 1024! 1151! 1210!

Justicia Linn.


J. ramosissima Roxb., Pl. Ind. 4: 129, 1832; Gr. 165.


Adhatoda ramosissima Nees.; Dalz. & Gibbs. 193.
Widespread in the district but nowhere abundant; it is generally procumbent below, erect in the upper half of the stem or branches. As a rule it grows in open country.

**Flowers.**—August to December. **Fruits.**—October to January.

*Woodrow; Cooke; Blatt. Herb. 28100! Acland 880! Sundarapau 514A! 846! 1224! 2549! 2678! 2952! 3121! 4579! 5027! 5131! 6907!*


*Adhatoda trinervia* Nees in Wall., Pl. As. Rar. 3: 103, 1832; Dalz. & Gibs. 194.

My only authority for the inclusion of this plant is that Hallberg mentions it in his MS. catalogue; I have seen no specimens from Khandala in any of the herbaria consulted.

*Hallberg* in MS. catalogue.

**Rostellularia** Reichem.

*Rostellularia procumbens* (Linn.) Nees in DC., Prodrt. 11: 371, 1847.


*Rostellularia procumbens* Nees in Wall., Pl. As. Rar. 3: 101, 1832; D. & G. 193 (non Rostellaria Gaertn.).

A variable plant, the commonest and most abundant of the Acanthaceae of Khandala.

Stems rooting at the lower nodes and then erect and profusely branched; branches from the same node up to 9, not verticillate but arranged fan-like in one plane; internodes usually long. Stems and branches occasionally with retrorse or bent hairs. Leaves 15-35×7-92 mm., narrow to broadly-elliptic, acute or subacute at both ends, with a few jointed hairs on both faces, raphides numerous arranged transversely to the midrib; margins entire, with a few stout hairs; petioles 4-10 mm., long, hairy.

Flowers in cylindric dense spikes, 1-7 cm. long; the whole spike as regards colour shows the following variations: (a) Green, the flowers light purple; the commonest combination of colours; (b) Green bracts with pure white flowers; occasional; (c) Spikes dark vinaceous in colour, with very dark purple flowers; (d) Lower part of the spike green, upper part purple.

Bracts with scarious edges, and ciliate with jointed hairs, up to 1-5 mm. broad; bracteoles much narrower, almost linear, ciliate with jointed hairs. Calyx segments about as long as the bracts and bracteoles, ciliate with jointed hairs. Corolla usually "Phlox Purple" (Ridg. 658) on the lower lip, with white spots at the throat; as mentioned before,
some flowers have a much deeper purple colour. Capsules about the same length as the calyx segments. Seeds suborbicular, slightly compressed, brown when ripe.

A very gregarious plant covering large tracts of ground in open country, practically to the exclusion of every other plant. Occasionally it grows on old walls and rocks during the rains. The form with light green bracts and light purple flowers is the commoner one in Khandala.

Flowers and Fruits.—July to November.


Rostellaria eriniae Nees in DC., Prodr. 11 : 373, 1847 ; D. & G. 193.

Rostellaria crinita Nees in Wall., Pl. As. Rar. 3 : 101, 1832.

Justicia microcarpa Heyne ex Wall., Cat. 2449, 1890, nom. nud. ; FBI. 4 : 536 ; C. 2 : 409 ; C. 1080.

The authority for the inclusion of this plant is Hallberg, who mentions it in his MS. catalogue for Khandala; I have not seen it either in the field or in any of the herbaria consulted.

As regards the specific epithet, the oldest one is that of Heyne, but this is a nomen nudum and therefore an invalid one; the oldest valid name is that of Nees in Wall., Pl. As. Rar., which has been adopted for the corrected name of the genus in DC., Prodr. by Nees himself.

Hallberg in MS. catalogue.

Adhatoda Nees.


Justicia adhatoda Linn., Sp. Pl. 15, 1753 ; Gr. 164 ; Bot. Mag. t. 361.

Not common. Apparently planted, not truly wild in the district. When in full bloom it is a fine shrub, but generally it looks rather ragged and bare with flowers and leaves only near the ends of the branches. It is often used as hedge shrub.

Flowers.—December to March. Fruits.—February to May, but rare.

Blatter and Hallberg in MS. catalogues; Santapau 165 ! 1471 ! 1503 ! 1969 ! 3329 ! 3330 ! 3798 !

Rhinacanthus Nees.

Rhinacanthus nasuta (Linn.) Kurz in JASB 39 : 79, 1870 ; Merrill, Enum. 3 : 488.

Justicia nasuta Linn., Sp. Pl. 16, 1753 ; Gr. 164.

Rhinacanthus communis Nees in Wall., Pl. As. Rar. 3 : 109, 1832 ; FBI. 4 : 641 ; Wight, Icon. t. 464 ; D. & G. 194 ; C. 2 : 415 ; G. 1063.
A gregarious shrubby plant, up to 2 m. high, usually about 1 m. Stems erect leafless except near the ends of the branches. Leaves in Khandala seem to be much larger than in most specimens kept in Kew Herb., up to 20x9 cms., the average being about 15x6 cms., the smaller sizes are the exception in Khandala. Leaves entire or irregularly sub-crenate; petioles up to 4.5 cms. long.

Flowers inconspicuous in a very large panicle; bracts and bracteoles and calyx segments very small, persistent. Corolla white or very often pale pink; tube narrow, about 10-15 mm. long, slender; limb 2-lipped, upper lip narrow, in straight line with the tube or nearly so; lower lip sharply bent at right angles to the tube. Capsules rather rare, or perhaps caducous.

From the localities where this plant has been seen in Khandala, it is obviously a wild plant in the district. It is found along the ravines in forest clearings or towards the edges of the forest; it is fairly common at lower altitudes. At its best, it is a poor-looking plant.

Flowers.—November to April. Fruits.—December to May.

Cooke: Blau. Herb. 28216 | Santapau: 6 | 1247 | 1453 | 3298 | 3299 | 3300 | 3315 | 3688 | 3873 | 8805

PERISTROPHI NOSS.

Peristrophe bicorymbulata (Rotz.) Noos in Wall., Pl. As. Rar. 3: 113, 1832; FBI. 4: 554; D. & G. 197; C. 2: 415; G. 1084.

Dianthrea bicorymbulata Retz. in Act. Holm. 297, t. 9, 1775.

Justicia bicorymbulata Vahl, Symb. 2: 13, 1791; Gr. 164.

A rare plant in Khandala except on the lower slopes below St. Xavier’s Villa. The flowers are distinct in structure and very brightly coloured.

Flowere and Fruits.—November 1945.

Santapau Nov. 1945

VERBENACEAE.

LANTANA Linn.

Lantana camara Linn., var. aculeata (Linn.) Moldenke, in Torrey 34: 9, 1934.

L. aculeata Linn., Sp. PI. 627, 1753; Bot. Mag. t. 96; Gr. 150; D. & G. Suppl. 88.

L. camara auct. (non Linn.): FBI. 4: 562; C. 2: 419.

Very common about Khandala village in waste ground, and scattered towards the edges of the forest throughout the district.

The dominant colour of the flowers is red; occasionally some plants are found with yellow flowers in the centre of the corymbose spike and
red ones towards the periphery. The typical *L. camara* Linn. has not been observed in the district; the spines of the var. *aculeata* cause very painful scratches which if left unattended seem to fester easily.

This is an introduced plant, by now thoroughly well established in the district. It has already spread to the tops of the highest hills in the country round Khandala, and is now forming almost impenetrable thickets in some of the ravines. The fruits are occasionally eaten by children.

*Local name* : Tantani.

*Flowers.*—Throughout the year. *Fruits.*—During the dry months.

Blatt. Herb. 23582 | Hallberg in MS. catalogue; Santaphau passion !

**Phyla Lour.**

*Phyla nodiflora* (Linn.) Green in Pittonia 4: 46, 1899; Moldenke in Lilloa 4: 296; Meeuse in Blumea 5: 69.


*Lippia nodiflora* A. Rich. in Michx., Fl. Bor. Amer. 2: 15, 1803; FBI. 4: 565; D. & G. 196; Wight, Icon. t. 1463; C. 2: 420.

In open places the internodes are short, the leaves small and the peduncles up to 2-5 cms. long; in shaded spots, the whole plant seems to be more robust with longer internodes and peduncles and with larger leaves.

Abundant on the old railway line near the village tank, on stony ground; elsewhere in the district rare.

*Flowers and Fruits.*—Throughout the year, less abundant during the rains, probably because the spot mentioned is usually under water.

*Santaphau* 3759 | 3760 | 3761 | 3762 | 4166 | 4842 |

**Stachytarpheta Vahl.**

*Stachytarpheta urticaefolia* (Salisb.) Sims in Bot. Mag. t. 1849, 1816; D. & G. Suppl. 68; Moldenke, Geogr. Distr. 55.

*Cymburus urticaefolius* Salisb., Paras. Lond. 53, 1806-1807.

*Stachytarpheta indica* auct. (non Verb. indica Linn.); Gr. 154 (probabilit.); FBI. 4: 564; C. 2: 421.

Rare in Khandala; only seen on the lower slopes below Forbay. My specimens from Khandala agree well with the diagram in Bot. Mag. t. 1848.

*Flowers and Fruits.*—August to February.

*Santaphau* 1236 | 2464 | 2846 | 3388 | 4822 | 4971 | 5469 |

**Callicarpa Linn.**

*Callicarpa tomentosa* (Linn.) Murray, Syst. Veg. (ed. 12) 130, 1774; Moldenke in Fedde, Repert. 40: 106; Meeuse in Blumea 5: 71.

**Calliandra lanata** Linn., Mant. 2: 331, 1771; FBL. 4: 567; Gr. 156; C. 2: 423.

*C. cana* D. & G. 230, 1861.

A common shrub in dense forest especially towards the edges of secondary forest, i.e., where the original forest has been removed and regeneration is taking place. The flowers are inconspicuous, but the plant itself is noticeable on account of the shape and size of the leaves and of the dense stellate tomentum covering all the young plants.

*Local name:* Patkuri.

*Flowers.*—December to May. *Fruits.*—January to June.


**Tectona** Linn. f.

_Tectona grandis_ Linn. f., Suppl. 151, 1781; FBL. 4: 970; Gr. 158; D. & G. 199; C. 2: 424.

The Teak tree does not thrive in the district from Bombay to Khandala; I have not observed any trees over 10 m. high. In Khandala itself it is a rare tree, only seen on the slopes of Monkey Hill. Local people have often complained that growing teak trees for timber does not pay, as the Government claims not only control but ownership of all such trees even those grown on private lands; the result is that private owners try to get rid of these unwelcome guests from their fields.

*Local name:* Sag.

*Flowers.*—May to October. *Fruits.*—September to November.

Blatter in MS. catalogue; _Herb. Cooke, Bhore Ghaut! Bhide 864! Santapau 2626! 4754! 4755!*

**Gmelina** Linn.

_Gmelina arborea_ Roxb., Hort. Beng. 46, 1814, & Pl. Cor. 3: 42, t. 246, 1819; FBL. 4: 581; Gr. 158; D. & G. 201; Wight, Icon. t. 1470; C. 2: 424.

Not common in Khandala; found occasionally in open country and seldom more than 5 m. high; the trees are too small and too scarce in the district for economic purposes.

*Local name:* Shikan, Sivan.

*Flowers.*—March to May. *Fruits.*—March to June.

PREMNA Linn.

**Premna officinalis** Clarke in FBI. 4: 573, 1635, C. 2. 429.

P. scandens Graham, Cat. 155, 1839; D. & G. 199 (non Roxb.).

Tolerably common in Khandala, abundant especially behind Khandala Hotel, and on the slopes below Elphinstone Point. The fresh leaves when crushed emit a strong odour, very similar to that of some of the Piper plants. On several occasions I have noticed this plant living epiphytically on Ficus sp., there being no connection between the plant and the ground, the upper branches giving off numerous adventitious roots. A very fine climber, deserving a place in gardens even for the sake of the leaves alone.

**Local name**: Kārān Pāri.

**Flowers**.—March to June. **Fruits**.—April to May.

**Rhiva / Santapau**: 465 | 549 | 854(2) | 1829-1834 | 1949 | 4015-4025 | 6108 | 6109 | 8743 | 8744 | 8772.

VITIS Linn.

**Vitis negundo** Linn., Sp. PI. 638, 1735; FBI. 4: 523, Wight, Icon. t. 519; C. 2: 428.

V. bicolor Willd.: D. & G. 201.

V. trifolia Graham, Cat. 155, 1839 (non Linn.).

Common in open country; at times the branches become rather long and assume a subcaudate habit. It is not found on the higher hills, nor in the ravines except along the water courses.

This plant is held in high repute for medicinal purposes in Western India; but I have been unable to find any medicinal use made of it in Khandala.

**Local name**: Nirgundi.

**Flowers and Fruits**.—More or less throughout the year.

**Haller & Hallberg** in MS. catalogues; Bhide 881 | Santapau passim.

**Vitis leucocylon** Linn. f., Suppl. 293, 1781; FBI. 4: 587; Gr. 156; D. & G. 201; C. 2: 430.

**Wallrothia leucocylon** Roth: Wight, Icon. t. 1467.

There are several fine specimens along Kune Stream and a few along the same water course near "Bottles Home"; not seen elsewhere in the district. It is a fine looking small tree; locally no use is made for medicinal or commercial purposes of any part of the tree.

**Local name**: Pādri.

**Flowers**.—March to June. **Fruits**.—April to October.


**Gommery**: 19252 | Santapau 528a | 174 | 385 | 486 | 1984 | 1986 | 2106 | 2107 | 3824 | 4083 | 4379 | 5390 | 6842.
Clerodendrum Linn.


This is an introduction which has not yet spread in the district; it is only found in a few gardens. It makes a very fine fence, much like the Privet of English gardens, but locally it does not seem to be much favoured.

Flowers.—November to May.
Santapau, In garden on station platform!

Clerodendrum viscosum Vent., Jard. Malm. t. 25, 1803; Moldenke, Geogr. Dist. 54, & in litter.
C. infortunatum auct. (non Linn.): Gr. 157; D. & G. 200; FBI. 4: 594; C. 2: 432.

A gregarious shrubby plant, 0.75-3 m. high. Young branches densely pubescent, older ones glabrous or nearly so. Leaves large, broadly ovate, acute or shortly acuminate, more or less irregularly serrate or denticulate.

Panicles at first all green except for the white corolla; in the fruiting stage the calyx becomes bright red, the pedicels and branches of the inflorescence purplish red; on several occasions I have observed a strong scent emitted by the flowers during the night, in the daytime they were scentless. Calyx green and fairly densely pubescent in flower, accrescent and nearly glabrous in fruit, lepidote with round, saucer-shaped scales, which are also seen occasionally at the base of the leaves. Corolla white with a pinkish tinge near the mouth of the tube on the inside; filaments up to 35 mm. long, glabrous, pure white; anthers deep purple; stamens exerted. Drupes at first reddish, finally black; pyrenes strongly reticulate on the outer surface.

Not common in Khandala, where it seems to be an introduction. A fine plant deserving of a place in gardens.

Flowers.—February to April. Fruits.—March to May.
Blatt. Herb. 23461! Santapau 1708! 1709! 3624-3625! 6004-6007! 8641! 8642!

Clerodendrum serratum (Linn.) Moon, Cat. 46, no. 32, 1824; Spreng., Syst. 2: 758, 1826; FBI. 4: 592; Gr. 157; D. & G. 200; Wight, Icon. t. 1472; C. 2: 432; Moldenke, Geogr. Dist. 54.
Volkameria serrata Linn., Mant. 90, 1767.

A shrub usually about 1 m. high; on September 3, 1942, I measured a specimen on Bhoma Hill, the stem of which was 5 cms. diam., at 30 cms. from the ground, and the total height was 3 m.
Common all over the district, especially so on rocky ground. At its best the plant looks rather wild and unattractive.

Graham, loc. cit., mentions that the leaves are eaten as greens; I have been unable to confirm this point, even though I was in the district in times of great scarcity when a number of plants from the jungle were being collected and eaten by the Katkaris.

*Flowers and Fruits.*—June to November, occasionally later.

*Graham; Dalzell & Gibson; Bhima; Blatt. Herb.* 27963 | 28041 | *Santapau* 409A | 410A | 729A | 500 | 639 | 713 | 851 | 1018 | 4181 | 4596(2) | 4964 |


Blatter mentions this plant in his MS. catalogue, but until recently I had not seen it in Khandala. Commonly cultivated in gardens. Calyx inflated, creamy white and rather showy; corolla exserted; scarlet; filaments whitish below, greenish above. The whole plant is erect and reaching 90 cm. high; it is said to be a climber.

*Blatter in MS. catalogue; Santapau* 10579 !

*Clorodendrum fragrans* (Vent.) R. Re in Ait., Hort. Kew. 4 : 65, 1812 ; C. 2 : 433 ; Bor & Raiizada, l.c., 546, f. 5.

*Volkameria fragrans* Vent., Jard. Malm. t. 70, 1803.

A gregarious plant, up to 2 m. high. Flowers of the "polyantha" type, i.e., petals indefinite in number, pale pinkish white; flowers sweetly but not strongly scented. Stamens petaloid.

*In flower* on 13th August 1950, near the station.

*Santapau* 11110-11112 !

**Symphorema Roxb.**

*Symphorema involucratum* Roxb., Pl. Cor. 2 : 46, t. 186, 1798 ; PBL. 1 : 500 ; D. & G. 193 ; Wight, Icon. t. 302 ; C. 2 : 434 ; Moldenke, Geogr. Distr. 55.

An elegant climber, noticeable on account of the star-shaped involucres and of the thin, long branches. Leaves appear after the flowers and are rather variable in the structure of their margins. Common near Convalescent Home.

*Flowers.*—March. *Fruits.*—March to May.

*Blatt. Herb.* 23466 | *Santapau* 189(2) | 172 | 344 | 1706 | 1763 | 3846 | 3982 | 3983 | 6110-6112 | 8761 | 8752 | 8753 !
**Duranta Linn.**

*Duranta repens* Linn., Sp. Pl. 637, 1753; Morill, Enum. 3: 381; Moldenke, Geogr. Distr. 54.


An introduced South American plant, often planted in gardens as a hedge plant in Khandala. Flowers are bright blue, occasionally white, fruits orange or yellow. The name *D. repens* Linn., however correct it may be taxonomically, is a very inappropriate one, as the plant at least in the Western parts of India is always an erect shrub.

*Flowers.*—Dry season.  *Fruits.*—Whole year.

*Blatt. Herb.* 23462! *Santapau 6102!*

**Holmskioldia Rez.*

*Holmskioldia sanguinea* Retz., Obs. 6: 31, 1791; FBI. 4: 591; C. 2: 437; Moldenke in Lilloa 4: 333; Bor & Rajada, 540, t. 13.

A cultivated plant, occasionally seen in Khandala gardens. The large red calyx is conspicuous even after the fading of the corolla. Only on one occasion did I find the plant run wild along the main road, but it was near a garden where the plant was under cultivation.

*Flowers.*—October to January.

*Blatt. Herb.* 28202! *Santapau 3523!*

**Labiatae.**

**Ocimum Linn.**

*Ocimum sanctum* Linn., Mant. 1: 85, 1767; FBI. 4: 609; Gr. 147; D. & G. 204; C. 2: 440; Mukerjee, Lab. Ind. Emp. 19.

The Tulsi plant, cultivated in many Hindu homes in Khandala.

*Blatt. Herb.* 23573! *Santapau, cultivated!*

*Ocimum americanum* Linn., in Cent. Pl. 1: 15, 1753; Epling, in Fedde, Repert., Beih. 95: 100.

*A. comum* Sims, in Bot. Mag. t. 2452, 1824; FBI. 4: 607; Gr. 147; D. & G. 203; C. 2: 441; Mukerjee 17.

Occasionally cultivated in gardens and at times run wild in Khandala; it is a rare plant in the district.

*Local name*: Ran Tulsi.

*Blatt. Herb.* 23569! 

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**RECORDS OF BOTANICAL SURVEY OF INDIA.**
ACROCEPHALUS Benth.


*Primula indica* Burm., *Pl. Ind. 129, 1763*.

**Acrocephalus capitatus** Benth., in *Bot. Reg. t. 1282, 1296; & in Wall., Pl. As. Rar. 2: 18, 1831*; FBJ. 5: 411; Gr. 158; D. & G. 204; C. 2: 449.

An elegant slender herb, found very occasionally in cultivated fields; the dry stems persist for some time and are very characteristic. It is a rare plant in Khandala.

**Flowers.**—October. **Fruits.**—October to November.


PLECTRANTHUS L'Herit.

**Plectranthus mollis** (Ait.) Spreng., *Syst. 2: 690, 1825*.


**P. cordifolius** Don: Gr. 148; D. & G. 205.

A gregarious shrubby herb, often found in very large numbers forming dense banks of vegetation near walls, roads, etc. A large clump of these plants in leaf and flower is a fine sight.

**Flowers.**—August to October, occasionally to the end of November. **Fruits.**—September to November.

Graham; Dalzell and Gibson; Woodrow; Hallberg in MS. catalogue: Blatt. Herb. 24044! Santapau 143/10! 754! 881! 1079! 1142! 2468! 2407! 3478(1)! 5006! 5363! 5395!

POGOSTEMON Desf.


When crushed this plant emits a strong and unpleasant odour. Common in the undergrowth of the forest or by the sides of paths. Often the plant looks hoary on account of the white woolly hairs on stem and branches and of the pale green colour of the leaves.

**Flowers.**—November to January. **Fruits.**—December to May.

**Woodrow**: Blatter in MS. catalogue; Santapau: 10! 1510! 3219! 3220! 3240! 3241! 3242! 3408! 3449! 5790! 5950! 8065!

A very common plant, found in open places especially on rocky ground; often seen by the road sides. The whole plant has a penetrating and persistent odour, which in some respects is similar to that of *P. Heyneanus*, but in general the scent of the present species is not pleasant.

Flowers.—December to April, occasionally to May. Fruits.—January to June.

*Plant Herb* 23507 | 23430 | 23539 | 23539 | 23538 | 90043 | 97448
*Santapau* 816A | 360 | 1504 | 1427 | 3336 | 5787 | 8620 | 8771


"Similar to *P. plectranthoides*, from which it differs by its completely glabrous inflorescence; the bracts, bracteoles and calyx segments are entirely glabrous. The type of this variety is Blatter 24085, collected in Khandala in the month of April, probably in the year 1918, and is kept in the Blatter Herb., Bombay.

There is only one sheet of this variety in Blatter Herb., collected in Khandala in April; the year of the collection is not mentioned on the sheet, but in all probability it was the year 1918. In all respects the new variety agrees with the typical species except that the whole inflorescence is entirely glabrous." (Santapau, loc. cit.)

**Pogostemon parviflorus** Benth. in *Wall.*, *Pl. As. Rar.* 1: 31, 1829; FBI 4: 632; C. 2: 453; Mukerjee 68.

*P. frutescens* Graham, Cat. 149, 1839.


The occurrence of this plant is given on the authority of Cooke; I have not found any specimens that could for certain be ascribed to this species. It is very similar to the preceding species; the relative amount of pubescence on stems and leaves cannot separate these two species.

The bracts of *P. parviflorus* are ovate, those of *P. plectranthoides* broadly ovate; Mukerjee gives for the present species the following characters: a herb, leaves 10 cms. or more long, calyx 1.5 mm. long, whilst *P. plectranthoides* is a shrub, leaves 5-10 cms. only in length, clavix about 5 mm. long.

In Blatt. Herb. there are many specimens labelled by Blatter as *P. parviflorus*; I have checked these sheets with the types or with authentic material in Kew Herb. and found them all to belong to the other species.

*Cooke.*

**Dysophylla Blume.**

**Dysophylla stellata** Benth in *Wall.*, *Pl. As. Rar.* 1: 30, 1829; FBI 4: 649; Gr. 160; *D. & G.* 209; C. 2: 457; G. 1137; Mukerjee 80.
A very pretty, slender herb, growing gregariously in pools of stagnant water, covering large areas. In November 1948 one of the sides of Khandala talao was almost entirely covered with these plants.

Most of my specimens from Khandala seem to belong to the var. gracilis Cooke, but after examination of large numbers of sheets, including the types of the varieties in Kew Herb. I am still in doubt about the limits of the two varieties. When the Kew specimens are arranged carefully, one finds but a long series of plants with the so-called var. tomentosa at one end, and var. gracilis at the other, with every intermediate form in between. Until the boundaries between these two varieties are better defined, I am inclined to leave my plants merely as specimens of D. stellata Benth.

Flowers.—September to December. Fruits.—October to December.

Blatt. Herb. 280022; Santapau 10141; 1130; 1190; 2604; 2806; 2907; 3067; 3068; 5058; 5423; 5429; 5430; 5048; 5049; 5100; 9596-9599.

COLEBROOKIA Sm.


Very common all over the district, and very conspicuous especially when in fruit; found in open country or in clearings in the forest.

Flowers.—December to January. Fruits.—February to May.

Graham; Cooke; Blatt. Herb. 23514; 24060; 25329; 25483; 28473; 28A 22A; 112; 113; 1543; 3554; 3590; 3821; 6843; 8821.

ANISOMELES R. Br.

Anisomeles hayesiana Benth. in Wall., Pl. As. Rar. 1: 59, 1830; FBI. 4: 672; D. & G. 210; C. 460; G. 1140; Mukerjee 152.

A tall, rank herb, often seen in open country along hedges or at the edges of the forest.

Flowers.—October to January, occasionally till May. Fruits.—October to March.

Blatt. Herb. 23540; 24045; 27540; 28182; Santapau 735(2)A; 1130; 1192; 1250; 2940; 3462; 5083.

LEUCAS R. Br.

Leucas stelligera Wall. ex Benth. in Wall., Pl. As. Rar. 1: 51, 1830; FBI. 4: 638; D. & G. 211; C. 2: 470; G. 1154; Mukerjee 177.

A common and rather unattractive weed, found generally in the forest. The star-like structure of the calyx easily distinguishes this species.
Flowers.—October to January, occasionally to April. Fruits.—
December to April.


Leucas lavandulaefolia Rees, Cycl. 20(2),1819; Mukerjee 167.

A common plant in the district, in rice fields (very prominent after the harvest), and in waste lands. It is a rank and unattractive plant; but when growing luxuriously it is a fair plant.

Flowers.—Throughout the year, not common during the rains.
Fruits.—About the same time as the flowers.


Leucas ellipta Benth. in Wall., Pl. As. Rar. 1: 61, 1829; FBI. 4: 687; D. & G. 211; C. 2: 471; G. 1152; Mukerjee 174.

Not common in Khandala; it grows in open grass lands, especially on rocky ground.

Flowers.—November to March. Fruits.—December to May.

Hallberg in MS. catalogue; Blatt. Herb. 23508! 23518! 23532! Santapau 2301! 2302! 5925! 5926! 8067!

Leucas stricta Benth. in Wall., Pl. As. Rar. 1: 61, 1829; FBI. 4: 688; C. 2: 467; G. 1150; Mukerjee 170.

There is but one specimen in Blatt. Herb.; a rare plant in Khandala. Stem 15 cms. high. Flowers in small globose whorls, which are about 10-12 flowered, fewer-flowered and smaller than the rest of the Leucas of Khandala. Bracts linear, hairy with short hairs and elliptic with long stiff hairs. Calyx densely pubescent with short hairs and with a few, long ones scattered on the outside. Corolla white, upper lip densely white-villous; lower lip slightly pubescent outside.

Blatt. Herb. 23399!

Salvia Linn.

Salvia planifolia R. Br., Prodr. 501, 1810; FBI. 4: 655; D. & G. 209; C. 2: 474; G. 1155; Peter-Stibel in Fedd., Repert. 39: 181; Mukerjee 111.

Very common near the talao, both on stony ground along the old railway line and on the talao itself as soon as the level of the water has gone down; it is also common in the stream beds along the lower parts of most of the ravines in the district, usually on moist soil or sand; in the early part of the hot season, it is also common in cultivated fields.
In all these places the plant grows in great abundance in almost pure stands, and its long racemes of small flowers or fruits are very prominent.

_Flowers and Fruits._—December to June.


**Hypitis Jacq.**


_Ballota suaveolens_ Linn., Syst. (ed. 10) 1100, 1759.

A shrubby, scented plant, up to 1-5 m. high. An American introduced herb which has become naturalized on the slopes below St. Xavier's Villa and in other parts of the district. The corollas are purple, 2-lipped; anthers purple, filaments hairy with whitish hairs. The calyx, with its 3-10 strong nerves and its long spinous tooth distinguishes this plant from all the native members of the same family. The whole plant is strongly and not unpleasantly aromatic, with large numbers of short glandular hairs scattered through the leaves and inflorescence. It is still rather rare in Khandala.

_Santapau 3327! 5506! 5507!_

**Coleus Lour.**

_Coleus_ sp.

Several species of _Coleus_ are regularly cultivated in Khandala gardens, but I have not observed any of them running wild in the district. In the absence of specimens, which could not be collected from gardens, I have not been able to identify the species.

_Santapau, cultivated in gardens!_

**NYCTAGINACEAE.**

**Boerhavia Linn.**


_B. procumbens_ Roxb., Fl. Ind. 1: 146, 1820; Gr. 167; Wight, Icon. t. 874.

A variable herb, diffuse, procumbent or scendent with stout roots and long branches; internodes long, slender, tricots, green or purple. Leaves distinctly unequal in each pair. Flowers pale pink to pink, at times purplish pink.
Common in waste lands near Khandala station and talac. Not an attractive plant.

Flowers and Fruits.—October to June.

Santapau 2122!

**Bougainvillea** Comm.


A large climbing shrub commonly cultivated in gardens. The large coloured bracts are very prominent. The commonest colour of the bracts is pink to red. Occasional in Khandala gardens, not seen wild.

Flowers.—Hot season.

Blatt. Herb. 24143! Santapau, cultivated in gardens!

About the spelling of the generic name, see Harms in Engl. and Prantl, Pflanzenfam. (ed. 2) 16 C: 122; see also Sprague in Kew Bull. 1928: 349.

**Mirabilis** Linn.


An erect herbaceous plant, sometimes seen in Khandala gardens; not found wild in the district.

Blatter: “Cultivated in gardens”.

**AMARANTHACEAE.**

**Celosia** Linn.

*Celosia argentea* Linn., Sp. Pl. 205, 1753; FBL. 4: 714; Gr. 167; D. & G. 215; Wight, Icon. t. 1767; C. 2: 436.

An annual, erect herb; root stout, almost tuberous; stems simple in young specimens, branched in older ones, but branches simple or nearly so, at least in the Khandala specimens; the whole plant reaches 2.44 m., though usually it is about 1 m. high.

A common plant about Khandala, found all over the district in open fields or on the slopes and along the stream beds in the ravines.

Flowers.—August to November; in moist spots up to June.

Fruits.—October to June.

Santapau 889 ! 931 ! 1098 ! 1105 ! 2253 !

**AMARANTHUS** Linn.

*Amaranthus spinosus* Linn., Sp. Pl. 991, 1753; FBL. 4: 718; Willd., Hist. Amaranth. 18, t. 4, f. 8; Gr. 169; Wight, Icon. t. 513; D. & G. 216; C. 2: 439.
Rares in Khandala, except in waste land near the railway station and village tank. Locally no use is made of the leaves or roots of this plant.

*Flowers and Fruits.*—Dry season, October to June.

*Blatt. Herb.* 24209! 24210! *Santapau* 410! 3061!


An erect herb with deeply grooved stems. Leaves variable, with a slender petiole about as long as the blade itself. The most typical part of the plant is the densely rugose capsule; it is the only species of the genus in Khandala with such a capsule.

Not common in Khandala; it is found in waste lands near the village tank and station, and occasionally along the stream bed in St. Xavier’s Ravine. Cooke remarks that he has seen no specimens from Bombay: the specimens here listed have been checked with those in Kew Herb. and there is no doubt that the Khandala plants belong to this species.

*Flowers and Fruits.*—Dry season, from November onwards.

*Blatt. Herb.* 2415! *Santapau* 4435! 8126! 8975!


An erect, suberect or prostrate herb. The capsule is the typical part of this species: it is smooth or nearly so, at least not at all or only very slightly rugose, about 1/3 longer than the perianth. Sepals obtuse or subobtuse and often apiculate and scarious near the margins. Leaves nearly as broad as they are long, with petioles up to three times as long as the blade.

Fairly common in waste land near the tank and station, occasional elsewhere. It is not cultivated in Khandala.

*Flowers and Fruits.*—Throughout the year.


*A. gangeticus* Linn., Syst. (ed. 10) 1268, 1759; FBL 4: 719; C. 2: 489.

*A. oleraceus* Willd., Sp. Pl. 4: 386, 1805 (non Linn.); Gr. 169; Wight, Icon. t. 715.

A herb very similar to *A. pinnatus*, from which it differs mainly by its trimerous flowers. Sepals usually longer than the capsule with an own which is at least as long as the leafy part of the sepal.
Rare in Khandala. Found near a stream in April 1941.

*Flowers and Fruits*—April 1941.

*Santapau 23/66*


*A. frumentaceus* Buch.-Ham.: Wight, Icon. t. 720.

An erect herb, growing in moist ground. Flowers are pentameres; for the rest this plant is very similar to *A. tricolor* Linn.

Rare in Khandala; not seen in cultivation.

*Flowers and Fruits.*—April 1942.

*Santapau 262*


The specimens mentioned below have been identified by Mr. M. B. Raizada of Dehra Dun. The plant was noticed growing gregariously near human habitation on Monkey Hill during the rains; it is clearly an introduction, a much stouter plant than any of the local species.

*Flowers and Fruits.*—July 1943.

*Santapau 10187-10190*

**Aerva Forsk.**

For the spelling of the generic name, see Sprague in Kew Bull. 1928: 342.

*Aerva sanguinolenta* (Linn.) Blume, Bijdr. 547, 1825; Backer in Fl. Males. 1, 4(2): 85.


*Aerva scandens* Wall., Cat. 6911, 1829; Moq. in DC., Prodrt. 15(2): 302, 1849; FBI. 4: 727; D. & G. 217; Wight, Icon. t. 724 (excl. sem. & utr.); C. 2: 493; G. 1178.

A subscandent to scandent shrubby herb, reaching 2 m. in length. Stem and branches striate, from densely pubescent (at times almost woolly) in young parts to glabrous in older ones. Leaves alternate and opposite on the same plant, up to 9.5 x 3 cms., acute, entire, base tapering into a short petiole; the two sides of the leaf are fairly densely hairy with stout hairs from broad bases.

A very common plant in Khandala; in dense forest, in clearings in the forest, and on grassy banks.

*Flowers and Fruits.*—October to June.
**Aerva persica** (Burn.) Merrill, in Phil. Journ. Sci. 10 : 348, 1921; Schinz in Fl. Ind. 16 C : 51.

*Inosea persica* Burm. Fl. Ind. 212 (err. typ. 312), 1763.

*Inosea javanica* Juss. in Ann. Mus. Par. 2 : 131, 1803; FBI. 4 : 727; D. & G. 216; Wight, Icon. 876; C. 2 : 492.

Both Blatter and Hallberg have recorded the presence of this plant in Khandala; I have not seen it in the district, there are no specimens in the Blatt. Herb.

**Blatter and Hallberg** in MS. catalogues.

*Inosea lanata* (Linn.) Juss., loc. cit.; FBI. 4 : 728; Gr. 168; D. & G. 217; C. 2 : 493; Schinz, loc. cit. 53.

*Achyranthes lanata* Linn. Sp. Pl. 294, 1753 (non *Celosia lanata* Linn., ibid. 205, quae est *Aerva persica* Merr.).

*Aerva floribunda* Wight, Icon. t. 1776 pro parte, & 1776 bis A, 1832.

The occurrence of this plant is also given on the authority of Blatter and Hallberg. In the Blatt. Herb. there are no specimens from Khandala.

**Blatter and Hallberg** in MS. catalogues.


*Ilokebrium monsoniae* Linn. f., Suppl. 161, 1781.

*Celosia monsoniae* Retz., Obs. 2 : 13, 1781; Gr. 168.

There are no specimens of this plant from Khandala in any of the herbata consulted; it is given on the authority of Hallberg.

**Hallberg** in MS. catalogues.

**Achyranthes Linn.**


*A. porphyristachya* Wall., Cat. 6925, 1832.


The typical *A. aspera* Linn. has not been found in Khandala; the broadly ovate to orbicular leaves are characteristic of Linnæus's plant. The present variety has larger leaves, which are acute, elliptic or lanceolate; spikes are longer with a slender rachis; flowers and fruits are about the same in structure but slightly larger. The whole plant, even
at first sight, looks quite different from Linnae's species. My specimen No. 4158 well represents the form peculiar to the variety; its leaves measure up to 13\times6.5\text{ cm}, and are thin and nearly glabrous.

Common all over the district especially in clearings in the forest and on grassy slopes.

Flowers and Fruits.—September to May.

*Blatt. Herb.* 24217! 24902! 28089! *Santapau* 42A! 352! 1845! 2536! 4158! 8862!


The following is the translation of the specific description: "Similar to *A. aspera* var. *porphyristachya* Hook. f., from which it differs in the following details: it is a perennial plant; in habit it is shrubby and profusely branched; in size it far exceeds all the species of the genus described from India; the inflorescence is much longer, the flowers and fruits at least twice as large as those of the typical species.

"A perennial shrub, erect, up to 3-3.5 m. high. Stem terete, woody, up to 5 cm. diam. below, thinner above; branches many, woody, patent, the younger ones pubescent, older ones glabrous or glabrescent; the whole plant including the inflorescence extends up to 3.5 m. in diameter. Leaves many, deciduous; the lower ones 23-5\times9 cm., or even larger; higher leaves gradually decrease in size, all elliptic or lanceolate, acute or acuminate, glabrous or subglabrous above, pubescent or subpubescent beneath especially on the primary nerves, which are about 10-12 on either side of the midrib; margins entire; base cuneate or acute, decurrent into the petiole; petiole up to 3 cm. long, pubescent, more or less channelled.

"Sepals at first green or pale, at length straw-coloured; flowers when freshly opened, rosy or purplish on account of the colour of the staminal tube; flowers at first erect, later patent, finally deflexed and appressed to the rachis. Rachis rather thick, up to 56 cm. long, densely pubescent, greyish or whitish; the spikes with spreading flowers up to 20 mm. diam. Bracts persistent, ovate, acuminate, membranous, about 6 mm. long; bracteoles aristate, deciduous, about as long as the bracts. Sepals up to 10 mm. long, 1.5-2.5 mm. broad, glabrous, green or greemish, margins scarious. Stamens 5; staminodes filibrate, rose-coloured, only half as long as the filaments of the anthers, and about as long as the capsule. Capsule about 5 mm. long, style persisting on the capsule and 6 mm. long, the capsule included in the persistent and hardened sepals, brownish, truncate at the apex; seed one, slightly brownish, nearly as large as the capsule itself, truncate at the apex cylindrical, smooth."
The type, Santapau 8074, was collected in Khandala on the Western Ghats of India on the 26 November 1945 and was placed in the Blatt. Herb., Bombay; the iso- and para-types, Santapau 8009, 8070, 8073 have also been placed in the Blatt. Herb., 8071 in Kew Herb., 8072 in Arnold Arbor., U. S. A.; the paratypes, Santapau 5945, 5946, 5947, 8649 and Blatter 27553, 27554, 27555 have been placed in the Blatt. Herb.

At the time my specimens were collected, the plant was growing about half way down St. Xavier's Ravine, near the path; at that spot there were about ten different large plants; in 1949 I found that all those plants had disappeared from the spot, probably on account of a land-slide.

*Flowers and Fruits.* October to February.

**ALTERNANTHERA Forsk.**

*Alternanthera sessilis* (Linn.) R. Br., Prodr. 417, 1810; FBI. 4: 731; Gr. 168; D. & G. 220; Wight, Icon. t. 727; Aschers. & Graebn., Syn. 5: 361.


A common plant in moist places throughout the year, often forming dense mats on damp ground.

*Flowers and Fruits.*—The whole year.


**GOMPHRENA Linn.**

*Gomphrena globosa* Linn., Sp. Pl. 326, 1763; FBI. 4: 732; Gr. 169; D. & G. Suppl. 72; C. 2: 499; Aschers. & Graebn., Syn. 5: 367.

On several occasions I have noticed this plant cultivated in Khandala gardens; the colour of the flowers is deep red or crimson, I have not noticed any other colour in Khandala.

*Santapau.* cultivated in gardens.

**CHENOPODIACEAE.**

**CHENOPODIUM Linn.**


*C. viride* Linn., Sp. Pl. 219, 1753; Gr. 171.

The occurrence of this plant is mentioned on the authority of Hallberg. According to Crooke it is often cultivated or found as an escape on cultivated ground in the Deccan. I have not seen the plant wild or otherwise in Khandala.

*Hallberg* in MS. catalogue.
POLYGONACEAE

Polygonum Linn.


A very variable plant, the forms and varieties apparently depending on the amount of moisture and shade. As far as Khandala is concerned, the early plants seem to belong to the var. indica Hook. f.; as the season advances and the ground becomes drier, they assume the foliage of var. brevifolia Hook. f. Many of my Khandala specimens show large leaves on the stem together with the smaller leaves on the branches.

A very common plant in rice fields after the harvest, along the beds of streams during the dry season, on the edges of the village tank and in open dry fields.

Flowers and Fruits.—December to May.


Polygonum glabrum Willd., Sp. Pl. 2: 447, 1799; FBI. 5: 34; Gr. 172; D. & G. 214; Wight. Icon. t. 1799; C. 2: 514; Gage. Cens. Ind. Pol. in RBSI. 2: 393; Steward 43.

Not common in Khandala. There is a good clump near the Khandala Hotel Swimming Bath, which has been in flower and fruit for several years. During the dry season there are a few plants along the stream bed behind Khandala Hotel and along the bed of the stream along the bottom of St. Xavier’s Ravine; it is also occasional near the village tank.

Local name: Parel.

Flowers and Fruits.—The whole year.

Blatt. Herb. 24293! Santapau 1230(2)! 4823!


P. serrulatum Hook. f. in FBI. 5: 38, 1886 (excl. var. Donii); Gage 349; C. 2: 515 (non Lagasca, nec Meisn., nec Miq.).

P. rhindare Graham, Cat. 172. 1839 (an Koenigi ?); D. & G. 214 Rare in Khandala, only seen in the stream near Kune Plateau.

Flowers and Fruits.—January to September.

Hallberg in MS. catalogue: Blatt. Herb. 29558! Santapau 1707! 4091! 4092! 4399! 4400! 5913!


Fagopyrum esculentum Moench., Meth. 230, 1794; FBI. 5: 55; C. 2: 518.
An erect, stiff herb, glabrous all over, deep green. Leaves alternate below with a long petiole (petiole up to 9 cms. long); passing gradually into sessile leaves above, all deltoid, stiff when fresh, membranous when dry; margins entire; base subcordate to truncate; apex obtuse or subobtuse; the whole leaf more or less angular.

Inflorescence terminal on the stem and branches, second or nearly so, racemose; pedicels filiform, varying in length. Perianth of 5 segments, which are united near the base, the segments ovate-obtuse, white. Stamens 5 alternating with the perianth segments: 10 glands or staminodes forming a disc round the base of the ovary; then 3 stamens with filaments twice as long as the outer five; the connective between the anther cells horizontal, very distinct. Ovary triangular in section; styles 3, recurved; stigmas capitate, small. Ovules seem to be one in each ovary.

Only seen once near human habitation, clearly an introduction.
Flowers and Fruits.—24 July 1949.
Sanatapu 10179! 10180! 10181!

Rumex Linna.

Rumex dentatus Linn., Mant. 2: 226, 1771; Fl. Bl. 5: 59; C. 2: 518; Pfl. 3 (1a): 19 & 17. t. 8. O.

A rare plant in Khandala, only seen in 1949 and 1950; on the last occasion it was found growing gregariously on the old railway line near the village talao.
Flowers and Fruits.—March 1949 and 1950.
Sanatapu 9999! 10769-10772!

Antigonon Endl.


An American plant cultivated in gardens and occasionally found at an escape in Khandala. On hedges along the main road from Khandala to Lonnyna.
Flowers.—May 1944; Oct. 1945; April 1946.
Sanatapu, in gardens or roadsides.

Muehlenbeckia Meiis.

Coccoloba platyclada Muell., in Bot. Mag. t. 5282, 1863.

In Blatt. Horb, there is one sheet of this plant in flower; the locality is given as "Bombay Khandala". I have not seen the plant in Khandala either in gardens or as an escape.
Blatt. Herb. 24733!
PODOSTEMACEAE.

**Terniola Tul.**

*Terniola zeylanica* Tul., var. *konkanica* (Willis) Santapau, comb. nov.


Willis, loc. cit., writes: “Khandala and Lanauli, in the Bhor Ghat, 1500-2500 feet, common. Willis ! Sakarpather, near Lanauli, Woodrow ! Tiger Leap, near Khandala, Woodrow !…” In a footnote Willis adds: “Enormous quantities in the stream below the Hamilton Hotel on the left going from Khandala to Lanauli; also in stream on the right after crossing the railway from the Hamilton Hotel, and in nearly all streams in the district and on far side of Sakarpather.”

**Zeylanidium Engl.**

*Zeylanidium lichenoides* Engl., var. *khandalesis* (Willis) Santapau, comb. nov.


*Willis 14 ! 65 ! in Kew Herb.*

*Zeylanidium lichenoides* Engl., var. *bhorensis* (Willis) Santapau, comb. nov.

*Hydrobryum lichenoides* Kurz, var. *bhorensis* Willis, loc. cit.

*Willis 17 ! in Kew Herb.*

PIPERACEAE

**Piper Linn.**

*Piper nigrum* Linn., Sp. Pl. 28, 1753; FBI. 5: 90; Gr. 198; D. & C. Suppl. 84; C. 2: 527; C. DC., Clavis in Candollesa 1: 217; O. 1208.

*P. Trichostachyon* Roxb.: Gr. 199; Wight, Icon. t. 1335.

A common climber in practically all the ravines about Khandala. It grows under the shade of trees in deep forests, at times suberect, more often climbing over rocks or trees, but seldom going over 1-5 m. up the tree trunks. This plant is often taken for *P. trichostachyon* Cass., from which it clearly differs by its glabrous inflorescence. From the localities where this plant has been found in Khandala and its relative abundance, I consider it as indigenous in the district.

*Local name:* Mirvel.

*Flowers.—*July to September. *Fruits.—*January to August.

Piper trichostachyon (Miq.) C. DC. in Prodr. 16(1): 242, 1869; FBl. 3: 80; C. 2: 526; C. DC., Clavis 70 & 282.

Muliera trichostachya Miq.: Wight, Icon. t. 1944.

In general appearance there is little difference between this species and P. nigrum. The spikes of this species are pubescent, at times densely so; the stamens appear like two eyes in the opening of the globose bracts.

Dalzell and Woodrow, ex Cooke.

Peperomia R. & P.


P. portulacoides D. & G. 225, 1861 (non Miq.).

Blatter mentions this plant among his Khandala plants; there are no specimens in Blatt. Herb. from Khandala.

Blatt in MS. catalogue.


An American plant naturalized in Western India; it is common in Bombay Island. It is occasionally planted in Khandala gardens.

Blatt. Herb. 26285 | Santapau, in gardens |

MYRISTICACEAE.

Knema Linn.

Knema attenuata (Wall.) Warb., Mon. Myrist. 590, 1807.

Myristica attenuata Wall., Cat. 6791, 1832, nom. nud.; Hook. f. & Thomas., Fl. Ind. 157, 1855; DC., Prodr. 14(1): 205, 1856; D. & G. 4; FBl. 6: 110; King in ARBGC. 3(3): 316, t. 152; C. 2: 531.

M. anggidina G. 110, 1839 (non Wall.).

An evergreen, fine looking tree, somewhat rare in the district; there are several trees together on the slopes below Duke's Nose not far from the village path; it is also found scattered on Meroli plateau in deep forest.

Local name: Ragtrorar.

Flowers.—November to December. Fruits.—March to June.

Hallberg in MS. catalogue; Santapau 1316 | 1978 | 1978 | 1980 | 2173 | 2174 | 2175 | 3221 | 3222 | 3223 | 3224 | 3880 | 3881 | 3449 |
LAURACEAE.

BRITISHMIA Laes.

BRITISHMIA FAGITIFIA Laes., var. DALZELLII Meisn., in DC., Prodr. 15(1) : 64, 1864 ; FBI. 5 : 122 ; C. 2 : 534.

B. ROXBURGHIANA D. & G. 222, 1861 (non Laes).

B. ROXBURGHIANA Laes., var. DALZELLII Haines, Bot. Bih. & Or. 798, 1924.

This is one of the largest and finest trees of Khandala. Leaves entire, somewhat broader than the types in Kew Herb., up to 15.5 x 7 cm., elliptic to broadly elliptic, acute, subacute or obtuse, glabrous and shining above, glabrous but dull and paler beneath, coriaceous to subcoriaceous; base rounded, subacute and very shortly decurrent; apex occasionally tapering to an obtuse point; petioles up to 2 ems. long.

Pedicels conspicuously thickened in fruit, at first green, finally bright red. Flowers dull yellow, small and inconspicuous. Fruit smooth, at first green, gradually turning purple, at maturity black, generally covered with a whitish bloom that easily comes off, up to 4 x 2.6 mm.; the red pedicel of the mature fruit is about as long as or a little longer than the fruit itself.

This is a difficult plant to identify, and I do not feel confident that my identification is correct; one of the sheets in Kew Herb. from Stocks Herb. bears a note from Gamble: "In my opinion this is B. BOURDILONI BRANDIS". On account of the structure of the leaves my Khandala plants are more similar to B. BOURDILONI than to B. FAGITIFIA.

Local name.: Kásuri, Kájuri.

Flowers.—February to March. Fruits.—February to June.

BLATTER in M.S. catalogue; SANTAPAR 340! 340(2)! 1733! 1735! 1866! 2136! 3858-3861! 3890! 6011! 6012! 8851-8853! 9069!

CINNAMOMUM BL.

CINNAMOMUM ZEYLANICUM Blume, Bijdr. 565, 1825 ; FBI. 5 : 131; Wight, Icon. t. 1230; C. 2 : 525; G. 1224; Kostermans in H. Humb., Not. Syst. 6(2) : 120.

C. AROMATICUM Gr. 173, 1839; D. & G. Suppl. 74.

Kostermans, loc. cit., following Meisner in DC., Prodr. 15 : 13, erroneously attributes the specific name to Breyné, who described the tree in Ephem. Nat. Cur. dec. 1, ann. 4 : 139, 1676; but according to the Rules, Breyné's name is not legitimate as it is prior to 1753. The first author after 1753 to use the binomial name was Blume.
Graham states that "a few trees grow in the ravines about Khandala, but it is not common on that part of the Ghauts". For ten years I failed to find the tree about Khandala; finally in 1950 and again in 1951 I found two groups of such trees in St. Xavier's Ravine just below St. Xavier's Villa.


**Machilus Nees.**

* Machilus macrantha Nees in Wall., Pl. As. Rar. 2 : 70, 1831; FBL. 5 : 140; D. & G. 221; Wight, Icon. t. 1824; C. 2 : 536; Talb. 2 : 291; G. 1227.

* M. glaucescens Wight, Icon. t. 1825, 1852 (excl. syns.); D. & G. 221.

Following Gamble; I have united these two species under one; the material of these two species available in Kew Herb. supports this view. It is possible, however, that when more material becomes available, the two trees will prove to be different.

One of the largest trees in Khandala. Leaves coriaceous, up to 17×7 cms., acute at the apex, rounded or subacute and slightly unequal sided at the base. Inflorescence consisting of several puberulous panicles at or near the ends of the branches; flowers inconspicuous, dull yellow. Fruits at first green with white dots, at maturity uniformly black with bluish bloom, subglobose, smooth, up to 27×19 mm.

Not common in Khandala. I have only seen two large clumps, one near Forbay, the other in the ravine just below St. Xavier’s Villa.

*Local name*: Pishia; Pisara.

*Flowers.*—December. *Fruits.*—January to April.

**Blatter and Hallberg in MS. catalogues; Santapau 3834-3835 ! 5897 ! 5898 ! 8716 ! 8717 !

**Alseodaphne Nees.**

* Alseodaphne semecarpifolia Nees in Wall., Pl. As. Rar. 2 : 72, 1839; FBL. 5 : 144; D. & G. 222; C. 2 : 526; Wight, Icon. t. 1226; C. 1228.

The occurrence of this tree in Khandala is given on the authority of Blatter and Hallberg, both of whom affirm that they have seen it in the district. There are no specimens from Khandala in any of the herbaria consulted.

**Blatter and Hallberg in MS. catalogues.**
Actinodaphne Nees.


A. Hookerii Meisn. in DC., Prodr. 15(1) : 218, 1864 (excl. var. longifolia & incl. vars. dassypoda & glabra); FBI. 5 : 149; O. 2 : 537.

A. lacustrata D. & G. 213, 1861.

Tetranthera lanceolata G. 174, 1839 (non Roxb.).

A small to medium-sized tree with a sombre aspect. Leaves near the ends of the branches, whorled, dark bluish green, up to 18 x 7 cms.; young leaves densely silky on both sides, mature leaves generally glabrous. Meisner has two varieties, dassypoda and glabra: these cannot be maintained as varieties, since the pubescence or glabrousness of the leaves depends on the age of the leaves. Petioles silky pubescent when young, glabrous when old.

Flowers dioecious, yellow, on leafless branches near the end; buds rusty tomentose. Fruits at first green with a few white dots, at maturity bright orange red without dots, seated in the cup-shaped calyx.

This is one of the most prominent and abundant trees on Bhoma Hill; the shape of the tree and the deep bluish green colour of its foliage make it stand out rather strongly against the surrounding vegetation.

Fruits are produced in great abundance, and at maturity can be seen in large numbers on the floor of the forest under the tree.

Local name: Pishia.

Flowers.—October to December. Fruits.—January to June.


Litsea Lamk.

Litsea deccanensis Gamble, Fl. Madr. 1235, 1925.

L. tomentosa Heyne ex Wall., Cat. sub no. 2550, 1830; FBI. 5 : 157; C. 2 : 531 (non Blume).

Tetranthera tomentosa Roxb.: Wight, Icon. t. 1834.

T. apetala G. 174. 1839: D. & G. 222 (non Roxb.).

Widely scattered over the whole district, but nowhere abundant.

Local name: Kuriak.

Flowers.—October to January. Fruits.—December to January.

Lišea wightiana (Nees) Hook. f. in Gen. Pl. 3: 162, 1880; FBI. 5: 177 pro parte; C. 2: 540; G. 1238.

Olyciodaphne wightiana Nees in Wall., Pl. As Rar. 2: 68, 1829; D. & G. 222; Wight, Icon. t. 1883.

Blatter mentions this tree among those of Khandala; I have seen no specimen from the district. In Blatt. Herb. there is a specimen, no. 24388, collected on June 2, 1809, which has been labelled in Blatter's hand as L. wightiana; the specimen does not seem to be a Lišea at all, as it does not match with any of the plants of this genus in Kew Herb.

Another specimen in Blatt. Herb., no. 27546, has been identified at Dehra Dun as "Lišea fuscata Thw."; in my opinion the specimen belongs to Actinodaphne angustifolia.

Blatter in MS. catalogue.

PROTEACEAE.

GREVILLEA R. Br.

Grevillea robusta Cunn. in R. Br., Suppl. Pr. 24, 1850.

A large tree often planted in gardens. In Khandala I have never seen the tree in flower; further in the Deccan it seems to flower quite readily. Planted in St. Xavier's Villa.

Santapau, in gardens.

THYMELIACEAE.

Lasiocapnos Fresen.


L. speciosus Deane. loc. cit. 147, t. 150; D. & G. 222.

Gnidia ericophaulus Gr. 176, 1839; Wight. Icon. t. 1859.

One of the commonest shrubs about St. Xavier's Villa and Convalescent Home; usually it is found in open country or towards the edges of forest. The stem and leaves are used locally for poisoning fish in local streams: the fish so poisoned do not die, but float along the stream in a stunned condition.

Local name: Rameta.

Flowers.—November to January. Fruits.—March to May.

ELAEAGNACEAE.

ELAEAGNUS Linn.


E. latifolia Linn., Sp. Pl. 121, 1753; FBI 5: 202; C. 2: 543; omnes pro parte tantum.

According to Servet., loc. cit., the Linnean species E. latifolia is a complex group consisting of at least three species: E. conferta Roxb., E. latifolia Linn. and E. Kologa Schlecht. The structure of the perianth is the distinguishing feature of these species: E. conferta has a perianth with a short conical base, and a tube which is cylindrical, more or less equally thick throughout the whole of its length. This is definitely the common Khandala plant.

A scandent or subscandent shrub with long branches. Leaves greyish green above, silvery white and shining beneath. Flowers creamy-white, shining with silvery scales. Perianth tube short, cylindric; lobes ovate or more or less triangular or deltoid, spreading. Fruit at first greyish green, at maturity pale pink with a transparent, white-dotted skin.

The fruit when ripe is edible, and has a slightly acid taste.

Common at the edges of the forest, or in fairly dense forest where trees are not too high. The leaves are among the most elegant ones in Khandala.

Local name: Amgoli.

Flowers.—December to January. Fruits.—January to May.


LORANTHACEAE.

"The only genus bearing rightly the name Loranthus is nowadays called Philiacanthus and is restricted to tropical America." (Danser, New Syst. Loranth. and Nomencl., p. 65).

DENDROPHTHOE Mart.


Loranthus falcatus Linn. f., Suppl. 211, 1781.

L. longiflorus Desr in Lamk., Encycl. 3: 598, 1789; FBI 5: 214; Gr. 66; Wight, Icon. t. 302; C. 2: 548; G. 1250.
THE FLORA OF KHANDALA.

This species is less common than most other Loranthaceae in Khandala. The host plants noted in the district are the following: Pongamia pinnata (Linn.) Pierre, Meyna laxiflora Robyns, Mangifera indica Linn., Careya arborea Roxb., Carissa congesta Wight, Salinaria malabarica Schott & Endl., Syzygium cumini (L.) Skeels, Cassaria gravoDons Dalz., Woodfordia fruticosa (L.) Kurz, Vitis negundo Linn., Holoptelea integrifolia Planch., etc. The commonest host plants are Mangifera and Careya.

Flowers.—December to May. Fruits.—March to May.

Graham; Hallberg in MS. catalogue; Blatt. Herb. 24534 | 23366 | Santapau 175 | 1541 | 3531 | 3602 | 4013 | 4014 | 4356 | 8611 | 8734 | 8947 | 8948 | 8949

Dendrophthoe falcata Etting., var. coccinea (Talb.) Santapau, comb. nov.

Loranthus longiflorus Desr. var. coccinea Talb., Trees, ed. 1, 172, 1894; C. 2 : 549.

This parasite was first recorded from Khandala on December 28, 1949; the host was covered with branches of the parasite, but collection of specimens was made difficult by the many spiny climbers on the trunk and the multitude of red ants on the branches of the host (Terminalia crenulata Roth). Flowers: calyx green; corolla scarlet in the tube, green on the outside of the lobes; as the flower ages, the whole of the corolla becomes uniformly scarlet. Filaments slightly deeper red than the corolla tube.

On Terminalia crenulata Roth, at the point where Monkey Hill Plateau joins Battery Hill Plateau, in dense jungle.

Flowers.—December 28, 1949.

Santapau 10652 | 10653

Dendrophthoe trigona (Wt. & Arn.) Danser, MS. in Kew Herb. Ined.

Loranthus trigonus Wight & Arn., Prodr. 386, 1834; PBI. 5 : 219; C. 2 : 549.


A stout woody parasite; young branches acutely 3-angled, gradually becoming rounded with age. Leaves thick, leathery and rather variable in shape and size, up to 15×12 cms., opposite or in whorls of 3, reddish when young, at length greyish green. Flowers in short axillary racemes, often from the old wood away from the actual leaves; the whole inflorescence is glabrous. Peduncle up to 2 cms. long, green or reddish; corolla slightly inflated about the middle of the tube; tube salmon pink below, greenish in the upper half; corolla lobes salmon-pink, becoming red with age. Anthers yellow with a touch of pink,
about 1 mm. long; filaments greenish; stigma "Carmine" (Ridg.), style greenish. The edges of the corolla lobes are papillose with minute carmine papillae, which are very clear on the fresh flower. Fruit ellipsoid, about 10×8 mm., light red in colour when ripe.

Not a common parasite in Khandala. The most frequent hosts are *Ficus arnottiana* Miq., *F. glomerata* Roxb.; occasional hosts *Heteropappus quadriloculare* K. Schum., and *Pouteria tomentosa* Bachh.

**Flowers.** January to February. **Fruits.** February to June.


**Heliantheae D.ans.**


*Loranthus elasticus* Desr. in Lamk., Encycl. 3: 599, 1789; FBI. 5: 210; Gr. 86; D. & G. 109; Wight, Icon. t. 343; C. 2: 547.

A woody parasite, with much swollen joints; young branches green and smooth, older ones greyish and rough. Leaves opposite, sessile, leathery, up to 7×3-5 cm., ovate, obtuse or subacute; nerves obscure. Flowers in axillary or lateral fascicles at the nodes; calyx green with a touch of purple; corolla tube whitish, lobes reddish, the whole flower up to 3-5 cm. long. The corolla lobes open explosively and remain spirally rolled. Style and stigma scarlet, not coiled. Fruit green


The dichotomous arrangement of the branches and the shape of the leaves distinguish this plant among the Loranthaceae.

**Flowers.**—October to January. **Fruits.**—November to January.

**Blatt. Herb.** 27540! *Santapau* 810(2)A! 1512! 1577! 2877! 2778! 4132! 5438-5444! 8084!

**Helixanthera Lour.**


*Loranthus obtusatus* Schult., Syst. 7(2): 1659, 1830; FBI. 5: 205; Gr. 86; D. & G. 109; C. 2: 546.

This plant is included on the authority of Hallberg; there are no specimens in Blatt. Herb.; I have not seen it in Khandala.

Hallberg in MS. catalogue.
THE FLORA OF KHANDALA.

MACROSCOLEN BLUME.

MACROSCOLEN CAPITELLATUS (WT. & ARN.) DANSER IN BLUMEA 2: 36, 1930.

Loranthus capitellatus WT. & ARN., Prodr. 382. 1834: FBL. 5: 221; WIGHT, Icon. t. 304; D. & G. 109; C. 2: 550.

A bushy parasite. Leaves opposite or subopposite, base acute or subacute. Peduncles up to 1 cm. long, usually shorter; pedicels 0. Calyx truncate, about 2-3 mm. long. Corolla usually curved, up to 22 mm. long, tube pink or reddish; corolla, creamy white above, lobes green becoming purplish with age. In bud the whole flower, bract, bracteoles, calyx and corolla is green.

A common parasite, forming dense bushy clumps on the host; often the point of insertion of the parasite is marked by a prominent swelling, cancer-like, on the host. The commoner hosts are: Flossaria latifolia Cooke, Terminalia crenulata Roth, Careya arborea Roxb., Mangifera indica Linn., Terminalia chebula Retz., Murraya philippensis Muell., Murraya petala Muell. Arg., Acacia sp., Pouteria tomentosa Baelhi, etc.

Flowers.—March to July. Fruits.—May to July.

BATT. Herb. 24545 24547 24548 Santapa 70A 300 309 291 1716-1718 1923 4053 4056 4123 4124 4174 4179 4357 4462 6776 6779 6780 8901 8903 8912 8915 9180-9183.

SCURRULA LINN.


Loranthus philippensis Cham. & Schlcht. in LINNAEA 3: 204, 1828.

L. Scurrula Hook, f. in FBL. 208; C. 2: 546; ambo pro parte.

L. bidecivides Desr.: G. 86, 1839; D. & G. 110, pro parte.

The differences between this plant and S. parasitica LINN., with which it is often confused, are given by DANSER in Phil. Journ. Sci. 58(1): 117, 1935.

"Large-leaved, long-flowered, with light-coloured tomentum; leaves usually 4 to 9 cm. long, 25 to 6 cm. broad, roundly elliptical to oblong; corolla and style 15 to 25 mm. long. S. philippensis.

Small-leaved, small-flowered; leaves usually round to lanceolate obovate, 1-5 to 6 cm. long, 1 to 3 cm. broad; corolla and style usually 9 to 15 mm. long, rarely longer. S. parasitica."

A shrubby tree-parasite. Leaves opposite, subopposite and alternate on the same plant, up to 11-5×6 cms., obtuse to subacute; petals up to 1-8 cms. long. Flowers (calyx and corolla included) about 2-2 cms. long. Corolla slender, straight or curved, grey-tomentose outside. Berry grey tomentose.

*Flowers.*—December to June. *Fruits.*—December onwards.


**TAXILLUS** Van Tiegh


A shrubby parasite; young branches green, older ones greyish and rough. Leaves alternate (the fascicles mentioned by Cooke, seem to be leaves belonging to short axillary branches), up to 5-2 x 3-8 cms. (incl. the petiole).

Flowers in pedunculate umbels with generally 3 shortly pedicellate flowers in each umbel; peduncles up to 8 mm. long, slender; each flower is supported by a bracteole. Calyx tomentose outside. Corolla up to 3 cms. long, straight or slightly curved, reddish outside.

This is one of the commonest of parasites in Khandala, and the only one truly abundant; often the parasite is so abundant that the host is killed.


*Flowers.*—January to August. *Fruits.*—January to November.


**TOLYPANTHUS** Blume.


*Loranthus lagenerifer* Wight, Icon. t. 306, 1846; FBl. 5: 218; Gr. 86; D. & G. 110; C. 2: 550.

A rough-looking parasite; branches stout, conspicuously lenticellate. Leaves leathery, up to 13 x 10-5 cms., generally suborbicular, green or reddish, or red-spotted mainly along the petioles and nerves.
Flowers fasciculate on the old wood; peduncle about 3-4 mm. long. Involucre generally red, very seldom red at the rim, green below, cup-shaped, up to 33 mm. long; teeth unequal, about 5 in number, deltoid, 3-8 mm. long; flowers 3-6, often 5 in an involucre. Calyx minute. Corolla up to 4 cms. long, green or red, lobes green. Stamens about as long as the corolla tube, anthers just exerted in the open flower; style as long as the corolla, exerted 4-6 mm. from the open flower, stigma minute, both style and stigma red. Fruit yellow to orange, with red or purplish top, up to 11 × 6.5 mm., ovate oblong; when in fruit, the involucral cup is often ruptured or split.

A fairly common parasite; it differs from all the Loranthaceae of Khandala by its involucre, and by the fact that it puts out haustoria along most of its branches, which "creep" for fairly long distances along the branches of the host.

Hosts: the commonest is Pouteria tomentosa Bakh.; occasionally it is found on Holarrhena antidysenterica Wall., Randia bradistis Gamb., Securinea sp., Ficus sp.

Flowers.—June to August. Fruits.—July to September. Leaves.—July to March.

Graham: "This strange looking parasite is to be found on Kanta Konia (Sideroxylon) trees at Khandala", Holberg in M.B. catalogue; Blatt. Herb. 24448! 24525! 27945! Santapau! 2874! 19! 819! 962! 1511! 2148! 1773! 4519! 4520! 4567! 4568! 4569! 4650! 6854!

Viscum Linn.

Viscum angulatum Heyne ex DC., Prodr. 4: 283, 1830; Wight & Arn., Prodr. 380; FBL. 5: 225; D. & G. 110; C. 2: 553; Talb. 2: 422, t. 481; G. 1267; Fischer in RE81 11: 181 seq.

Viscum ramosissimum Wight, Icon. t. 1017 tantum, 1845.

A leafless parasite; young branches green, sharply angular; older ones terete, greyish. Flowers green or yellowish green, minute. Fruit globose, smooth, at first green, at length pale yellowish green.

A common parasite about Khandala, generally pendulous from the branches of the host and rather abundant. Hosts: the commonest is Olea dichica Roxb.; other hosts are Syzygium cumini Skeels, Jasminum nudiflorum Wight, Fagusia raijolia Cooke, Linocera mala- barica Wall., Carissa congesta Wight, Terminalia chebula Retz., etc.

It is often found on the same host as Taxillus cuneatus v. Tingh, but I have not seen this or any other members of the Loranthaceae parasitic on each other.

Flowers.—December to May. Fruits April to October.

**Viscum nepalense** Spreng., Syst., Cur. Post. 47, 1827; Danser in Blumea 4 : 283.

*V. dichotomum* D. Don., Prodr. Fl. Nep. 142, 1823 (non Gillibert 1792 nec Spreng. 1823).

*V. attenuatum* DC., Prodr. 4 : 284, 1830; Gr. 85.

*V. articulatum* (non Burm. 1768) Hook. f. in *FBEI. 5* : 226; C. 2 : 558 pro parte; G. 1258; Pichler, loc. cit. 151 seq. (commes incl. var. dichotomum).

*Viscum nepalense* var. *theleocarpum* Dans. in Blumea 4 : 289, 1841.

Danser loc. cit. p. 257 gives the following differences between this species and the real *V. articulatum* Burm.:

"Internodes slender, usually not more than 5 mm. broad. Fruits white or greenish-white, globose, not more than 3 mm. in diameter. Nearly always parasitic on Loranthaceae: 7. *V. articulatum*.

"Fruits darker coloured, and also larger, or at least longer. Only now and then on Loranthaceae. Internodes 5-10 mm. broad. Fruit globose or somewhat oblong in the unripe stage: 8. *V. nepalense*.”

All the *Viscum* sheets in Kew Herb. have been examined by Danser, and the only specimens of *V. articulatum* Burm. from India come from Khasia Hills and Burma.

The var. *theleocarpum* Dans. seems to be based on too slender grounds to be maintained even as a variety.

A leafless parasite, green; internodes in young branches flattened, narrowed at the nodes; older branches more or less toment. Flowers minute, green or yellowish green. Fruit green and verrucose when young, at maturity smooth and yellowish; pulp very visaceous, whitish; seed green, about 2 x 1 mm.


Among the specimens from Khandala I have two, possibly juvenile forms, without flowers or fruits, where the branches are only 2.3 mm. broad: they seem to be an intermediate form between *V. angulatum* and *V. nepalense*.

**Flowers and Fruits.**—March to May.

Blatter in MS. catalogue; *Santepau* 07A 1 3896 1 3897 1 4341 1 4342 1 4457 1 8892 1 8893 1

*Viscum monoicum* DC., Prodr. 4 : 278, 1830; Roxb., Fl. Ind. 3 : 763, 1832; *FBEI. 5* : 224 (incl. var. *Edgeworthii*); C. 2 : 559, pro parte; G. 1257; Danser in Blumea 4 : 305.

*V. verruculosum* Tabl. 2 : 419, pro parte (non Wt. & Arn.), 1911.
A pendulous parasite. Branches terete, striate, green. Leaves somewhat leathery, up to 7 x 3 cm., ovate or lanceolate, often falcately curved, acute to subacute, base tapering into the petiole, margins entire or more or less irregularly crenate or waved; basal nerves 3–5, fairly prominent. Flowers in axillary, sessile or pedunculate umbellate fascicles, minute, greenish. Fruit green, shining, smooth, with about 9 longitudinal whitish lines.

Host: the only host on which this parasite has been found in Khandala is Mallotus philippensis Muell.

Not common in the district. I have only seen two groups of these plants, one on Paranormal Plateau, the other on the slopes below Elphinstone Point.

**Flowers and Fruits:** February to May.

*Santalum* 3994-1007! 4113-4115! 6016-6024! 8795-8800! 8951-8955!

**SANTALACEAE.**

*Oxyris Linn.*

*Oxyris wightiana* Wall., Cat. 4036, 1831; Gr. 177, 1839; Wight, Icon. t. 1853, 1852; D. & G. 223; Pilger in Pflan. (ed. 2) 10B: 77, t. 37.


The two names, *O. arborea* and *O. wightiana*, were published as "nomina nuda" by Wallich in 1831; examination of Wallich's sheets in Kew Herb. shows that the two plants are identical. Graham in 1899 took up the name *wightiana*, but his description is too meagre to be accepted as valid under the rules; Wight's Icon. t. 1853 shows the plant correctly, and has to be accepted as valid under the rules, Art. 44. The name *O. wightiana*, therefore, is the oldest name effectively published for this plant, and the date of publication must be taken to be 1852, the date of Wight's publication of his Icon for this plant.

A very common shrub about Khandala, in open places or at the edge of the forest.

**Local name:** Jinjrat or Raktronar.

**Flowers and Fruits.**—Most of the year, except the middle of the rainy season.
BALANOPHORACEAE.

Balanophora Forst.

Balanophora indica Wall., Cat. 7247, 1832; Weddell in Ann. Sci. Nat. (ser. 3) 14: 183, t. 9, 1850; FBI. 5: 237; C. 2: 557; Harms in Pfam. (ed. 2) 10 B: 393.

Languedoea indica Wight & Arn. ex Hook., Icon. t. 295: 106, 1849.

From 1941 to 1949 I searched extensively for this plant, especially during October to December, when the plant is supposed to be in flower, but without success. In Blatt, Herb. there are no specimens from Khandala.

Woodrow ex Cooke "on roots of Carissa Carandas"; Blatter in MS. catalogue.

EUPHORBIACEAE.

Euphorbia Linn.


Ligularia lactea Rumph. : G. 179 & 251.

Very common in open country in the plateaus and slopes about Khandala, often planted as a hedge plant round cultivated fields; the largest specimens in the district are on the slopes of Bhoma Hill above the railway station.

Local name : Dhudli.

Leaves.—August to October. Flowers and Fruits December to May.

Hallberg in MS. Catalogue: Ryan 16! Gammie 16107! Santapau 8876! 8984!

Euphorbia trigona Haw., Syn. Plant. Succul. 127, 1812; FBI. 5: 256 pro parte; Wight, Icon. t. 1863; G. 1277.

Very similar in most respects to E. neriifolia, but different in having only 3 rows of leaves or stipular thorns and the tuberolas being very pronounced. Among my Khandala specimens there is one with tuberolas in three rows and each tuberola being about 2 cms. long, straight or recurved. My specimens match those in Kew Herb. marked "Euphorbia trigona Haw... Searampore. G(riffith)." Until further evidence be obtained, I give this plant only provisionally as occurring in Khandala.

Santapau 4834! 4835!
Euphorbia pyenostegia Boiss., Cont. Euph. 9, 1860; FR. 5: 246; C. 2: 565; G. 1274.

In grass fields or on grassy slopes. An elegant herb.

Flowers and Fruits.—September to December, or in moist places up to March.

Cook, 5 November 1891 | Blatter 13372 | Santapau 1430 | 2534 | 3141 | 5062 | 8063


Very similar to E. pyenostegia, from which it is separated by its smooth, non-tuberculate seeds. Leaves are opposite, but branches quite often are only produced in the axil of one of them; size of the leaves up to 55×17 mm.; petioles 0.2 mm. long.

In view of the close resemblance between this species and the preceding one, I am very strongly inclined to merge them both under a single variety, with at most two varieties.

Flowers and Fruits.—August to November; in moist spots till May.

Blatt. Herb. 26195 | 26370 | Santapau 68/60, 68/1022 | 1203 | 2586 | 2759 | 3142 | 4747 | 4748

Euphorbia birta Linn., Sp. Pl. 454, 1753; Gr. 179; D. & G. 227; G. 1275; Pax & Hoffm. in Pflan. (ed. 2) 19 C: 210.


Erect, ascending or prostrate; stems and branches green or purplish; hairs on the branches simple but jointed. Leaves distinctly unequal-sided.

Common in waste lands and along the railway line; an inconspicuous and unattractive herb.

Flowers and Fruits.—The whole year.

Blatt. and Hallberg in MS. catalogues; Blatt. Herb. 13804 | Santapau 68/96 | 6802 | 0829

Euphorbia thymifolia Linn., Sp. Pl. 454, 1753; FR. 5: 252; D. & G. 227; C. 2: 569; G. 1276; Pax & Hoffm. loc. cit.

E. prostrata Graham, Cat. 179, 1839 (non Ait.).

Fairly common in moist places; it is particularly common along the railway line below Bebran's plateau and along stream beds in the ravines.

Flowers and Fruits.—January to June.

Euphorbia microphylla Lamk., Encycl. 2 : 423, 1786; FBl. 5 : 282; C. 2 : 570; G. 1276.

E. uniflora D. & G. 227, 1861 (non Roxb.).

Very similar in appearance and habit to E. thymifolia with which it is often confused. The whole plant is glabrous or nearly so. Stems prostrate, green or occasionally reddish or whitish. Leaves minute, nearly as broad as they are long, light green, closely set along the branches. Inflorescence is glabrous.

Not common in Khandala. In rice fields, and along stream beds in the ravines.

Flowers and Fruits.—January to June.

Hallberg in MS. catalogue; Blatt. Herb. 13802 ! Santapau 3733 ! 3917 ! 9066 !


In general appearance this species is very similar to E. acutis Roxb. The type specimen was collected by McCann in Khandala in 1918; in 1941 McCann himself showed me the exact spot of the typical collection, and for several years I have been able to study the plant in detail on the spot. The shape and size of the bracts is the feature most readily separating this plant from E. acutis.

Rootstock up to 75 cms. long, 10 cms. diam., simple or sparingly branched, completely covered underground. Leaves radical, appearing during the rains and falling off soon after they cease, green or more or less purplish. Inflorescence comes out soon after leaf fall; generally purplish, at times green in colour; in length it is up to 14 cms., in diam. about 10 cms. The lower bracts broadly triangular, as broad as or broader than long; higher bracts broadly ovate or suborbicular, abruptly acuminated.

Abundant in the spot where the type was collected, the spur at the South end of Behran’s Plateau; I have not seen it elsewhere. The typical locality is an exposed rocky ground, where plants are subject to rather hard climatic conditions throughout the year.

My own specimen 2059 is the largest rhizome collected in Khandala. It was brought down to Bombay in June 1943, and left for nearly six months in the sun to dry; it was then placed in a cupboard where the concentration of formaline fumes was very strong. The specimen, however, flowered and fruited abundantly during February to April for three consecutive years on the cupboard shelves. It was then planted in a flower pot and has continued to thrive in Bombay.

Leaves.—June to October, occasionally young ones appear in March or April. Flowers and Fruits.—January to May.

McCann in Blatt. Herb. 12678 (type) ! Santapau 68/58, 77, 78, 80, 84, 102 ! 604 ! 2012 ! 2068 ! 2069 ! 2242 ! 4127 ! 4190 ! 4368-4359 ! 8708 ! 9012 !

E. rupicola Stem ex G. 251, 1839 (non Friese, non May.).


This plant is included on the authority of Blatter and Hallberg; there are no specimens from Khandala in Blatt. Herb.; I have not seen the plant in the field.

Blatter and Hallberg in MS. catalogues.

Euphorbia parviflora Linn., Syst. (ed. 10) 2: 1759; Roxb., Fl. Ind. 2: 472; Gr. 179; D. & G. 227.

E. hypericifolia Linn. Sp. Pl. 454, 1753, pro parte; FBI. 5: 249, pro parte.

E. hypericifolia var. parviflora Prain, Bong. Pl. 2: 924, 1903; C. 2: 567.

Blatter in his list mentions this plant from Khandala; I have not seen it in the district where the closely allied species, E. pyrnostegia and E. cornicoides, are fairly common. There are no specimens from Khandala in any of the herbaria consulted.

Blatter in MS. catalogue.

Euphorbia pulcherrima Willd. ex Klotzsch. in Otto & Dietr., Allg. Gartenz. 2: 27, 1834; FBI. 5: 239; G. 2: 570; G. 1278; Merrill, Plant Life Pac. World 259 f. 239.


Blatter lists this plant as cultivated in Khandala gardens; I have observed it on two occasions (Jan. and March 1945) but could not gather any specimens. The plant is very common in Bombay gardens.

Blatter in MS. catalogue; Santapau January and March, 1945!

Bridelia Willd.


B. retusa Hook. f. in FBI. 5: 268 & Cooke 2: 573 ambo pro parte, non Spreng.

B. retusa var. squamosa Muell.-Arg. in DC., Prodr. 15(2): 493, 1866.

Gehrmann, loc. cit. remarks: "This species differs from B. retusa from which it has been distinguished as a variety by J. Mueller, clearly through the flower clusters being usually axillary on the branches and the leaves having long, broad stipules. The flowers are, moreover, larger than in B. retusa, the leaves much more strongly coriaceous;
the shape of the leaf is characteristic, as it tapers from an oval or rounded base to a short apical point." The attenuated acute apex distinguishes this species from *B. roxburghiana* Gehr. which has ovate-elliptic leaves with a rounded apex.

This is one of the commonest trees in Khandala, in open country, on the slopes of hills and along the ravines.

Local name: Asana.

Flowers.—January to September, mostly April to May. Fruits.—April to December.


*Bridelia* hamiltoniana* Wall., Cat. 7882, 1847; FBI. 5: 271; C. 2 : 573; Gehrm. loc. cit. 30.

*B. montana* Gamble, Madr. Fl. 1281 (non Willd.), 1925.

A shrub up to 2 m. high, with long sermentose branches. Leaves variable in shape, often irregularly rhomboid. Inflorescence in axillary clusters.

A rare plant in Khandala; only found low down on the slopes of St. Mary's Ravine and near Monkey Hill.

Flowers.—Not seen. Fruits.—October to November.

*Blatt. Herb.* 28212 ! Santapau 1343 ! 4665 !

GLOCHIDION Forst.


*G. lanceolatum* Dalz. in D. & G. 235, 1861 (non Voigt).

*Bridelia sinica* Graham, Cat. 184, 1839 !

Gamble in Kew Herb., MS., remarks that he can see no reason for separating this plant from *G. ellipticum* Wight. These two species are very similar, but in my opinion they differ in the structure of the female early and of the stigma sufficiently for them to be kept apart.

Very common in open spaces all over Khandala.

Local name: Bhoma.

Flowers.—December to March. Fruits.—Persisting for the whole year.

*Graham ; Cooke ; Blatt. Herb.* 24653 ! 24654 ! 24677 ! 25341 ! 25358 ! 29029 ! 28485 ! 28588 ! Santapau 68/43, 72, 73, 74, 85 ! 500 ! 1124 ! 2318 ! 5205 ! 3089 ! 3600 ! 3637 ! 3643 ! 3727 ! 4907 ! 5850 ! 8622 !
Securinega Juss.

Securinega virosa (Roxb. ex Willd.) Pax & Hoffm., in Pflanzenreich (ed. 2) 19 C : 66, 1931.


Flueggea microcarpa Blume, Bijdr. 580, 1825; FBI. 5 : 328; C. 2 : 581.


F. Leucopyrus D. & G. 236, 1901 (nom. Willd.).

Phyllanthus rotundus Roxb. : C. 180.

Chorisandra pinnata Wight, Icon. t. 1944, 1832.

There seems to be very little distinction between this species and \( S. \) Leucopyrus; Cooke and Gamble state that the latter is armed with spines, the former unarmed; but the specimens in Kew Herb. do not bear out such a distinction. The size of the leaves is another uncertain character as often \( S. \) virosa has very small leaves.

The specimens listed below have all been matched with many of the sheets in Kew Herb. identified by Gamble. In every case leaves are small 1-3 cms. long, elliptic, ovate or obovate in shape, acute, subacute or obtuse at the apex, acute or concave at the base; the plant is a fairly large shrub entirely unarmed. Fruit edible.

Common in open parts of the district or towards the edges of the forest.

Flowers.—May to July. Fruits.—May to August.


Securinega leucopyrus (Willd.) Muell.-Arg. in DC., Prodr. 15(2): 451, 1866; Pax & Hoffm. loc. cit.

Flueggea (Flueggea) Leucopyrus Willd., Sp. Pl. 4 : 787, 1805; FBI. 5 : 328; Wight, Icon. t. 1876; C. 2 : 581, G. 1296.

F. virosa D. & G. 236, 1851 (nom. Baill.).

A fairly large shrub, similar to \( S. \) virosa; some of the upper axillary branches bearing flowers and fruits and leaves are spine-like in structure, tapering from a thick base to a more or less fine point; I have failed to discover any real spines in any of the sheets in Herb. Kew.

In consideration of the close similarity between these two species, I am strongly inclined to unite them under a single specific name; in deference to the authority of Gamble, I keep them separate.

Santapau 8975! in flower and fruit in May 1946.
Melanthesa Blume.

The common plant of this genus generally known under the name of *Bryonia patens* Rolfe is treated below. The generic name *Bryonia* Forst. is an illegitimate one, since it is a later homonym of *Bryonia* Linn., which was given to quite a different plant. On the whole question of the nomenclature of this genus, see Croizat in Sargenti 1: 48 seq. 1942.

**Melanthesa turbinata** (Koen. ex Roxb.) Wight, Journ. 5(2): 26, t. 1897, ("truncata" sub tab. per sphalm.) 1852; D. & G. 234.

**Phyllanthus turbinatus** Koen. ex Roxb., Hort. Beng. 104, 1814 & Pl. Ind. 5: 666, 1832; Gr. 180.


**Melanthesa obliqua** Wight, Icon. t. 1898, 1852.

A shrub 1-2 m. high. Leaves distichous, of a bright green colour. Flowers are usually pendulous; as the fruit develops it becomes erect and the calyx becomes enlarged and turns red; the fruit is sometimes spoken of as the "cup in the saucer."

The plant is one of the most elegant shrubs about Khandala. It is common in open country and in the undergrowth of deciduous forests.

*Flowers.*—May to August. *Fruits.*—June to August.

Woodrow; Garade 25 June 1903! Blatt. Herb. 24606! 24606(2)! Santapau 554! 594! 2048! 2158!

**Phyllanthus Linn.**

**Phyllanthus uromic** Linn., Sp. Pl. 982, 1753; FBI. 5: 293; Gr. 180; C. 2: 387; G. 1287.

*P. leprocarpus* Wight, Icon. t. 1895, f. 4, 1852.

An elegant herb found in grass lands or on grassy slopes. Seeds prominently transversely ridged.

*Flowers and Fruits.*—August to September.

Woodrow; Blatter in MS. catalogue; Blatt. Herb. 29654! Santapau 88/61! 739! 2440! 4820! 6962! 6977! 6980!

**Phyllanthus uromic** Linn., Sp. Pl. 981, 1753; FBI. 6: 298; Gr. 180; Wight, Icon. t. 1894; D. & G. 234; C. 2: 587; G. 1268.

Capsules glabrous and smooth; seeds brownish, tuberculate with minute tubercles which are arranged in longitudinal rows.

Common in gardens as a weed, in cultivated ground and along the railway line. Locally the plant is not used medicinally.

*Flowers and Fruits.*—April to September.

Santapau 68/97! 2603! 4669! 5494! 6791! 6943! 6963! 9247!
Phyllanthus maderaspatensis Linn., Sp. Pl. 982, 1753; FBI. 5: 292; Gr. 180; Wight, Icon. t. 1895, f. 3; C. 2: 586; G. 1289.

The occurrence of this plant is given on the authority of Blatter. The seeds are typical, being muriculate in parallel lines which are intersected by minute cross-bars.

There is in Blatt. Herb. a specimen, no. 21652 labelled Ph. maderaspatensis, but the specimen is too imperfect for exact determination.

Blatter in MS. catalogue.

Emblica Gaertn.

Emblica officinalis Gaertn., Fruct. 2: 122, 1791; Wight, Icon. t. 1896; D. & G. 235; G. 1295.


Common in the district in open country; it is abundant on the small plateau below Echo Point towards the western side. The fruit is edible.

Local name: Auli, Amlí.

Flowers.—March to May. Fruit.—May to March.

Blatt. Herb. 21652 ! 21657 ! Santapau 68/65, 87, 89 ! 1209 ! 1719 ! 3924 ! 3925 !

Kiranagelia Baill.


Phyllanthus reticulatus Poir. in Lamk., Encycl. 5: 298, 1804; FBI. 5: 288; C. 2: 585; Merrill, Enum. Pl. Borneo 327.

Ph. multiflorus Willd., Sp. Pl. 4: 581, 1805; Gr. 180.

Anisonema multiflora Wight, Icon. t. 1899, 1852; D. & G. 234.

A sermentose shrub in Khandala reaching up to 2 m. in height, but not climbing.

There is a large clump of these plants growing in the stream bed near Kunu among rocks; for a good part of the year these plants are practically submerged in the stream. I have seen no other specimens in the district.

Flowers and Fruits.—April to October.

Blatt. Herb. 27579 ! Santapau 4393-4396 ! 8843 ! 8844 !
Cicca Linn.

Cicca disticha Linn., Mant. 1: 124, 1767; Gr. 180; D. & G. Suppl. 78.
Phytlanthus distichus Muell.-Arg. in DC., Prodr. 16(2): 413, 1866; FBI 5: 304; C. 2: 589.

A fairly large tree cultivated in some of the gardens in Khandala. Leaves distichous, up to 3-5 x 3 cms., ovate, acute, glabrous. Flowers clustered along a 6 cms. long rachis on the old wood, reddish, minute. Fruit a berry up to 1.5 cms. diam., edible.

Flowers and Fruits.—April 1946.
Santapau 8840!

Phytlanthus Wall

Phytlanthus rynchogil Wall, Tent Fl. N. & 86, 1826; FBI 5: 336; D. & G. 236; Wight, Icon. t. 1876; C. 2: 590; G. 131; Pax & Hoffm, loc. cit. 39 f. 13C.

The whole tree has a typical appearance due to the colour and structure of the leaves and the general shape of the tree. Common on the slopes along the torrent between Elphinstone Point and the railway line; not seen elsewhere in the district.

Flowers.—March to May. Fruits.—March to December.

Dulz. & Gibs.; Blatt. Herb. 27466 ! 27472 ! Santapau 58/51! 1467! 1774! 1775! 1776! 3339-3339! 4136! 4187!

Drypetes Vahl.

Drypetes venusta (Wight) Pax & Hoffm. in Pfeich. 81: 268, 1922.

Asystile venusta Wight, Icon. t. 1902, 1883

A middle-sized tree with deep green foliage. Leaves coriaceous, elliptic or oblong. Flowers not seen in Khandala. Fruit on a long, slender pedicel reaching up to 4 cms. long.

Only one tree has been observed in the district; it grows near the main gate of Convalencee House.

Fruits.—August and September 1944; January 1945.
Santapau 4773-4777! 1824! 1925! 5851-5853! 9104!
THE FLORA OF KHANDALA.

ANTIDESMA Linn.

Antidesma bunius (Linn.) Spreng., Syst. 1: 826, 1825; FBI. 5: 358; Wight, Icon. 5: 819; C. 2: 593.

Stilago Bunius Linn., Mant. 1: 122, 1767.

Antidesma alexandria Gr. 186, 1839 (non Linn.).

This plant has not been collected in Khandala recently, it is included on the authority of the authors here mentioned.

Graham; Talbot ex Cooke; Blatter in MS. catalogue.

Antidesma diandrum Roth, Nov. Plant. Sp. 369, 1821; FBI. 5: 361 pro parte; D. & G. 237; C. 2: 593; Pax in Pfeich. 143.

A. lanceolatius Wall., Cat. 7284, 1832; Wight, Icon. t. 766.

This plant is included on the authority of Blatter; I have seen no specimens from Khandala.

Blatter in MS. catalogue.

JATROPHA Linn.

Jatropha curcas Linn., Sp. Pl. 1095, 1753; FBI. 5: 383; Gr. 183; D. & G. Suppl. 77; C. 2: 598; Pax, loc. cit. 77, t. 78.

This plant is occasionally seen in Khandala gardens as a hedge or fence plant; I have not heard of its being used for medicinal purposes.

Santapau cultivated!

Jatropha podagrica Hook., Bot. Mag. t. 4376, 1848; C. 2: 598.

For a number of years there was a group of these plants growing on the banks of the torrent near the main road in front of Khandala station. In 1949 the plants seemed to have disappeared from that locality.

Stems 50-100 cms. high, about 2-5-4 cms. diam., enlarged just above the ground level to about 10 cms. for a distance of 20 cms. Flowers small, bright scarlet. Fruits small. The leaves are typically peltate with rounded lobes. A garden escape.

Santapau Dec. 1940! April 1942! 68/103!

DIMORPHOCALYX Thw.

Dimorphocalyx lawianus (Muell.-Arg.) Hook. f. in FBI. 5: 306, 1887; C. 2: 604; Pax in Pfeich. 47: 31; G. 1337.

Trigonostemon lawianus Muell.-Arg. in Linneae 34: 212, 1866 pro parte & in DC., Prodr. 15(2): 1105 pro parte.

Croton ramiflorum Graham, Cat. 182, 1839 (tantum probabiliter).

Fairly common in dense forest, on the slopes below Echo Point; elsewhere it is rare.

Flowers and Fruits.—March to January.

Woodrow, 28 December 1890! Blatt. Herb. 27532! Santapau 68/69, 71, 78, 93, 94! 1307! 1533! 1731! 3214! 3263! 3584! 6028!
AGROSTISTACHYS Dalz.


This plant is given only on the authority of Blatter who mentions it is his list. There are no specimens in the Blatt. Herb.

Blatter in MS. catalogue.

CHRYSOPHORA Nock.

Chrysophora rottleri (Geis.) Juss. ex Spz., Syst. 3 : 850, 1826; Prain in Kew Bull. 1918 : 95; Pax & Hoffm. in Pfreich. 57 : 19; G. 1316.

Crotan rottleri Geis., Crotan Monogr. 57, 1807.

C. plicata Benth., Hort. Beng. 63, 1814 & Fl. Ind. 3 : 631, 1832; Gr. 182 (non Vahl).

Chrysophora plicata Voigt, Hort. Sub. Calo. 156, 1846; D. & G. 233; C. 2 : 607; (non A. Juss.).

C. plicata 1 Hook. f. in FBI. 5 : 409, 1837.

The nomenclature of this plant is rather complicated; for a full treatment of the question see Prain, loc. cit. Rare in Khandala.

Flowers and Fruits.—March 1917.

Blatt. Herb. 24673 l Hulb. in MS. catalogue.

Chrysophora prostrata Dalz. in D. & G. 233, 1861; C. 2 : 607 (excl. sp. afric.) ; Prain loc. cit. 90; G. 1316.

C. plicata 3 Hook f. in FBI. 5 : 440, 1837.

B. plicata Pax & Hoffm. loc. cit. 19, pro parte; non Juss.

A prostrate herb with branches closely appressed to the ground: the whole plant is densely stellately hairy or woolly. It is found occasionally on the dry banks of Khandala talao during the hot season; but the plant is easily confused with some of the Mollugo, than which it is much more rare.

Sanjapah 1

TREWIA Lind.

Trewia polypetala Benth. in Gen. Pl. 3 : 318, 1890; FBI. 5 : 424; C. 2 : 614; G. 1319.

T. nudiflora Wight, Icon. t. 187 (quod flor. fem. tantum).

T. nudiflora Lind.: Pax & Hoffm. 63 : 141 1933, pro parte.

Male flowers not seen. Female flowers in racemes near the ends of the branches. Fruit at first densely hairy or tomentose, at length in Khandala always entirely glabrous and very dark purple or almost
black; fruits observed in Khandala are two-celled, subglobose or more often in shape like two hearts laterally pressed one against the other. Fruits are edible.

Fairly common on the slopes between Elphinstone Point and the railway line and along the bottom of the ravine; occasionally this tree has been observed on Battery Hill Plateau.

For a long time the identity of this tree proved to be an insoluble problem; all doubts were removed when the fruits on some of the Kow sheets were found to be tomentose when young and glabrous at maturity.

Local name: Petari.

Flowers.—February. Fruits.—March to June. Leaves.—May to December.

Blatt. Herb. 23107 | Santapau 197 | 188 | 400 | 890 | 1847 | 2131 | 2178 | 2179 | 4212 | 4259 | 4260 | 4453 | 4454 |

MALLOTUS Lour.

Malhotus philippensis (Lamck.) Muell.-Arg. in Linnaea 34: 196, 1866; FBl. 3: 442; C. 2: 615; Pax in Pfreich. 184 f. 47; (aut. non pauci persiphalm. philippinensis scribunt).

Croton philippense Lamck., Encycl. 2: 206, 1786.

Rottlera tinctoria Roxb., Pl. Cor. 2: 36, t. 167, 1788; Gr. 184; D. & G. 230.

A common tree; found in open country or in the ravines; it is made rather prominent by the masses of bright red fruits against a mass of pale green leaves.

Local name: Shendri.

Flowers.—October to December. Fruits.—January to April.

Blatter in MS. catalogue; Blatt. Herb. 21182 | 24835 | 24835(2) | 27556 | 28349 | Santapau 68 | 1423 | 1655 | 1753 | 3249 | 3200 | 3381 | 3539 | 3640 | 5882 |

Malhotus stenanthus Muell.-Arg. in Linnaea 34: 191, 1866; in DC., Prodr. 15(2): 972, 1866; FBl. 5: 437; C. 2: 616; Pax in Pfreich. 190, 1914.

A glabrous shrub with minute, yellow, shining glands on the young branchlets. capsules and underside of leaves. Leaves about 12×3 cms. Flowers not seen in Khandala. Capsules 3-lobed, echinate with spines which are fairly stout and about 1 mm. long.

A rare plant in Khandala, where I have only collected it on one occasion in fruit, on July 20th, 1941.

Santapau 68/52 (1-3)!
**Mallotus aureo-punctatus** (Dalz.) Muell.-Arg. in DC., Prodr. 15(2): 973, 1866; Pax, loc. cit. 192.


**Mallotus Lauwii** Muell.-Arg. in Linnaea 34: 192, 1865; FBI. 5: 438; C. 2: 617.

A shrub about 2 m. high; young branches and inflorescence fairly densely pubescent. Leaves up to 22.5 × 8 cms., rarely entire, generally sinuate-toothed, dotted on the underside with numerous, minute, greenish yellow resinous glands; base acute or rounded. Flowers greenish. Male flowers in fascicles, pedicels 0.4 mm. long. Female, flowers in few-flowered racemes. Capsules covered with long hairs.

A fairly common shrub in the ravines in evergreen forest.

**Flowers and Fruits.**—November to July.

Woodrow, 1 January 1891! *Blatter in MS. catalogue; Santapau 62/52: 1310! 1466! 2149! 3230! 3247! 3212 2214! 2577! 2099!*

**Cleidion Blume.**

**Cleidion spiciflorum** (Burm.) Merrill, Inter. Herb. Amb. 322 in nota, 1917.

**Acalypha spiciflora** Burm., Fl. Ind. 203, t. 61, f. 2, 1768.

**Cleidion javanicum** Blume, Bijdr. 613, 1825; FBI. 5: 444; C. 2: 618; Pax, loc. cit. 290, f. 47; G. 1325.

The fruit of this tree seems to be eaten by monkeys or squirrels, the ground below the tree often being littered with the empty "shells".

A rare tree, only seen in Meroli Plateau, where it grows in dense forest and attains a large size.

**Local name:** Radkure.

**Flowers.**—October to March. **Fruits.**—October to June.


**Macaranga Thouars.**

**Macaranga peltata** (Roxb.) Muell.-Arg. in DC., Prodr. 15(2): 1010, 1866; Prain in Beng. Pl. 951; Pax, loc. cit. 347, f. 57.

**Onagis *peltata** Roxb., Fl. Ind. 3: 855. 1832; Gr. 177.

**Mappa peltata** Wight, Icon. t. 817, 1844.

**Macaranga Roburghii** Wight, Icon. 5(2): 23, 1852, & 0: t. 1949, f. 4, 1853; FBI. 5: 448; D. & G. 228.

THE FLORA OF KHANDALA.

A large shrub or a small tree; it is common on the ravine slopes, and is rather conspicuous on account of the structure and bright green colour of the leaves. Near Forbay there was a tree about 10 m. high, the largest specimen seen in the district, but this tree has unfortunately been cut down lately.

Local name: Chandya.

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

Graham; Herb. Coll. Sci. Poona 16154 | Woodrow, Febr. 1891 | Cooke; Hallberg in MS. catalogue; Blatt. Herb. 24619 | 24635 | 28094 | Sanjayou 68/1 | 14 | 96 | 4167 | 8698 | 8807 | 8827 | 8898

TRAGIA LINN.

Tragia muelleriana var. unicolor (Muell.-Arg.) Pax & Hoffm. in Pfeffrich. 85: 81, 1935.

T. Miquelianu var. unicolor Muell.-Arg. in DC., Prodr. 15(2): 843, 1866.

T. involucrata Cooke 2: 621, pro parte.

A climber, very abundant above Forbay in places from which the forest has been removed. Leaves cordate at base, at least when old; young leaves subcordate to rounded at the base. Female calyx accrescent in fruit; segments up to 12 mm. long, elliptic or oblong in shape, about 6 mm. broad, with 5-6 pairs of narrow teeth; the whole calyx on the outside is covered with rather stiff, white or greyish-white hairs.

The calyx segments in the present variety are intermediate between the broadly ovate segments of the typical T. Muelleriana and the very narrow ones of T. hispida; Pax and Hoffm. consider the present variety deserving of specific rank.

This is about the most painful stinger found in Khandala; the burning sensation of the sting may last for well over 3 hours. As a remedy against such painful stings, I have found the external application of a dilute solution of ammonia rather soothing.

Flowers.—August to November, occasionally till March. Fruits.—October to January; the calyx remains long after the fruit has disappeared.

Nees, February 1891 | Meboid 8913, ex Pax & Hoffm., loc. cit. | Gammie 15475 | Childs 61 | Blatt. Herb. 25279 | Sanjayou 8/1 | 36 | 788 | 1159 | 1176 | 1418 | 1705 | 3312 | 5473

SAPIUM R. Br.

Sapium insigne Duth. var. malabaricum (Wight) Hook. f. in FBl. 5: 472, 1885.

Falconeria malabarica Wight, Icon. t. 1866. 1852.

Sapium insigne Cooke 2: 622.
Common in open country near Kunj; elsewhere only occasional. When in leaf this tree has a remote similarity to Plumeria acuminata Ait.; the floral spikes are generally erect, the fruiting spikes either spreading or more generally pendulous.

**Local name:** Shorut or Shorut.

**Flowers.** January to April. **Fruits.** March to June. **Leaves.** March to October.


**Pedilanthus Neck.**


*Buxorhiza tithymalooides* Linn., Sp. Pl. 452, 1753; D. & G. Suppl. 76.

A succulent shrub about 1 m. high, with practically unbranched, erect stems. Leaves somewhat fleshy, during the rainy season along the whole stem, later on only in the upper third of the stem. Flowers scarlet, red or pink in colour.

The whole plant is of a deep green colour, with shining smooth stems. A garden escape that has become naturalized in several parts of the district. An uninteresting plant.

**Flowers.** January to July. **Fruits.** Not seen.

**Blatt. Herb.** 24607, S 18/11.

**Ricinus Linn.**

*Ricinus communis* Linn., Sp. Pl. 1007, 1753; FBI. 5: 437; Gr. 183; D. & G. Suppl. 78; C. 2: 627.

The castor-oil plant, found as an escape in several places about Khandala. In the district it flowers and fruits profusely. The leaves and inflorescence are of the larger green variety mentioned by Cooke.

**Local name:** Erand or Rand.

**Blatter and Hallberg** in MS. catalogues; **Santapau** 9087-9089.

**Hura Linn.**

*Hura crepitans* Linn., Sp. Pl. 1008, 1753; D. & G. Suppl. 76; C. 2: 627.

There is a good specimen of this tree in the grounds of Khandala Hotel; the fruits are said to dehisce with a noise like the crack of a pistol.

**Flowers.**—April to May. **Fruits.**—October.

**Santapau** 10939-10942; Cooke; **Blatter** in MS. catalogue; **Kirtikar** in *JBNHS.* 19: 513-514, 1908.
THE FLORA OF KHANDALA.

ULMACEAE.

HOLOPTELEA Planch.

Holoptelea integrifolia (Roeb.) Planch. in Ann. Sci. Nat. (ser. 3) 10: 266, 1848; FBI. 5: 481; D. & G. 238; Wight, Icon. t. 1968; C. 2: 629; Fischer in G. 1348.

Ulmus integrifolia Roeb., Pl. Cor. 1: 56, t. 78, 1795; Gr. 188.

A very fine tree, one of the largest in open country about Khandala; it is fairly common on the slopes below Echo Point; there is a fine specimen in the middle of the main street in Khandala village itself.

Local name: Waula.

Flowers.—February to March. Fruits.—March to May.


CELTIS Linn.

Celtis cinnamomea Lindl. in Wall., Cat. 3691, 1831; Planch. in Ann. Sci. Nat. (ser. 3) 10: 303, 1848; FBI. 5: 482; C. 2: 630; Taub. 2: 299, t. 514; Fischer 1349.

C. Wightii Planch., loc. cit. 307, 1848; Wight, Icon. t. 1969; Cooke & Fischer, 11. cc.

After careful examination of the type sheets in Kew Herb., I have come to the conclusion that C. Wightii cannot be maintained as a separate species. Fisher, loc. cit., gives an elaborate key for the separation of the two species, but in practice I find no constant characters by which to distinguish them; Fischer himself writes of C. Wightii: "In the same localities as the last species (i.e. C. cinnamomea); very similar to it and not easily distinguished from it." As a matter of fact there are in Kew Herb. several sheets identified by Fischer first as one species and then corrected to the other. The structure of the sepals and leaves cannot be taken as a determining character.

This is a fairly common tree about Khandala, generally found in open country, sometimes in the forest on ravine slopes.

Flowers.—February to March. Fruits.—May.

Tremata Lour.

Tremata orientalis (Linn.) Blume, Mus. Bot. Lugd.-Bat. 2: 58, 1856; Fl. 5: 484; C. 2: 631; Tabl. 2: 500, t. 515.

Celtis orientalis Linn., Sp. Pl. 104, 1753; Gr. 189.

Spenia nightii Planch. in Ann. Sc. Nat. (ser. 3) 10: 322, 1848; Wight, Icon. t. 1771; D. & G. 238.

A small tree, about 4 m. high. Leaves up to 14 × 5 cm., obliquely and narrowly ovate, base cuneate or rounded or cordate, unequal-sided; petioles pubescent. Flowers greenish, inconspicuous.

Common in the district; the shape of the leaves renders the appearance of this tree rather typical. Locally no use is made of it except for fuel.

Flowers.—October to February. Fruits.—The whole year.


Urticaceae.

Fleurya Gaud.

Fleurya interrupta (Linn.) Gaud., in Bot. Freyc. Voy. 497, 1826; Fl. 5: 548; D. & G. 238; Wight, Icon. t. 1975; Weddell, Mon. 115, t. A, f. 9; C. 2: 632.


A common gregarious herb found on forest slopes or on old walls during the rainy season. Stinging hairs on the stems make this a somewhat difficult plant to handle; the stings, however, are much less painful than those of Triania.

Flowers and Fruits.—July to September.


Girardinia Gaud.

Girardinia zeylanica Decne. in Jacq., Voy. 152, 1844; Weddell, Mon. 108; C. 2: 633, Fischer 1739.

Urtica heterophylla Roxb. (non Vahl): Gr. 187; Wight, Icon. t. 687.

Girardinia heterophylla D. & G. 238, 1861 (non Decne.).

G. heterophylla var. zeylanica Decne, loc. cit.; Fl. 5: 551.

Not common in the district; it is abundant along a hedge near the main road, not far from St. Xavier’s Villa. This is a very disagreeable stinger, about as bad as Triania.

Flowers and Fruits.—October to November.

Blatt. Herb. 2826! Santapau 1202 ! 1335 ! 2976 ! 2977 ! 5099 ! 5100 !
**Lecanthes Wedd.**

*Lecanthes peduncularis* (Wall.) Wedd. in DC., Prodr. 16: 184, 1869; pro parte; Merrill, Enum. 2: 77.

*Procis peduncularis* Wall., Cat. 4634, 1831; Royle, Ill. t. 83, f. 2, 1839.


*L. Wightii* Wedd., loc. cit.; FBI. 5: 559; C. loc. cit.

*Elatostemma oppositifolium* Dalz. in Kew Journ. Bot. 3: 179, 1851; D. & G. 239.

*E. oxida* Wight, Icon. t. 1988, 1852.

The two species, *L. Wightii* and *L. Wallichii* of Weddell are here fused into one species; in this I have followed Merrill. Examination of the sheets in Kew Herbarium and of the living plants in Khandala has forced this course on me.

A common and gregarious monsoon plant, found on rocks and old walls, or in sheltered positions on the ground.

*Flowers and Fruits.*—August to October.


**Elatostemma Forst.**

*Elatostemma cunisatum* ("cunisata") Wight, Icon. 6: 25 & t. 2091, 1853; FBI. 5: 506; D. & G. 239; Wedd., Mon. 330; C. 2: 635.

A rare plant in Khandala; found on old walls during the rains. It is often mistaken for *Lecanthes* or *vice versa.*

*Flowers and Fruits.*—July to August.

*Santapau* 6807! 6808! 6940! 9292!

**Boehmeria Jacq.**


*Urtica scabrella* Roxb., Hort. Beng. 67, 1814 & FI. Ind. 3: 581, 1832; Wight, Icon. t. 691.

*Siphocarpa scabrella* D. & G. 233, 1801.

*Boehmeria platyphylla* Don, var. *scabrella* Wedd., Mon. 305, 1856; FBI. 5: 678.

Gregarious and very common on slopes all over the district, in open country under the shade of trees, or on forest slopes. The stinging hairs cause a burning sensation which may be felt for several hours.

*Flowers.*—August to September. *Fruits.*—September to January.

*Blatt. Herb.* 25229! 25298! 26349! 27580! 28062! *Gammie* 15555

*Chhibber* 52! *Santapau* 8/13! 435! 1049! 3100!
POUZOLZIA Gaud.

**Pouzolzia zeylanica** (Linn.) Benn., Pl. Jav. Rar. 67, 1838; Merrill, Inter. Herb. Amb. 302.

*Parietaria zeylanica* Linn., Sp. Pl. 1659, 1753

*P. indica* Linn., Mant. 1 : 128, 1767; Gr. 187.


An erect herb, 16-64 cm. high, glabrous; in Khandala this plant is always erect, with but a few roots in the lower part of the stem. Leaves 1-7 cm. long; petioles very slender.

Flowers greenish white or green. Seeds brownish, smooth and shining. Fairly common among grasses.

**Flowers and Fruits.**—July to September.

*Blatt. 16 July 1892*! Blatt. Herb. 25290 ! 25384 ! Santapau 729 ! 2411 ! 2566 ! 6792 ! 6941 ! 7000 ! 9272 !

DEBREGNASSA Gaud.

**Debregnassia longifolia** (Burm.) Wedd. in DC., Prodr. 16 : 235, 1809; Merrill, in Bibl. Emm. Born. Pl. 234.

*Urtica longifolia* Burm., Pl. Ind. 197 (erron. 297), 1768.


*Conephorus nivens* Wight, Icon. t. 1959, 1853; D. & G. 239.

*Boehmeria ramiflora* Gr. 187, 1839 (non Jacq.).

The occurrence of this plant is given on the authority of Blatter who mentions it in his list; I have not seen the plant in Khandala or in any of the herbaria consulted. The leaves and branches are remarkably similar to those of *Trema orientalis*.

**Blatter in MS. catalogue.**

**Pilea Lindl.**


*Parietaria microphylla* Linn., Syst. (ed. 10) 1309, 1759.

*Pilea muscosa* Lindl., Coll. Bot. t. 4, 1821; FBI. 5 : 551.

A small succulent herb, often cultivated as a border plant in gardens in Khandala and elsewhere in Western India. The leaves and stems are generally green, fairly often reddish, the colour possibly being due to age.

*Blatt. Herb. 25287 ! Santapau, in gardens, 9161 !
THE FLORA OF KHANDALA.

MORACEAE.

Ficus Linn.


*F. ampelos* Koen.: Wight, Icon. t. 652 (non Burm.).

*Urostigma ampelos* D. & G. 315, 1861.

*U. volubile* D. & G. 242, 1861.

An erect or epiphytic tree; when erect, it is generally a small tree. Leaves up to 14×6 cms., often very irregular in shape, acute or acuminate; main nerves prominent beneath. Receptacles at first green, then orange, at length orange or yellow, about 7 mm. diam.

Fairly common. It is a conspicuous plant especially when it is a strangler on palms and other trees.

*Receptacles.*—October to March.

*Blatt. Herb.* 25618 ! 28462 ! *Santapau* 1254 ! 1666 ! 1704 ! 5482 !

*Ficus gibbosa* Blume, var. *cuspidifera* King, loc. cit. 6, t. 2a, 281, 1887-1889.


"Leaves elongate, gradually narrowed above, and more or less acuminate; slightly rough below from minute tubercles, not shining, and but little coloured." (King, loc. cit.)

In *Blatt. Herb.* there is but one specimen from Khandala, identified by Fischer in Kew Herb. The leaves are narrower and smaller than in the previous variety.

*Blatt. Herb.* 25431 !

*Ficus gibbosa* Blume, var. *tuberculata* King, loc. cit. 6, t. 2b, f. B, 1887-1889.

*F. tuberculata* Roxb., Fl. Ind. 3 : 554, 1832 ; Wight, Icon. t. 651.

"Very like var. *parasitica*, but with narrower leaves, which are sometimes irregularly serrate." (King, loc. cit.)

*Blatt. Herb.* 25482 !


The Banyan-tree, not common in Khandala; Blatter recorded it from the district but left no specimens in his herbarium. I have only collected it once, at the base of Behran Plateau, near the railway line; my entry in the field diary is as follows: "Receptacles abundant at end of branches, "Pomegranate Purple" (Ridg. 71, i); leaves shining above, pubescent and paler beneath."

Local name: Wad.

Receptacles.—14 June 1943.

Blatter in MS. catalogue; Santapau 2209!


This is one of the largest species of *Ficus* in Khandala; it has no aerial roots. Leaves coriaceous, the largest of the genus in the district, 13-22.5×7.5-14 cms.; young leaves slightly tomentose above, densely so beneath, older leaves glabrous and shining above, pale green and tomentose beneath; base rounded or sub-cordate; margins entire, somewhat repand; lateral nerves forming an angle of 50-60 degrees with the midrib, parallel among themselves and uniting into an intramarginal prominent nerve.

Receptacle at first green, then yellowish with white or greenish spots, at length orange red. Monkeys seem to eat the fruit readily.

A very large and elegant tree, common in the ravines; some of the finest specimens grow in the ravine just below St. Xavier's Villa.

Local name: Wad.

Receptacles.—March to June.

**Blatt. Herb.** 23476! Santapau 1748! 2166! 3986-3998! 4270-4272! 8809!

**Ficus retusa** Linn., Mant. 129, 1767; FBL. 5: 511; King 50. t. 61 & t. 84. f. P; C. 2: 647; Tabl. 2: 510, t. 220; Fischer 1362.


A small tree with a few aerial roots. Leaves shining, with numerous slender lateral nerves. Receptacles small, yellow or orange.

This tree is extensively planted in Khandala as a shade tree; there is a fine avenue of such trees in St. Xavier's Villa.

**Blatt. Herb.** A10! 23403! 25485! 25466! 25468! Santapau 4038! 4486!

**Ficus nervosa** Heyne in Roth, Nov. Pl. Sp. 338, 1821; FBL. 5: 512; King 53, t. 63, f. A; C. 2: 647; Tabl. 2: 512, t. 522; Fischer 1364.
A very large tree, with buttress-like trunk. In my field diary I entered against No. 8793: "Large tree, loaded with receptacles. Leaves very brittle, glabrous and shining on both sides; petioles not jointed, margins recurved. Receptacles axillary, in pairs; peduncle 13 mm. long, with 3 hairy, small bracts at the base; ripe receptacles orange, glabrous, shining."

In dense forest in the ravines, where this tree is common, I have measured specimens over 32 m. high; the finest specimens are found on Meroli Plateau, on the slopes below Elphinstone Point and on those of Echo Point Ravine. This is the largest species of Ficus in Khandala.

Receptacles.—April to August.

Santapau 8/10 ! 1839 ! 4685 ! 8794 ! 8795 !

Ficus religiosa Linn., Sp. Pl. 1059, 1753; FBI 5: 513; Gr. 190; King 56, t. 67A & t. 84, f. U; C. 2: 649; Tabl. 2: 514, t. 533; Fischer 1363.

Urostigma religiosum Gasp., Rio Capril s2, t. 7, # 1,5, 1845; Wight, Icon. t. 1967; D. & G. 241.

A large tree, planted in the village; I have seen no specimens in the jungle around Khandala.

Local name: Tippal.

Blätter in MS. catalogue; Santapau, cultivated!

Ficus arnotiana Miq. in Ann. Mus. Lugd.-Bat. 3: 287, 1857; FBI 5: 513; King 56, t. 68 & t. 84, f. 5 V; C. 2: 649; Tabl. 2: 516, t. 524; Fischer 1363.

F. cordifolia Gr. 192, 1839 (non Roxb.).

Urostigma cordifolium D. & G. 242, 1861.

A glabrous, deciduous tree. Leaves shortly cuneate-acuminate, bright red or vinaceous when young, at length green, glabrous. Receptacles appear when the tree is leafless.

This is about the commonest or at least one of the commonest species of Ficus in the district; common in the ravine slopes or in open country.

A fine tree.

Local name: Pari.

Graham "Kandalla, pretty common"; Blatt. Herb. A 8 ! 25471 ! 25538 ! Santapau 8/9, 23, 24, 37 !

Ficus lacor Buch.-Ham. in TJS. 15: 150, 1835.

F. infectiosa Roxb., Fl. Ind. 3: 550, 1832 (excl. syn. Rhesed); FBI 5: 515; Gr. 191; Wight, Icon. t. 605; D. & G. 241; King 90, t. 76, & t. 84, f. V; C. 2: 651; Tabl. 2: 519; Fischer 1362 (non Willd., 1806).
The nomenclature of this plant is to be noted. Roxburgh's name "infectoria" is invalid, as it is preoccupied by that of Wilkes, which is a synonym of F. Tschakela Burm. Hamilton's F. lacor was published in 1825; the same year saw the publication of Blume's F. intermedia; I have been unable to discover which of these two names has priority of publication. One thing is clear, and that is that Roxburgh's name cannot stand in accordance with the Rules.

A fairly large tree. Leaves membranous, nerves strong on both sides. Receptacles sessile or very shortly pedunculate, with three bracts just below the receptacle.

Occasionally found in the ravines.

Local name: Piphi.

Receptacles. October to May.

Blatt. Herb. 25408! 25475! Santapan 1219! 1474! 1525! 8085! 8086!

Ficus lacor Buch.-Ham. var. lamberitianus (Miq.) comb. nov.

F. infectoria var. lamberitianus King, Sp. Fio. 63, t. 70, 1887; C. 2 : 651; Tabl. 2 : 520, t. 527; Fischer 1883.


"Leaves distinctly coriaceous, their bases broad, rounded, emarginate or subcordate, rarely narrowed; receptacles 3 to 4 in. across, on pubescent pediciles from 2 to 3 in. long." (King, loc. cit.)

This is quite a clear variety, distinguished by the broader leaves and the pedunculate receptacles; both the leaves and toe receptacles are larger than in the typical species.

About as common in Khandala as the typical species; on ravine slopes, especially below Kiphinshan Point.

Receptacles.—October to June.

Santapan 8/6! 4266-4268! 4932! 7445! 9200!

Ficus asperrissa Roxb., Fl. Ind. 3 : 554, 1832; F31. 5 : 522; Gr. 191; Wight, Icon. t. 633; D. & G. 243; King 80, t. 100; C. 2 : 536; Tabl. 2 : 522, t. 529; Fischer 1883.

A large shrub or small tree, without aerial roots. Leaves up to 18.5 x 8.5 cm., acute or acuminate, shallowly crenate or more or less deeply 3-lobed, scabrid on both sides.

Receptacles solitary, pedunculate, up to 21 mm. diam., scabrid, red when ripe, often produced on old branches away from the leaves.

Fairly common in moist situations; the 3-lobed leaves, which Cooke considers a sport and which King does not mention, are about as common in Khandala as the entire or crenate leaves.

Receptacles.—December to June.
Blatt. Herb. 25444! 25534! 25478! 25523! 27497! 27533! Santapau 77(2)A 389! 481! 1444(1-3)! 3053! 3732! 4533!

Ficus hispida Linn. f., Suppl. 442, 1781; FBI. 5: 522; King 116, tt. 154-155; C. 2: 653; Tabl. 2: 523, t. 530; Fischer 1367.

F. oppositifolia Wilk.; Gr. 191; Wight, Icon. t. 633.


C. daemonum Miq.; D. & G. 244.

Ficus daemonum Koen.; Gr. 192; Wight, Icon. t. 641.

A shrub or small tree, often unbranched and only 1-3.5 m. high; branches hollow. Leaves up to 35×16 cms., margins toothed, crenate or entire; lateral nerves very prominent on both sides, petioles up to 5 cms. long. Receptacles mostly on short branches, which come from the old wood, often from near the ground or even from under the ground; receptacles hispid.

This plant is conspicuous on account of the size and opposite arrangement of its leaves, and the position of the receptacles. Occasionally found in dense forest, usually in moist situations.

Local name: Boimbar.

Receptacles.—May to July.

Dr. Arbuckle ex Graham; Blatt. Herb. 25444! 26665! 27578! Santapau 431! 662! 1082! 8911!

Ficus glomerata Roxb., Pl. Cor. 2: 13, t. 123, 1798; FBI. 5: 535; Gr. 190; Wight, Icon. t. 667; King 173, t. 218 A; C. 2: 654; Tabl. 524, t. 531; Fischer 1364.


A large tree. Receptacles from the old wood, on the trunk and branches, clustered; at first green, at length red and edible, but generally full of insects; monkeys seem to eat the fruit with impunity but I have heard of a number of persons being taken seriously ill after eating such insect-infected fruits. The size of the receptacles reaches up to 4-7×2-3 cms.

This is the most abundant Ficus in Khandala; when growing in the open, the tree seldom attains a good size; in dense forest on the ravine slopes, it is one of the largest trees.

Local name: Umbar.

Receptacles.—Whole year.

Blatt. Herb. 25375! 27455! Santapau 386! 511! 3783!

Ficus rumphii Blume, Bijdr. 437, 1825; King 64, t. 67B & t. 67, T; C. 2: 648; Tabl. 2: 514.

F. cordifolia Roxb. (non Blume): Wight, Icon. t. 640.


_Talbot_, loc. cit.

_Ficus elastica_ Roxb., Hort. Beng. 65, 1814 & Fl. Ind. 3: 541, 1852; FBL. 5: 508; Gr. 190; D. & G. Suppl. 79; King 45, t. 54; C. 2: 655.

Occasionally planted in gardens in Khandala.

_Santapau_ 11776!

_Ficus_ sp. (prox. _F. Talboti_ King).

In my collection there is one specimen that seems to match these of _F. Talboti_ King. in Kew Herb.; it was collected in the ravine slopes below St. Mary's Villa. The petioles are longer and the lateral nerves stronger than in _F. retusa_, which it much resembles. On the other hand, the description and plates of _F. Tribeha_ Roxb. given by King seem to place my plant under the latter species. In the absence of receptacles, however, it is not possible to settle the identity of the plant satisfactorily.

_Santapau_ 8/31 April 1941.

**Antiaris Leschen.**


_Antiaris saccharina_ Dalz. in Kew Journ. Bot. 3: 232, 1851; D. & G. 244.

_Lepanthes saccharina_ Nimmo in Gr. 193, 1839.

A tall tree, but in Khandala I have seen no specimen of the dimensions mentioned by Cooke. Leaves about 12 x 5 cm., bilobated, polished and shining above and to a lesser extent also beneath; base distinctly unequal-sided; lateral nerves conspicuous on both sides.

The flowers were seen for the first time in 1944, after keeping the tree under observation for over 4 years. Male flowers crowded on a flat receptacle, 13 mm. diam., the underside of which is covered with minute bracts; as the flowers develop, the receptacle grows in size and its edges become recurved; the mature receptacle measures up to 18-6 mm. diam., on a peduncle 19 mm. long; the colour of the receptacle is at first green, later it becomes yellowish. Female flowers could not be collected. Fruit deep red or purple, subglobose, velvety, up to 18 mm. diam.; the ripe fruit is eaten by the Katkaris.

A rare tree in the district. The best specimen noticed in Khandala grows near the main road, where this passes over tunnel No. 24, G.I.P. Ry. line. The leaves are often covered with honey-dew; the fruit is
eaten locally, but the tree is too scarce for any use to be made of its bark. As regards the poisonous qualities of the tree, I have often handled branches without any ill effect.

_Local name:_ Tarar.

_Flowers._—October. _Fruits._—October to February.

_Graham:_ "Grows in the deep ravines at Kandalla"; _Dulkezand Gibson_; _Blatter in MS. catalogue_; _Santapau_ 1492! 1534! 1533! 1671! 3342! 3343! 5223! 11725!

**ARTOCARPUS Forst.**

**Artocarpus integrifolia** (Thumb.) Merrill, _Interpr. Herb. Amb._ 190, 1917; _id._ _Brum._ 2: 41.


_Artocarpus integrifolia_ Linn._f._ Suppl. 412, 1781; _FBL._ 5: 541; _Gr._ 192; _D. & G._ 244; _C._ 2: 697; _Fischer_ 1368.

A fairly large tree cultivated in St. Xavier's Villa and elsewhere for shade and for the sake of its "fruit." Typically the "fruit" reaches a large size (up to 60×30 cms.) and is produced from stout peduncles on the stem and branches. Nowhere have I seen it wild in the district.

_Local name:_ Phanna.

_Blatter in MS. catalogue_; _Santapau_ 8/4! 6087!

**CANNABINACEAE.**

**Cannabis Linn.**


The only authority for the inclusion of this plant is Blatter, who mentions it in his list. The plant is sometimes cultivated in western India for its fibre and for the various drugs obtained from it. I have seen the plant in Khandala neither in the wild state nor under cultivation.

_Blatter in MS. catalogue._

**CASUARINACEAE.**

**Casuarina Linn.**

_Casuarina equisetifolia_ ("equisetifolia") Linn., _Amen._ _Acad._ 4: 143, 1759; _Forst._, _Charact._ 104, t. 52, 1776; _FBL._ 5: 598; _D. & G._ Suppl. 82; _C._ 2: 600; _Talb._ 2: 536.

_C. muricata_ _Roxb._, _Pl. Ind._ 3: 519, 1832; _Gr._ 196; _D. & G._ _Suppl._ 82.
A tall tree planted and thriving in Khandala gardens. There are several fine specimens in St. Xavier’s Villa and in Khandala Hotel; in both places the tree produces fruit regularly.

Hallberg in MS. catalogue; Blatt. Herb. 25574 | Santapau 6/1

SALICACEAE.

Salix Linn.

Salix tetrasperma Roxb., Pl. Cor. 1: 68, t. 97, 1795; FBL. 5: 626; Gr. 195; Wight, Icon. t. 1954; D. & G. 220; C. 2: 661; Talb. 2: 537, t. 536; Fischer 1390.

In Blatt. Herb. there is but one specimen from Khandala identified by Blatter himself; the exact locality is given as “Below Tata’s p.” I have seen no other specimens from the district.

Blatt. Herb. 25724

CERATOPHYLLACEAE.

Ceratophyllum Linn.


This is an elegant plant when its leaves are spread out in the water of the village tank. It is fairly abundant in Khandala in the talao during the dry season. The fruit is generally 5-6 mm. long, ovate, with a subulate style reaching 12 mm. long, and a spur 0 mm. long on either side of the base.

Flowers and Fruits.—November.

Blatter Herb. 26436 | Santapau 8118

GNETACEAE.

Gnetum Linn.

Gnetum ula Brongn. in Duperrey, Voy. Coquille 12, 1829; Markgraf, Monogr. Gnet. 469, t. 6, f. 4, 1930 (non Marsten nee alior.).

G. funiculare Smith ex Wight, Icon. t. 1955, 1853.

G. scandens Brandis, For, Pl. 502, 1874; Talb. 2: 543, f. 537; C. 2: 665; Fischer 1392 (non Roxb.).

Common in the district; the largest specimens with stems 50 cms. Broad and about 15-20 cms. thick have been observed on Meruli plateau.

Local name: Tólumbi.

Blatt. Heb. 27909 | Santapau 288-289A | 134-137 | 1517 | 1575 | 1576 | 1660 | 1684 | 3067 | 4686-4690 | 5845-5847
THE FLORA OF KHANDALA.

HYDROCHARITACEAE.
LAGAROSIPHON Harv.


Valisneria alternifolia Roxb.. Hort. Beng. 71, 1814 & Fl. Ind. 3: 750, 1832; Gr. 199; Wight, in Hook. Bot. Misc. 2: 344, Suppl. t. 11.


Stems very slender, green. Leaves membranous, bright green. Flowers minute, axillary. Grows submerged in Khandala village tank.

Santapau 81121

VALLISNERIA Linn.

Vallisneria spiralis Linn., Sp. Pl. 1015, 1753; FBL 5: 660; C. 2: 669.

V. spiralisoides Roxb.: Gr. 200.

Dhatter recorded this plant for Khandala in October 1916: I have seen no specimens from the district.

Dhatter in MS. catalogue.

BLYXA Thomps.


Vallisneria octandra Roxb., Pl. Cor. 2: 34, t. 165, 1798; Gr. 199.

Blyxa Roxburghii Rich. in Mem. Inst. Fr. 77, t. 5, 1811; FBL 5: 660; C. 2: 670.

A gregarious herb growing towards the edges of tanks and pools in Khandala during the rainy season; stems practically none, leaves tufted, green or purplish, membranous.

Flowers not seen. Fruits linear, 1.5-5 cms. long; seeds numerous, sparingly tuberculate, "tails" about 1-3 mm. long.

Fruits.—September to December.

Santapau 2559-2572 ! 3355-3357 ! 8115 ! 8116 !

BURMANNIACEAE.
BURMANNIA Linn.

Burmannia pusilla (Wall. ex Miers.) Thw., Enum. Pl. Zeyl. 325, 1864; FBL 5: 655; Youker, Mon. Burman. 30, 1933.

B. ocellata var. pusilla Trim., Handb. Pl. Ceyl. 4: 131, 1898; C. 2 672.
B. coelestis Fischer, in G. 1839, 1938 (non Don).

B. triflora Roxb.: D. & G. 271.

D. disticha Gr. 223, 1839 (non Linn.).

A very slender herb; stems generally unbranched, occasionally sparingly branched, filiform. Leaves inconspicuous, minute and rare. Flowers "Hortense Violet" (Kodg. 61, b), 1-3 on a scape.

On Behrara's Plateau and other grassy places, common during the second half of the monsoon; often associated with Drosera indica and Eucalyptus, so that one can seldom find one of these plants without finding the rest together.

Flowers and Fruits.—September to October.

Blatt. Herb. 27532 ! 27561 ! 28024 ! 28034 ! Saniapau 2771 ! 2893 ! 5040 ! 7429 !

ORCHIDACEAE.

OBERONIA Lindl.

Oberonia recurva Lindl. in Bot. Reg. Misc. no. 8, 1839; FBI. 5 : 680; D. & G. 260; C. 2 : 676; Blatt. & McCann in JBNHS. 35 : 257; King & Pantl. in ABGC. 8 : t. 9; Fischer 1405-6.

Epiphytic on Ficus sp., Careya arborea Roxb., etc. Leaves green; inflorescence greenish yellow, erect, up to 7 cms. long.

Flowers and Fruits.—March to April.

Law 30 ! Saniapau 2334 ! 3632 !

MICROSTYLE Nutt.

Macrostyle versicolor Lindl., Gen. & Spec. Orch. 21, 1830; C. 9 : 678; Blatt. & McC. 259.

M. Rheederi Wight, Icon. t. 902, 1844-1845; FBI. 5 : 690; D. & G. 260 (exl. sym.); Hook. f., Icon. Plant. t. 1832.

Malaxis Rheederi Hayne; Gr. 212.

A rare plant in Khandala. In Blatt. Herb. there are at present but a few scraps of a specimen that has been identified by Blatter himself as M. versicolor. I include this plant on the authorities cited below; I have not seen any living specimens from Khandala.

Cooke; Hallberg; Blatter and McCann 25838, 25837; Blatt. Herb. 25233 (?) !

DENDROBIUM Swartz


D. humile Wight, Icon. t. 1643, 1852.

Epiphytic on *Monotoma umbellatum* and *Terminalia crenulata*. Leaves coming out during the monsoon, up to 5 from the same bulb, bright green. Flowers appearing when the plant is leafless, white or creamy white, lip pinkish with darker purple veins.

One of the commonest orchids of Khandala, where during the monsoon it may be seen covering large patches on the trunks of trees.

**Flowers.—**December to January  
**Fruits.—**Up to May.

*Blatter in MS. catalogue; Santapau 233/30 ! 1037 ! 1439 ! 2452 ! 4512 ! 4001!*

**Deudrobium sp.** (prope *D. Mabelae* Gammie).

Epiphytic; pseudobulbs 2-3-jointed. Leaves up to 5 on the same plant, and up to 14×1-3 cms., bright green, submembranaceous, acute. Flowers not seen. This may be a stouter form of the preceding species, but in the absence of flowers I find it impossible to determine the species.

*Santapau 4740-4742 ! 5049 ! 6932 !

**Dendrobium ovatum** (Willd.) Kranz. in Pfeirch. 45: 71, 1910; Blatt. & McC. 282.


*D. barbatulum* Wight, Icon. t. 910, 1843 (non Lindl.).

This plant is included on the authority of Blatter and McCann, who mention it in their Revision; I have seen no specimen from Khandala; the specimen mentioned below has disappeared from Blatt. Herb.

*Blatt. & Hällberg 26492.*

**Dendrobium barbatulum** Lindl. in Wall., Cat. 2013, 1829 & in Gen. & Spec. Orch. 84, 1890; FBI. 5: 719; D. & G. 261; C. 2: 682; Kranz. 70; Fischer 1416.

Epiphytic on *Vitex Negundo* Linn., *Ficus* sp. and *Terminalia crenulata* etc. Stems 5-30 cms., tapering but slightly towards the apex. Leaves appearing during the monsoon, deciduous, up to 11.5×2.8 cms., narrowed at the base above the sheath.

Flowers appearing long before the leaves, from pure white to deep rosy pink, in racemes from the upper axils or terminal; usually there is but one raceme, but occasionally there are up to 3, one being then terminal, the others lateral. Fruit with 3 strong and 3 weak ribs, all reddish or purplish against a green or yellowish background.

Very common in Khandala, especially in St. Xavier’s Villa and Convalescent Home; most of the trees in either place support one or more *Dendrobium.*
Leaves.—June to October. Flowers.—January to April. Fruits.—May to June.

Haller 26539; Blatter 26540; McCann; Blatt. & Hall. 26537; Blatt. & McC., 26491 (all ex Blatt. & McC., in Revision); Santapau 233/6, 281 823; 1675; 1675; 2497; 2233; 3613; 3614; 4392; 5123; 5644; 5645; 8763; 9179; 19361

Porpax Lindl.

Porpax papillosa Blatt. & McCann in JBNHS. 35: 288, f. 4, 1931.

Pseudobulbs lying flat on branches of supporting tree, covered with reticulate sheaths. Leaves up to 5×2-4 cms., ovate or obovate or lanceolate, subacute or obtuse at the apex, margins entire but minutely papillose, base gradually tapering, midrib fairly clear, lateral nerves very faint, the whole leaf glabrous and bright green in colour. Flowers about "Brazil Red" (Rdg. 1, 5-1) in colour, 11-5 mm. long, 4 mm. broad, sessile or subsessile. Fruits 6 mm. long and about as much in width, pyriform.

This small orchid seems to be fairly common about Khandala, but due to its small size is not easy to find. Khandala, moreover, is the typical locality of the species.

Flowers.—June. Fruits.—October. Leaves.—July to October.

Haller ex Blatt. & McCann.; Blatt. Herb. 27629! Santapau 7431
823; 2150; 2151; 2252; 2620; 2806; 4516; 6930!

Eria Lindl.

Eria reticosa Wight, Icon. t. 1637, 1852; FBI. 5: 787; C. 2: 690; Blatt. & McC. 272.


The occurrence of this plant is mentioned by Blatter; I have seen no specimen from the district.

Blatter in MS. catalogue.


Dendrobium filiforme Wight, Icon. t. 1642 (Icon. contr. & sinistra).

Very common and abundant especially on Rehnan's Plateau, where in the rains it may be seen covering large areas on trunks of trees. The flowers are very sweetly, though not strongly, scented.

Flowers.—July to August. Fruits. August to October.

Haller 26530! Blatter 25840; McCann 25844; Blatt. & McC. 25839; Santapau 583; 628; 720; 1036; 2450; 2451; 4604; 4894; 4896; 5050; 6908; 6929!
Eria microchilos Lindl. in JLS 3: 47, 1858; C. 2: 691; Blatter & McCann 273.

E. Dalzellii var. fimbriata Hook. f. in FBI. 5: 789, 1890; Kranz. 20.

D. microchilos Dalz. loc. cit. 3: 345, 1851.

An epiphytic herb very similar to the preceding species. Leaves 2-4 with a small one, sheath-like, at the base. Flowers secund, creamy or yellowish white. Sepals with minute, hyaline, glandular hairs. Lip minute, pandurate.

It can easily be distinguished from E. dalzellii in the second arrangement of the flowers, the shape of the lip and the time of flowering, which is somewhat later in this than in the former species.

Common and gregarious on Behran's Plateau, on tree trunks; flowers are sweetly scented.

Flowers and Fruits.—July to August, but slightly later than in E. dalzellii.

Hallberg; Sedgwick; Santapau 304 A! 414A! 624! 2244! 4613! 4706! 4743! 6828!

Thunia Reich.


Phajus albifl Lindl. in Wall., Cat. 3749 & Gen. & Sp. Orch. 128, 1830, pro parte; FBI. 5: 818 pro parte; Gr. 205.

Graham: "On trees at Kandalla—rare". Among my collections there are two specimens from Kandalla, 4645 & 4878, which may belong to this species; leaves up to 18 cms. long (excl. the long sheath) and up to 3-1 cm. broad, acute, strongly nerved; flowers or fruits not seen.

Eulophia R. Br.

Eulophia ochrata Lindl. in JLS. 3: 24, 1858; D. & G. 265; FBI. 6: 2; C. 2: 693; Fischer 1435; Blatt. & McC. 485.

Roots tuberous; tubers up to 17 in a line; scape up to 45 cms. long. Leaves up to 21×8 cms. (excl. sheath). Flowers yellow, lip with some purple lines on the inner side; bracts green to greenish purple.

A rare ground orchid.

Flowers.—June.

Bull. Herb. 2000 (!) 1 Santapau 787! 2138! 2139!

Eulophia pratensis Lindl. in JLS. 3: 25, 1858; FBI. 6: 24; D. & G. 264; C. 2: 694; Fischer 1435; Blatt. & McC. 486.

E. ramentacea Wight, Icon. t. 1666, 1851 (non Lindl.);
E. virens Graham, Cat. 202 (non R. Br.), 1839.
On March 2, 1945 a friend living in Khandala gave me a tuber of this plant, which was planted in St. Xavier's College, Bombay. It came into flower in October 1949.

The tubers are eaten raw, and locally are reputed as energetic rejuvenators: the friend who gave me the tuber remarked on that occasion: "The tuber was collected on Bhuna Hill, Khandala, and the man who collected it showed no signs of rejuvenation; obviously the tuber is not so powerful as local people believe."

**Rhynchosylyis Blume.**

*Rhynchosylyis retusa* Blume, Bijdr. 288, t. 49, 1825; FBL. 6: 32; King & Pantl. in ARBG. 8: 212, t. 284; C. 2: 698; Fischer 1410; Blatt. & McC. 490.

*Saccolabium guttatum* Lindl. in Wall., Cat. 7308, 1832; D. & G. 263; Wight, Icon. tt. 1745, 1746.

*Acerdis retusa* Sw. : Gr. 294.


Rare in Khandala; I have only found it on one occasion, and then it was in fruit. This is the largest epiphytic orchid seen in Khandala.

*Fruits.*—July 1949.

*Santapau 10169 ! 10170 !

**Sarcochilus R. Br.**


*Saccollabium viridisflorum* Lindl. in JLS. 3: 36, 1858; FBL. 8: 63.

*Sarcochilus viridisflorus* Cooks, Fl. Prea Bumh. 2: 697, 1907; Blatt. & McC. 488 (non Hook. f., 1890).

The specific name *viridisflorum* is preoccupied for the genus by Hook. f.'s name which is based on *Acerdis viridisflorum* Thwait.; the present species is named after Dalzell, who was the first to recognize the specific standing of this plant.

For several years I have observed a good number of these plants growing epiphytically on *Ficus retusa* in St. Xavier's Villa; elsewhere I have observed them on other sps. of *Ficus* and on *Tetrameles nudiflora* R. Br., and *Olea dionica* Roxb. It is not common in the district.

*Flowers.*—May to June. *Fruits.*—June.

Blatt. Hall. & McC. ex Blatt. & McC. in Revision; *Santapau 487 !

507 ! 1352 ! 4350 ! 4521 ! 9077 !
**Aerides Lour.**

*Aerides maculosum* Lindl. in Bot. Reg. t. 58, 1845; FBI. 6: 45; D. & G. 266; C. 2: 699; Fischer 1442; Blatt. & McC. 490.

*Succulbium speciosum* Wight, Icon. t. 1674-1675, 1851.

Common and very showy; I have recorded the following trees as supports of this orchid: *Terminalia orenulata*, the commonest, *Eriolaena quinquenularis*, *Heterophragma quadriloculare* and *Euphorbia nerifolia* (the last on June 13, 1913, on Chira Hill).

**Flowers.**—May to June. **Fruits.**—June onwards, persistent.

Hallberg in MS. catalogue; Blatt. Herb. 27362! Santapau 417A 498! 506! 543* 2049! 2191! 2441! 4232! 3008! 9048! 9120-9132!

*Aerides crispum* Lindl. in Wall., Cat. 7319, 1828 & Gen. & Spec. Orch. 239, 1830-1840, & Bot. Reg. t. 35, 1841; FBI. 6: 45; D. & G. 265; C. 2: 700; Fischer 1442; Blatt. & McC. 490.

*A. Lindleyana* Wight, Icon. t. 1677, 1851; D. & G. 265.

The scent of this plant is fairly strong and very pleasant. This orchid is larger in all its parts than the preceding species, which it otherwise much resembles. It is rare in Khandala.

**Flowers.**—May. **Fruits.**—From May onwards, apparently remaining on the parent plant most of the year.

Hallberg ex Blatt. & McC., loc. cit.: Santapau 435 89101

**Cottonia** Wight.


Stem about 20 cms. long; leaves bifarious. Inflorescence paniculate; common peduncle about 20 cms. long (up to 50 cms. in some specimens collected in N. Kanara); branch peduncles clearly and strongly compressed. Petals and sepals uniform in colour, greenish yellow with a touch of pink or purple; midlobe of lip tiddle-shaped, deep purple almost black, with yellow hairy sides. Fruit not seen in Khandala.

In N. Kanara this plant is common; in Khandala it seems to be extremely rare, Blatter does not mention it for the district, and I have only seen it on the one occasion mentioned below; it was epiphytic on *Vitex Negundo* L. and in full bloom on May 6th, 1950. The general appearance of the vegetative portion of this plant very much resembles some of the common orchids of the district, *Aerides* sp., with which it may have been confused in the past.

**Flowers and Fruits.**—April-May.

*Santapau 10953!


**Nervilia Comm.**


Fairly widely scattered over the district, but nowhere abundant; it is found in forests under the shade of trees. In St. Xavier's Villa there is a good group of such plants which I have kept under observation for several years and some of which I have successfully cultivated in Bombay.

In my collection there is a specimen, no. 6812, collected on July 21, 1945, that seems to be an intermediate form between the present species and *N. monantha* Blatt. & McC. : the leaves are typical of the present species, but the fruiting stem is about 21 cm. long (typical of *N. monantha*).

*Flowers* and *Fruits.*—June. *Leaves.*—August to November.

*Cooke.* 1892 (in Kew Herb.) ! *Santapau* 634 ! 643 ! 664 ! 824 ! 2036 ! 2037 ! 2060 ! 2220 ! 4510 ! 455 ! 4597(2) ! 9140 !


When comparing the description of this and of the preceding species with my Khandala specimens, I have been left in considerable doubt about the validity of the present species: both descriptions seem to fit my plants, and the diagnoses given by Blatt. & McC. do not show sufficient details. In the absence of the type sheet, it is not easy to decide such a point. The type specimen was collected by Hallberg in Kune during June 1917.

*Hallberg* ex Blatt. & McC. loc. cit.


This plant is included on the authority of Blatter, who mentions it in his *MS. catalogue* ; Blatter & McCann in their Revision cite Cooke, whose specimen they assert to have seen.

In Kew Herb. is a sheet labelled "*Pogonia plicata* Lindl. collected at Khandala (hill station in the Deccan Bombay Presidency) 1800 ft. by T. Cooke June 1899?" ; the specimens on that sheet are clearly those of *N. infundibulifolia* Blatt. & McC. In the *Herb.* of the Agric. College, Poona, there is another sheet collected by Cooke in Khandala in June 1890 ; according to the key given by Blatt. & McC. loc. cit. the Poona plants are also *N. infundibulifolia* and not *N. plicata*.

*Blatter* in *MS. catalogue* ; *Cooke* ?


*Epipactis carinata* Roxb., *Pt. Ind.* 3: 454, 1832 ; *Or.* 205.
THE FLORA OF KHANDALA. 305


Rare in Khandala. In the undergrowth of the forest slopes near Meeroli Plateau.

Flowers.—June. Leaves.—End of June.

Blower in MS. catalogue; Santapau 4001 ! 4501 ! 4502 !

PERISTYLUS Blume.

Peristylus stocksii (Hook. f.) Kraenz., Orch. Gen. & Spec. 1: 513, 1901; C. 2: 710; Fischer 1475; Blatt. & McC. 735.

Habenaria Stockii Hook. f. in FBI. 6: 158, 1880.

A common ground orchid, found under the shade of trees or under dense shrubs; often found on sloping ground.

Flowers.—July to September. Fruits.—September to October.

Santapau 773 ! 805 ! 2491 ! 4675 ! 4676 ! 4672 ! 4771 ! 6886-6886 ! 9224 ! 9225 ! 9248 ! 9249 !

PLATANTHERA Rich.

Platanthera susannae (Linn.) Lindl., Gen. & Sp. Orch. 259, 1835; Wight, Icon. t. 920; D. & G. 269; C. 2: 713; Fischer 1475.


Habenaria Susannae R. Br., Procdr. 312, 810; FBI. 6: 137.

H. gigantca Don, Procdr. Fl. Nep. 24, 1825; Gr. 201.

A stout herb, often reaching 1 m. in height. Leaves very elegant and beautifully arranged all along the stem, up to 20.5 × 7 cm. Flowers pure white, strongly and very sweetly scented; floral bracts up to 7.5 × 2.5 cm., very acute, base broad but scarcely sheathing. The expanded flowers reach 8-4 cm. diam. Dorsal sepal up to 4-2 cm. at its broadest. Petals up to 6 mm. broad, somewhat falcate. Lip with very conspicuous pectinate side-lobes; the whole lip up to 4.5 cm. long; spur reaching 12 cm. long. Ovary 4 cm. long. Pollinia about 6 mm. long.

I have found a few plants growing in St. Xavier’s Villa and Convalsecent Home; on the slopes of Droma Hill it is more frequent. In general, this, the most beautiful and fragrant of Khandala orchids, seems to be doomed to disappear from the district unless a check is put to the thoughtless practices of both local people and visitors. The tubers are said to be a delicacy for wild pigs; on several occasions I have seen plants from which the tubers had been removed by such creatures.

Flowers.—September to October. Fruits.—October.

Graham: “At Kandalla, on the open ground above Sir Herbert Compton’s Bungalow”; Stocks 71; Cooke & Woodrow ex Cooke; Blatter & Hallberg, ex Blatt. & McC.; Blatt. Herb. 25653; Santapau 775 ! 1064 ! 1101 ! 2672 ! 2818-2820 ! 5010 ! 5360 ! 11159 !
Habenaria Wild.


**H. triseriata** Wight, Icon. t. 1701, 1852.

Common in grass fields and grassy slopes especially under the shade of trees. On several occasions after collecting the plant I have placed it in a vase and kept it overnight; during the evening and night it emits a strong and very unpleasant colour, which can only be qualified in the words of one of my assistants as a “powerful and revolting stench”; during the day time the plant is odourless.

**Flowers.**—July to August. **Fruits.**—August.


**Habenaria digitata** var. foliosa Hook. f. in FBI. 6: 135, 1890; C. 2: 716.


"Khandala under a hedge, Sedgwick 2586." This specimen is no longer in Sedgwick Herb. I have seen no specimen of this plant from Khandala.

**Habenaria digitata** var. gibsoni** (Hook. f.)** Fischer in G. 1469, 1928.

**H. Gibsoni** Hook. f. in FBI. 6: 135, 1890; Blatt. & McC. 15.

**H. digitata** Cooke 2: 715, pro parte.

In my opinion this plant is so similar to **H. digitata** Lindl. that it scarcely deserves even varietal rank. The lower lobe of the petals is slightly longer than in the typical plant.

**Flowers.**—July to August.

McCann 25814; Blatt & Hallberg, 25815; Blatt 25813, 2583; Hallberg 25827; Blatt. Herb. 35284! Another specimen without refer. number labelled "Khandala July 1917"! Santapau 6380!


Leaves rather variable in size and shape. Flowers scentless or only faintly scented at night. The tooth-like lobe mentioned by Blatt and McCann is rare among Khandala plants.

One of the commonest among Habenarias during the first half of the monsoon. It is abundant on rocks, old walls and occasionally tree trunks; it does not grow on the ground except rarely.
Flowers and Fruits.—July to August.

Halberg 26497; Blatter 25842; Blatt. Herb. 35236; Acland 1167; Saitzepau 421A 617; 2524; 4606; 4708; 6737; 8863; 9249.

Habenaria grandifloraformis Blatt. & McCann in JBNHS. 36: 17, 1932.

Among my collections from Khandala there are three sheets which may belong to this species. Leaves 1 or 2; pedicels about twice as long as the fruit, one plant has 6 fruits, the rest 1-2 fruits each. The very broad lower bract typical of this species is not found on my specimens. In Sedgwick herbarium there is a sheet of this species, but unfortunately all the specimens on the sheet are only in flower.

Blatter and McCann, loc. cit. "Khandala, in grasslands, abundant"; Blatter 25835; Halberg 26501; Saitzepau (only probably) 784; 6888; 6891.


Leaf solitary, closely appressed to the ground. Flowers white, scentless. The bract below the lowest flower varies considerably in width, showing a continuous series from the narrow bract of this species to the very broad one of the preceding species.

This is the earliest Habenaria to come into flower during the monsoon and it is also one of the most abundant in grassy fields.

Flowers and Fruits.—July to August, rare in September.

Stepnevik 2627; Blatt. Herb. 35231; 35233; Saitzepau 232/5, 14; 619; 764; 840; 2255; 4589; 4006; 6786; 6832; 6867.


H. longicorniculata Gr. 202, 1839.

H. longecalcarata var. viridis Blatt. & McC. loc. cit.

According to the rule of priority, Graham's name is the only legitimate one for this plant. I have not adopted it because of the solid weight of authority in favour of longecalcarata; Graham's description of the plant seems to me to be as good as any in the botanical literature of the time.

The whole plant is 30-115 cms. high, the taller specimens being common towards the end of September among tall grasses. Leaves 3-10 (not counting the bract-like ones above), in size up to 23x1 cms. Flowers pure white, scented. Lateral sepals up to 14x6.5 mm.; petals up to 12 mm. long, both petals and sepals with prominent nerves. Lip of a total length of 2-9 cms. Spur up to 14 cms., occasionally even longer. Fruit about 2-2.5 cms. long.
Tubers up to 5.9 x 1.8-3.5 cms. Medicinally the tubers are employed to reduce local swellings. The tubers are rootless, but a number of roots come out of the stem between the tuber and the lowest leaf.

A very common and variable plant, depending on its environment. The flowers at first are pure green, then white; the plant mentioned by Blatter and McCann as var. viridis seems to be an immature specimen, and for this reason I have fused it with the typical species.

Local name: Wagsaura.

Flowers and Fruits.—September to October.

Graham: Adland 1181; Hallberg; Chibber 90; Gammele 15467; Garade; Cooke! Woodrow; Blatt. Herb. 2626; 28211; 26347; Santapan 508A! 909! 913-916! 1020! 1054! 1078! 2492! 2539! 2611! 2612! 2829! 5032! 7430!

Habenaria plantaginea Lindl., Gen. & Sp. Orch. 323, 1835; FBl. 6: 141; Wight, Icon. t. 1710; Duthie in ARBG. 9(2): 181, t. 132; C. 2: 718; Fischer 1170; Blatt. & McC. 20.

Tubers 1.5-3 x 1.1-5 cms. The whole plant may reach 35 cms. high. Leaves radical, more or less flat on the ground. Flowers are pure white, subsessile to sessile, the scapes are slender with numerous sheaths that gradually pass from the leaves to the floral bracts. Spur about 3 cms. long, very slender, much longer than the ovary, greenish in colour.

Rare in the district; I have only found it on sloping ground near Convalescent Home.

Flowers.—September. Fruits.—October.

Santonin 593A! 910! 2490! 4993!

Habenaria commelinifolia Wall. ex Lindl., Gen. & Sp. Orch. 325, 1835; FBl. 6: 143; C. 2: 719; Duthie 183, t. 134; Fischer 1470; Blatt. & McC. 20.

Orchis commelinifolia Roxb., Fl. Ind. 3: 451, 1832; Gr. 201.

The occurrence of this plant is given on the authority of Woodrow ex Cooke; I have seen no specimens from Khandala; Blatter & McCann likewise do not seem to have seen any plant from the district or from anywhere in the neighbourhood.

Woodrow ex Cooke; Blatter in MS. catalogue.

Habenaria heyneana Lindl., Gen. & Sp Orch. 320, 1835; FBl. 6: 148; Wight, Icon. t. 923; D. & G. 268; C. 2: 719; Fischer 1471; Blatt. & McC. 22.

H. ocrea Blatt. & McC. in JBNHS. 36: 21, t. 6, 1932.
During my two years’ stay in Kew (1946-1948) I examined at leisure the following species of Habenaria: H. subpubens, H. candida, and H. heyneana, and came to the conclusion that they are all one and the same species. Then on comparing my Khandala sheets, some of which had been identified as H. cerae by McCann himself, I failed to see why those should not be placed under H. heyneana. On my return to India I had a chance to examine Sedgwick 7907, which seems to be a paratype of H. cerae and which bears a label in Blatter’s own hand; the identity of the two species is entirely clear to me, and in consequence Blatt & McC.‘s name must give way to the much older one of Lindley.

The whole plant is generally 10-25, occasionally up to 33 cm., high. Leaves subimbricate (rarely) to subdistichous or distichous. Flowers at first greenish or whitish, then pure white, at length waxy yellow; the turning into yellow due to age seems to be gradual, so that first the lip, then the petals, finally the sepals become yellow; the colour of the flower, white or yellow, cannot be made into a specific difference. The size of the bracts relative to that of the flowers is most variable; on the paratype of H. cerae, Sedgwick 7907, most of the bracts are by far longer than the flowers; from the very numerous specimens which I have examined, I conclude that the flower at first is much shorter than the bract, but later on, when the ovary is more or less fully developed, the flower may be pushed out of the bract. The size of the sepals, another specific difference of H. cerae according to the original description, is fairly constant and in every case the dorsal sepal in slightly shorter than the lateral ones; this is the case in the Kew sheets of H. heyneana Lindl., in my sheets from Khandala and in Sedgwick 7907.

This is one of the commonest Habenarias in Khandala; it is very abundant on several more or less level grassy fields on Bhoma Hill. A very pretty plant.

Flowers.—August to September. Fruits.—September to October

Local name: English-speaking visitors often call this “the Toothbrush orchid”.


Habenaria ovalifolia Wight. Ic. t. 1708. 1851; FRI. 6: 149; Fischer 1471; Blatt & McC. 23.

The following is my entry under no. 853, for Sept. 5, 1942: “Orchid. Meroli Plateau, in clearing in forest. Green all over; ground orchid. Lateral sepals spreading; petals entire; lip 3-lobed, divided almost to the base; lateral lobes of lip subulate, acute; midlobe ovate-lanceolate, obtuse, slightly falcate; spur slightly longer than the ovary, slender, somewhat inflated towards its apex. Apex itself acute. Leaves clustered about the middle of the stem. Only one specimen seen today”.

THE FLORA OF KHANDALA.
A rare orchid in Khandala; my specimens match those of Kew Herb., with which my sheets were compared.

*Flowers.*—August to September.

*Santapau* 853 ! 6991 !

**Habenaria hallbergii** Blatt. & McCann in JBNHS. 36 : 24, 1932.

According to the original description, this plant is very similar to *H. ovatifolia* Wt.; the main differences are: (a) The bracts are lanceolate-subulate and longer than the flowers. (b) The spur is a little curved, linear, twisted, somewhat compressed and clavate at the apex. (c) The lobes of the lip are all of the same length, the lateral ones being narrowly linear, rigid and patent. (d) The glands are narrow and very long.

For a full description of the plant, see loc. cit.

The type was found in Khandala in a ravine by Hallberg and is preserved in Blatt. Herb., Bombay!

**Habenaria marginata** Coleb. in Hook. Exot. Bot. t. 136, 1825; FBI. 6 : 190; Gr. 201; D. & G. 268; Duthie in ARBG. 9 : 184, t. 136; C. 2 : 721. Fischer 1471; Blatt. & McC. 29.

There is in Blatt. Herb. but one specimen from Khandala; the sheet has been compared with those in Kew Herb. and found to match with *H. marginata* Coleb. The yellow or yellowish margins of the leaves are typical of this plant.

*Flowers.*—September 1919.

**Blatt. Herb.** 29672 !

**ZINGIBERACEAE.**

**Kaempfera** Linn.

**Kaempfera scaposa** (Nimmo) Benth. in Benth. & Hook., Gen. Pl. 3 : 642, 1883; FBI. 6 : 224; Schumann in Pflfeirh. 20 : 72; C. 2 : 726.

**Hedychium scaposum** Nimmo in Gr. 205, 1839; D. & G. 275.

**Monolophus scaposus** Dalz. in Kew Jour. Bot. 2 : 143. 1850; Wight.

*Not common in Khandala; there is a patch near the top of Bhoma Hill among grasses under an isolated clump of trees. The plant seems to be abundant about Lanavla.*

*Flowers.*—September.

**Blatt. Herb.** 28213 ! Chiber 125 ! Santapau 808 ! 603(2) ! 4890 ! 4881 ! 5002-5006 !

**Hitchenia** Wall.

**Hitchenia caulina** (Graham) Baker in FBI 6 : 221. 1890; Schumann 97; C. 2 : 725 (et pro parte ?).

**Caresina caulina** Gr. 210, 1839; D. & G. 275; Lisboa in JBNHS. 2 : 140, t. opp. p. 140
For a long time I have been in great doubts about the identity of this plant in relation to Curcuma pseudomontana Graham; all such doubts have been set at rest after studying Lisboa's description and icon, and after examining large numbers of living specimens in Mahabalipuram. The two plants are really and truly distinct.

*Hitchewiu* has flowers borne on a central spike, which usually possesses a long peduncle; the structure of the anther cells shows a small straight "tail" at the base of each cell, the "tail" being not more than 1/3 as long as the anther cell itself. In the case of Curcuma the peduncle is considerably shorter even in specimens where the peduncle is quite clearly distinct from the surrounding leaves; at the base of the anther cells there are two spurs that in length are about 1/2 as long as the cells themselves.

A rare plant in Khandala; I have seen no living specimens.

_Blatter_ in MS. catalogue; _Cook_, August 1892, in Herb. Econ. Botanist, Poona!

**Curcuma** Linn.

*Curcuma pseudomontana* Graham, Cat. 210, 1839; D. & C. 275; C. 2: 730: Santapau in JBNHS. 45: 618-624, 1945.

_C. montana_ Baker in FBl. 6: 214, 1850, pro parte (non Roscoe); Schumann, loc. cit. 106, pro parte.

_C. Ramade_ Prain in JBNHS. 11: 463, 1898.

Following Cooke, I retain this species as distinct from *C. montana* Rosc. For a full description of the plant, see Santapau loc. cit.

Characteristic of this plant are the following points: (a) Rhizome fairly large, with many fibrous roots which bear ovoid or elliptoid or subglobose tubers at their ends; I have not seen any plant with sesamid tubers. (b) The tubers are at first white, then yellowish inside and strongly aromatic. (c) There is a lateral spike that comes into flower either immediately before or together with the leaves; when this lateral spike has decayed, there appears a central one on the same plant; occasionally both lateral and central spikes are present on a plant at the same time. (d) The colour of the flowers is always pure yellow. (e) The colour of the sterile coma is generally purple, but often enough it is pure white, or white with green or purplish streaks, or very deep purple (at times nearly black). (f) As regards the leaf shape, the ratio of leaf length to width is often about 2:1. (g) Root-fibres always bear tubers at their ends, but these are not easy to extract from the ground on account of the length of the root-fibres.

A very common plant in Khandala during the rains, and a very showy one. It grows in open fields, on hill slopes, in the undergrowth of secondary forests, etc. In St. Xavier's Villa it is one of the commonest plants and certainly the most conspicuous until the Balasams take the field.

*Local name:* Kachora.
Flowers: (a) Lateral inflorescence: June to beginning of August.  
(b) Lateral and central inflorescence: first half of August. (c) Central inflorescence: August to October, occasionally to November. Fruits: June to November.


The colour of the corolla is yellow with purple streaks; there is one sessile tuber, which is yellow inside.

Flowers: "during the early monsoon 1917".

Hattberg 14956.

ZINGIBER Adams.

Zingiber cernuum Dalz. in Hook. Kew Journ. Bot. 4: 342, 1855; FBl. 6: 245; C. 2: 734; Schumann 132.

In my field work, I have had great difficulty in identifying this plant; the cause of the difficulty is that my plants from Khandala seem to show a mixture of the characters that Dalzell attributes to Z. minimunii and Z. cernuum. These two species require an intensive field study.

The following notes have been extracted from my field diaries, and cover a period of nearly ten years; they were written after examination of numerous fresh specimens.

Stem leafy, up to 1-5 m. high, green or purplish green. Leaves the largest for the genus in Khandala, long petiolate, the base of the petiole sheathing; ligules about 5 mm. long, scariosus; leaf blade up to 30×11-5 cms., oblong lanceolate, acuminate, deep green and shining above, pale green, pubescent or subpubescent and dull beneath; margins undulate; midrib canaliculate above, prominent beneath; side nerves numerous, prominent above, canaliculate beneath; leaf base rounded or subacute.

Spikes just appearing above ground; peduncle with a few sheaths; each flower supported by 2 bracts; the whole spike up to 9 cms. diam. Bracts at first whitish or yellowish, at length the exposed parts turn reddish or even red, the unexposed parts remain whitish; outer bract broadly ovate, subacute, about 3-2×1-8 cms. when supporting the fruit; inner bract 3-2×2-5 cms., strongly parallel-veined, shortly trifid at apex.

Calyx 1-5 cms. long, shortly 3-lobed or more or less truncate, hyaline; split down one side. Corolla 8 cms. long; tube about equal to the lobes in length, 1-5 mm. diam., regularly cylindrical from the base to
near the limb, then gradually widening or becoming infundibuliform. Corolla lobes 3, white, the upper lobe about 3×1.5 cms., the lateral ones 3×0.8 cms. Lip 3-lobed; midlobe 2-fid, 3-3.5 cms. long, about 2 cms. broad, white with red spots; side lobes of the lip half as long as the midlobe, 7-8 mm. broad, yellow with red spots or lines, some of which are confluent. Anther 2-celled, cells about 12 mm. long, curled; style white and filiform; stigma bearded or fringed with a row of short hyaline bristles all round.

Fruit inferior, trigonous, somewhat falcately bent, whitish when young, turning uniformly and deeply red at maturity, exceeding the bracts by about half its length, up to 45×27×21 mm. Seeds 6.5×3.2 mm., dark red, finely striate, with a white aril. The inner wall of the loculi of the ovary is bright scarlet. Placentas central; seeds 58 in one fruit, in three rows in each loculus.

The rhizome is purplish or purplish lilac inside with a strong aromatic scent.

Gregarious under the shade of trees, not seen in open ground; usually 2 or more spikes come out of each rhizome.

According to Dalzell Z. cernuum has glabrous leaves and variegated (white and red) lip; whilst Z. nimmonii has pubescent leaves and yellow lip. My Khandala plants show pubescent leaves together with variegated midlobe of lip but with yellow side lobes of the lip. Dr. S. K. Mukerjee of the Silpur Herbarium identified all my specimens as Z. nimmonii Dalz.; I checked them all in Kew Herb., but reached no definite conclusion except that the original descriptions are very deficient and much work has to be done in the field on this as well as other monocotyledonous plants.

Flowers.—July to October. Fruits.—August to October.

Santapau 393A ! 448A ! 645 ! 1104 ! 2278 ! 3018 ! 3019 ! 4594 ! 4597 ! 6912 !


Alpinia Neesiana Graham Cat. 207, 1839?

Dried herbarium specimens of this and of many other species of the Family are most difficult of examination. The following notes were written after examination of very large numbers of fresh specimens.

Height of plant generally about 1.5 m., occasionally up to 2 m. Rhizome small in direct continuation of the stem, pale sulphur yellow inside with strong aromatic odour; old rhizomes deep yellow inside. Root fibres numerous from the present and the previous seasons' rhizome, up to 30 cms. long, 4-5 mm. thick with fusiform tubers at their ends; such tubers are up to 3.2×1.4 cms. and may continue into a long fibrous root, i.e. the tuber itself is on a fibrous root that is produced for some distance beyond the tuber.
Stems consist of a small core in the middle, the rest is made up of the sheaths of leaves; the nodes are inappreciable, the internodes about 7.5 cm. long. Leaves petiolate, sheathing, with a sessile and truncate ligule which is about 5 mm. high; the leaf blade is deep green and shining above, glabrous; paler green and slightly hairy especially on the nerves beneath; margins undulate, entire, apex acute or acuminate, base tapering, leaves generally distichously arranged.

Inflorescence: there are generally 1-2 scapes from the same rhizome both lateral to the stem, in length about 1 m.; the lower part of the scape is covered with sheathing bracts. The length of the spike is from 6 cms. in young specimens to 50 cms. in older ones; usually the spike is simple but not seldom it is branched. Bracts of the spike each supporting one flower; above the flower there is a second bract enclosing the calyx and corolla-tube, this inner bract being up to 2.6 x 1.5 cm. and both inner and outer bracts are acute or slightly emarginate.

Calyx truncate, hyaline, up to 1 cm. long. Corolla tube about 25 mm. long, curved near its mouth and widening gradually; dorsal petal broadly ovate lanceolate, subacute with about 13 parallel nerves, and about 27 x 12 mm.; lateral petals lanceolate, subacute, 5-nerved, about as long and half as broad as the dorsal petal. Lip 3-lobed; midlobe longer than the lateral ones and deeply cleft, with a few red dots forming two lines for each segment of the midlobe. Anther 2-celled, cells splitting longitudinally and releasing masses of white pollen; connective overtopping the style; the anther cells are 5 mm. long, the projection of the connective 4 mm. long. Style long, filiform, whitish; stigma minute, indistinct from the style, with an erect ring of short bristles. Fruit ellipsoid or subglobose, 3-locular, 3-valved, many-seeded, crowned with the remains of the flower; seeds with a white, hyaline, membranous aril, in the immature stage the seeds are pink with a white dot at each end.

Colour of the plant: the stem and scape are either green or green with touches of purple; bracts of the spike green or vinaceous red with green tips; flowers cadmium yellow; fruits deep red at maturity.

Common and abundant all over the district in open grass fields, occasionally under the shade of trees.

Flowers and Fruits.—July to November.

Cosmosus Linn.

Cosmosus speciosus (Koenig) Smith, in T. S. 1: 249, 1800; F. B. I. 6: 249; Gr. 208; Wight, Icon. t. 2014; D. & G. 274; Schumann 395; C. 2: 736.

Banksia speciosa Koenig in Betz., Obs. 3: 75, 1783.

On a few occasions I have found plants that were entirely green, and with stems straight.

Rare in Khandala except on Meroli Plateau and on the lower levels of the slopes below St. Mary's Villa.

Flowers and Fruits.—August to October, the fruits persisting.

Graham; Coke; Blatt. in MS. catalogue; Santapau 391 A1 879 1166.

CANNACEAE.

Canna Linn.

Canna indica Linn., Sp. Pl. 1, 1753; Bot. Mag. t. 454; F. B. I. 6: 260; Gr. 211; D. & G. Suppl. 88; C. 2: 744; Kraenzelin in Pfreich. 56: 59.

Planted in gardens, but nowhere wild. Flowers are of various colours, bright red; or yellow, or variegated, the red variety being the more common.

Santapau 6 May 1946, in gardens!

MARANTACEAE.

Stachyphrinium Schum.

Stachyphrinium speciatum (Roxb.) Schum. in Pfreich. 11: 46, 1902.


Very abundant in large patches in almost pure formations in the undergrowth of dense forest at Meroli. In general appearance it is very similar to some of the large-leaved grasses.

Flowers.—June to August. Fruits.—June to October. Leaves.—Throughout the year.

Santapau 1241! 1912! 2169-2172! 3541-3543! 4593-4598! 4691-4692! 5248-5249!

Phrynium Wild.


This plant is included on the authority of Hallberg; I have not seen any specimens from Khandala.

Hallberg in MS. catalogue.
MUSACEAE.

Ensete Horan.


M. textilis Graham, Cat. 213, 1839 (non Née).

For the differences between Musa sens. strict. and Ensete, see Cheeseman, loc. cit. pp. 98-99.

Locally the young fruits are pickled; the whole inflorescence spike is eaten as a vegetable, but only when the spike is very young.

Common all over Khandala, on hill or ravine slopes, in open grassy places or in more or less dense forest; but seldom are fruits allowed to reach maturity. On several occasions I have noted this plant living epiphytically at the fork of some trees.

Hallborg in MS. catalogue; Blatt. Herb. 27397! Millard, ex Rynd, in JBNHS. 15: 586-593; Santapau 812! 4560-4563!

Musa Linn.

Musa sp. (paradisiaca Linn.?)

For the distinction between Bananas and Plantains, see Cheesman in Kew Bull. 1948(2): 149 acq., 1948. In several Khandala gardens I have seen these plants under cultivation; they produce fairly large fruits, the pulp of which is sweet and edible without cooking, the skin green.

Santapau, in gardens, 18 Feb. 1946!

BROMELIACEAE.

Ananas Mill.

Bromelia comosa Linn., in Stickman., Herb. Amb. 21, 1754.
Ananas suaveolens Schult. f., Syst. 7: 1283, 1830; C. 2: 744.
Bromelia Ananas L. Sp. Pl. 285, 1753; Gr. 222; D. & G. Suppl. 94.

The Pine-apple, cultivated occasionally in gardens in Khandala. Santapau 15 March 1945, 6 May 1946, in St. Xavier's Villa grounds!
HYPOXYDACEAE.

**Hypoxis Linn.**


*Cerculigo graminifolia* Nimmo ex Gr. 215, 1830; D. & G. 276.

A very common plant all over Khandala, in open places, grassy slopes, etc.

*Flowers.*—June to October. *Fruits.*—July to October.

Nimmo ex Graham; Dalsell and Gibson; Woodrow; Hallberg and Blatter in MS. catalogues: Blatt Herb. 27412 ! 27952 ! Santapau 223/7 ! 583 ! 626 ! 735 ! 951 ! 2052 ! 2257 ! 5055 ! 6861 ! 9178 !

*Cerculigo Gaertn.*

*Cerculigo ochrochoides* Gaertn., Fruct. 1: 63, t. 13, 1788; FBL. 6: 279; Gr. 215; Baker, Synop. 124; C. 2: 748; Fischer 1502.

C. *malabaria* Wight, Icon. t. 2043, f. I, 1853; D. & G. 276.

C. *brevifolia* Dryand.: Gr. 215; Wight, Icon. t. 2043, f. 2; D. & G. 276.

Very common all over Khandala, especially under the shade of trees in deciduous forests, or in open country. This is one of the first monsoon plants to come into flower and one of the last to disappear.

*Flowers.*—June to October. *Fruits.*—September to October.

Hallberg and Blatter in MS. catalogues: Blatt Herb. 26100 ! 27961 ! Santapau 224/3 ! 512 ! 532 ! 733 ! 2042 ! 2075 ! 4481 ! 4966 ! 9229 ! 9250 !

AMARYLLIDACEAE.

**Crinum Linn.**

*Crinum latifolium* Linn., Sp. Pl. 291, 1753; FBL. 6: 283; Gr. 216; Wight, Icon. tt. 2019-2020; Baker, Handb. Amar. 87; C. 2: 750; Fischer 1504; Santapau, Cir. Ind. Gard. 1: 3.

This is one of the most showy and attractive of Khandala plants. Both in flower and in leaf this plant deserves a place in gardens. Gregarious on steep slopes at the foot of Behran’s Plateau; not seen elsewhere in the district. For several years I have been cultivating this plant in Bombay from two bulbs originally brought down from Khandala. For the method of cultivation, see Santapau loc. cit.


*Blatt. Herb.* 28522 ! 28523 ! Santapau 525 ! 531 ! 576 ! 2038-2041 ! 4483 ! 9079-9080 !

*Crinum asiaticum* Linn., Sp. Pl. 292, 1753; FBL. 6: 280; Gr. 216; D. & G. 725; Baker, Handb. Amar. 76; C. 2: 749; Fischer 1504.
C. toxicarium Roxb.: Wight, Icon. t. 2021-2022.

Hallberg mentions this plant from Khandala in his MS. catalogue; there are no specimens in Blatt. Herb., and I have seen none from Khandala.

Pancratium Linn.


The type of this plant is McCann 18854 which was collected near St. Mary's Villa in Khandala; flowered in June. For a full description of the plant, see Blatt. & Hallb., loc. cit.

The specimens of my collection listed below seem to belong to the present species, but in the absence of the type, which seems to have perished, the matter remains uncertain.

The perianth segments of my plants are never linear, but lanceolate, 5-8 mm. broad, and leaves appear after the flowers; these two characters are typical of P. Sanctae-Mariae. The neck of the bulb varies from 1-5 to 8 cms.; the length of the perianth tube is also variable. Leaves up to 45 × 2-5 cms.

As soon as the first showers of the monsoon come down, this plant bursts into flower, and often finishes its flowering in 2-3 days, so that when the leaves appear the plant is already in fruit. Occasionally I have seen flowers and leaves together on the same plant. This is one of the most difficult plants to collect in flower on account of the ephemeral nature of the inflorescence.

Common in Khandala in open places or under the shade of trees; it is abundant in St. Xavier's Villa and on Behram's Plateau.

Flowers.—May to June. Fruits.—June. Leaves.—June to August.

McCann 18854; Blatt. Herb. 28524! 28526! Sanctapau 5161 526! 597! 2034(3)! 2044! 2050! 4173! 4180! 8015! 9046! 9113! 9114!

AGAVEACEAE.

Agave Linn.

Agave sp. (vera-cruz Mill. ?)

For the distinction among the various species of Agave found in India, see Drummond and Prain in Agric. Ledg. 1906: 77-271, 1907.

In St. Xavier's Villa and elsewhere in Khandala there is a species of Agave that seems to be A. vera-cruz Mill. Leaves form a lax rosette and are about 20 cms. at their broadest; inflorescence scape 2-5-4 m. high; flowers pale yellow. The colour of the leaves is grey-green.

This plant has been naturalized in Khandala and much more so further inwards on the Deccan Plateau; it produces normal flowers, but the seeds germinate in situ, so that often the inflorescence branches
support a large number of seedlings; these fall off from the parent plant and take root fairly easily as independent plants. This explains the rapid propagation of the plant in many districts.

_Santapau_ 510 ! +031 !

**DIOSCOREACEAE**

Most of my specimens of this family from Khandala have been checked by L.H. Burkhill, M.A., F.L.S., in Kew Herbarium, October 1948; my indebtedness to him is hereby gratefully acknowledged.

**Dioscorea Linn.**

_Dioscorea ventaphylla_ Linn., Sp. Pl. 1032, 1753; FRI. 6: 261; Gr. 218; D. & G. 247; Wight, Ic. t. 814; Prain & Burkhill in Proc. As. Soc. Beng. 19: 23, & in ARBG. 14: 100, t. 66; Cl. 2: 756; Fischer 1511; Santapau in JBNHS. 49: 631.

_D. triphylla_ Linn., Sp. Pl. 1032, 1753; Gr. 218; D. & G. 247.

_D. Jacquemontii_ Hook. f. in FRI. 6: 290, 1892.

For a full description of the plant and its varieties, see Prain and Burkhill, loc. ult. cit. or Santapau, loc. cit.

A very common plant in Khandala; flowers cream coloured and slightly scented. The flower buds of male and occasionally of female flowers are used locally as a vegetable in curries; one of my local helpers, whenever he came out into the jungle in my company, was in the habit of collecting several pounds of the flowers for the pot, and he used to say that they made a very palatable dish.

**Flowers.**—September to October. **Fruits.**—September onwards, persisting on the dry plant till April of the following year.


**Dioscorea bulbifera** Linn., Sp. Pl. 1033, 1753; Gr. 219; Wight, Ic. t. 878; C. 2: 768; Prain & Burkhill in Proc. 26, & in Ann. 11, t. 50; Fischer 1511; Santapau 628.

_D. sativa_ Thunb., Fl. Jap. 151, 1784 (non Linn.); FRI, 6: 285 (excl. _D. chifortiana_).

_Hemia bulbifera_ Knuth: 1) & G. 247.

For a full description, see Prain & Burkhill, loc. ult. cit.

This species has the largest leaves among the Dioscoreas of Khandala. Male flowers white or creamy white, or pinkish; female flowers creamy. Common only on _Kuma_ Plateau. The bulbils are caducous and this is why they are often missing from herbarium sheets.

**Flowers.**—July to September. **Fruits.**—September onwards.

_Blatt. Herb._ 25881! _Santapau_ 818! 2539-2541! 0751! 10163! 10173
**Dioscorea oppositifolia** Linn., Sp. Pl. 1083; 1753; FDI. 6: 292; Gr. 219; Wight, Ion. t. 813; D. & G. 247; C. 2: 758; Prain & Burkhill in Proc. 30, & in Ann. 392, t. 139; Fischer 1512; Santapau 632.

The petioles are reddish; the stems green or reddish or dark purple.

Fairly common in Khandala; flowers come out during the first half of the monsoon, the fruits may remain on the parent plant until the next rainy season; during the hot weather dry fruits show at times a silvery sheen, that I have not seen in any herbarium specimens.

**Flowers.**—June to August. **Fruits.**—August onwards.

Graham; Cooke; Garade ex Prain & Burkhill; Blatt. Herb. 25879! 36030! 28565! Santapau 405A! 519! 898! 1170! 2116! 2504! 2849! 4429! 4465! 4473! 4657! 9052! 10162! 10170-10172!

**Dioscorea belophylla** Voigt, Hort. Sub. Calc. 653, 1845; Prain & Burkhill in Proc. 36, & in Ann. 348, t. 127; Fischer 1512; Santapau 634.

This plant is not given in Cooke’s Flora.

Climbing plant; stems purplish; bulbils very frequent in the axils of leaves, but in my Khandala specimens such bulbils are oblong or ellipsoid, not globose (as is the case with *D. bulbifera*). Leaves angustate-cordate, the sides of the sinus straight or nearly so.

A rare plant in Khandala.

**Flowers.**—September to October.

Santapau 954! 2848! 10165!

**Dioscorea wallichii** Hook. f. in FDI. 6: 295, 1892; Prain & Burkhill in Proc. 31 & in Ann. 261, t. 115; Fischer 1512; Santapau 633.

This is another species not included in Cooke’s Flora. For a full description, see Prain and Burkhill, loc. ult. cit. or Santapau loc. cit.

Climbing plant; stems without bulbils. Leaves suborbicular, broadly cordate, the sinus occasionally very broad; petioles as long as or even longer than the leaves themselves, slender.

**Flowers.**—October to November. **Fruits.**—December.

Santapau 3090! 5377! 9821! 9822! 10174!

**LILIACEAE.**

**Asparagus** Linn.


*As. sarmentosus* Gr. 221, 1859 (non Linn.).


**Asparagus sarmentosa** D. & O. 246, 1861 (non Kunth.).
For several years I have botanized on Ghira Hill, which is a short  distance from Karli and forms part of the range of hills on which Karli
is built. Some of my specimens collected on Ghira Hill are exactly
like the type of A. Jacquemontii Bak. (Jacquemont 526 in Kew Herb.);  such
specimens seem to be but juvenile stages of the common A. racem-
mosus var. javanica; for this reason I have fused A. Jacquemontii with
the other species.

A common plant all over Khandala, particularly so in thickets in
open country. It is especially abundant on Behran’s Plateau.

Flowers.—May to August. Fruits.—July to September.


1304; Baker in J.S. 14 : 623, 1874; FBI. 6 : 317; C. 2 : 762.

Blatter in his MS. catalogue mentions this plant for Khandala;
I have seen no specimen from the district; there are none in Blatt.
Herb.

Gloriosa Linn.

Gloriosa superba Linn., Sp. Pl. 305, 1753; FBI. 6 : 368; Gr.
221; Wight, Icon. t. 2047; C. 2 : 766; Fischer 1519.

Metonia superba Dalz. & Gibb., Bomb. Pl. 205, 1881.
The tubers are said to be rather poisonous.

This plant is abundant on the Konkan plains and goes up along the
railway line up to about 3 of the way to Khandala; I have seen the
plant only at the extreme lower limit of the district covered by this
flora; Blatter has recorded the plant from Khandala itself.

Flowers and Fruits.—July to August.

Blatter in MS. catalogue; Santapau 19 August 1945, a little above
Thakurwadi station.

Iphigenia Kunth.

Iphigenia indica (Linn.) A. Gray in Kunth, Enum. 4 : 213, 1843;
FBI. 6 : 357; C. 2 : 768; Fischer 1528.

Anguillaria indica R. Br.: Gr. 222.

Melanthium indicum Linn., Mant. 2 : 226, 1771.

Common in grassy places about Khandala, often growing on paths
or under trees; it is very common on the main path at the entrance of
St. Xavier’s Villa.

Flowers.—July to September, occasionally to October. Fruits.—
July to October.

Graham; Blatt. Herb. 29670 ! Santapau 517A ! 573A ! 683 ! 1083 !
2239 ! 2481 ! 4603 ! 4684 ! 6946 ! 9270 ! 9286 !
Scilla Linn.

Scilla viridis Blatt. & Hallberg in JIB. 2 : 52, 1921.

For a full description, see reference.

The tuber was collected in leaf in Khandala and brought down to Bombay, where it flowered in March 1919. The type sheet, 14500, is in Blatt. Herb.

Urginea Steinh.

Urginea indica (Roxb.) Kunth, Enum. 4 : 393, 1843 ; FBl. 6 : 347 ; D. & G. 250 : C. 2 : 768 ; Fischer 1527.

Scilla indica Roxb., Fl. Ind. 2 : 147, 1832 ; Graham 220 (non Baker). Abundant on the S.W. part of Bahran's Plateau, especially among Terminalia trees; not seen elsewhere in Khandala.

Flowers.—March to April. Fruits.—April to May. Leaves.—June to October.

Sanata 4484 ! 4511 ! 4512 ! 8699 ! 8706 ! 8707 !

Chlorophyrum Ker.

Chlorophyrum tuberosum (Roxb.) Baker in JLS. 15 : 332, 1875; FBl. 6 : 334 ; C. 2 : 772 ; Fischer 1525.


Phalangium tuberosum Wight, Icon. t. 2036, 1853.

Anthericum tuberosum Roxb., Fl. Ind. 1 : 149, 1832 ; Dr. 219.

Roots fleshy, generally with numerous tubers which are 2-2.5 x 0.8-1 cm. Leaves about 8 in number, membranous, up to 35 x 2.5 cm., linear, tapering towards an acute apex, slightly narrowed at the base. Scape erect, naked or with only one sheath, as long as or much shorter than the leaves.

Flowers white, in simple, few-flowered racemes; bracts ovate, long subulate-acuminate; pedicels erect, up to 1.2 cm. long in fruit, joined a little below the middle. Perianth segments up to 10 x 2.5 mm., acute or subacute, 5- or more-nerved. Filaments glabrous, a little shorter than the anthers, which are about 6 mm. long. Style about as long as or a little shorter than the stamens. Capsule subglobose, strongly 3-keeled (scarcey 3-winged) with strong horizontal nerves.

Flowers and Fruits.—June.

Sanata 4482 ! 2183 ! 2184 ! 4303 ! 4504 ! 4505 !

Chlorophyrum glaucum Dalz. in Kew Journ. Bot. 2 : 142, 1850 ; D. & G. 252 ; FBl. 6 : 334 ; C. 2 : 772 ; Fischer 1526.

A very common plant during the second half of the monsoon, and gather conspicuous on account of both its leaves and its flowers; on grassy slopes in open places about Khandala.
THE FLORA OF KHANDALA.

Flowers.—July to September. Fruits.—August to October.

*Blatt. Herb.* 25805 | 25800 | 28042 | *Santapau* 440A | 567A | 632 | 719 | 801 | 802 | 2443 | 4708 | 4709 | 9291

**SMILACEAE.**

**Smilax Linn.**


*S. macrophylla* Roxb., Hort. Beng. 72, 1814; Fl. Ind. 3: 793, 1832; FRIT 6: 310; Clarke, *Smilac.* in DC., Mon. Phyt. 1: 198; Gr. 219; D. & G. 246; C. 2: 763 (non Willd.).

*S. ovatifolia* Roxb., Fl. Ind. 3: 794, 1832; Gr. 219; Wight, Icon. t. 809; D. & G. 246.

A very common plant in Khandala, in secondary scrub forests.

Flowers.—August to December. Fruits.—September to April.

*Blatt. Herb.* 26066 | 26104 | 26596 | 26596 | 27577 | *Santapau* 232/1 | 816 | 817 | 1127 | 1315 | 1411 | 1115 | 2334 | 3393 | 4063 | 4417 | 4627

**COMMELINACEAE.**

**Commelina Linn.**

*Commelina nudiflora* Linn., Sp. Pl. 41, 1753 (non. Linn., Mant. 2: 177); FRIT 6: 369; Gr. 223; Clarke in DC., Mon. Phyt. 3: 144; C. 2: 781; Fischer 1558.

*C. communis* D. & G. 252, 1861 (an cadem ac Walt., Fl. Carol. 68, 1/88).

Erect or suberect, rooting at the lower nodes. Flowers blue, exserted from the spathe. Fruit 3-celled, each of two cells with 2 seeds. the third cell with one seed only.

This seems to be a rare plant in Khandala.

Flowers.—October 1945, April 1941.

*Santapau* 219/2 | 7175

**Commelina benghalensis** Linn., Sp. Pl. 41, 1753; FRIT 6: 370; Gr. 223; Wight, Icon. t. 2065; D. & G. 283; Clarke in DC., Mon. Phyt. 3: 150; Comm. Cyt. Beng. 4: C. 2: 782; Fischer 1539.

Stems usually creeping and rooting at the lower nodes. Leaves ovate to suborbicular, acute to obtuse. Flowers blue. Underground flowers and fruits abundant from many of the lower nodes.

Fairly common about Khandala in open places.

Flowers and Fruits.—August to November.

*Santapau* 5102-5104 | 5236 | 5237 | 5273 | 9476 | 6940 | 6963 | 7470 | 23 a
Commelina obliqua Buch.-Ham. in Don, Prodr. Fl. Nep. 45, 1825; FRI. 6: 372; Clarke, Mon. 178, & Comm. Cyrt. Beng. t. 9; C. 2: 784; Fischer 1339.

C. polyspatha Wight, Icon. t. 2066, 1853.

Erect or creeping and rooting at the lower nodes; main roots fairly stout, cylindrical. Leaves variable, but generally the largest among the Commelinaceae of Khandala. Spathes usually crowded in terminal heads. Flowers blue, large for the genus. Seeds about 5 mm. long, sub-reniform.

This is about the commonest species of the genus in Khandala; it grows in grass fields or by the sides of paths.

Flowers and Fruits.—July to October.

Blatt. Herb. 27396! 27626! 28345! Gammie 15481! Santapau 718! 822! 2585! 4656!

Murdannia Royle.

Murdannia spiratum (Linn.) Brueckner, in Pfam. (ed. 2) 15A: 173, 1930.

Commelina spirata Linn., Mant. 176, 1767.


A. nanum W. Kunth; Wight, Icon. t. 2077.

Annual, about 15 cms. high, but occasionally reaching 30 cms. Leaves amplexicaul, small. Flowers in terminal or axillary panicles; peduncles and pedicels filiform. Corolla blue or pinkish, ephemeron. Fruit in Khandala specimens 3-celled, each cell usually 4-, rarely more-, occasionally 3-seeded, seeds yellowish brown.

Common about Khandala, by the sides of paths, on rocks, etc. The pinkish or salmon-pink flowered variety is rather rare.

Flowers and Fruits.—July to September, occasionally later in moist spots.


Murdannia versicolor (Dalz.) Brueckner, loc. cit. 173, 1930.


An erect herb, up to 30 cms. high, at first unbranched, at length much branched, but branches erect and not spreading.

Flowers salmon-pink; pedicels axillary, at first solitary, finally up to 5 from an axil. Capsules about as long as or just a little longer than the persistent calyx, 5- or more-seeded.
A very distinct plant on account of its habit and axillary inflorescence, but rare in Khandala.

**Flowers and Fruits.**—10 October 1944, 8 November 1943.

*Sanatpaun* 3198 | 4952!

*Murdannia nudiflorum* (Linnaeus) *Sanatpaun*, comb. nov.

*Commelina nudiflora* Linnaeus, Mant. 177, 1787 (non Linnaeus, Sp. Pl. 1753); Gr. 223.

*Aniclema nudiflora* (R. Br.) Prodr. 211 (in s.nat.); 1810; *FBL.* 6: 375; D. & G. 253; Clarke, Mon. 210, & Comm. Cyrt. Beng. t. 21; C. 2: 788; Fischer 1545.

Wholly erect, or creeping and rooting at the lower nodes; leaves up to 10 × 0.8 cm.; the strong cilia on the margins of the sheath continue downwards along the stem in a line at least as long as the sheath itself.

In a large number of fruits examined, I have found 2 cells each with 2 seeds, and one cell with 3 seeds.

**Flowers and Fruits.**—September to November.

*Matt. Herb.* 26229! *Sanatpaun* 3198/13! 4853! 3390!


*A. paniculatum* W. Wall., Cat. 5216, 1831-2, nom. nud.; Clarke, Mon. 215, 1831; *FBL.* 6: 381; C. 2: 789; Fischer 1546.

*Disacanthum junceodes* Wight, Icon. t. 2078, 1853.

*Commelina nimmoniana* Graham, Cat. 224, 1839.

The oldest name for this plant is clearly that of Wallich, but as it is a *nomem nudum* it is invalid according to the Rules, Art. 37; Graham’s description is so meagre that it can only be considered as little better than a bare name. The first complete description is that of Dalzell (1851) and in accordance with the rules of priority Dalzell’s name is the oldest valid one for this species.

A common plant in Khandala, especially on rocky ground; on the flat, rocky stretches near Kuresh stream and on Rehman’s plateau this is one of the commonest herbs at the beginning of September. The whole plant is rather variable in colour, from dark green to deep purple.

**Flowers and Fruits.**—July to October.


*Murdannia dimorphum* (Dalzell) Brueckner, loc. cit. 173, 1930.

A. paniolata Wight, Icon. t. 2075, 1853.

The only specimen from Khandala which I have examined is that in Sedgwick Herb., under number Sedg. 2617.

Cyanotis Don.

Cyanotis tuberosa (Roxb.) Schult. f., Syst. 7: 1153, 1830; FBE. 6: 386; D. & G. 256; Clarke, Mon. 249; C. 2: 793; Fischer 1549. Tradescantia tuberosa Roxb., Pl. Cor. 2: t. 108, 1798; Gr. 223.

Roots consisting of a number of fusiform tubers, each up to 4-5 cms. long, about 4-5 mm. diam., the root continuing beyond the tuber as a thin cylindric root. Stem up to 90 cms. long, erect or rooting at the lower nodes; these, at least the lower ones, are hairy with silky hairs which may reach 12 mm. in length. Radical leaves up to 16 × 2-5 cms. or larger, the upper leaves smaller; sheaths of radical leaves up to 2-5 cms. long, silky along the margin and suture, the line of silky hairs continuing downwards to the lower sheath and upwards along the leaf margins. All leaves strongly parallel-veined.

Corolla deep blue. Filaments about 15 mm. long, bearded in upper part with moniliform, purplish-blue hairs; anthers bright orange yellow. Ovary slightly 3-lobed, hairy above; stigma fusiform, white, its apex level with the anthers.

Capsule 3-locular, with usually one seed in each loculus.

Common and abundant in St. Xavier's Villa and on the South spur near the top of Rohran's Plateau. It is the only species of the genus which is conspicuous on account of the massed flowers in each head. On one occasion, after handling one of these plants, I had a severe attack of urticaria; the experience has not been repeated, but after that time I have been careful not to touch the plant with bare fingers.

Flowers and Fruits.—June to October, mainly in September.

Blatt. Herb. 28603 | Santapau 752(2) | 855 | 933 | 934 | 1092 | 3020 | 3021 | 4726 | 6942.

Cyanotis fasciculata (Heyne ex Roth) Schult. f., Syst. 7: 1152, 1830; FBE. 6: 387; Wight, Icon. t. 2086; D. & G. 255; Clarke, Mon. 253; C. 2: 387; Fischer 1550.

C. rosea, dichotricha, decumbens, Wight, Icon. tt. 2086-2088; 1833.

Tradescantia fasciculata Heyne ex Roth, Nov. Pl. Sp. 189, 1821.

An erect, annual, slender herb. Root fibrous; stem up to 29 cms. long, very rarely rooting at the lower nodes, glabrous, subglabrous or more or less floccosely woolly. Leaves recurved, with a very short sheath at the base.

Flowers in cymes from the upper or most of the axile; peduncles filiform. Flowers blue, occasionally pure white; filaments bearded with hairs of a uniform colour, blue or white, according to the colour of the petals.

Common on rocky ground.
Flowers.—August to October. Fruits.—September to October.

Blatt. Herb. 28073 ! 20565 ! 29655 ! Santapau 210/10 ! 752 (3) ! 940 ! 941 ! 1023 ! 2626 ! 2627 ! 2628 ! 4854 ! 4855 ! 4890 ! 5031 !

Cyanotis cristata (Linn.) Schult. f., Syst. 7 : 1150, 1830 ; FRI. 6 : 385 ; Wight, Icon. t. 2082 ; D. & G. 256 ; Clarke, Mon. 247 & Comm. Beng. t. 56 ; C. 2 : 734 ; Fischer 1049.


Tradescantia cristata Jacq. : Gr. 223.

A common plant about Khandala; the cymes are typical.

Flowers and Fruits.—July to November.


ZEBRINA SCHNEIZL.


In Blatt. Herb. there is a specimen, no 28865, collected during October 1918 in Khandala. The specimen has no flowers, but a note by the collector states that "leaves white-striped above, purple beneath. Cultivated". I have seen no other specimen from Khandala.

PALMAE.

CARYOTA LINN.

Caryota urens Linn., Sp. Pl. 1189, 1753 ; FRI. 6 : 432 ; Gr. 228 ; D. & G. 278 ; C. 2 : 805 ; Fischer 1550 ; Blatter, Palms Brit. Ind. 339, t. 57, f. 48.

Trunk 10-20 m. high, in dense jungle at Meroli many specimens reach over 30 m. high. A very elegant tree, especially in the young stages.

Very common in dense forest. After the ripening and falling of the fruits, there is often a large number of them germinating on the ground round the parent plant; seedlings are elegant miniature palms; I have often noticed such seedlings on Meroli Plateau at the beginning of the rainy season.

Flowers.—October to May. Fruits.—January to June.

Santapau 1983 ! 3564-3566 ! 4740 !

PHOENIX LINN.

Phoenix sylvestris (Linn.) Roxb., Hort. Beng. 73, 1814 & Fl. Ind. 3 : 787, 1839 ; FRI. 6 : 426 ; Gr. 224 ; D. & G. 278 C. 2 : 801 ; Fischer 1550 ; Blatter, Palms 3 & tt. 2-3.

Elate sylvestris Linn., Sp. Pl. 1189, 1753, pro parte.
A much smaller palm than the previous species, in open country, reaching 2-5 m. The fruit is orange yellow and edible, but rather poor in quality.

The In St. Xavier’s Villa and other open places around Khandala ravines, wild date palm, perhaps cultivated. It is very rare in the it is tolerably common. It is far from pretty; in most cases leaves fall off leaving behind a length of the petiole, and this gives the whole tree a rather wild aspect.

Fruits.—March to June.

Blätter and Hallberg in MS. catalogues; Santapau, passim!

**BOURASSUS** Linn.


*B. flabelliformis* Morr., Syst. (ed. 13) 827, 1774 (ex Cooke); Gr. 226; D. & G. 278.

For a full description of the plant, see Blatt, loc. cit.

Occasionally planted in gardens in Khandala; I have not seen it wild anywhere in the district.

*Santapau, cultivated!*

**TYLIACEAE.**

**TYPHACEAE.**

*Typha angustata* Bory & Chaub., Exp. Sc. Mor. 3 (2): 33, 1832; FBL. 6: 489; Graebner in Pfreich. 2: 14, f. 4 F; C. 2: 816; Fischer 1571.

*T. elephantina* Gr. 227, 1839 (non Roxb.).

A rare plant in Khandala; in Blatt. Herb. there are a few specimens collected on 29-4-1917 and Sept. 1918; I have not seen the plant in the district.

*Blatt. Herb. 26308! 26369! 26370! 26317! 26065!*

**ARACEAE.**

*Cryptocornia spiralis* (Retz.) Fisch. ex Wydler in Linnaea 5: 428, 1830; FBL. 6: 494; Wight, Icon. t. 773; Engler in DC., Mon. Phan. 2: 628, & in Plana. 2(3): 152, f. 90 D-C, & in Pfreich. 73: 237, f. 58 K; C. 2: 818; Blatt. & McO. in JBNHS. 35: 15; Fischer 1575.

Arum spirale Retz., Obs. 1: 30, 1779; Graham, 228.

In rock pools near St. Peter’s School, and along the sandy banks of Kune stream, usually growing partly submerged in water. An inconspicuous grass-like plant, in dense clusters and gregarious.

*Flowers and Fruits.—October to January.*

*Santapau 214/10! 1946! 3046-3049! 5206! 5209! 5921!"
Arisaema Nutt.

*Arisaema murrayi* (Graham) Hook. in Bot. Mag. t. 4388, 1848; FBI. 6: 507; D. & G. 258; Engler in Mon. 552, & Pfreich. 162; C. 2: 821; Blatt. & McC. 18; Fischer 1855.

*Arum Murrayi* Graham, Cat. 229, 1839.

For a full description of the plant, see Blatt. & McC., loc. cit. Most plants have only one leaf, occasionally two; in the latter case one leaf is much larger than the other. Some leaves have two clear intramarginal nerves, others have but one, or at any rate a clear one, the second nerve being either absent or very faint.

The appendix of the spadix is usually shorter than the limb of the spathe, but it so bent that it often protrudes from the spathe. As regards the sexes of the flowers, I have found plants with only male flowers or with male above, female flowers below on the same spadix. I have not seen plants with only female flowers. Most of the female flowers seem to be covered with minute cystoliths, which are whitish and quite prominent.

Common in Khandala in secondary forests or among bushes, sometimes epiphytic.

*Flowers.—*June to July. *Fruits.—*August to October.

McCann, Bivi, both ex Blatt. & McC., Revis. ; Sedgwick 2616 ! Aitken 1226 ! Ganseraus 214/12 ! 575 ! 740 ! 1297 ! 2070 ! 2191 ! 2192 ! 2187 ! 2193 !

*Arisaema tortuosum* (Wall.) Schott., Melet. 1: 17, 1832, ; FBI. 6: 502; Engler, Mon. 545 & Pfreich. 190, f. 42; C. 2: 820; Blatt. & McC. 21; Fischer 1854.

*Arun tortuosum* Wall., Pl. Ash. Rat. 2: 10, 1830.

*Arun curvatum* Wight, Icon. t. 788, 1844; D. & G. 258 (non Kunth).

The occurrence of this plant is given on the authority of Blatter who mentions it in his manuscript catalogue and of Blatter & McCann who in their Revision mention having seen Chibber’s specimen from Khandala. I have not seen the plant in the district.

Chibber ex Blatt. & McC.; Blatter in MS. catalogue.

*Arisaema neglectum* Schott., in Bonpl. 7: 26, 1859; FBI. 6: 504; Engler in Mon. 554, & Pfreich. 192, f. 43; Blatt. & McC. 21.

*A. tortuosum* Schott. var. *neglectum* Fischer in C. 1585, 1931.

For a full description of the plant see Blatt. & McCann in Revision or Engler in Pflaenzreich, loc. cit.

My Khandala specimens are all one-leaved and either monoecious or dioecious. Tuber about 2 cms. diam., depressed globose, with numerous roots coming from the upper part of the tuber. Petiole up to 25 cms. long; leaflets 6-7, subaest, ovate or elliptic, acute or sub-accinate, margins strongly waved, nerves about 10 pairs joining in
an intramarginal nerve 3-5 mm. from the edge. Peduncle nearly as long as the petiole, green or with a few purple spots or striæ. Spathe green all over; tube cylindrical without constrictions at the mouth; limb incurved at nearly right angles to the tube, acuminate; average size of the spathe: tube 4 cms. long, limb 7 cms. long, 4 cms. broad at about the middle. Spadix: flowers all male in some specimens, male above, female below in others; anthers 2, 4 or 6 on a stout filament; fertile part of spadix about 3 cms. long, sterile part greenish or purplish, long exserted, the whole spadix from a little longer than to twice as long as the spathe, sigmoid.

This species seems to be fruiting quite as freely as *A. Murrayi*, but in the absence of the sterile appendix of the spadix it is not possible to distinguish from the latter species.

**Flowers. July. Fruits. August to October?**

*A. chinensis* Bl. in Rumph. 1: 23, 1826; FBI. 6: 504; Engler in Mon. 552 & in Pfreich. 179; C. 2: 821; Blatt. & McC. 19; Fischer 1585.

*Arum crubecens* D. & G. 258, 1861.

Blatter in his MS. catalogue mentions this plant from Khandala. On the other hand in their Revision Blatter and McCann state: “We doubt the occurrence of this species in the Presidency”. I have not seen any specimen from Khandala or from any other place in the State of Bombay.

**SAUROMATUM SCHOTT.**

*Sauromatum guttatum* (Wall.) Schott., Mee. 1: 17, 1832; FBI. 6: 508; Engler in Mon. 570, & in Pfreich. 123, f. 18 A-L; C. 2: 824; Blatt. & McC. 25.

*Arum guttatum* Wall., Pl. As. Rar. 2: 10, t. 115, 1831.

For a full description of this plant, see Blatter & McCann, loc. cit. and McCann in JBNHS 34: 518, f. 1, 1930.

In St. Xavier’s Villa grounds I have found giant specimens of the leaf, their measurements being: petiole up to 1-5 m. high, 5 cms. diam. below, blade over 1 m. diam. Peduncle up to 9 cms. long; spathes, (tube and free portion included) up to 65 cms. long; spadix up to 43 cms. long. When in fruit, the spadix above the ovaries decays, whilst at the height of the ovaries it becomes enlarged to form almost a perfect ball about 3 cms. diam. The fruit is at first green, then reddish or purple, at length almost black.

Common in Khandala, but easily missed; first the flowers appear, then when the plant is already in fruit, the lea expands.

**Flowers.—May to June. Fruits.—July to September.**

*Blatter & McCann ex Revision; Santapau 214/20 ! 585 ! 047 ! 648 ! 649 ! 1083 ! 9218 ! 9219 ! 9220 !
Amorphophallus Blume.


Conophallus commutatus Schott in Bonpl. 7: 28, 1859.

Dracontium polyphyllum Gr. 229, 1839 (non Denst.).

Amorphophallus silvaticus: D. & G. 259, 1861 (non Kunth.).

The appendix of the spadix is locally eaten as a vegetable. This is a most noticeable plant: the carrion stench emitted by the inflorescence is almost overpowering and can be felt a long way away from the plant; on several occasions I have had people complaining of defecation sewage in the neighbourhood of the place where the plant grew.

A common plant in the undergrowth about St. Xavier's Villa and Convalescent Home.

Flowers.—May to June. Fruits.—June to July.

Blatter in MS. catalogue; Mc Cann ex Blatt. & McC. in Revision Santapau 518! 530! 2067! 2094! 2167! 2217! 4403-4406! 4439! 5383! 9073!

Amorphophallus bulbifer (Roeb.) Blume in Rumph. 1: 148, 1835; FRI. 6: 516; Engler in Mon. 317 & in Pfeirich. 98; C. 2: 825; Blatt. & McC. 27; Fischer 1857.

Arum bulbiferum Roxb., Fl. Ind. 3: 510, 1832; Gr. 229.

For a full description, see Blatt. & McC., loc. cit.

This plant is abundant on Meroli plateau, in the undergrowth of dense forest. I have not seen it anywhere else in the district. Bulbils appear in the primary and secondary forks of the leaves; segments of leaves (or "leaflets") up to 25 x 8.5 cm., elliptical, tapering at both ends, acuminate. The presence of bulbils and the shape of the leaf segments are typical. This plant has only been seen in leaf.

The petioles of my specimens reach 1 m. in length, and are green with whitish, elongated patches.

Santapau 214/15! 849! 2574! 4670! 4671! 5253! 5254!

Anoectes Nimmo.

Ariopsis peltata Nimmo in Graham, Cat. 252, 1899; FRI. 6: 519; D. & G. 259; Engler in Mon. 528 & in Pfeirich. 71: 130, f. 29; C. 2: 827; Blatt. & McC. 50; Fischer 1860.

Romusia vivipara Wight, Icon. t. 300, 1844-1845 (non Schott.).

Common and gregarious on trunks of trees (especially on Ficus glomerata Roxb.) or on rocks during the first half of the monsoon. Locally the leaves are used as a vegetable.

Flowers.—June to July. Fruits.—July to August.

Hailberg ex Blatt. & McC., Revision: Santapau 351 A! 587! 633! 2105! 2118! 4514! 4524! 6753-6786! 9147!
RENUSATIA Schott.

Renusatia vivipara (Roxb.) Schott, Melct. 1: 18, 1822; FBI. 6: 521; D. & G. 259; Engler in Mon. 496; Krause in Frech. 71: 16, f. 4, A-M; C. 2: 528; Blatt. & McO. 30; Fischer 1583.

Arum viviparum Roxb., Hort. Beng. 65, 1814 & Fl. Ind. s. 3: 496, 1832; Gr. 228; Wight. Icon. t. 798.

Roxburgh’s name in Hort. Beng. is validly published by reference to Rheed’s Hort. Malab. 12: t. 9, and is therefore the oldest available one for this plant. Loddige’s name (Calamium viviparum Lodd., Bot. Cab. t. 251, 1920) is six years later than that of Roxburgh.

Common in Khandala, especially on Bhima Hill, generally epiphytic. The scape often bears adventitious roots at the lower nodes, or, if the scape is prostrate along the ground, then at all the nodes.

Locally the leaves are used as vegetables; the tubers are used against open flesh wounds. In times of scarcity the tubers are eaten but they require very careful boiling to rid them of some very irritating crystals.

Flowers and Fruits.—Not seen in Khandala. Bulbiferous shoots.—August to October.


Potri Spreng.

Potri scandens Linn., Sp. Pl. 968, 1753; FBI. 6: 551 pro parte; Gr. 229; D. & G. 257; Engler in Mon. 54 & in Frech. 21: 26; C. 2: 528, pro parte; Blatt. & McO. 31; Fischer, 1562.

For a full description of the plant, see Engler, loc. ult. cit., or Blatt. & McO. The occurrence of this plant is given on the authority of Blatter who mentions it in his MS. catalogue; I have not seen the plant in Khandala.

Colocasia Schott.


Arum Colocasia Linn., Sp. Pl. 965, 1753; Gr. 228.

Colocasia antiquorum Schott, Melet. 1: 18, 1832; FBI. 6: 525; Engler in Mon. 491 & in Frech. 71: 65; C. 2: 829; Fischer 1580.

For a description of the plant and its many varieties, see Engler in Frech., loc. cit. Cultivated in gardens about Khandala; the leaves are eaten as vegetable. I have often seen it in leaf in St. Xavier’s Villa; but have seen it in flower only on one occasion.

Santapau, in gardens, 13035!
POTAMOGETONACEAE.

POTAMOGETON Linn.

*Potamogeton indicus* Roxb., Pl. Ind. 1: 452, 1820; FBL. 6: 565; Gr. 200; D. & G. 248; C. 2: 837; Aschers. & Graeb. in Pfeirch. 31: 64; Fischer 1900.

Stems creeping below and rooting at the nodes; pedicels from about as long as or up to three times longer than the leaf blade; stipules scarious, somewhat sheathing. Spikes generally above the surface of the water, erect. Fruit with a strong ventral keel and two faint lateral keels.

Common in Khandala talao; leaves mostly floating, a few occasionally submerged.

*Flowers.*—Cold season. *Fruits.*—Hot season.

*Blatt. Herb.* 26143! 28541! 29543! 28545! *Santapau 3763! 3764! 3765! 3766!*

ERIOCAULACEAE.

ERIOCAULON Linn.

*Note.* All my specimens of *Eriocaulon* have been checked by Dr. H. N. McKenney of New York, to whom I extend sincere thanks.


The occurrence of this plant is given on the authority of Fysan, who refers to *Mezbold* 9102, 0103 in Calcutta Herb.


*Eriocaulon elegans* Fysan in JIB. 2: 316, 1921.

*Blatt. Herb.* 2794, ex Fysan; *Santapau 9604-9608! 10280-10281 10447!

*Eriocaulon minutum* Hook. f. in FBL. 6: 579, 1893; Ruhl. in Pfeilch. 13: 111, no. 190; Fysan, 317.

*Mezbold* 9105, in herb. Calcutta, ex Fysan; *Santapau 2928!*

*Eriocaulon thomasi* Fysan, *ibid.* 318, 1921.

*Mezbold* 9104 in herb. Calcutta; this seems to be the type or at least an isotype of this species; see Fysan, loc. cit.

*Eriocaulon sallyanum* Royle, Ill. 409, t. 97, f. 1. 1830.

*E. trilobum* Buch.-Ham. ex Koen., in Linnaea 27: 645, 1856; FBL. 6: 583; C. 2: 548; Fysan 206; Ruhl. 74.

This seems to be a fairly common species in Khandala; it occurs in rice fields after the harvest forming dense mats on the ground; heads are very dark, almost black.

*Blatt. Herb.* 27983! 28009! 28068! *Santapau 218/4! 767! 2925! 3127! 4817! 4844! 4945! 1290 in part!"
Eriocaulon cineumum R. Br., Prodr. 254, 1810; Moldenke, in litt. 
Fril. 6: 577; C. 2: 845; Raddl. 111; Eysen 3: 15.

My specimens were collected from a drying pool in St. Xavier’s Villa; 
most of the pool was covered with a large mass of a very gregarious 
plant.

Santapau 8101!


The following description is taken from Moldenke, loc. cit.: “Acaulescent herb; leaves basal, rostrate, linear, membranous, uniformly green 
on both surfaces, dull, 2-4 cm. long, about 1 mm. or less wide at the 
midpoint, acute at the apex, somewhat inconspicuously fenestrate 
toward the base, glabrous on both surfaces, the venation obscure; 
sheaths rather close, about 1.5 cm. long, often conspicuously twisted, 
glabrous, obliquely split at the apex, the blade short, usually erect, 
subacute or blunt at the apex; peduncles numerous, 1-50 per plant, 
very slender, stramineous, 3-13-5 cm. long, 3-costate, much twisted, 
glabrous; heads small, grayish stramineous, hemispheric, 2-3 mm. 
in diameter; involucral bracteoles rather few, elliptic, stramineous, 
about 2 mm. long and 0.7 mm. wide, attenuate-acute or subacute 
at the apex, glabrous and shiny; receptacle long-villous; receptacular 
bracteoles obovate, whitish-subhyaline, about 1.4 mm. long and 0.5 mm. 
wide, concave-cuculate, abruptly subacute at the apex, glabrous; 
staminate florets: sepals 2, oblanceolate, hyaline, about 0.8 mm. long 
and 0.2 mm. wide, abruptly short-acute at the apex, glabrous; 
petal-tube about 0.7 mm. long, very slender; stamens 4; anthers 
brown, small; pistillate florets: sepals 3, free, hyaline, oblanceolate, 
about 1.3 mm. long and 0.4 mm. wide, sharply acute at the apex, pilose 
on the back toward the apex; petals 3, free, hyaline, narrowly oblong, 
about 1.5 mm. long and 0.4 mm. wide, sharply attenuate-acute at the 
apex, sparsely pilose on the upper half of the back; ovary subglobose, 
about 0.5 mm. long and wide, glabrous, 3-sulcate, 3-celled, 3-ovululate; 
style about 0.4 mm. long, glabrous; stigmas 3, about 0.4 mm. long.”

“The type of this little species was collected by Blatter, Hallberg 
and McCann (no. 28099, in part) at Khandala, Bombay, India, in October, 
1918, and is deposited in the Britton Herbarium at the New York Botanical 
Garden.”


Moldenke’s description is as follows: “Acaulescent herb; leaves 
basal, apparently very few or even absent, grass-like, uniformly bright-
green on both surfaces, erect, thin-membranous, 13-14 cm. long, many-
nerved, not plainly fenestrate, acute at the apex, glabrous on both 
surfaces, sheaths very lax, foliaceous and conspicuous, 10-13 cm. 
long, thin-membranous, glabrous, obliquely split at about 2/3 of its length 
and prolonged into an erect, foliaceous, acute or attenuate-acuminate,
The Flora of Khandala.

Glabrous blade; peduncles 12 or more per plant, 10-14 cm. long, 3-costate, flattened in drying, very slightly twisted, glabrous; heads conic, gray, 5-8 mm. long and wide; involucral bracts similar to the receptacular ones but slightly broader and blunter; receptacular bracts very numerous and conspicuous, dark-brown (except at the base), angular-obovate, about 1-0 mm. long and 1-7 mm. wide, keeled transversely at the widest part and slightly umbo-nate on the back, ciliate, apiculate at the apex, farinose above the keel on the back, otherwise glabrous; staminate florets: sepal 3, free, oblanceolate, brownish, about 1-5 mm. long and 0-4 mm. wide, obtuse at the apex, very minutely ciliolate at the apex; petals 3, united into a stramineous membranous tube about 1-3 mm. long, 3-lobed at the apex, the lobes narrow-attenuate, hyaline, with a black gland below the apex and a small erect tuft of hair at the apex; stamens 6; pistillate florets: sepal 3, filiform, free, hyaline, about 1-3 mm. long, densely long-villous from near the base to the apex; pistil 1-7-2 mm. long, glabrous; ovary 3-celled, 3-sulcate, 3-ovulate, glabrous."

The type of this very distinct species was collected by H. Santapau (no. 2924) at Khandala, on the Kune Plateau, Bombay, India, on October 4, 1943, and is deposited in the Britton Herbarium at the New York Botanical Garden.

This is a very common species all over Khandala during the latter part of the monsoon; it occurs in rock pools, near Khandala Hotel and elsewhere. Typically this plant has the largest leaves and sheaths among the Eriocaulons of Khandala, and the whole plant looks rather pale green when fresh.

**Blatt. Herb. 28071! Santapau 891! 2924 (type)!**


This is the largest plant of the family in Khandala; it occurs in rock pools during the rains, the lower part of the plant being submerged. Scapes up to 30 cms. long, slender, filiform. In his description Moldenke states: "This variety differs from the typical form of the species in having the peduncles densely spreading-pilose or villous. The type was collected by H. Santapau (no. 2182) in rock pools at Khandala, Bombay, India, on September 5, 1941, and is deposited in the herbarium of St. Xavier's College at Fort, Bombay." The exact locality of this plant is on Kune Plateau, about half way between Kune village and the Katkari Settlement.

**Santapau 218/2 (type)! 2567! 2568! 4845!**

**Eriocaulon santapau** Moldenke in Phytologia 3: 166, 1949.

The following is Moldenke's description: "Acaulescent herb; leaves basal, rosetulate, grass-like, membranous, about 1 cm. long, about 3 mm. wide at the mid-point, acute at the apex, not fenestrate, glabrous on both surfaces, indistinctly many-nerved; sheaths rather lax, green, 1-8-2-8 cm. long, not twisted, glabrous, indistinctly nerved, obliquely
split at the apex, the blade short, blunt; peduncles about 60 per plant, slender, stramineous, 4-costate, 8-20 cm. long, glabrous; heads small, stramineous, hemispheric, 2.5-3 mm. in diameter; involucral bractlets few, elliptic, about 2 mm. long and 1 mm. wide, stramineous, obtuse at apex, glabrous; receptacle densely long-villous; receptacular bractlets brownish, obovate, somewhat concave-cuculate, about 1.3 mm. long and 0.6 mm. wide, rounded at the apex, finely white-pilose on the back toward the apex; staminate florets: sepals 3, stramineous, connate only at the very base, about 1 mm. long and 0.2 mm. wide, obtuse and slightly white-pilose on the back at the apex; petals 3, united into a whitish membranous tube about 1.7 mm. long, the free lobes about 0.2 mm. long; stamens 6; anthers brown; pistillate florets: sepals 3, hyaline, narrowly oblong, free, about 0.6 mm. long and 0.1 mm. wide, acute at the apex, glabrous throughout; petals 3, free, hyaline, narrowly oblong, about 0.8 mm. long and 0.1 mm. wide, subacute at the apex, glabrous; ovary subglobose, about 0.4 mm. long and wide, glabrous, 3-ovulate, 3-celled, 3-ovulate; style about 0.6 mm. long, glabrous: stigmas 3, about 0.4 mm. long."

"The type of this very distinct species was collected by H. Santapau and C. McCann (no. 1290) in a stream near Kune Mission at Khandala, Bombay, India on November 7, 1942, and is deposited in the Britton Herbarium at the New York Botanical Garden."

Eriogonum vanheurckii Muell.-Arg. in Heurck, Obs. Bot. 2: 98, 1870; Moldenke in litt.

This plant is not mentioned in Eyson's monograph. The plants listed below have been identified by Moldenke.

*Santapau* 218/3 ! 2566 ! 4843 !

**Cyperaceae.**

All the Cyperaceae of Khandala have been checked by Mr. E. Nelmes of Kew Herb., to whom I gladly acknowledge my indebtedness from these pages.

**Cyperus Linn.**

*Cyperus albo-marginatus* Mart. & Schrad. ex Nees in Mart., Fl. Bras. 2(1): 9, 1842; C. 2: 858; Kuckenth. in Pfreih. 101: 359, f. 42 E-II.

*Cyperus albo-marginatus* Nees in Mart., Fl. Bras. 2(1): 9, 1842; FBI. 6: 594; Fischer 1628; Blatt. & McCl. in JBNHIS. 37: 29.

St. Mary's Villa grounds, McCann C. 103; flowers and fruits: Sept. 1918.

*Cyperus aristatus* Rottb., Descr. & Icon. 23, t. 6, f. 1, 1773; FBI. 6: 609; C. 2: 866; Blatt. & McCl. 263; Kuckenth. 502, f. 55 F-J. Blatter, Hallberg and McCann, 2403, 2404, 3064; flowers and fruits July 1918.
Cyperus articulatus Linn., Sp. Pl. 44, 1753; FBI. 6: 611; Blatt. & McC. 269; Kuekenthal. 77.
This plant is not given in Cooke's Flora. For a description, see Blatt. & McC., or Kuekenthal, loc. cit.

Flowers and Fruits.—April 1917.
McCann 3195.

Cyperus brevifolius (Roth.) Hassk., Cat. Hort. Bogor. 24. 1844; Kuekenthal. 600.

Kyllinga brevifolia Rottb., Descr. & Icon. 13, t. 4, f. 3, 1773; FBI. 6: 588; Clarke, Illustr. Cyp. t. 1, f. 1-4; Blatt. & McC. 25.

Not in Cooke's Flora. For a description see Blatt. & McC., or Kuekenthal, loc. cit.

Flowers and Fruits.—March 1925; April 1926; June 1944; July 1917.
Sedgewick 2571; Blatt. & McC. 3033, 3041; McCann 400, 402, 343, 346; Santapau 4446! 4447!

Cyperus compressus Linn., Sp. Pl. 46, 1753; FBI. 6: 605; C. 2: 866; Blatt. & McC. 269; Kuekenthal. 166, & f. 4 A-D.

Flowers and Fruits.—September 1919.
St. Xavier's Villa, McCann C. 113.

Cyperus corymbosus Rottb., Descri. & Icon. 42, t. 7, f. 4, 1773; FBI. 6: 612; C. 2: 870; Blatt. & McC. 270; Kuekenthal. 80, f. 10.

Blatter and McCann in their Revision, loc. cit., have fused C. tegetum Roxb., C. tegetiformis Roxb. and C. Pangorei Rottb. with the present species. The sheets of C. corymbosus from Khandala are not in the Blatt. Herb., and in consequence I am unable to decide their identity for certain. The following references are given on the authority of Blatter and McCann, and must be taken as representing C. corymbosus understood sensu latores of these two authors.

Blatter 1866; McCann C. 117; Blatter, Hallberg and McCann 2420, 3049; Blatter and Hallberg, Khandala to Karjat, 3171.

Cyperus cyperoides (Linn.) O. Kuntze, Rev. Gen. 3: 333, 1895; Kuekenthal. 514.

Scirpus cyperoides Linn., Mant. 2: 181, 1771.

Mariscus Sieberianus Nees in Linnaea 9: 239. 1835; FBI. 6: 622; Clarke, Illustr. Cyp. t. 23, f. 5-6; Fischer 1845.

M. paniculatus Vahl, Enn. 2: 337, 1806; Blatt. & McC. 533.

For a description of the plant, see Blatt. & McC. or Kuekenthal. My plants were found growing by the side of a pool at the foot of Behran's Plateau.

Flowers and Fruits.—July 1917; August 1942: October 1643.
Sedgewick 2553; Blatter, Hallberg and McCann, 28580; Santapau 641! 2812!
Cyperus cyperoides var. subcompositus (Clarke) Kuekenthal in Pfreich. 101: 518, 1936.

Roscoea Sieberiana var. subcomposita Clarke in FBI. 6: 522; 1893.


Mariscus konkanensis Sedgwick in JBNHS. 25: 698, 1918; Blatt. & McC. 534.

Blatter in MS. catalogue; Bhide 18417 ex Blatt. & McC., Revis.

Cyperus difformis Linn., Cent. Pl. 2: 6, 1756 & Ameen. Acad. 4: 302, 1760; FBI. 6: 599; C. 2: 862; Fischer 1640; Blatt. & McC. 259; Kuekenthal. 237, f. 27 F.H.

My own specimens were collected in a pool near Khandala station. They are not common in the district.

Woodrow; Sedgwick 2551; McCann 92; Blatter and McCann 3155, 3168; Santapau 483!

Cyperus digitatus Roxb., Hort. Beng. 81, 1814 & Fl. Ind. 1: 205, 1832; FBI. 6: 618; C. 2: 873; Fischer 1642; Blatt. & McC. 277; Kuekenthal. 55.

Sedgwick, in a rivulet, 2572! Blatter and McCann, Soldier's Play ground, in watercourse, 2401; McCann C 219.

Cyperus eleusinoides Kunth., Enum. 2: 39, 1837; FBI. 6: 608; C. 2: 868; Blatt. & McC. 267; Kuekenthal. 144.

Flowers and Fruits.—March 1917, 1929; May 1917; July 1918.

McCann 3187, 3188; Blatter and McCann 3156, Khandala tank; Blatter, Hallberg and McCann, 3048: Blatt. Herb. 22806

Cyperus exaltatus Retz., Obs. 5: 11, 1789; FBI. 6: 617; C. 2: 872; Blatt. & McC. 275; Kuekenthal, 64, f. 9 A-F.

Flowers and Fruits.—July 1916, 1917; Sept. 1918; October 1905.

Sedgwick, in a rivulet 2572! Blatter 1854; McCann C. 207; Blatter and McCann, 3166; Blatter, Hallberg and McCann 2410, 3056.

Cyperus flavescens Linn., Sp. Pl. 68, 1753; Clarke in JLS. 21: 36, t. 4, f. 40-41, 1881; Kuekenthal. 398.

Pyrus flavescens Reich, Fl. Germ. Exc. 72, 1839; Nees in Linnaea 9: 283, 1835; FBI. 6: 589; Blatt. & McC. 27.

For a description of this plant, see Blatt. & McC. or Kuekenthal, loc. cit.

Gummie 14386; Herb. Econ. Bot. Bombay (without number); McCann C. 187.
Cyperus globosus Allion. Fl. Pedem. 49, 1789; C. 2: 857.
Kuekenthal. 352.


P. flavidus Retz., Obs. 5: 13, 1789 (nec Clarke, nec aliorum).

P. capillaris Nees in Linnaea 9: 283, 1834; FBI. 6: 591.

Flowers and Fruits.—March 1917, 1929; September 1919.
Blatt and McCann 3161.


C. Iria var. paniciformis Clarke in FBI. 6: 607, 1893.

This is one of the commonest of the Cyperaceae in Khandala; it is a conspicuous plant, rather rank in appearance. Some of my specimens were collected in rice fields after the harvest, or in moist ground along the railway line.

Flowers and Fruits.—March 1917; May 1917; July 1916; August 1916, 1942, 1945; September 1919; November 1943.

Woodrow; Sedgwick 2560; Blatt and McCann 3162; Blatt, Hallberg and McCann 1993, 1994, 3046, 28603; Santapau 6301 3123! 6847!

Cyperus iria var. parviflorus (Nees) Miq., Fl. Ind. Bat. 3: 270, 1859; Kuekenthal. 152.

C. parviflorus Nees in Wt., Contrib. 87, 1832, excl. syn. (non Vahl).

Flowers and Fruits.—July 1942.

Santapau 557; in rice fields.

Cyperus hydron Ewld., Cat. Hort. Vindob. 1: 94, 1842; Kuekenthal. 606, f. 64 C-D.

Hydron monocephala Rothb., Deser. & Icon. 13, l. 4, 1773 (excl. syn. nonnullis); FBI. 6: 588 & Ill. Cyp. t. 2, f. 1-2; C. 2: 876; Fischer 1924; Blatt. & McC. 25.

Gammie 13388.

Cyperus lateaeocatus Boeck., in Flora 42: 441, 1859; C. 2: 855; Kuekenthal. 392.

Pycnus lateaeocatus Clarke in FBI. 6: 590, 1883 & Illust. Cyp. 3; Blatt. & McC. 27.

I have seen this plant only on the higher hill tops in the district.

Flowers and Fruits.—September 1942, 1943.

Chibber; Santapau 953! 2505!
Cyperus lenocephalum Retz., Obs. 5: 11, 1789; FBI. 6: 602; C. 2: 864; Blatt. & McC. 261; Kuekenth. 278, f. 31 A-D.

*Flowers and Fruits.*—July 1913.
*Santapau 1249!*


*Pycreus malabaricus* Clarke in JLS. 34: 12, 1898; Blatt. & McC. 28, t. 3.
Cooke; Blatter, Hallberg andMcCann 3044; Herb. Econ. Bot. Bombay; Santapau 4840!

*Cyperus metzii* (Hochst.) Mattf. & Kuekenth. in Pfreich. 101: 612, 1936.

*Kyllinga squamulata* Thomn. ex Vahl, Enum. 2: 381, 1806; FBI. 6: 589; Clarke, Illustr. Cyp. t. 1, f. 5-7; Fischer 1624; Blatt. & McC. 24.


*Flowers and Fruits.*—July 1916, 1911; October 1921.
Seligwick 7228, on a wall! Blatter and McCann 3637, 3057.

*Cyperus michelianus* (Linn.) Link, subsp. *pygmaeus* (Rottb.) Aschers. & Graebn., Syn. 2(2): 273, 1930; Kuekenth. 312, f. 35 E-G.
*Cyperus pygmaeus* Rottb., Descr. & Icon. 20, t. 14, f. 4-5, 1773; C. 2: 855.

*Juncellus pygmaeus* Clarke in FBI. 6: 596, 1893; Fischer 1629.


*Flowers and Fruits.*—March 1917; April 1929; May 1917.
McCann, in a marsh near the station, 379, 393, 408, 409; Blatter and McCann 3163, 3173, 3174, 3186.

*Cyperus nutans* Vahl, Enum. 2: 363, 1806; FBI. 6: 607; C. 2: 868; Fischer 1640; Blatt. & McC. 266; Kuekenth. 141, f. 5 A-D.

*Flowers and Fruits.*—November 1916; January 1943.
Woodrow; Blatter & McCann 2756; Santapau 1527; 2523 !

*Cyperus pangorei* Rottb., Descri. & Icon. 31, t. 7, f. 3, 1773; Kuekenth. 76 (non Retz., nec C. B. Clarke).

*C. Gorgybosus* Kunth, Beck et alior., non Rottb.
*C. tectum* Boxb., Fl. Ind. 1: 208, 1832; Clarke in FBI. 6: 613, & Illustr. Cyp. t. 17, f. 1.

*Santapau 1328! In St. Xavier's Ravine, November 1942.
There is some confusion in the literature as regards this plant and its relation to *C. corymbosus* Rottb. The following key is based on that of Kuekenthal pp. 73-74:

1. Rhizome shortly creeping; scales somewhat remote, oblong-elliptic, rufous... ... ... *C. Pangorei*.

2. Rhizome long-creeping, often stoloniferous; scales mostly densely imbricate, broader, dark or blood-coloured... ... *C. corymbosus*.

*Cyperus pumilus* Linn., *Con. Pl.* 2: 6, 1753; & Amoen. Acad. 4: 302, 1788; *C.* 2: 857; Kuekenthal. 375, f. 44 A-E.


*P. nitens* Nees: Clarke in FBI. 6: 591, 1893.

*F. Fowers and Fruits.*—March 1917, 1929; April 1929; May 1917; September 1912, 1919.

Gammie 15387; McCann 351, 3184, C. 119. C. 129.


*C. membranaceous* Vahl, Enum. 2: 330, 1806.

Meebold 8843, ex Kuekenthal. loc. cit.


*Fowers and Fruits.*—August 1916.

Blatter, Hailberg and McCann 3045, 4066.

*Cyperus sanguinolentus* Vahl, Enum. 2: 351, 1806; *C.* 2: 356; Kuekenthal. 385.

*Pycreus sanguinolentus* Nees in Linnæa 9: 283, 1836; FBI. 6: 690; *Fischer* 1627; Blatt. & McC. 28.

*Fowers and Fruits.*—March 1917, 1929; April 1929; May 1917; September 1895, 1918.

Woodrow; Gammie 15407; Herb. Econ. Bot. Bombay; McCann 3186, C. 110, 399, 103; Blatter and McCann 3160, 3191.


*Kylinga triclops* Rottb., Descr. & Icon. 14, t. 4, f. 6 (excl. cit. Rheed.) 1773; FBI. 6: 587; *C.* 2: 677; *Fischer* 1023; Blatt. & McC. 29.

*Fowers and Fruits.*—July 1917, 1943.

Blatter, Hailberg and McCann 2435, 27457; Santapau 2256.
FIMBRISTYLIS Vahl.


Flowers and Fruits.—March 1918, 1929; April 1908; May 1917, 1942.

Talbot 4790; Blatter and McCann 3175, 3177; McCann 394, 392, 1866, 1867, 3190; Santapau 419!


F. diphylla Vahl, var. annua Clarke in FBI. 6: 637, 1893.

Flowers and Fruits.—September 1919.

Sedgwick 2588! McCann C. 82.


This is one of the commonest plants of the genus in Khandala.

Flowers and Fruits.—January 1945; February 1946; March 1917, 1929, 1944; April 1917, 1942; May 1917, 1942.

Woodrow: McCann 342, 343, 385; Blatter and McCann 3152; Santapau 212/20! 478! 3841! 5919! 8634!

Fimbrystylis digitata Boeck in Flora 61: 35, 1878; FBI. 6: 648; C. 2: 884; Blatt. & McC. 545.

This is a common species in Khandala and conspicuous in the monsoon; the inflorescence is white and rather conspicuous among small grasses.

Flowers and Fruits.—May 1917; June 1943; July 1916, 1941, 1942; August 1906.

Sedgwick 2595! Blatt. 1858; McCann 1857, 3194, 3220; Blatter, Hallberg and McCann 3052; Santapau 212/7! 572! 2214!

Fimbrystylis diphylla (Retz.) Vahl, Enum. 2: 289, 1806; FBI. 6: 636; Nelmes in litt.

Scirpus diphyllus Retz., Obs. 5: 15, 1789.

Flowers and Fruits.—March 1929; June 1917; July 1917; September 1902, 1918, 1919; October 1918.

Sedgwick 2888! Blatter, Hallberg and McCann 3047, 3060; McCann C. 80, 372; Blatt. Herb. 27949! 27989! 28037!


Flowers and Fruits.—August 1917.

Blatter and McCann 3001; Bhor Ghat, Blatt. Herb. 3123.

Flowers and Fruits.—March 1929; May 1917; July 1916.

Sedgwick 2575! McCann 352, 3193; Blatter, Hallberg and McCann 3050, 3059.

Fimbristylis quinqueangularis Kunth, Enum. 2: 239, 1837; FBI. 6: 644; C. 2: 883; Blatt. & McC. 547.

Flowers and Fruits.—March 1917, 1929; July 1917.

Sedgwick 2573! McCann 388; Blatter and McCann 3170.


Flowers and Fruits.—July 1916; September 1919, 1943; October 1915.

Woodrow; Saxton 1204; McCann C 57; Blatter, Hallberg and McCann 3030; Santapau 2556!


Flowers and Fruits.—March 1917; July 1916; September 1919, 1942.

Blatter, Hallberg and McCann 3042, 3051, 3055, 3063, 3065; Santapau 798!


Flowers and Fruits.—March 1917, 1929; April 1929; June 1917; July 1916; September 1941, 1943.

Sedgwick 2550! McCann 344, 381, 382, 404; Blatter and McCann 3153, 5317; Blatt. Herb. 27965! Santapau 212/11! 2556!

Fimbristylis woodrowii C. B. Clarke in JLS. 34: 68, 1898; C. 2: 884; Blatt. & McC. 546.

According to Cooke, loc. cit., Khandala is the typical locality of this plant.

Flowers and Fruits.—March, May and July 1917; August 1916; September 1895, 1919.

Woodrow ex Cooke; Sedgwick 2576! McCann 3185; Blatter, Hallberg and McCann 3002; Herb. Ecam. Bot. Bombay.

Eleocharis R. Br.

Eleocharis atropurpurea Kunth, Enum. 2: 151, 1837; FBI. 6: 627; C. 2: 889; Blatt. & McC. 537.

Blatter and McCann 1740.
Scirpus Linn.

McCann 27447.


Flowers and Fruits—March 1923; November 1918.

Rhynchospora Vahl.

Rhynchospora wightiana Steud., Cyper. 148, 1855; FBL. 6: 669; C. 2: 901; Blatt. & McC. 774.

Flowers and Fruits.—July 1917; August 1896; September 1902, 1942, 1943.

Jacquemont 649; Woodrow; Seligwick 2589! McCann 28067, 29550; Gammie 15401; Saxon 1195; Santapau 930! 2558!

Scleria Berg.

Scleria stocksiana Boeck, in Linnaea 38: 474, 1874; FBL. 6: 687; C. 2: 905; Blatt. & McC. 779.

Flowers and Fruits.—October 1918.
Blatter and McCann 27593.

Carex Linn.

Carex alicina Nees var. glaucina (Boeck) Kuekenthal in Pfreich. 38: 274, 1909.

C. glaucina Boeck, in Linnaea 49: 353, 1876.
Blatt. Herb. 27550! October 1918.

Bulbosystis Kunth.


B. trisda Kunth, Enum. 2: 213, 1837.
Gammie 15424, September 1902.

Gramineae.

All the specimens in Blatter Herbarium, whether of my own collections or of Blatter, Hallberg, McCann and other collectors, have been checked in Kew Herbarium by Dr. N. L. Bor, to whom I tender sincere thanks.
Aphuda Linn.

Aphuda aristata Linn., Cont. Pl. 2: 71, 1758; D. & C. 303; Bor in Ind. For. Rec., Bot. 2(1): 219, & in Fl. Assam 5: 431.


A. mutica Linn. var. aristata Pilger in Pflan. (ed. 2) 14 a: 130, 1940.

McCann 5293 ! 5411 ! Santapau, slopes behind St. Mary's Villa, 1349.

Aristida Linn.

Aristida setacea Retz., Obs. 4: 22, 1786; Gr. 218; D. & G. 295; FBL. 7: 925; C. 2: 1008; Fischer 1809; Blatt. & McC. 211, t. 139.

Graham, loc. cit.; Blatter in MS. catalogue.

Arthraxon Beauv.

Arthraxon hispidus (Thunb.) Makino in Bot. Mag. Tokyo 26: 214, 1912; Bor, Fl. As. 378; Pilger 156.


Arthraxon ciliaris Beauv., Agrost. 111, 1812, pro parte.

McCann A 89! 9740! 9747! 9749! 9950!

Arthraxon inermis Hook. f. in FBL. 7: 145, 1896; C. 2: 963; Blatt. & McC. 74, t. 45.

McCann A 90! 5289! 5291! 5413! 9744! 9750! 9753! Santapau, Stream near Kune, 1271!

Arthraxon jubatus Hack., Mon. Andr. 358, 1889; FBL. 7: 147; C. 2: 970; Blatt. & McC. 79, t. 50; Pilger 156.

Hallberg, on damp rocks, 9788! Sept. 1918.

Arthraxon lancifolius (Trin.) Hochot. in Flora 188, 1856; Blatt. & McC. 77, t. 48; Fischer 1729; Bor, Fl. As. 378; Pilger 156.


McCann 9741! On Railway line 9745, 9746! 9748! Tata's Lake 9752! Gammie 15460! Blatt. Herb. 5077(2)!

Arthraxon meeholdii Stapf. in Kew Bull. 1908: 440, 1909; C. 2: 969; Fischer 1728; Blatt. & McC. 76, t. 47.

The type of this species was collected in "India. Concan, in open grasseland on a hillside near Khandala, 600 m. Meebold, 9132" (Stapf, loc. cit.).

Meebold 9132; Gammie, 20 Sept. 1902, 15361! Blatter 4412! McCann 9948! 9949! Blatt. Herb. 440! 4413! 6751(2)! 9751(2)! 9751(3)! 5041(3)!
Arthraxon quartinianus (Rich.) Nash in N. Amer. Fl. 17: 99, 1912; Blatt. & McC. 78, t. 49; Pilger 156.


Arthraxon ciliaris Beauv. subsp. quartinianus Hack., Mon. 356, 1859 (excl. var. Hookeri & glabrescens).

McCann 5321 ! 9751 ! 9744 !

ABUNDINELLA Raddi.

Arundinella nepalesis Trin., Sp. Gram. t. 263, 1828; Bor 76, t. 9 & Fl. As. 183.

A. brasiliensis Hook. f. in FRI. 7: 73, 1898 (non Raddi); C. 2: 1003.


Saxton 1295; Lisboa ex Blatt. & McC.; Blatt. Herb. A 175 ! 5050(25) !

Arundinella pumila (Hoscht.) Stend., Syn. Pl. Glum. 114, 1854; Fischer 1654; Bor, Fl. As. 181 & in JIB. 27: 61.


Jacquemont 631, ex Blatt. & McC.; Blatter 4400 ! 4408 ! McCann A 1671 ! 5293 ! 9596 ! 9599 ! 9605 ! Santapau, Kune stream, 1264 !

Arundinella pygmaea Hook. f. in FRI. 7: 72, 1896; C. 2: 1002; Fischer 1801; Blatt. & McC. 194; Bor, loc. ult. cit. 62.

McCann 5318 !

Arundinella sp.

Blatt. Herb. 5312 ! 9600 !

BAMBUSA Schreb.

Bambusa bambos (Linn.) Voss in Vilmorin, Blümengarten. 1: 1189, 1896; McClure in Blumes, Suppl. 3: 108, 1946; Bor in litt.

Arundo bambos Linn., Sp. Pl. 81, 1753.

Bambusa arundinacea Hook. f., Cooke, Blatt. & McC., et al. (non Willd.).

Common in the district and very noticeable; it is particularly abundant in and around St. Xavier's Villa (possibly planted), and on the ravine slopes especially below Duke's Nose. In the course of about ten years I have seen this plant in flower on only one occasion, November 7th, 1942, and then it was only a small clump of these plants that flowered, all the neighbouring plants being entirely unaffected.

For the question of the flowering of the bamboos, see Blatter in JBNHS. 33: 899-921; 34: 135-141, 447-467.

McCann A 224 ! A 225 ! A 226 ! Santapau 1255 !
Bhidea Stapf ex Bor.

Blatt. Hort. 9918 of Sept., 1919!

Bothriochloa O. K.

Bothriochloa compressa (Hook. f.) Heniard in Blumea 3: 456, 1940.


Hallberg 9432! Hallberg 9657 & Bhide ex Blatt. & McC.; McCunn, Plain behind the Saddle, 8433! Saxton & Bhide 9688!

Bothriochloa concanensis (Hook. f.) Heniard, in Blumea 3: 457, 1940.

Andropogon concanensis Hook. f. in FBI. 7: 174, 1896.

Amphilophis concanensis Blatt. & McCann in JBNHS. 32: 422, 1928, & Bomb. Gras. 87, t. 56.

Saxton & Bhide 1214! McCunn, in watercourse, 9651! 9954!

Bothriochloa intermedia (R. Br.) A. Camus in Ann. Soc. Linn. Lyon (N. S.) 76: 164, 1930; Bor 81, & Fl. As. 367; Pilger 161.

Andropogon intermedius R. Br., Prodr. 202, 1810; FBI. 7: 175; C. 2: 980.

Amphilophis glabra Blatt. & McC., Bomb. Gras. 87 (non Stapt.).
McCunn, in watercourse, 9435!

Bothriochloa kunzeana (Hack.) Heniard in Blumea 3: 456, 1940.

Andropogon kunzeanum Hack. in DC., Mon. 6: 478, 1889.
Santapau, in Kune Stream, 1274!

Brachiaria Griseb.

Brachiaria eruciformis (Sibth. & Smith) Griseb. in Ledeb., Fl. Ross. 4: 469, 1833; Bor, Fl. As. 274; Pilger 28.

Panicum eruciforme Sibth. & Smith, Fl. Graec. 1: 44, t. 69, 1806.
P. isochnae Roth in Nov. Fl. Sp. 54, 1821; FBI. 7: 28; C. 2: 931.

Brachiaria isochnae (Roth) Stapf in Fl. Trop. Afr. 9: 552, 1918;
Blatt. & McCf. 133, t. 85.
McCunn 9566!

Brachiaria ramosa (Linn.) Stapf, in Fl. Trop. Afr. 9: 542, 1919;
Blatt. & McC. 134, t. 86; Fiescher 1770; Bor, Fl. As. 277.

Sedgwick 2631 ex Blatt. & McC.
Capillipedium Stapf.

*Capillipedium filiculme* (Hook. f.) Stapf in Hook. Icon. t. 3085, 1922; Blatt. & McC. 82; Fischer 1730; Henrard in Blumea 3: 461.

*Andropogon filiculmis* Hook. f. in FBI. 7: 181, 1896; C. 2: 982.

Blatter & Hallberg. Khandala to Karj A 287! Blatt. Herb. 5011!


*Andropogon Hugelii* Hack. Mon. 492, 1889; FBI. 7: 180; C. 2: 982.

McCann, St. Xavier's Villa, 9426! 9647!

Chionachne R. Br.

*Chionachne koenigii* (Spreng.) Thw., Enum. 369, 1864; Fischer 1706; Bor 87, t. 14; Pilger 181, f. 101.

Coix *Koenigii* Spreng., Syst. 1: 228, 1825.

*C. barbata* Roxb., Fl. Ind. 3: 569, 1832; D. & G. 289.

*Polytheca barbata* Stapf in FBI. 7: 102, 1896; C. 2: 999; Blatt. & McC. 6, t. 3.

Santapau, slopes leading to Meroli Plateau, fairly abundant!

Chrysopogon Trin.

*Chrysopogon montanus* Trin. in Spreng., Neue Entdeck. 2: 63, 1820-1822; Blatt. & McC. 70, t. 42; Bor 94, tt. 17-18; Pilger 153.

*Andropogon monticola* Schult., Mant. 665, 1824; FBI. 7: 192 cum vars.; C. 2: 985.

Blatter & Hallberg, Khandala to Karjat, A 232!

Coix Linn.

*Coix lacryma-Jobi* Linn., Sp.-Fl. 972, 1753; FBI. 7: 100; C. 2: 997; Blatt. & McC. 3, t. 1; Bor 99, t. 20; Pilger 190, f. 103.

*C. lacryma* Linn., Syst. (ed. 10) 1261, 1759; Gr. 240; D. & G. 289.

Blatter 4415! McCann 9405! 9412! 9411! 9398! 9396! Santapau, common on ravine slopes 211/10, 11! 256! 4376!

Cymbopogon Spreng.


*Andropogon citratus* DC., Cat. Hort. Monsp. 78, 1813.

*A. Schoenanthus* Linn., Syst. (ed. 10) 1304, 1759 (non 1753).

Blatt. Herb. 4414!
Cymbopogon martini (Roxb.) Watson in Atkins., Gazet. N. W. Prov. Ind. 302, 1032; Stapf in Kew Bull. 1008; 359; Blatt. & McC. 104; Bor 104, t. 21 & Fl. As. 384; Pilger 164.

Andropogon Martini Roxb., Fl. Ind. 1: 280, 1820.

A. Schoenanthus var. Martini Hook. f. in FBI. 7: 204, 1896 (excl. syn. Afric.)

McCann, "very common", ex Blatt. & McCann; Blatt. Herb. 4008! 5344! 5408! 9428! Santapau, along railway line near Monkey Hill, 4189! 7300!

Cynodon Rich.

Cynodon dactylon (Linn.) Pers., Syn. 1: 88, 1805; FBI. 7: 288; C. 2: 1032; Blatt. & McC. 250, t. 166; Fischer 1835; Bor 110, t. 22, & Fl. As. 125.

Panicum dactylon Linn., Sp. Pl. 58, 1753; Gr. 236.

Brass. Herb. 5050(12)! 5055(20)! 5421! 5435! 5431! 27936! McCann 5301!

Dactylolotenum Willd.

Dactylolotenum aegypticum (Linn.) Beauv., Agrost. 72, 1812; Blatt. & McC. 262, t. 176; Fischer 1840; Bor 112, t. 23, & Fl. As. 110.

Cynodon aegypticus Linn., Sp. Pl. 72, 1753.

Dactylolotenum aegypticum Willd., Enum. 1099, 1800; Gr. 255; D. & G. 297.


McCann, ex Blatt. & McC.; McCann, Khandala to Kampoli, A 209! Gammie 15395!

Danthoniopsis Stapf.

Danthoniopsis griffithiana (Muell.) Bor, in Fl. As. 5: 187, 1940.


Arundinella avuncosa Munro ex Thw., Enum. 902, 1904; FBI. 7: 69; C. 2: 1000 (avuncosa per sphalm.); Blatt. & McC. 191, t. 124; Fischer 1911.

Cheikher 40! McCann 9604! Blatt. Herb. 9595! 9597! 9598! 9603! Santapau, Behran's Plateau, 2608! Top of Echo Point, 958!

Dichanthium Willcm.

Dichanthium annulatum (Forsk.) Stapf in Fl. Trop. Afr. 9: 178, 1917; Blatt. & McC. 94, t. 72; Bor 116, t. 25, & Fl. As. 371; Pilger 161.

"Khandala, very common (McCann 5297!), ex Blatt. & McC. ; Blatt. Herb. 9635; McCann 5297!"

Diobanthium aristatum (Poir.) Hubbard, in Kew Bull. 1939: 654, 1940.

Andropogon aristatum Poir., Encycl. Suppl. 1: 585, 1810.
McCann 5315!

Dichanthium armatum (Hook. f.) Blatt. & McC. in JBNHS. 32: 426, 1928, & Bomb. Gras. 91, t. 59; Pilger 162.

Andropogon armatus Hook. f. in FBI. 7: 197, 1896; C. 2: 987.
McCann, Ghira Hill, 9430! 9431!

DIGITARIA Rich.

Digitaria longiflora (Retz.) Pers., Syn. 1: 85, 1805; C. 2: 941; Blatt. & McC. 127, t. 81; Bor, Fl. As. 211; Pilger 51.

Paspalum longiflorum Retz., Obs. 4: 15, 1786; FBI. 7: 17, pro parte (non Trin.).
Blatt. Herb. St. Mary’s Villa, Sept. 1919, 3900(2)!


Digitaria marginata Link, var. simbrata Stapf in Fl. Trop. Afric. 9: 440, 1919; Blatt. & McC. 125, t. 78; Fischer 1764.

D. sanguinalis var. ciliaris Prain, Beng. Pl. 1181, 1903; C. 2: 940.
Paspalum sanguinale var. ciliare & commutatum Hook. f. in FBI. 7: 15, 1896.
McCann 3604! 3650! 3652! 5050(18)! 5302! 5313! 5404! 5434! 5444! 9532! Large village water tank 27460! Saddle 9545! Santacruz St. Xavier’s Villa grounds, 6126!

Digitaria stricta Roth ex R. & S., Syst. 2: 474, 1817.
Paspalum royleanum Nees ex Thw., Enum. 358, 1864; FBI. 7: 18.

Digitaria royleana Prain, Beng. Pl. 1181, 1903; C. 2: 942; Blatt. & McC. 127, t. 82; Fischer 1765; Bor, Fl. As. 210.

Gamitie, Sept. 1902, 15365! Blatt. Herb. 9511! Santacruz, Bohran’s Plateau, 2247!

DIMERIA R. Br.


The type sheet of this species, Blatt. & McCann 9918(17)! was collected in Khandala, and is preserved in the Blatter Herbarium, Bombay. For a full description of the plant see Bor loc. cit.


*Andropogon fitiformis* Roxb., Fl. Ind. 1: 266, 1820 & 1: 256, 1832.


**Dimeria gracilis** Nees ex Steud., *Syn. Pl. Glum. 413, 1855; FBL. 7: 105; C. 2: 946; Blatt. & McC. 9; Fischer 1718.

*McCann* A 318! *Saxton & Bhide*, in open grassland, 9478!

**Dimeria stapfiana** Hubbard ex Pilger, in Pfr. (ed. 2) 14 e: 109, 1940.

Woodrowia diandra Stapf in *Hook. Icon.* t. 2447, 1896; FBL. 7: 241; C. 2: 1012.

*Dimeria diandra* Stapf ex Bhide, in *Journ. & Proc. As. Soc. Beng.* (N. S.) 7: 515, 1911; Blatt. & McC. 9 (non Griff.).

*McCann* A 318! *A 319! 9918(16)! 9918(17)! *Saxton & Bhide* 9478! *Gammie* 15435!

**Echinochloa Beauv.**

*Echinochloa columnum* (Linn.) Link., *Hort. Bor. 2: 206, 1827; Blatt. & McC. 148, t. 94; Bor 122, t. 27 & Fl. As. 246; Pilger 31.

*Panicum columnum* Linn., *Syst.* (ed. 10) 870, 1769; FBL. 7: 32; C. 2: 931.

*McCann* 5306! 5332! 5360! 5407! 5438! 5443! 9582! 27441! *Santapau*, in pools near Khandala station, 480!

**Echinochloa crus-galli** (Linn.) Beauv., Agrost. 161, 1812; Blatt. & McC. 150, t. 95; Bor, Fl. As. 217; Pilger 31.


*McCann* A 101! *Blatt Herb. 5286! 9582! 9582(2)! 9582(3)!

[Echinochloa stagnina (Retz.) Beauv.: Blatt. & McC., 151, write: "Khandala, in water tank in the small village tank (McCann 27441!)"; the sheet in question has been identified by Dr. Bor in Kow as belonging to *E. columnum* Link. The occurrence of *E. stagnina* in Khandala is doubtful.]

**Eleusine Gaertn.**

*Eleusine coracana* (Linn.) Gaertn., *Fruct.* 1: 8, t. 1, 1788; Gr. 239; D. & G. Suppl. 97; FBL. 7: 294; C. 2: 1039; Blatt. & McC. 260, t. 173; Bor, Fl. As. 109.

Cultivated on ground where on account of its slope rice or other more profitable crops cannot be grown; it is often parasitized by members of the Soraphulariaceae, especially by various *Striga* sps.
Local name: Natchni.

Blatt. Herb. 4102, 5102. Santapau, along a path, escape from cultivation, 7416.

Eleusine indica (Linn.) Gaertn., Fruct. 1: 8, 1788; Blatt. & McF. 259, t. 172; Bor 124, t. 238, Fl. As. 108; Henrard in Blumea 3: 454.

Cynodon indicus Linn., Sp. Pl. 72, 1753.

Eleusine triuncycha Lamk., Ill. 1: 203, t. 203, 1791; FBI. 7: 263; C. 2: 1037.

Blatter & McCann, March 1917, Khandala to Karjat, 5323. McCann 5306, 9407. 52916.

Elytrophorus Beauv.

Elytrophorus spicatus (Willd.) Camus in Lecomte, Fl. Gen. Ind. Ch. 7: 547, 1923; Bor, Fl. As. 92.


Elytrophorus articulatus Beauv., Agrost. 67. t. 14. f. 7. 1812; FBI. 7: 306; Blatt. & McF. 276, t. 188.

McCann 9392. Santapau, in cultivated fields, fairly common.

Eragrostiella Bot.

Eragrostiella bifaria (Vahl) Bor, in Ind. For. 66: 270, 1930.

Poa bifaria Vahl, Symb. 2: 19, 1791.


Woodrow, ex Blatt. & McCann, loc. cit.

Eragrostis Beauv.

Eragrostis aspera (Jacq.) Nees, Fl. Afr. Austr. 408, 1841; FBI. 7: 314; C. 2: 1025; Blatt. & McF. 290; Fischer 1823.

Poa aspera Jacq., Hort. Vindebr. 3: 92, 1770-1778.

Blatt Herb. 5050(15).

Eragrostis diarrenna (Schult.) Steud., Syn. Pl. Glum. 263, 1854; Fischer 1826; Bor, Fl. As. 97.

Poa diarrenna Schult., Mant. 616, 1827.

Eragrostis interrupta var. diarrenna Stapf in FBI. 7: 310, 1896.

Poa interrupta Blatt. & McCann, Bombay Grass. 233, 1935, pro parte.

Blattes & Hallberg, Khandala to Karjat, 5322. McCann 9998, 5298, 5299, 5324, 5336, 5342. Santapau, Kune stream, 5810.
Eragrostis chariis (Schult.) Hitch. in Lingnan Sci. Journ. 7 : 193, 1931.

Poa chariis Schult., Mant. 2 : 314, 1824.


_E. elegans_ Stapf in FBI 7 : 318, 1896.

Blatter & Hallberg, Khandala to Karjat A 3 | McCann A 10 | 0319 | 5029(12) | Santapau, St. Xavier's Ravine, 4449.

Eragrostis japonica Trin., in Mem. Acad. Petersb. (ser. 6) 1 : 405, 1831 | Bor, Fl. As. 97.

_E. interrupta_ Blatt. & McC., Bomb. Grose. 235, 1895, pro parte.

_E. interrupta var. terrissima_ Stapf in FBI 7 : 316, 1896.

Blatter Herb. 5079(2) | 5326 | 5330 | 5341.

Eragrostis ciliannensis (All.) Link ex Lutati in Malpighia 18 : 386, 1904 | Blatt. & McC. 237, t. 157 | Fischer 1827 | Bor, Fl. As. 98.

_Poa ciliannensis_ Allion., Fl. Pedem. 2 : 246, t. 91, f. 2. 1785.


Blatter, along the main road, July 1916, 5445!


_Poa gangetica_ Roxb., Fl. Ind. 1 : 341, 1820.


_E. mutans_ Blatt. & McC. 237, 1935 | Fischer 1826 | Bor, Fl. As. 103, (non Steud).

McCann 5319!


_Poa pilosa_ Linn., Sp. Pl. 68, 1753.

McCann A 7 | A 7(2) | Blatt. Herb. 5333 | 5410 | 5050(26) | 5050(27).


_Poa plumosa_ Retz., Obs. 4 : 20, 1786.

Blatter, Oct. 1905, 4370!


McCann, behind Khandala Hotel, Oct. 1918, A 18!


_Poa unioloides_ Retz., Obs. 5 : 19, 1789 | Gr. 236.

Blatter, Oct. 1906, 4375! 4404! 4409! McCann 5440! 3601! 3601(2)! 3937! 5339! 5450! 5456! 9983! 9983(2)! Blatt. Herb., 5050(1)! 5050(17)! Santapau, in grassy field near station, 8127!

Eragrostis viscosa (Retz.) Trin. in Mem Acad. Petersb. (ser. 6) 1: 397, 1831; D. & G. 298; Blatt. & McC. 233; Fischer 1826; Bor 127 & Fl. As. 95.

Poa viscosa Retz., Obs. 4: 20, 1786; Gr. 239.

Eragrostis tenella var. viscosa Stapf in FBL. 7: 315, 1897; C. 2: 1024.

Blatter & McCann, loc. cit.

Eulalia Kunth.

Eulalia fimbriata (Hack.) O. Kuntze, Rev. Gen. Pl. 775, 1891; Blatt. & McC. 53, t. 36.


McCann 5300! 9724! Santapau, slopes of Duke's Nose Ravine, 1320!

Eulalia trispicata (Schult.) Hornand. in Blumea 3: 453, 1940.

Andropogan trispicatus Schult., Mant. 2: 452, 1824.


McCann, Bohran's Plateau, 97! Saddle, 9018(14)! At 600 m. alt., 9716! 9719! 9918 (7)! 9721! 9718! 9720! 9918(4)! Hallberg, 9659! Santapau, at altit. 600 m., 211/38! On earth banks behind Khandala Hotel, 9566! 9567! 9568! Kune plateau, 1273!

Garnotia Brongn.


McCann. ex Blatt. & McC., loc. cit.

Garnotia stricta Brongn. in Duperr. Voy. Bot. 133, t. 21, 1829; FBL. 7: 243; C. 2: 1013; Blatt. & McC. 207, t. 136; Fischer 1812; Bor, Fl. As. 152.

McCann A 299! A 301! A 302!
HACKELLOCHOLA O. Kuntze.

HACKELLOCHOLA GRANULARIS (Linn.) O. Kuntze, Rev. Gen. pl. 776, 1891; Fliger 134, t. 74; Fischer 1798.

Conchus granularis Linn., Mant. 2: App. 575, 1771.

Matisi, granularis Linn. f., Nov. Gram. Gen. 40, 1779; Gr. 234; FBI. 7 : 159; C. 2 : 955; Blatt. & McC. 32, t. 22.

Woodrow, McCann 9410 ex Blatt. & McCann, loc. cit.; McCann 9393.

HETEROPOGON Pers.

HETEROPOGON CONTORTUS (Linn.) Beauv. ex R. & S., Syst. 2: 666, 1817; Blatt. & McC. 109, t. 71; Pilger 183.


Andropogon polystachyos Roxb., Fl. Ind. 1: 261, 1832.

Woodrow, ex Blatt. & McC., loc. cit.


Andropogon ritchiei Hook. f. in FBI. 7 : 201, 1896 ; C. 2 : 990.


Heteropogon insignis Thw., Enum. 437, 1864; Blatt. & McC. 108, t. 69.

McCann 9390 ! 9420 ! 9646 ! 9648 ! Santapau, Monkey Hill Plateau, 7414 ! 7415 !

HYGRORIZA Nees.


Leersia aristata Roxb., Fl. Ind. 2: 207, 1832; Gr. 236.

Santapau, abundant in village talao, 10041—10043 ! 12942 !


Isachne australis R. Br., Prodr. 196, 1810; FBI. 7: 24; C. 2: 923; Blatt. & McC. 188, t. 122.

Blatter 4407! 17730! 27437! McCann, 4409(5)! 5050(6)! 52871! 5307! 5311! 5459! 9554! 9556! 9557! 9558! 9559! 9833! 9840! A 22! Santapau, St. Xavier's Villa, 2763!

Isachne gracilis C. E. Hubbard, in Kew Bull. 1939: 654, 1940.

Gummie 15388!

Isachne miliaeza Roth ex R. & S., Syst. 2: 476, 1817; Henrard, loc. cit. 465; FBI. 7: 25; C. 2: 923; Blatt. & McC. 189, t. 123.

Santapau, Kune Plateau, 1262!


I. elogata Dals. in D. & G. 291, 1861; FBI. 7: 23; C. 2: 923; Blatt. & McC. 187, t. 121; Fischer 1797.

McCann 5286! 9400! Behind Khandala Hotel 9555!

Ischaemum L.

Ischaemum aristatum Linn., Sp. Pl. 1049, 1753; FBI. 7: 126; C. 2: 958; Blatt. & McC. 11, t. 6; Pilger 196.

I. ciliare Retz., Obs. 6: 36, 1791.

McCann 9908 ex Blatt. & McC.; 5305! 9933! 9618! 9612! 9614! 9918(2)! 9929! 9932! 9630! Santapau, in village talao, 10041—10043!


For a full description of the plant, see reference.

The type, Blatter 9904, was collected in Khandala, Tata's Lake and is preserved in Herb. Kew. and in Blatt. Herb., Bombay. "This is a most remarkable species. At first sight it might be taken for Ischaemum rugosum Salisb. were it not for the very large spikelets. A further remarkable and unique feature in the genus is the presence of nodules on the upper glume of both the sessile and pedicelled spikelets. This grass should be sought for again and should not be very difficult to find." (Bor, loc. cit. p. 165.)


Saxton & Bhote, in open grassland, 9491! Blatt. Herb. 5355! 9918(5-6)! McCann 9909! Santapau, Kune Plateau, 1272!
The type of this species, Santapau 9665, was collected at Karjat, at the foot of the Ghats, just below Khandala: this grass is very common all along the railway line from Karjat to Khandala, and in the neighbourhood of Khandala Station.

*Santapau* 10550-10563!

*Ischaemum semissigattatum* Roxb., Hort. Beng. 8, 1814 & Fl. Ind. 1: 320, 1832; FBI. 7: 130; C. 2: 961; Blatt. & McC. 15, t. 10; Fischer 1722.

*Blatter* 5292! *McCann*, at 600m. altit., 5304! 5331! 5340! 9912! St. Xavier's Villa, 4409(2)! 9418! 9420! Khandala to Campoli, 9910! Railway line, 9913! Without exact locality, 9416! 9417! 9611! 9611(2)! 9613! 9911! 27441(2)! 4409 (3)! 9615! *Santapau*!

*McCann* remarks: "No. 9416 has variegated leaves. The leaves are longitudinally striped with green and white."

*Ischaemum timorense* Kunth, Rev. Gram. 1: 369, t. 98, 1829; FBI. 7: 130; Blatt. & McC. 19; Fischer 1722.

*McCann*, Saddle, 9917! *Santapau*, Kune Plateau, in cultivated fields after the harvest, 1270!

*Ischaemum* sp.

The following two specimens are too imperfect for an exact determination, they are definitely *Ischaemum* sp.

*Blatt. Herb*. 5305! 5405!

**Manisuris** Sw.

*Manisuris clarkii* (Hack.) Bor, comb. nov.


*McCann*, behind Khandala Hotel, 9410!


*Peltophorus divergens* Blatt. & McC., Bomb. Gras. 34, t. 23, 1933 (non Camus).

*Woodrow, ex Blatt. & McC., loc. cit.; McCann A 68 ! A 69 ! A 70! 5050(9) ! 9616!*

**Melanocenchus** Nees.

*Melanocenchus jacquemontii* Jaub. & Spach., Ill. Pl. Or. 4: 36, 1851.


*McCann, Khandala to Campoli, A 57!*

**Uplismenus** Beauv.

*Uplismenus burmannii* (Retz.) Beauv., Agrost. 54, 1812; FBI. 7: 68; C. 2: 927; Blatt. & McC. 154, t. 97; Bor 158 & Fl. As. 263; Pilger 47.

*Panicum burmannii* Retz., Obs. 3: 16, 1783.

*McCann, 9392! 9592!*

*Uplismenus compositus* (Linn.) Beauv., Agrost. 54, 1812; FBI. 7: 66; C. 2: 927; Blatt. & McC. 102, t. 96; Bor 157, t. 42 A. & Fl. As. 282; Pilger 47.


*McCann 5335! Ghura Hill, 9301! St. Xavier’s Villa, 9434! Santapau at altit. 600m., 211/31! Kune Plateau 1268! Duke’s Nose Ravine 1325!*

**Oryza** Linn.

*Oryza sativa* Linn., Sp. Pl. 323, 1753; FBI. 7: 99; C. 2: 1043; Blatt. & McC. 274, t. 187; Bor, Fl. As. 170.

*Blatt. Herb. 5309! 9402! Santapau sparsely cultivated in the district.*

**Panicum** Linn.

*Panicum miliaceum* Lamk., Illustr. 1: 173, 1791; FBI. 7: 46; Gr. 237; C. 2: 953 pro parte; Blatt. & McC. 169, t. 101.

*Blatt. Herb. 5088! 5334! Ghura Hill, Oct. 1918!*
Panicum montanum Roxb., Fl. Ind. 1: 318, 1820; FBI. 7: 53; C. 2: 938; Blatt. & McC. 164, t. 105; Fischer 1783; Bor 180 & Fl. As. 234.

McCann, A 136! A 143!

Panicum paludosum Roxb., Hort. Beng. 8, 1814 & Fl. Ind. 1: 301, 1832 (non Nees); Blatt. & McC. 162; Bor 166, & Fl. As. 229; Pilger 18.

P. proliferum Hook. f., FBI. 7: 50, 1896 (non Lamk.).

McCann, alt. 600 m., 5310! Blatt. Herb. 3505! Sept. 1918!

Panicum psiliopodium Trin., Gram. Panic. 217, 1826; FBI. 7: 46; Blatt. & McC. 153; Fischer 1782; Bor, Fl. As. 230; Pilger 22.

Blatt. Herb. 5036(2)! 5050(8)! 5050(14)! 5403! 5443! 5448! 9288(2)! 5454! 5494! 5446! 5374! 9918(8, 9, 10, 11, 12, 13)! Santapau, St. Xavier’s Villa, 9236! Monkey Hill, 9239!

Paspalidium Stapf.

Paspalidium flavidum (Retz.) A. Camus in Lecomte, Fl. Can. Indo-Ch. 7: 419, 1923; Blatt. & McC. 141, t. 90; Bor 172, t. 44 & Fl. As. 253; Pilger 29.

Panicum flavidum Retz., Obs. 4: 13, 1786; FBI. 7: 28; C. 2: 929.

Woodman ex Tsuke, Inc. cit.

Paspalum Linn.

Paspalum compactum Roth, Nov. Fl. Sp. 36, 1827; FBI. 7: 12; C. 2: 943; Blatt. & McC. 138, t. 88; Fischer 1772; Bor, Fl. As. 251.

Blatt. Herb. 5507! McCann, 5500(10)! 5505(13)! St. Mary’s Villa 9503! In gravelly soil, 9823! Blatt. Herb. 9508! Santapau. in a ditch in grass field near Reversing Station, 5367!

Paspalum scrobiculatum Linn., Mant. 1: 29, 1787; FBI. 7: 10 (excl. syn. P. orbic. Forsk.); C. 2: 943; Blatt. & McC. 136, t. 87; Bor 174, t. 45 & Fl. As. 253; Pilger 62.

Blatt. Herb. 5455! 5050(7)! 5050(13)! 5050(23)! Behind Khándala Hotel, 5462! McCann, large water tank, 27434! Santapau, 211/15! Top of Bhuma Hill, 2510! In moist ground along water course, St. Xavier’s Ravine, 4448!

Pennisetum Pers.

Pennisetum typhoides (Burn.) Stapf & Hubbard in Kew Bull. 1933: 271, 1933; Fischer 1782; Bor, Fl. As. 291.

P. typhoides (Burn.) Rich. in Pers., Syn. 1: 72, 1895, pro parte; FBI. 7: 82; C. 2: 917; Pilger 81.

Alopecurus typhoides Burn., Fl. Ind. 27, 1768.

McCann, St. Mary’s compound, 9397! Santapau, along the railway line, 2446! 5053! In ditch near railway station, solitary, 8624!
**Pogonacme** Bor.


*Blatter & McCann 9924 ! 9925 ! 9926 !

**Pseudanthistiria** Hook. f.

*Pseudanthistiria heteroclita* (Roxb.) Hook. f., FBI. 7 : 219, 1896 ; Blatt. & McC. 121, t. 76 ; Fischer 1749 ; Pilger 158.

*Anthistria heteroclita* Roxb., Pl. Ind. 1 : 219, 1832.

*McCann A 332 ! A 333 ! A 290 ! 5041(2) ! 5359 !

*Pseudanthistiria hispida* Hook. f., FBI. 7 : 219. 1896 ; C. 2 : 992 ; Blatt. & McC. 120 ; Fischer 1749.

*McCann, railway line, A 331 ! A 292 !

**Pseudodichanthium** Bor.

*Pseudodichanthium serrafalcoides* (Cookes & Stapf) Bor in Ind. For. 66 : 272, 1940.


*A. cooknc Stapf* ex Woodrow in JBNHS 13 : 433, 1898, nom nud. ; C. 2 : 936, 1908, sum descript.

*Dichanthium serrafalcoide* Blatt. & McC., in JBNHS 32 : 426, 1928 ; Bomb. Grass. 95, t. 63.

*McCann & Hallberg, Echo Point, 9408 ! 9404 !

**Pseudobaphis** Griff.


*Panicum asperum* Koenig, in Naturf. 23 : 269, 1789.


*McCann, on banks of village tank, 9848 !

**Pseudosorghum** A. Camus.


*Andropogon fascicularis* Roxb., Pl. Ind. 1 : 269, 1820 (non Thw.).

*Santapau, Kune Plateau, 1269 !
SEHIMA Forsk.

**Sehima nervosum** (Rottl.) Stapf in Fl. Tr. Afr. 9: 36, 1917; Blatt. & McC. 21, t. 14; Bor 194, t. 57; Pilger 128.


*Ischaemum laxum* R. Br., Prodrr. 395, 1810; FBI. 7: 136, pro parte; C. 2: 964, pro parte.

**McCann** 5106! Bhoma Hill, 9413! *Santapau*, Behran's slopes, 5083!

*Agavenia podunculata* Wall. was growing as a parasite on the roots of this plant; the slopes of Behran's Plateau are the only place in Khanda la where this association has been observed in Khanda la.


Woodrow ex Blatt. & McC. loc. cit.; **McCann** 9918! 9921! 9927! 9928! 9919! **Blatt** 5406! *Santapau*, Duke's Nose Ravine, 1322!

SETARIA Beauv.

**Setaria glauca** (Linn.) Beauv., Agrost. 51, 1812; FBI. 7: 78 pro parte; Blatt. & McC. 172; Bor 198, t. 59 & Fl. As. 290.


**Setaria intermedia** R. & S., Syst. 2: 480, 1817; FBI. 7: 79; C. 2: 920; Blatt. & McC. 174; Fischer 1789; Bor. Fl. As. 288.


**Blatt.** Oct. 1905. 4410! **McCann** 5436! 5452!

SORGHUM Pers.

**Sorghum halepense** (Linn.) Pers., Syn. 1: 101, 1803; Blatt. & McC. 55, t. 27; Bor 200, t. 60; Pilger 144, f. 79A.


*Andropogon halepensis* Brot., Fl. Lus. 1: 89, 1804; FBI. 7: 182; C. 2: 983.

**McCann**, railway line, 9426! **Blatt. Herb.** 9399! *Santapau*, along the railway line at foot of Behran's Plateau, 929!
Spodiopogon Trin.

Spodiopogon rhizophorus (Steud.) Pilger in Pfl. (ed. 2) 14 e : 119, 1940.


Spodiopogon albidus Benth. in JLS 19 : 66, 1881 ; FBI. 7 : 108 ; C. 2 : 947 ; Blatt. & McC. 51, t. 34.


Sporobolus R. Br.

Sporobolus diander (Retz.) Beauv., Agrost. 25, 1812 ; FBI. 7 : 247 ; C. 2 : 1017 ; Blatt. & McC. 221, t. 148 ; Fischer 1817 ; Bor 202, & Fl. As. 117.

Agrostis diandra Retz., Obs. 5 : 19, 1789.

McCann, at 600 m. altit., 5409 !

Themeda Forsk.

Themeda quadrivalvis (Linn.) O. Kuntze, Rev. Gen. Pl. 794, 1891 ; Blatt. & McC. 118.

Andropogon quadrivalvis Linn., Syst. (ed. 13) 758, 1774.

Themeda ciliata Hack., Mon. 664, 1889 ; C. 2 : 994.

Antillaria ciliata Linn. f., Suppl. 11, 1781 ; FBI. 7 : 213.

Blatt. Herb. (without date)! Santapau, Kune Plateau, 1266 !

Themeda triandra Forsk., Fl. Aeg.-Ar. exxii & 178, 1775 ; Blatt. McC. 115, t. 74 ; Bor 208 & Fl. As. 400.

Antillaria imberbis Retz., Obs. 3 : 11, 1783 ; FBI. 7 : 211.

A. ciliata Retz.: Gr. 299 ; D. & G. 304.


McCann, common, A 291 ! October 3018, (sine num.)!

Themeda tremula (Nees.) Hack., Mon. 667, 1889 ; C. 2 : 995 ; Blatt. & McC. 119, t. 75 ; Fischer 1746.


McCann 5041(2) !

Trilobachne Schenck ex Henrard.

Trilobachne cookei (Stapf) Schenck ex Henrard in Mededeeling van's Rijks Herb. no. 67 : 4, 1931 ; Pilger 189.

Polytrichum cookei Stapf in Hook. Icon. 24 : t. 2333, 1884 ; FBI. 7 : 101 ; C. 2 : 998 ; Blatt. & McC. 5, t. 2.

McCann, behind Duke's Nose, 9394 ! At 1600 ft. altit. 9879 ! 9881 !
THE FLORA OF KHANDALA.

TRIPOGON Roth.

Tripogon capillatus Jaub. & Spach, Illistr. Pl. Or. 4: 47, t. 332, 1850 83; FBL. 7: 295; C. 2: 1036; Fischer 1883; Blatt. & McC. 267, t. 779.

Garade Sept. 1910! McCann, on rocks, A 61! Among stones A 62! A 63! 9779! Santapau, St. Xavier's Villa, 858! Monkey Hill Plateau, 7431!

Tripogon jacquemontii Stapf in Kew Bull. 1892: 85, 1892; FBL. 7: 286; C. 2: 1037; Fischer 1883; Blatt. & McC. 268, t. 181.

Blatt. & McCann 3599! McCann A 336! Santapau, Kuno Plateau 1267!


Bhide ex Blatt. & McC.; Garade, Sept. 1910! McCann 5050(6) 9050 (16)! 9779(3)! A 334! Santapau, Monkey Hill slopes, on rocks in shaded spots, 7432!


McCann, on rocks, A 65! A 66! A 67! Santapau, on flat rocks in open places, 4366!

Tripogon sp.

The following specimens are too imperfect for an exact determination, they are definitely Tripogon. McCann 5050(2) 5050(21)!

TRITICUM Linn.

Triticum aestivum Linn., Sp. Pl. 35, 1753; Gr. 234; Blatt. & McC. 279.


Blatt. Herb. 5314!

VTIVIERIA Thou.

Vetiveria zizanioides (Linn.) Nash in Small. Fl. Southeast U. S. 67, 1903; Blatt. & McC. 65, t. 40; Bor 216, t. 44.

Phalaris zizanioides Linn., Mant. 2: 183, 1771.


Santapau, grassy fields on Kuno Plateau, 2347!
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**Notes:**
- The index lists various plant species with their corresponding page numbers.
- It includes genera such as *Strobilanthes*, *Strychnos*, *Symphomea*, and *Symphaceae*.
- The page numbers range from 222 to 303, indicating detailed entries for each species.
- Some entries are accompanied by additional notes or synonyms.

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**Additional Information:**
- The index is part of a botanical classification system, possibly used for academic or research purposes.
- It appears to be a systematic list, likely used to identify and reference specific plant species within a larger taxonomy.
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