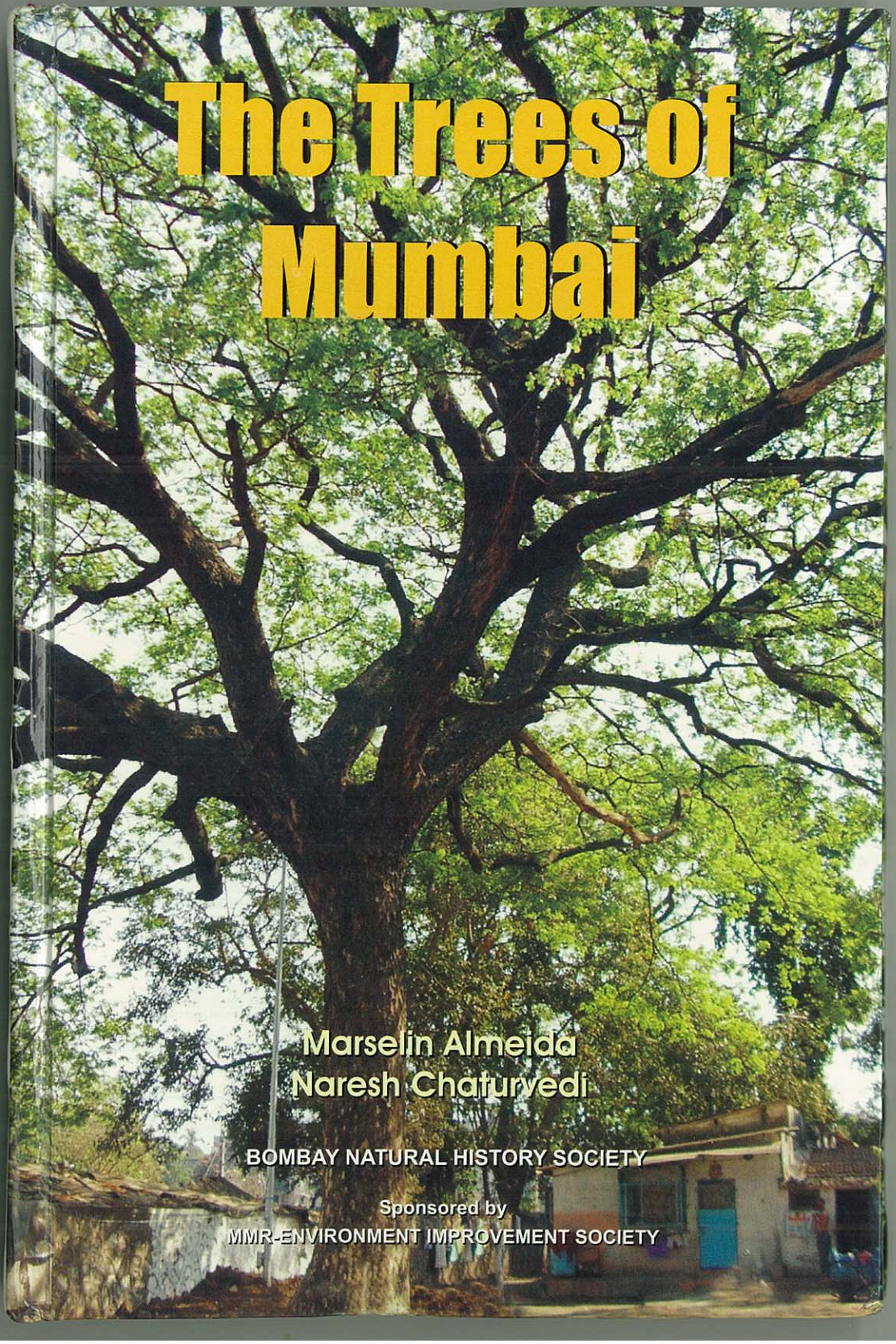

The Trees of Mumbai
Marselin Almeida
Naresh Chaturvedi
BOMBAY NATURAL HISTORY SOCIETY
Sponsored by
MMR-ENVIRONMENT IMPROVEMENT SOCIETY

TREES OF MUMBAI

By

Marselin Almeida

Naresh Chaturvedi

Sponsored by

MMR - ENVIRONMENT IMPROVEMENT SOCIETY

BNHS India CONSERVING NATURE SINCE 1883

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CONTENTS

Acknowledgements vi
Foreword vii
Preface ix
List of Plates x
Introduction 1
Description of Trees 2
List of trees in Maharashtra and Mumbai City 212
Hints for planting trees 227
Flower colour as an aid for tree identification 231
How to prevent tree cutting 233
Maharashtra (Urban areas) Protection and Preservation of Trees Acts, 1975 233
Trees that attract birds 239
Tree diversity in Mumbai 240
Trees in Indian Astrology 241
Trees used by Butterflies as Larval Host plant 242
Trees suitable for specific areas 243
Index of Common Names 246
Index of Scientific Names 248

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FOREWORD

Since the origin of life on earth, vegetation has formed an important part of the ecosystem. Life is directly or indirectly dependent on it. Trees are one of the important components of vegetation. Humans because of their intelligence started exploiting vegetation to get direct benefits such as food, medicine from herbs and wood for making shelter and other purposes, and in the process have forgotten that the vegetation also indirectly contributes to providing fresh air, prevents soil erosion and maintains water level in the soil.

It is rightly said that vegetation, including trees, can survive without us, but we cannot survive without them. Therefore, our ancestors had given them a sacred status by including them in our religion and culture. In ancient India *van mahotsav* was traditionally celebrated when people used to plant several trees to maintain good health of the forest. Some of these forests were declared as *Abhayaranyaa*, a practice which still continues. *Abhayaranya* were similar to protected areas of our times as they helped to protect not only the forest, but the mammals, birds and other animals. But with changing times our moral and cultural values have also changed. Today we have moved away from nature to a materialistic world. A continuous increase in human population has put tremendous pressure on our land resulting in expansion of the concrete jungles and reducing the natural habitat. The Mumbai Region is also facing similar problems. "Trees of Mumbai" will not only educate people about the varieties of trees in their neighbourhood, but will also help to select trees that can be planted in their surrounding. This publication is another effort of the Bombay Natural History Society to protect our natural heritage and encourage tree plantation for the benefit of our next generation. The project was sponsored by MMR-EIS, of MMRDA.

Today we all need to make some space for trees in our heart and in our surroundings. As indicated in an old saying :

"पिबन्ति नद्यः स्वयमेव नाम्भ स्वयं न खादन्ति फलानि वृक्षाः ।
नादन्ति सस्यं खलु वारिवाहाः परोपकाराय सतां विभूतयः ।।
"Trees never eat their fruits, rivers never drink their water,
they are born for the benefit of others."

B.G. Deshmukh (I.A.S. Retd)
President, BNHS

PREFACE

For the purpose of this book, tree is an erect perennial plant, branched or unbranched from the base, which grows to a minimum height of 5 m, which has a minimum girth of 10 cm at breast height, and grows independently without any support.

As the purpose of urban trees is more for beautification aesthetics was the prime criteria for selecting the trees for this book. Commonly cultivated trees have been listed on a priority basis. Technical language has been avoided for better understanding, except for correct scientific name. The generally accepted standardized common name is used as the title of the tree, but wherever these names are not standardized, we propose that they be taken as standardized here in this book.

It is said that in India the language or at least its dialect changes after every 18 km. Plant names are not an exception to this rule. However, keeping in line with the sentiments of the international community, regarding standardizing plant names, we have decided to give only a few selected local and traditional names in some selected languages.

The format of this book was decided by the sponsors. The description of the tree has been restricted to one printed page with one page for photographs, for easy identification of the tree.

We are sure that readers who admire trees in the wild, will also admire the small contribution that this book makes to enhance their values. In this matter, the satisfaction of our reader is our proud achievement.

Marselin Almeida, D.Sc.
Naresh Chaturvedi, M.Sc.

Mumbai
Date: December, 2005

LIST OF PLATES

S. No.	Common name	Scientific name	Pg. No.
1.	AFRICAN TULIP	*Spathodea campanulata*	2
2.	AAL TREE	*Morinda citrifolia*	4
3.	ALEXANDRIAN LAUREL	*Calophyllum inophyllum*	6
4.	FLAME AMHERSTIA	*Amherstia nobilis*	8
5.	ASHOKA	*Saraca asoca*	10
6.	AUSTRALIAN ACACIA	*Acacia auriculiformis*	12
7.	BADMINTON BALL TREE	*Parkia biglandulosa*	14
8.	BAEL	*Aegle marmelos*	16
9.	BAOBAB	*Adansonia digitata*	18
10.	BARTONDI	*Morinda pubescens*	20
11.	PURPLE BAUHINIA	*Bauhinia purpurea*	22
12.	BEEFWOOD TREE	*Casuarina equisetifolia*	24
13.	BONFIRE TREE	*Firmiana colorata*	26
14.	BOTTLE BRUSH	*Callistemon citrinus*	28
15.	BREAD FRUIT TREE	*Artocarpus altilis*	30
16.	CAJUPUT TREE	*Melaleuca quinquenervia*	32
	CASSIA'S – 17 TO 19		
17.	BURMESE PINK CASSIA	*Cassia renigera*	34
18.	SIAM CASSIA	*Cassia siamea*	36
19.	INDIAN LABURNUM	*Cassia fistula*	38
20.	CANNON BALL TREE	*Couroupita guianensis*	40
21.	CEYLON IRON WOOD	*Manilkara hexandra*	42
22.	COPPER POD	*Peltophorum pterocarpum*	44
23.	CORAL JASMINE	*Nyctanthes arbor-tristis*	46
24.	CORAL WOOD	*Adenanthera pavonia*	48
25.	DEVIL'S TREE/SATVIN	*Alstonia scholaris*	50
26.	DRUMSTICK TREE	*Moringa pterigosperma*	52
27.	FERN TREE	*Filicium decipiens*	54
	FICUS – 28 TO 32		
28.	BANYAN	*Ficus bengalensis*	56
29.	PEEPAL	*Ficus religiosa*	58
30.	BOKEDA	*Ficus hispida*	60
31.	INDIAN RUBBER TREE	*Ficus elastica*	62
32.	COUNTRY FIG/UMBAR	*Ficus racemosa*	64
33.	FLAME OF THE FOREST	*Butea monosperma*	66
34.	GHOST TREE	*Sterculia urens*	68
35.	SPOTTED GLIRICIDIA	*Gliricidia sepium*	70
36.	GUEST TREE	*Kleinhovia hospita*	72
37.	FLAMBOYANT TREE	*Delonix regia*	74
38.	HALDU	*Haldina cordifolia*	76
39.	INDIAN ALMOND	*Terminalia catapa*	78
40.	INDIAN CORAL TREE	*Erythrina variegata*	80
41.	INDIAN CORK TREE	*Millingtonia hortensis*	82
42.	INDIAN MEDLAR TREE	*Mimusops elengi*	84
43.	SAMUDRAPHUL	*Barringtonia asiatica*	86
44.	IRON WOOD TREE	*Mesua ferrea*	88
45.	PALA-INDIGO/SAFED KUDA	*Wrightia tinctoria*	90

LIST OF PLATES

S. No.	Common name	Scientific name	Pg. No.
46.	BLUE JACARANDA	*Jacaranda mimosaefolia*	92
47.	JACKFRUIT TREE	*Artocarpus heterophyllus*	94
48.	JAMUN	*Syzygium cumini*	96
49.	WILD ALMOND	*Sterculia foetida*	98
50.	KADAMBA	*Neolamarkia cadamba*	100
51.	KAMINI	*Murraya paniculata*	102
52.	KAKAD	*Garuga pinnata*	104
53.	KAPOK TREE / WHITE SILK COTTON	*Ceiba pentandra*	106
54.	PONGAM TREE / KARANJ	*Pongamia pinnata*	108
55.	KARMAL	*Dillenia pentagyna*	110
56.	KUSUM	*Schleichera oleosa*	112
57.	LEBBECK TREE / SHIRISH	*Albizia lebbeck*	114
58.	LIGNUM VITAE	*Guaiacum officinale*	116
59.	MAHOGANY	*Swietenia mahagoni*	118
60.	MALABAR KINO	*Pterocarpus marsupium*	120
61.	MANGO TREE	*Mangifera indica*	122
62	MANILA TAMARIND	*Pithecellobium dulce*	124
63.	MARGOSA TREE/NEEM	*Azadirachta indica*	126
64.	MAST TREE/ASOPALAV	*Polyalthia longifolia* var. *pendula*	128
65.	PINK TABEBUIA	*Tabebuia rosea*	130
66.	MEHENDI/HENNA	*Lawsonia inermis*	132
67.	MEXICAN GOLDEN TRUMPET	*Tabebuia argentea*	134
68.	MUCHKUND	*Pterospermum acerifolium*	136
69.	NIGHT SHADE POTATO TREE	*Solanum glandiflorum*	138
70.	PAGODA TREE	*Plumeria rubra*	140
	PALMS – 71 TO 77		
71.	CHINESE FAN PALM	*Livistonia chinensis*	142
72.	COCONUT PALM	*Cocos nucifera*	144
73.	FISH-TAIL PALM	*Caryota urens*	146
74.	INDIAN DOUM PALM	*Hyphaene dichotoma*	148
75.	PALMYRA PALM	*Borassus flabellifer*	150
76.	ROYAL PALM	*Roystonea regia*	152
77.	WILD DATE PALM	*Phoenix sylvestris*	154
78.	PERSIAN LILAC	*Melia azedarach*	156
79.	PORTIA TREE	*Thespesia populnea*	158
80.	PRIDE OF INDIA/TAMAN	*Lagerstroemia speciosa*	160
81.	PUTRANJIVA	*Drypetes roxburghii*	162
82.	RAIN TREE	*Samanea saman*	164
83.	RIO GRANDE TRUMPET FLOWER TREE	*Tabebuia megapotamica*	166
84.	SACRED BARNA	*Crataeva tapia*	168
85.	SAND PAPER TREE	*Streblus aspera*	170
86.	SAUSAGE TREE	*Kigelia pinnata*	172
87.	SCARLET CORDIA	*Cordia sebestena*	174
88.	SEBESTEN PLUM/BHOKAR	*Cordia dichotoma*	176
89.	SHENDUR	*Mallotus philippensis*	178
90.	SISSOO	*Dalbergia sissoo*	180
91.	RED SILK COTTON	*Bombax ceiba.*	182

LIST OF PLATES

S. No.	Common name	Scientific name	Pg. No.
92.	SMALL INDIAN OAK/ DATRIPHAL	*Barringtonia acutangula*	184
93.	SONCHAMPA	*Michelia champaca*	186
94.	STAR APPLE	*Chrysophyllum cainito*	188
95.	TAMARIND	*Tamarindus indica*	190
96.	TEAK	*Tectona grandis*	192
97.	TIMBURI	*Diospyros peregrina*	194
98.	TREE MALLOW/ BELAPATA	*Hibiscus tiliaceus*	196
99.	WARRAS	*Heterophragma quadriloculare*	198
100.	YELLOW OLEANDER	*Thevetia peruviana*	200
101.	YELLOW SILK COTTON	*Cochlospermum religiosum*	202
102.	WHITE MANGROVE	*Avicennia marina*	204
103.	GREY MANGROVE	*Avicennia officianalis*	206
105.	MANGROVE APPLE	*Sonneratia apetala*	208
108.	RED MANGROVE	*Rhizophora mucronata*	210

Photo Credit : Blue Jacaranda - Issac Kehimkar
Sonchampa, White Mangrove (Tree), Red Mangrove (Tree), } Vivek Kulkarni

INTRODUCTION

Books on trees in India started with titles like 'Forest Trees'. Presently, titles like 'Some Common Trees' and 'Trees of Urban Environment' are also available.

The need for a book on trees of the forest was first felt by Dr. Lindsay Stewart, who began compiling information for 'Forest Flora of North-West and Central India'. The book was completed in 1874 by Dietrich Brandis, a German, appointed as the First Inspector General of Forest. Dietrich Brandis later compiled 'Indian Trees', which has dominated the Indian scenario since 1906. Though the book is titled 'Indian Trees' it deals with trees, shrubs, woody climbers, bamboos and palms of the British Indian Empire, as it was primarily intended for foresters who worked relentlessly in the Indian forests without proper knowledge of the trees that they saw every day. The book deals with 4,400 species of which about 2000 species are trees. A detailed study of the book reveals that 825 trees are confined to the Western Ghats; this number has presently reached to 915 trees. It goes without saying that the book deals with only indigenous trees without paying much attention to introduced exotics.

Following in the footsteps of D. Brandis, J. Cameron published 'The Forest Trees of Mysore and Coorg' in 1894. In 1908, T.F. Bourdilon published 'The Forest Trees of Travancore'. 'Forest Flora of Bombay Presidency and Sindh', Vol I & II (1906-1911) by W.A. Talbot and T.R. Somasundaram's 'Handbook of the Identification and Descriptions of Trees, Shrubs and some Important Herbs of Forests of the Southern States for the use of the Southern Forest Rangers College, Coimbatore' in 1963 have also inherited the tradition of Brandis. The latest book in this series is S.G. Neginhal's 'Forests of South India' published in 2004.

All the above-mentioned works somewhat follow the definition of 'Tree' given by 'The Concise Oxford Dictionary', Tree - Perennial plant with single woody, self supporting stem or trunk, usually unbranched for some distance above the ground.

Neginhal restricts his work to the species found in forest areas (i.e. not including introduced trees), but his concept of 'Tree' is not very clear. He includes species like *Cocculus laurifolius* DC. (a scandent climber), *Capparis decidua* (Forst.) Edgew., *Capparis sepiaria* L. (low, branched bushy shrubs), but excludes woody climbers like *Ancistrocladus heyneanus* Wall. *Entada rheedei* Spr., *Derris scandens* (Roxb.) Benth. and *Calycopteris florifunda* Salisb.

The total number of species of trees in Maharashtra (both indigenous and exotic) is 775. Mumbai has 318 species of trees almost 50% of which are exotics.

In order to save some space we append only the generic list (not entire list of species) of the trees of Mumbai with the number of genera found in Maharashtra in Appendix - A.



Photo: Oval Maidan

(1) AFRICAN TULIP

Common Names : Scarlet Bell Flower Tree,
Squirt Tree (Eng.);
Patade (Tel.); Nrukaye, Lujjekaye (Kan.)
Scientific Name : ***Spathodea campanulata*** Beauv.
Where to see : Oval Maidan, Jijamata Udyan,
in many gardens across the city.

A tall evergreen tree up to 22 m high. In drier parts of the country it becomes deciduous. The tree trunk is straight with branches that bear compound leaves, each branch having around 9 to 19 leaflets. The leaflets are oval, deep green with a short stalk, and have 2 to 3 fleshy glands at the base.

The velvety olive green flower buds appear in bunches at the ends of the branches forming a compact globular mass. They are at different stages, maturing successively. Flowers can be seen for a long period on the tree. The buds are full of water and when pressed a jet of water squirts out, hence the common name Squirt Tree.

The scarlet orange, bell shaped flowers bloom from February-March; in Mumbai it can be seen flowering throughout the year. Flowers growing at the tree top, among green leaves, give the tree the shape of a *Maha Guldasta*. The scarlet flowers are orangish at the base. The petals are united in a bell shaped tube, giving it the common name Scarlet Bell Flower. The petals emerge from the boat shaped calyx and have 4 stamens protruding out from them. The flowers resemble tulip flowers, the tree is therefore also known as the African Tulip Tree. The fruits are long, pointed and woody with many winged seeds.

The scientific name *Spathodea* in Greek refers to the spathe-like calyx of the flower and *campanulata* refers to its bell shaped flowers.

The African Tulip is planted in gardens and in avenues because of its beauty. It is also planted along river banks to check soil erosion. The seeds are edible. The paste prepared from the bark is used for dressing ulcers. The decoction of the bark and leaves is used as a lotion and also for treating urethal inflammation and dysentery. The decoction of the hard central part of the fruit is poisonous and is used by tribals to poison animals.

Although the tree is very pretty in flowers, it spreads its roots parallel to the ground and proves to be short-lived as it easily topples with the force of pre-monsoon winds.



Photo: Jijamata Udyan

(2) AAL TREE

Common Names : Achu, Ak (Hin.); Surangi, Bartondi (Mar.); Noni, Manjananthi (Tam.); Mannanatti (Mal.); Maddi (Tel.); Sappanga (Kan.)

Scientific Name : ***Morinda citrifolia*** L.

Where to see : Malabar Hill, Chhatrapati Shivaji Vastu Sangrahalaya (Fort), Jijamata Udyan, Shivaji Park, Sanjay Gandhi National Park (Borivli).

A small tree with a straight trunk and yellowish white bark. The bright green, glabrous leaves are broadly elliptic.

The tree blooms between March and September. The small white flowers grow in dense globose heads.

The fruits are egg shaped, glossy and creamish-white when ripe.

The root bark yields a reddish dye used for dyeing cotton and silk cloth. All the parts of the tree have medicinal properties. The leaves are used to heal ulcers. They are also used as fodder and to rear silkworms. The fruits and tender leaves are eaten by tribals during food scarcity. The Aal tree is promoted as a food supplement and health enhancer in the Konkan region.

The tree is planted for shade and also to support pepper vines.



Photo: Sagar Upvan, Colaba

(3) ALEXANDRIAN LAUREL

Common Names : Dilo Oil Tree (Eng.);
Nagachampa, Punnaga (Sans.);
Sultanachampa (Hin. & Beng.);
Undagi (Mar.);
Punnai (Tam.); Punna (Mal.)

Scientific Name : ***Calophyllum inophyllum*** L.

Where to see : Coastal areas of Mumbai,
Sagar Upvan (Colaba).

A moderate sized evergreen tree up to 20 m high with a vertically streaked bark. The leaves are simple, elliptic, with leathery texture, grow in opposite pairs and have a stout flat petiole.

The tree flowers between May and August. The white flowers have a prominent yellow centre formed by stamens and grow in terminal clusters. They are arranged in racemes, i.e. old flowers at the base and buds at the apex. The sweet fragrance of the flowers attract a variety of insects that help in pollination.

The egg-like greenish fruits appear in bunches and have a smooth waxy skin. They turn yellowish on maturation and are relished by fruit bats that help to disperse the seeds.

The scientific name *Calophyllum* in Greek means beautiful; *inophyllum* indicates strongly veined leaves. The tree is native of coastal Alexandria, and hence commonly called Alexandrian Laurel.

The seeds yield a greenish oil known as Pinnay or Domba Oil, which is used as fuel and lubricant for cart wheels. It is applied in rheumatism and its mixture with Chaulmoorga oil helps to treat skin eruptions. The timber known as Poon is used for ship building.

The tree grows well on dry sandy soil in coastal region. It is also planted for ornamental purpose due to its beautiful, fragrant flowers. It is raised from seeds.



Photo: Mumbai University Campus, Fort

(4) FLAME AMHERSTIA / TREE OF HEAVEN

Common Names	:	Orchid Tree, Pride of Burma (Eng.); Ratanjot (Mar.)
Scientific Name	:	***Amherstia nobilis*** Wall.
Where to see	:	A rare tree, Mumbai University Campus (Fort), Jijamata Udyan.

A semi-evergreen tree of Burmese origin with moderate height, it grows up to 10 m. The dark blackish trunk has spreading branches forming a round crown; from a distance it looks like an Ashoka Tree. The compound leaves are about half a metre long and appear feathery. Each leaf has around 6 to 8 pairs of oblong leaflets, tapering at the ends like a fine tips. Young leaves are drooping and light pinkish in colour.

The tree blooms between January and March, and the flowers last for 2 to 3 days. They appear on a metre long spike and are arranged like a candelabrum, i.e. the oldest flower is at the base followed by young ones and buds at the distant end. Each spike has around 20 to 26 flowers. The pinkish vermilion flowers have 4 sepals, which form a tubular structure at the base from which 5 petals arise. Of these, three are large and have yellow spots, while two are small. The flowers appear like a miniature humming bird. The pinkish pods are broad on top, each having 4 to 6 seeds. The short-lived flowers point to early fertilization.

When in bloom, the vermilion flowers surrounded by green leaves are a sight to behold. The tree is considered to be one of the most beautiful of flowering trees, hence the species name *nobilis*. The generic (first) name *Amherstia* is in honour of an amateur botanist, countess of Amherst, the wife of Earl Amherst, Governor of Myanmar. The local name 'Nathani' is after a famous Indian botanist Nathaniel Wallich, who while naming this species described it as 'profusely ornamental with pendulous racemes of large vermilion coloured blossoms, unequal in the flora of the East Indies and perhaps not surpassed in magnificence and elegance in any part of the world.'

The tree is indigenous to Myanmar and is rarely seen in the wild. The seeds produced in Mumbai do not germinate raising doubts regarding their viability and paucity of their native pollinators in the region. There have been attempts to propogate this tree by tissue culture.



Photo: Jijamata Udyan

(5) ASHOKA

Common Names : Tamra Pallava, Rakta Pallavs
Tamra Patra, Rakta Patra (Sans.);
Jasundi (Mar.); Asogam (Tam.);
Asokam (Mal.); Kankeli (Tel.);
Ashun Kar (Kan.); Oshoko (Ori)

Scientific Name : ***Saraca asoca*** (Roxb.) de Wilde

Where to see : Altamount Road, Mumbai University Campus (Fort), Jijamata Udyan, KEM Hospital Compound, Opp. UDCT (Matunga),
Sanjay Gandhi National Park (Borivli).

A small evergreen tree 6-9 m high. The spreading branches arising from the straight trunk bear a dense crown of compound leaves.

The 15-20 cm long compound leaf has 3 to 7 pairs of leaflets without a single terminal leaflet at the apex. The green oblong to lanceolate leaflets are stiff leathery in texture. The new leaves are thin and drooping, and are coppery red in colour, hence the Sanskrit name Tamra Patra or Rakta Patra.

The tree flowers between January and March. The yellowish orange flowers appear in large clusters and have a mild fragrance. When old, the flowers turn vermilion. Each cluster has small flowers with four ovate petals forming a tube like structure at the base. The long thread like stamens and style, emerging from each flower, enhance the beauty of the cluster. The fruits are pink, flat, leathery pods 15-20 cm long.

The tree has several medicinal properties. The Asav and Ghrita prepared from the bark of the tree are sold as Ashokarishta and Ashok Ghrita, these are given to cure various uterine problems. The juice of the leaves mixed with cumin is used for stomachache. The leaves also possess blood purifying properties.

The Ashoka is sacred for Hindus and Buddhists. The fragrant flowers of Ashoka are offered in Shiva temples. According to the Ramayana, Sita was held captive in the Ashoka Van when in the custody of Ravana at Sri Lanka. The tree is therefore also known as Sita Ashoka. According to the Hindu calendar, Chaitra Shukla Ashtami is celebrated as Ashokashtami, a day when young women fast and eat eight leaves of the Ashoka to conceive a child. In Myanmar, it is believed that Gautam Buddha was born under this tree. The Ashoka is cited extensively in ancient Indian literature. It was one of the five arrows thrown by Kama to disturb the meditating Shiva. It is believed that Ashoka blooms only after it is touched by the feet of a beautiful woman. The tree is often planted near temples and in gardens.



Photo: Aarey Colony, Goregaon

(6) AUSTRALIAN ACACIA

Common Names : Kadambo (Mar.); Bengal Jali (Kan.)
Scientific Name : ***Acacia auriculiformis*** A. Cunh. ex Benth.
Where to see : Cultivated in gardens, small forest patches in the Mumbai suburbs.

A medium sized tree growing up to 12 m high. It is a fast growing tree, and is planted for future fuel supplies. The straight trunk with whitish bark has branchlets growing at an angle.

The compound leaves have tiny leaflets seen in the seedling stage, and later as flat and light green slightly curved stalks originating from the thick midrib called phyllode. The phyllodes perform photosynthesis and also check excessive loss of water.

The yellowish white flowers grow from the axis and are arranged on 3-6 cm long spikes. The fragrant flowers attract insects, which help in pollination.

The fruits are curled pods which become hard and coiled at maturity. When the pod is ripe, it opens along one edge with black seeds hanging on yellowish fibres. A tree with large number of ripe fruits looks spectacular and more attractive than the yellow flowered spikes.

The tree is cultivated as a lac host. It can also be used as a soil binder. The wood pulp is used for making paper and the wood is utilized on a small scale for making furniture. In urban areas, the wood is mainly used in scaffoldings and poles for construction work.

This quick growing tropical Australian tree was introduced in semi-arid regions of India. It requires little water and is well-suited for arid lands. The tree is propagated by germinating seeds. Propagation can be accelerated by dipping the seeds in boiling water before sowing them.

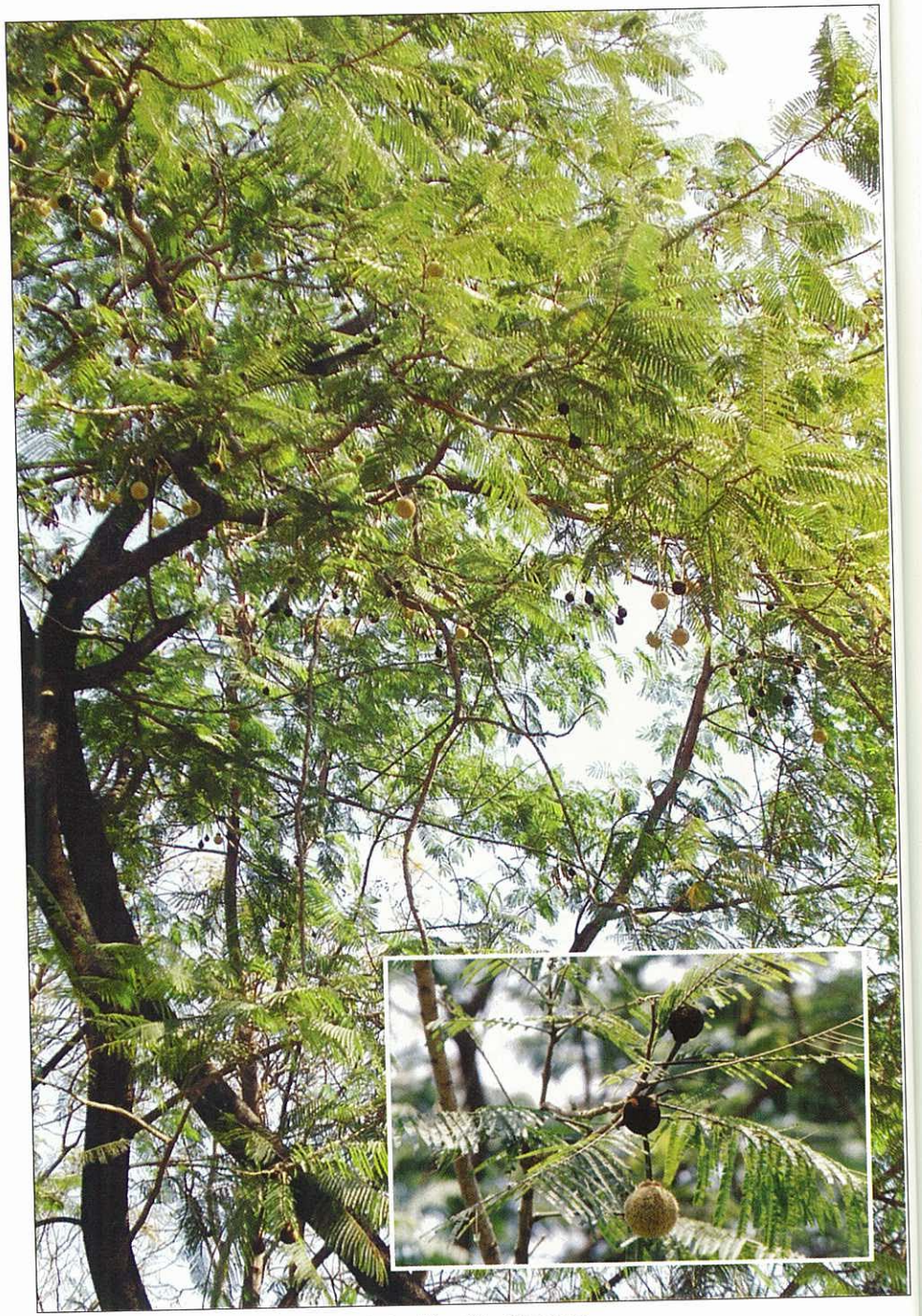


Photo: Film City, Goregaon

(7) BADMINTON BALL TREE

Common Names : Chenduphul (Mar.); Mavukai (Tam.); Shivalinga-mara (Kan.)
Scientific Name : ***Parkia biglandulosa*** Wight & Arn.
Where to see : Sagar Upvan (Colaba), Film City (Goregaon), Sanjay Gandhi National Park

A tall evergreen tree, native of Malaya. The trunk is straight and tall. The leaves are feathery bipinnate with 7-12 pairs of pinnae and 60-100 pairs of leaflets.

The tree flowers from December-January. The white flowers appear in globose or sub-spherical heads of 4-5 cm in diameter on a 12-20 cm long peduncle. The flower resembles a tennis ball, hence the popular Marathi name Chenduphul.

The fruits develop in bunches of 10-15 pods, which are stipitate, 30 cm or more in length and slightly apiculate. Each pod contains 8-15 disc shaped brown seeds, which are smooth and polished.

The scientific name *Parkia* is in honour of Mungo Park (1771-1805), a celebrated African traveller and explorer. *biglandulosa* is derived from the two tiny glands present on the petiole at the base of the lamina.

Seeds germinate easily, sometimes within the pods, before they fall from the parent tree; this phenomenon is called vivipari.

It is a good avenue and shade tree, and looks attractive with its feathery foliage. The pulp present in the pods is edible. The pollen discharged from flowerheads mixed with water makes a refreshing drink. The tree is propagated from seeds.



Photo: Mumbai University Campus, Fort

(8) BAEL

Common Names	:	Bengal Quince, Golden Apple (Eng.); Bili, Bilva (Sans.); Bael (Hin., Mar.); Vilvam (Tam., Mal.)
Scientific Name	:	***Aegle marmelos*** (L.) Correa ex Roxb.
Where to see	:	Near Shiva temples and in gardens, Mumbai University Campus (Fort).

A moderate sized deciduous tree native of India and Myanmar, 6-7.5 m high. Its greyish bark and branches are armed with long axillary spines. The trifoliate compound leaves have ovate-lanceolate leaflets. The terminal leaflet has a long stalk and is somewhat bigger in size, while the two lateral leaflets are sessile. The young leaflets are light green and turn dark with age. When the leaves are held against light, their prominent oil glands are clearly visible. The tree sheds its leaves by end-March and new leaves and shoots appear in April. The leaves are offered in worship, particularly in Shiva temples.

The tree blooms from May-June; buds appear on terminal branches. The sweet scented, greenish white large flowers attract bees. They are used for scenting drinking water.

The yellowish-grey globose fruit appears in May. It has a hard rind with thick yellowish orange pulp when mature with sacs embedding numerous compressed seeds. The fruit becomes ready for harvesting after a year. The green fruit turns yellowish grey or even pinkish on ripening. The unripe fruit yields a yellow dye.

The scientific name *Aegle* is derived from Greek, denoting one of the three naiads belonging to Hera the Greek goddess of rivers and springs. Hera received this tree from Earth as a gift on her marriage with Zeus. *marmelos* is derived from the Portuguese name 'Marmelos de Baggla'.

The ripe fruit is edible and eaten fresh. The extracted fruit pulp mixed with tamarind and sugar makes a delicious drink. The dry pulp acts as astringent, digestive and stomachic. It is also used in chronic diarrhoea and dysentery. The pulp of the fruit contains Vitamin C and is used for preparing soup. The roots are one of the ingredients of *dashamula*, an ayurvedic preparation. The young leaves and shoots are good fodder for cattle and are also used as medicine. The wood is light yellow and aromatic. The leaves serve as larval food plant of the Common Lime butterfly.

The tree is grown from seedlings.



Photo: Sagar Upvan, Colaba

(9) BAOBAB

Common Names : Kalpavriksha, Cream of Tartar Tree,
African Calabash Tree,
Monkey Bread Tree (Eng.);
Gorakhamli, Gorakh Chinch (Guj.);
Gorakh imli (Hin.);
Anaipuliamaram (Tam.);
Brahmamlika (Kan.)

Scientific Name : ***Adansonia digitata*** Linn.

Where to see : Navy Nagar, Chhatrapati Shivaji Vastu Sangrahalaya, Sagar Upvan (Colaba), Jijamata Udyan, Bandra (W), Vijay Nagar in Andheri (E), Kandivli, Bassein Fort (Vasai).

A medium sized tree of African origin with a short bole, growing up to 21 m high and with a girth of 27 m. The huge tree trunk tapering upwards with spreading branches makes the tree look planted upside down. According to records the tree lives for 2000 years. The bark is smooth and greyish brown.

The young leaves have three leaflets, while the older leaves have 5 to 7 oblong or lanceolate leaflets arising from a single point on the long stalk.

The white stalked flower of 15 cm size grows singly from the leaf axis. When in bloom, the purple anthers arising from the staminal bundles are prominently visible. The corolla has five petals. Flowers bloom at night and are pollinated by bats.

The gourd-like fruit with a long stalk hangs from the branches. The hard brownish fruit has several seeds enclosed in a thick pulp. The pulp is edible and is relished. It is rich in citric and tartaric acids, and used in cooling drinks. Monkeys are fond of eating the fruit, hence the common name 'Monkey Bread Tree'.

A native of Africa, it was introduced into India by Abyssinian, as well as the Portuguese traders.

The scientific name of the tree *Adansonia* is in honour of the 18th century French botanist Michael Adanson, while *digitata* indicates the finger-like shape of the leaflets.

The tree is planted in gardens, but not in avenues or along roadsides due to its thick sized trunk. The soft trunk of the tree, when hollowed, provides large space. The wood is used to make matchsticks and the tree fibre is used for making ropes, bags and strong paper.

The tree is grown from its kidney-shaped blackish brown seeds. The seeds require adequate water to sprout; 2-3 year old seedlings are transplanted during August-September.



Photo: Sanjay Gandhi National Park, Borivli

(10) BARTONDI

Common Name : Indian Mulberry (Eng.)
Scientific Names : ***Morinda pubescens*** Sm.
[syn. *M. tomentosa* Heyne ex Roth;
M. tinctoria Roxb.]
Where to see : BNHS-Conservation Education Centre (Goregaon), Film City (Goregaon), Marve Road, Sanjay Gandhi National Park (Borivli).

A small evergreen tree up to 10 m high with vertically furrowed bark and spreading canopy. The bark is yellowish.

The leaves are arranged in opposite and alternate pairs placed at right angles. The leaf is elliptic, long lance-shaped and is covered with soft hairs on both surfaces. The stipules, which are leaf-like structures, are present between a pair of leaves and are generally bifurcated. The young branches are 4-angled and leaves of the tree are closely arranged at the end of the branches.

The flowers appear in the axil of the leaves, and are arranged in aggregated globose heads, usually on a solitary stalk. The tree flowers from April-June, and the fruits ripen in September. The flowers are white but the extract from dry flowers gives a red dye.

The fruits are coherent drupes, aggregated in a globose or shapeless body, which show a number of mouth-like projections on the outer surface.

The specific names *pubescens* and *tomentosa* refer to its pubescent or tomentose leaves. *tinctoria* refers to its dye yielding property. The mouth-like projections of the drupes give its popular name Bartondi. The fruits (drupes) are aggregated like in Mulberry therefore the tree is also called the Indian Mulberry. This name is apparently also used for another tree.

The yellowish bark and roots yield a yellow dye. Bartondi was an important source of dye in earlier days when chemical dyes were not in use. The wood is called canary wood and is used as timber for fine craft work.

The fruits are used in Ayurvedic medicine as emetic. A spoonful juice of fresh fruits causes vomitting and is taken when one wants to get rid of something unpalatable or poisonous. The fruits and seeds, however, are considered poisonous for human consumption. Seeds of Bartondi have been recovered from the stomachs of dead Hornbills.



Photo: Indian Institute of Technology, Powai

(11) PURPLE BAUHINIA

Common Names : Mountain Ebony, Camel Hoof Tree (Eng.); Rakta-Kanchan; Koilari (Hin.); Mandari (Tam.); Deva-Kanchana (Beng.)

Scientific Name : ***Bauhinia purpurea*** Linn.

Where to see : Jijamata Udyan, Sagar Upvan (Colaba), IIT Campus (Powai), Film City (Goregaon), Sanjay Gandhi National Park (Borivli).

A moderate sized erect deciduous tree of Indo-Malayan origin up to 7-10 m high, but does not grow much in girth.

The leaves are almost round and 10-12 cm in diameter. They are divided into two halves up to the middle from the apex, each lobe has 4-9 nerves. Both the lobes are identical in shape and size.

The large sized flowers, growing at the end of branches as raceme, are fragrant. The petals are white, rose pink and purple, and attract a variety of insects. The tree flowers from September-December.

The fruits are flat greenish purple pods and are pointed at both ends, each pod has 12-16 oblong seeds. The pods remain on the tree till they ripen between January and March, and then burst scattering seeds up to a distance of 15 m.

The scientific name *Bauhinia* refers to the two lobes of the leaf. It was given by Carl Linnaeus to commemorate the twin brothers John Bauhin and Gaspard Bauhin who were French botanists and had contributed to the study of herbs in the 16th century. *purpurea* refers to the purple petals of the flower.

Another species of *Bauhinia* found in the surrounding areas is *Bauhinia racemosa* Lamk. commonly known as 'Apta' or 'Sona'. The leaves of *B. racemosa* are exchanged during Dassera festival and signify prosperity for the coming year.

The leaves are used as cattle fodder and are eaten as vegetable or pickle. The bark is used by the tanning industry. The wood is good for making agricultural implements. The tree also yields gum.

The tree is planted in gardens and avenues for ornamental purpose. The seeds germinate very easily; propagation is therefore by germination, and also by planting saplings. It is suitable for planting along narrow avenues.

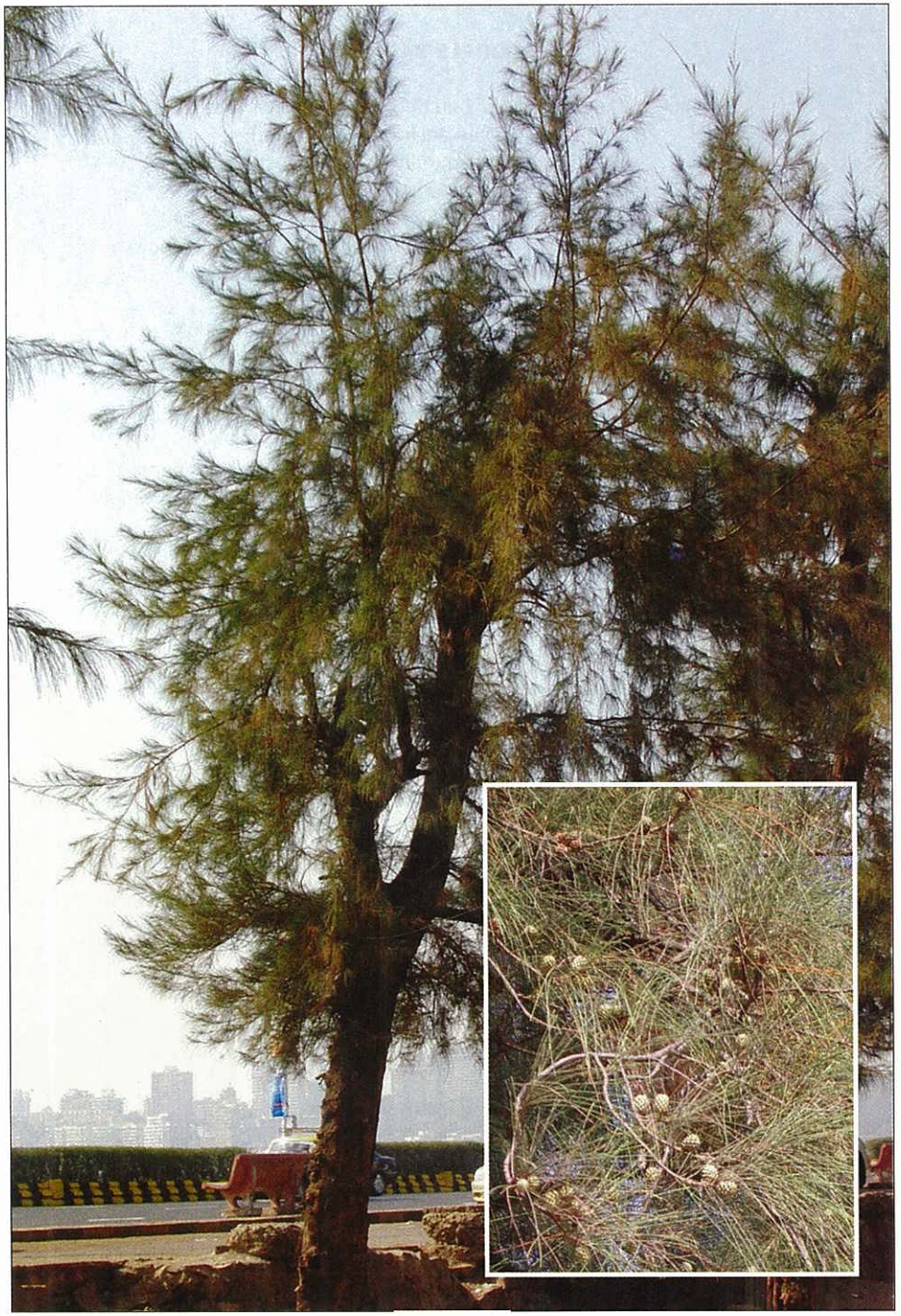


Photo: Marine Drive

(12) BEEFWOOD TREE

Common Names	:	Beefwood, Cassowary Tree (Eng.); Vilayati Saru (Guj.); Saru (Hin.); Savukku (Tam.); Chavkku (Mal.); Sarugudu (Tel.); Chabaku (Kan.)
Scientific Name	:	***Casuarina equisetifolia*** Forst. & Forst.
Where to see	:	Along the Eastern Express Highway, Marine Drive, Charni Road and Kandivli Railway Station.

A large evergreen tree up to 30 m high with a straight bole and stout stem covered with a black bark. The several drooping branches, with 6-8 angled needles, have triangular scale-like leaves on their joints.

The tree is unisexul i.e. male and female flowers appear on separate trees. The male flowers or cones appear on terminal green needles and each has one stamen. The female cones are produced on woody branches and have blunt ends all over the surface. The tree blooms between September-October, and February-April. The brownish woody cones bear tiny winged seeds.

The scientific name *Casuarina* is derived from Casuarius, due to the resemblance between its branches and bird feathers and *equisetifolia* refers to its leaves that look like a horse's tail.

The wood is hard and is used as fuel. It is reputed for its high calorific value. It is also used for poles. The bark is used as astringent and tanning material. It is known as Beefwood tree because of its dark brown wood.

The tree thrives best in coastal regions and is planted with other vegetation to check soil erosion. It is planted along roadside as an avenue tree. It is propagated from seedlings raised in nurseries. Casuarina is the only non-leguminous plant that has rhizobial root-nodules. It requires strong sunlight and should not be planted under shade.

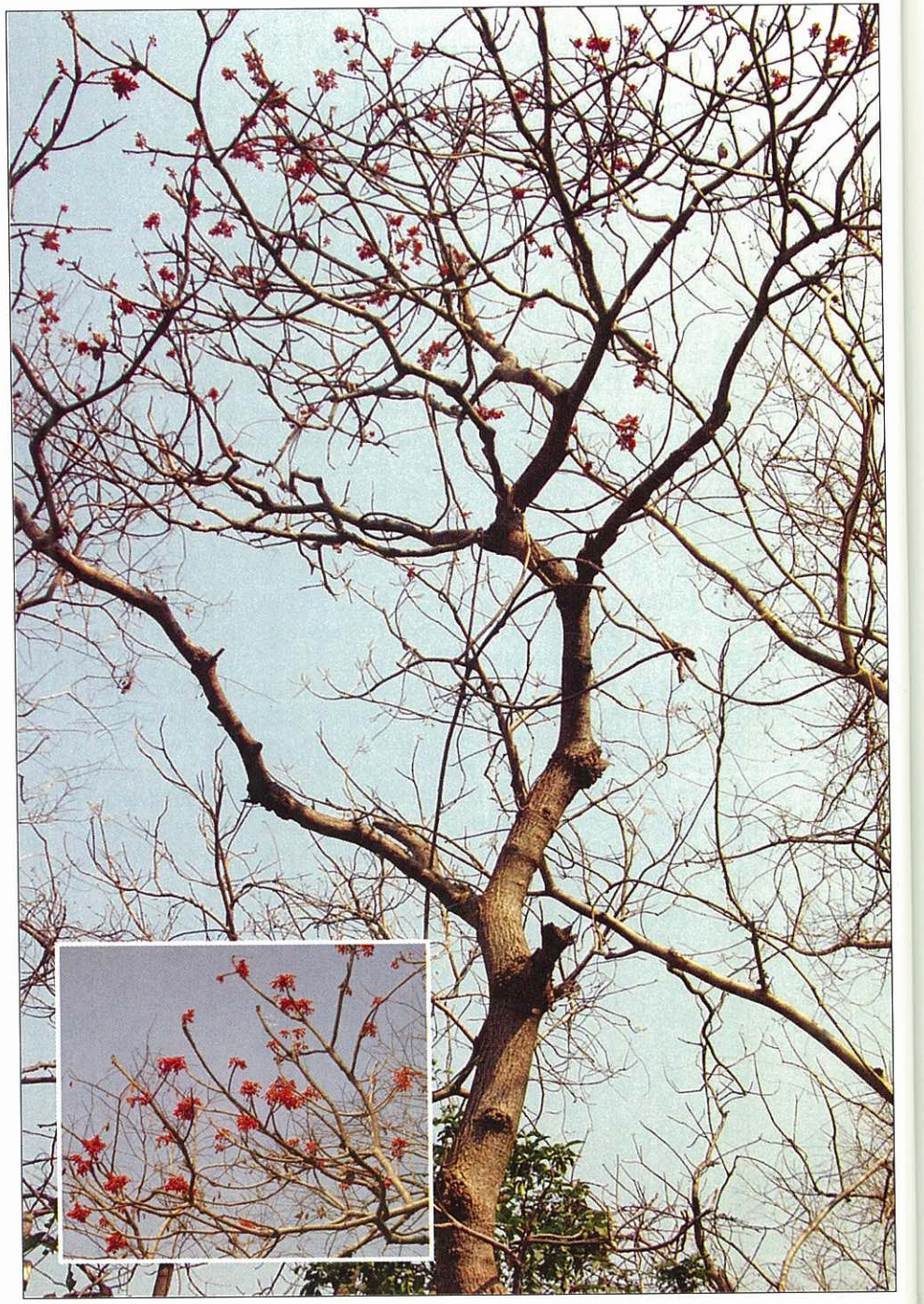


Photo: BNHS-Consevation Education Centre, Goregaon

(13) BONFIRE TREE

Common Names	:	Coloured Stercularia (Eng.); Supli, Bharcoi (Guj.); Bodula (Hin.); Khavashi (Mar.); Malamparatti (Mal.)
Scientific Names	:	***Firmiana colorata*** (Roxb.) R.Br. (*Sterculia colorata* Roxb.)
Where to see	:	BNHS-Conservation Education Centre (Goregaon), Sanjay Gandhi National Park (Borivli).

A large deciduous tree of up to 15 m high. The straight trunk has a crown of spreading branches and thick ash coloured bark. Full grown trees often develop buttressed roots.

The leaves have a slender stalk and grow in a bunch at the end of the branches. The leaves are wider than long, thin in texture, and their edge forms three triangular lobes with pointed tips. They start falling in November and by January the tree is completely barren. New leaves start emerging in May.

The tree blooms between March-May; its coral red flowers form a beautiful sight. The orange red flowers bunched in terminal panicles are covered with star shaped downy hairs, giving them a velvety appearance.

The fruits have 2-5 leaf-like membranous valves. The greenish pink valves open-up before the fruit is mature, exposing brown bean shaped seeds growing on the edges of the valves. Fruits appear between May and June.

The scientific name *Firmiana* is in honour of Count Karl Joseph von Firmian, Governor of Lambordy and Patron of Padua Botanic Garden. *colorata* refers to the colourful flowers.

The bark is sometimes used to make ropes. The twigs and leaves form fodder for cattle. The seeds have sweet oily pulp, often relished by children.

A sacred tree, it is planted for ornamental purpose in avenues. The tree can be propagated by seeds.

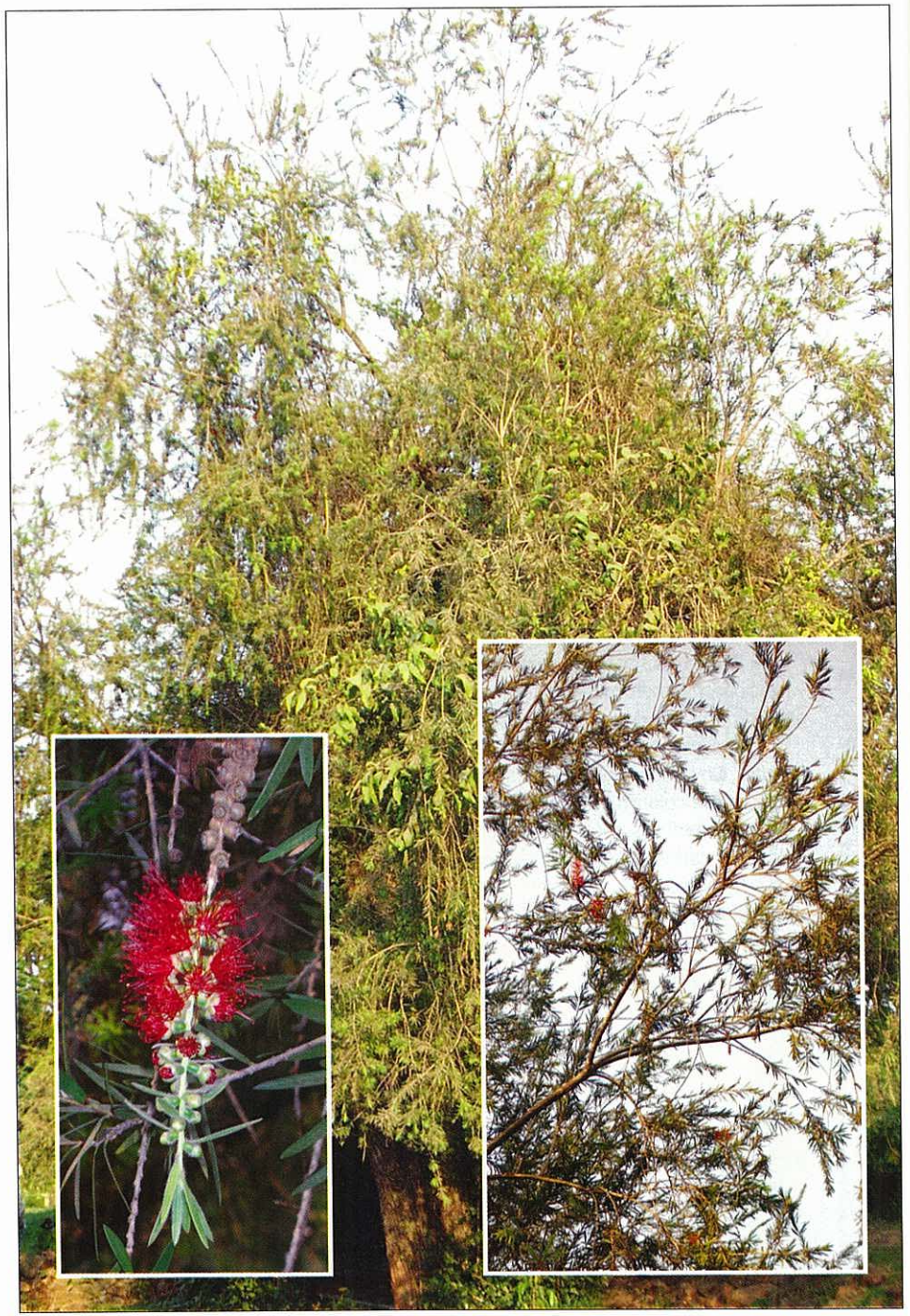


Photo: Observation Post, Aarey Colony

(14) BOTTLE BRUSH

Common Name	:	Lal Bottle Brush (Hin.)
Scientific Names	:	***Callistemon citrinus*** (curtis) Skeels (= *Callistemon lanceolatus* DC.)
Where to see	:	Sagar Upvan (Colaba), Five Gardens (Dadar), Aarey Colony (Goregaon), in various city gardens.

A small to medium sized evergreen tree up to 12 m tall native of Australia, cultivated in gardens. The long, drooping branchlets have long pointed leathery leaves. The leaves grow at the ends of the twigs.

The small scarlet flowers have red stamens pointed outwards that look like the bristles of a bottle brush, giving its common name Bottle Brush Tree. The tree flowers almost throughout the year. The small round fruits enclose several seeds.

The scientific name *Callistemon* meaning beautiful stamens is derived from the Greek word Kallos meaning beauty, stemon means stamen. *lanceolatus* in Latin refers to the lancet shaped leaves of the plant.

It is interesting to observe that branchlets bearing flowers grow further and develop new leaves. The Bottle Brush is a beautiful ornamental tree for gardens and avenues. The tree is propagated by developing seedlings in the nursery and transplanting them to suitable sites.

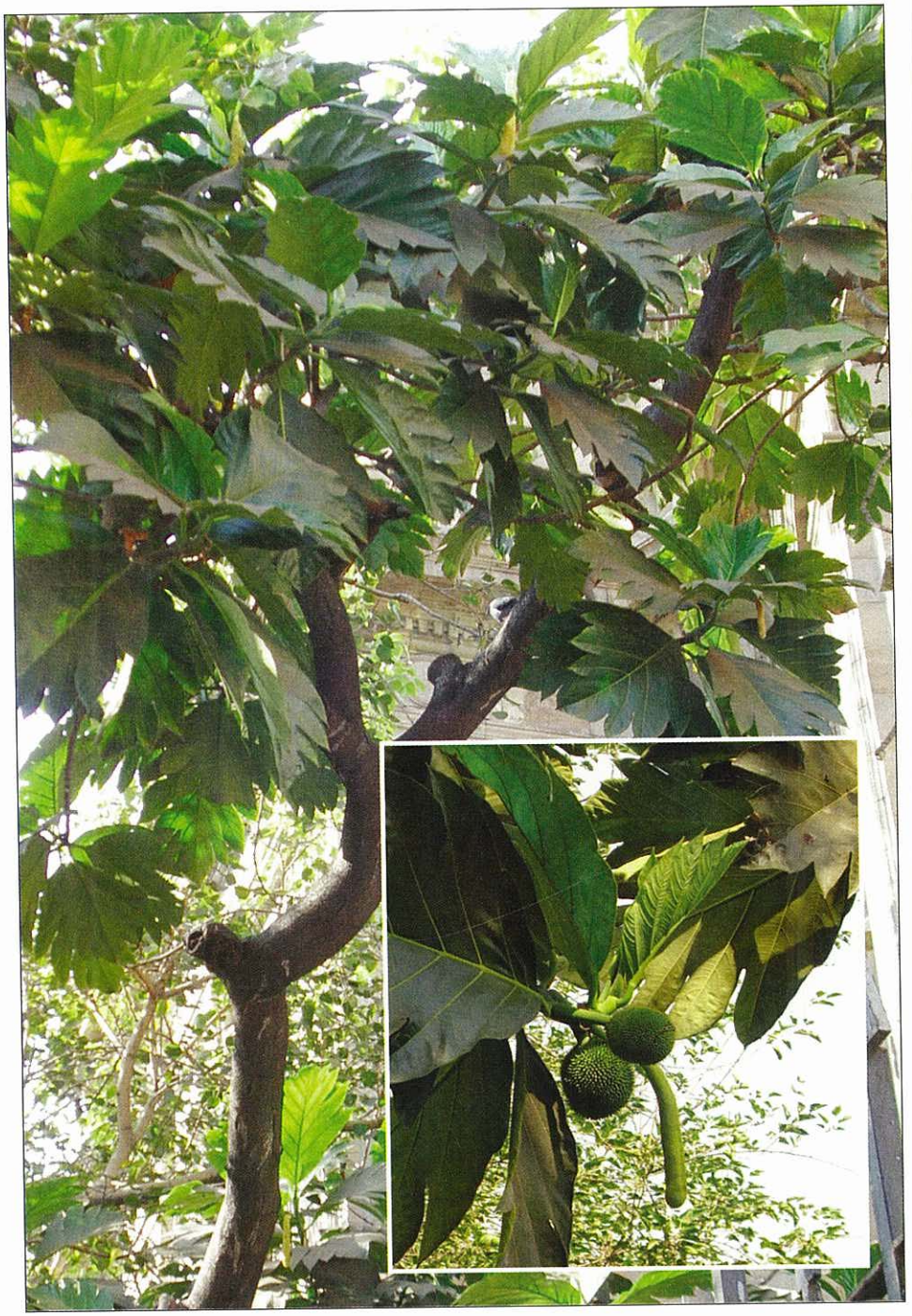


Photo: Near Institute of Science, Fort

(15) BREAD FRUIT TREE

Common Names : Barhal, Dahua (Hin.)
Scientific Names : ***Artocarpus altilis*** (Z.) Fosberg
(=*Artocarpus communis* Forst. & Forst.)
Where to see : Sagar Upvan (Colaba),
Near Indian Institute of Science
(M. Cama Road), Jijamata Udyan,
Sion, Goregaon (West).

A tall handsome tree native of Pacific Islands, up to 35 m tall, with a spreading crown. The large incised green leaves are ovate or rhomboid with leathery texture.

The male and female flowers grow separately on the same tree. The male flowers are thick and club shaped. The tree flowers between January and March.

The large sized globose fruits are green with a little yellowish tinge. The fruits are covered with slightly conical acute processes. They are of two varieties, one with seeds and the other completely seedless. The seeded variety, which grows wild is of little use for consumption, while the seedless variety, which has a whitish pulp is consumed as a vegetable and is used in other preparations. It can be baked, boiled and fried like potatoes.

The green fruits when roasted look like bread, giving its common name Bread Fruit tree. It is also used for preparing salads and soups. The gum secreted from the tree is used as bird lime and its paste acts as a cement. The root is used in diarrhoea and dysentery. The extract of the leaves is poisonous for carpet beetles and cockroaches.



Photo: Jijamata Udyan

(16) CAJUPUT TREE

Common Names	:	Punk Tree (Eng.); Kayapute (Hin.); Cajuputa (Mar.); Kaiyappudai (Tam.); Cajuputte (Beng)
Scientific Name	:	***Melaleuca quinquenervia*** (Cav.) Blake (= *Melaleuca leucadendron* (L.) L.)
Where to see	:	Jijamata Udyan.

A moderate to large sized evergreen tree of Australian origin with hanging branches. The bark is white and peels off in papery flakes. The leaves are oblong-elliptic or lanceolate, and are dotted with glands. It is often confused with *Eucalyptus* or *Acacia auriculiformis* due to its leaf structure, but can be easily distinguished from *Eucalyptus* by the presence of longitudinal nerves in the leaves and from *Acacia auriculiformis* by the presence of transparent glands.

The flowers are small, white and appear on long spikes. The fruits are small, woody capsules with numerous minute obovoid or wedge shaped seeds embedded within.

The steam distillation of its fresh leaves and terminal branchlets produces cajuput oil, which is used as an expectorant and anthelmintic for roundworms. The wood is used for posts and in ship building. The tree bark is used to stuff cushions and pillows.

The tree is propagated through seeds and cuttings. It is indigenous to Myanmar, and is planted as an ornamental tree in Myanmar, Malay Peninsula and Australia. It shows tolerance to saline and acid soils, and is often planted in swamps.



Photo: Near BMC School, Ghatkopar (W)

(17) BURMESE PINK CASSIA

Scientific Name : ***Cassia renigera*** Wallich
Where to see : Sagar Upvan (Colaba), Jijamata Udyan, Ghatkopar (W).

A small sized tree growing up to 8 m high. The straight branches originate from a short trunk that have drooping branchlets which form a spreading crown. The compound leaves have 8-20 pairs of short stalked leaflets with two kidney shaped stipules at the base, which fall off soon. The tree sheds its leaves between December and February.

The tree blooms in March when it is still leafless; new leaves appear soon thereafter. The sweet smelling flowers appear in small clusters along the drooping branchlets, and look like garlands. The flowers stalks are deep red in colour and are covered with fine white hairs. The flowers have large bracts at their bases. A tree adorned with the pinkish white blooms looks very beautiful.

The pods are smooth cylindrical and look like the pods of Indian Laburnum.

The species name *renigera* refers to the kidney shaped stipules.

The tree is a native of Myanmar. It is propagated from seeds. The seeds are soaked in hot water before sowing.

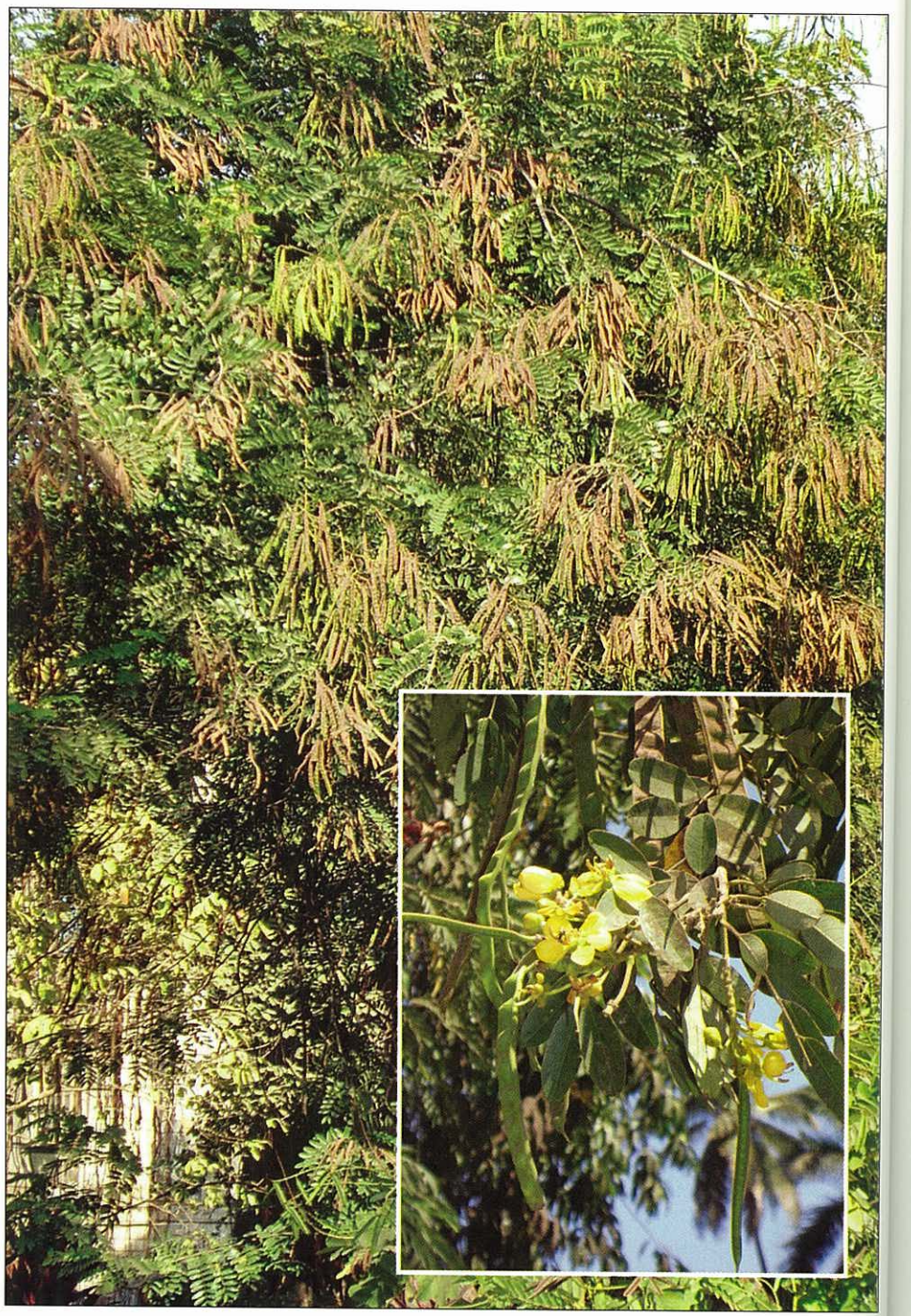


Photo: Horniman Circle, Fort

(18) SIAM CASSIA

Common Names	:	Kasod (Mar.); Manje Konne (Tam.); Simatangedu (Tel. & Kan.)
Scientific Name	:	***Cassia siamea*** Lamk.
Where to see	:	Avenue tree growing along roadsides, railway lines, and in gardens.

A moderate sized tree up to 15 m high. The compound leaves are 15-30 cm long. The paripinnate leaves, i.e. leaves without an odd terminal leaflet, have 12-18 pairs of leaflets. The leaflets are oblong and have a slight leathery texture and are 4-6 cm long with a fine tip.

The flowers are yellow and 20-40 cm in size. They appear in large bunches at the end of the branches. The tree flowers during the monsoon and continues to flower for a long period. The straight flat pods 15-22 cm long can be seen during August to September. The pods are initially green and turn brown on maturity.

The scientific name *Cassia* is the old Greek name of Dioscorides and *siamea* indicates its origin from Siam (Thailand). In Malaysia the tree is commonly called Busuk-Busub as the leaves emit a fetid odour after the rains.

The leaves are used as manure and at some place flowers are used as vegetable. A toxic alkaloid is present in the pods and leaves. The wood is used for furniture and to make walking sticks. This tree is a host for lac insects and is used by the lac industry. It is planted as an avenue tree.



Photo: Sagar Upvan, Colaba

(19) INDIAN LABURNAM

Common Names : Golden Shower, Pudding Pipe tree (Eng.); Girimal, Garmalo (Guj); Amaltas (Hin.); Bahava (Mar.)

Scientific Name : ***Cassia fistula*** Linn.

Where to see : Along roadsides, University Sports Ground, Sagar Upvan (Colaba), Ballard Pier, Jijamata Udyan, near LIC Building, Churchgate. Laburnum road at Gowalia Tank is named so because of the presence of these trees along the roadside.

A small to medium sized deciduous tree growing up to 15 m high. The short trunk of the tree has straight upwardly directed branches bearing yellowish green foliage. The compound leaves have 25-40 cm long rachis or stalk bearing 4 to 8 pairs of long leaflets. The young leaflets are light green, turning yellowish to green with age. The leaflets have a smooth upper surface with veins more visible on the underside. The leaves are shed between March and May.

Clusters of bright yellow flowers appear on racemes forming a golden shower. The flowering tree looks beautiful. Flowers appear between April-June, but in Mumbai the flowering continues till August. The fruit is a long cylindrical pipe-like pod which is green when young, but dark coffee brown when ripe.

The species name *fistula* refers to the long pipe-like pods. It was called Pudding Pipe Tree by the Dutch and as monkeys are fond of eating the pods, the tree is also called Monkey Stick.

The flowers are eaten by the Santhal tribals. The pulp of the fruit is used in many Ayurvedic medicines as a laxative and in heart disease, and its paste is applied to cure gout and rheumatism. The juice of leaves is used to cure ring worm; the leaves are also eaten by tribals. The wood is hard and is used for a variety of wood work. The leaves are larval food plant of the Common Emigrant butterfly.

It is planted as an ornamental avenue tree. The tree is propagated from seeds.



Photo: Mumbai University Campus, Fort

(20) CANNON BALL TREE

Common Names : Nagalingam (Tam.); Kailaspati (Mar.); Naga Pushpam (Mal.)
Scientific Name : ***Couroupita guianensis*** Aubl.
Where to see : All over Mumbai region, Mumbai University Campus (Fort), Churchgate (Rly. Head Quarters), Malabar Hill, Breach Candy, Jijamata Udyan, along roads in Western and Eastern suburbs, Santacruz Police Station Road.

A deciduous tree up to 20 m high native of Guiana. This straight, tall tree has spreading branches bearing leaves. The tree sheds its leaves three times in a year. Sometimes the tree suddenly sheds all its leaves, which indicates a polluted environment. The tree remains leafless for a week. The new leaves are light green; the tree looks extremely beautiful during this period.

The flowers appear from April onwards, but in Mumbai the tree blooms almost throughout the year. In the beginning, small green flower buds appear on the long hanging flowering branches, the buds later open up into large flowers. The pink to crimson coloured flowers of 7 cm diameter are fragrant and have small yellow dots on the petals that enhance their beauty. The stamens are bundled together to form a band-like structure bending down on to the centrally placed round, slightly raised female part of the flower. This looks like a hooded snake sheltering the Shivalinga. Therefore, this tree is also known as Naga Pushpa tree (Snake-flower tree).

The tree can be easily identified by its fruits, which are cannon ball shaped, giving it the common name Cannon Ball tree. The fruits are brown and have a woody covering. The sour smelling fruit pulp has many seeds. The fruits hang on the tree till they ripen in 8-9 months. The shells of the fruits are used as utensils and Africans prepare a beverage from the pulp.

The scientific name *Couroupita guianensis* Aubl. is derived from its native name 'Couroupitoutumou' and indicates its origin from Guiana. It is also found in South America, West Indies and South-East Asia. It is believed that it reached India through Sri Lanka.

The plant is raised from seed. The tree has a strong fragrance, due to which it is planted in gardens and near Shiva temples. Its flowers are offered to Shiva. Its ripe open fruit emit stinking smell.

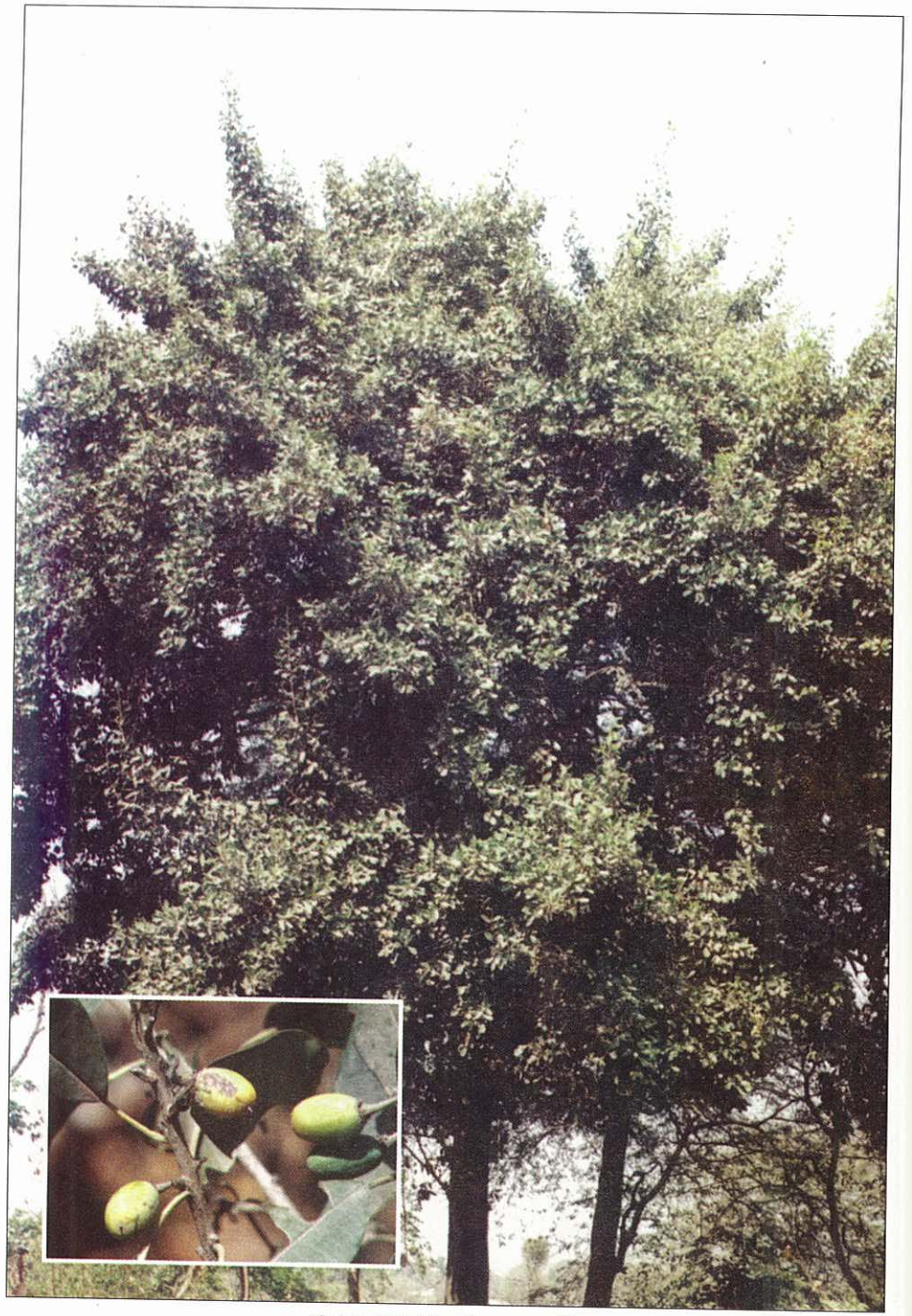


Photo: Film City, Goregaon (E)

(21) CEYLON IRON WOOD

Common Names	:	Rayan (Guj.); Khirni (Hin.); Ranjana, Rayan (Mar.); Palla (Tam.); Manjipada (Tel.)
Scientific Names	:	***Manilkara hexandra*** (Roxb.) Dubard. [syn. *Mimusop hexandra* Roxb.]
Where to see	:	Film City (Goregaon).

An evergreen tree up to 10 m high, but less than a metre in girth. It has a compact canopy of dark green leaves. The stem is dark with vertical marks of incisions. The leaves are elliptic, notched inwards at both ends with short petioles. They are a little thick and have leathery texture.

The flowers are borne singly or in groups of 2-3 in axils of the leaves. They are pale yellow and fragrant. The tree blooms between November and February. The flowers and fruits are produced in abundance.

The fruits are produced between April and July. They are yellow, slightly elongated and are similar to the neem fruit in size and shape. In Mumbai, the fruits are known and sold as 'Ahmadabadi Meva'. The fruits contain a single elongated shining seed, which is black.

The scientific name *Manilkara* refers to the local, traditional name in Malayalam and *hexandra* refers to the six stamens of its flower.

The timber is resistant to water and termites. The wood is hard and durable and is used for making household furniture. It is used to make a variety of articles like tool handles, furniture panels and walking sticks. The root-stocks are used for grafting sapota (chiku) seedlings. The ripe fruits are sweet and astringent. The leaves are used as cattle fodder. The tree also produces gum used in fever and as a general tonic.

The seeds of Khirni germinate easily and the saplings can be raised with ease during rains. The tree is planted for its fragrant flowers, sweet edible fruits and for ornamental purposes. It grows easily in house compounds and parks.

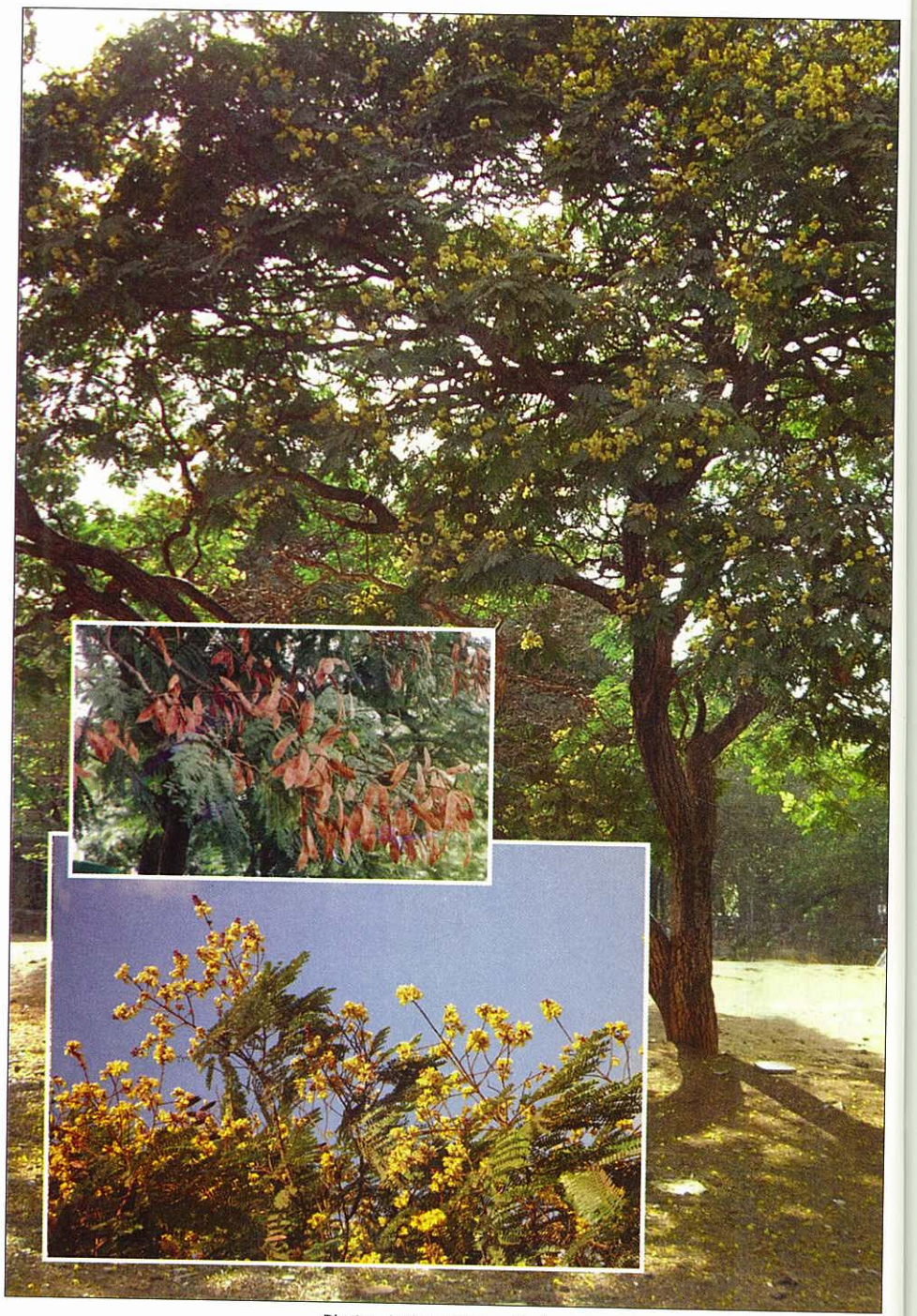


Photo: Parsi Colony, Dadar

(22) COPPER POD

Common Names : Rusty Shield Bearer,
Yellow Flamboyant (Eng.);
Son Mohur (Hin.); Ivalvagai (Tam.);
Kondachinta (Tel.)

Scientific Names : ***Peltophorum pterocarpum*** (DC) K. Heyne
[syn. *P. roxburghii* (G. Don) Degener]

Where to see : One of the commonest roadside avenue tree all over Mumbai.

A roadside tree native to the Indo-Malayan region, especially Andamans, growing up to 20 m high, with feathery long leaves. The stems have whitish bark. Each leaf has a long rachis with many pairs of pinnae. Each pinna has stalklets with tiny oval leaflets. The tree sheds its leaves for a very short period during January or February, exposing small, oblong, pointed coppery pods. The young coppery pods turn dark at a later stage, therefore the name Copper Pod tree.

The tree flowers from April to July, and again from September to November. When in bloom, the tree crowned with golden yellow flowers amidst dark green leaves provides a beautiful sight. The old flowers that fall on the ground form a carpet under the tree, and anyone standing near the tree can observe a steady shower of flowers.

The scientific name *Peltophorum* comes from the shield shaped stigma of its flower. *pterocarpus* (pteron = wing, carpus = fruit) refers to its winged, flat pod. It is also known as Son Mohur due to its golden yellow flowers and Rusty Shield Bearer refers to the shield shaped fruit.

The yellow flower is the source of a yellow dye. The mildly fragrant flowers attract a variety of insects for nectar and the green leaves are larval food of the Grass Yellow butterfly. The bark is a constituent of soga, a yellowish brown dye used in batik.

The tree is propagated from seeds. This fast growing tree is often planted on roadsides, but it falls easily – a victim of Mumbai's monsoon gales.



Photo: Unnat Nagar, Goregaon (W)

(23) CORAL JASMINE

Common Names	:	Shephalika, Parijat (Sans.); Jaya Parvati (Guj.); Harsinghar (Hin.); Khursali (Mar.); Manjhapu (Tam.); Parijatakam (Mal.)
Scientific Name	:	***Nyctanthes arbor-tristis*** L.
Where to see	:	All over the city at various places (in lanes and bylanes), gardens and colonies.

A native of India, it grows up to 10 m high. The trunk is grey or greenish grey with rough surface. The branchlets are quadrangular and covered with stiff white hairs.

Leaves are ovate with a pointed apex, and a smooth margin or a few large teeth. The leaf surface is rough above and thickly pubescent underneath.

Flowers are white, similar to jasmine, but with bright orange corolla tubes, therefore the English name Coral Jasmine. It grows wild in North, Central and Western India on hill slopes and rocky ground, and is often seen as undergrowth in dry deciduous forests. It can thrive in moderate shade.

The scientific name *Nyctanthes* means night flower and *arbor-tristis* means sad tree.

The tree is considered sacred and is dedicated to Lord Krishna. It is also grown near temples; the scented flowers and garlands are offered to the deities. According to the Vishnu Purana, the tree emerged at the churning of the ocean. It was taken by Indra and planted in his garden and was the pride of his wife Sachi. When Krishna visited Indra in heaven his wife Satyabhama was fascinated by the sweet scented flowers of Parijat and requested Krishna to take it to Dwarka. However, Indra was not willing to part with it and a great fight arose between them in which Indra was defeated. Krishna brought the tree to Earth and planted it in his palace at Dwarka.

The bright orange corolla tube contains a colouring matter known as Nyctanthin, which when boiled produces an orange colour that was used to dye silken cloth. Occasionally, the leaves are used to polish ivory and wooden items. The leaves are antibilious, expectorant and are used in rheumatism and fever. The leaves are used for the treatment of varicose veins.

This tree is planted along compound walls and the flowers often fall outside and can be enjoyed by the neighbours. This tree is indeed Owners' envy, neighbours' pride!



Photo: Peru Baug, Goregaon (W)

(24) CORAL WOOD

Common Names : Red Bead Tree,
Red Sandle Wood Tree (Eng.);
Moti Chanothi (Guj.);
Ratan Gunj (Hin.);
Thorligunj, Badigumchi (Mar.);
Manjadi (Mal.)

Scientific Name : ***Adenanthera pavonia*** Linn.

Where to see : Along roadsides and in gardens.

A moderate sized native tree of South-east Asia, 6-15 m high, with greyish brown bark. It has compound bipinnate leaves 20-30 cm long. Each leaf has 4-8 pairs of oblong, glabrous leaflets, alternately arranged on the rachis or stalk.

The tiny yellowish flowers are borne on stalks 10-20 cm long racemes growing along with pinnae. The flowers are fragrant and have five petals spread out in the form of a star. The fruits are 15-20 cm long pods that are twisted when dry and contain reddish biconvex seeds.

The scientific name *Adenanthera* indicates presence of stalked glands on each anther and *pavonia* means peacock feather-like leaves; refers to the feathery leaves of the tree. The term *Adenanthera* was also used by goldsmiths in Arabia (Aden). In olden days, the seeds were used as weights by jewellers in Arabia; the seeds are twice as heavy as 'gunja' seeds or 'ratti' (*Abrus precatorius* L.).

The seeds are used for treating boils and inflammations. They are also used to weigh, gold ornaments, as each seed roughly weighs 0.26 gm. They are also known as circassian seeds. The roots are emetic, while the bark is useful for treating chronic rheumatism and gout. The wood is used as a substitute for red sandalwood (*Pterocarpus santalinus*).

The seeds are rich in starch and toxic to humans and animals. They are covered with a thick red chitinous coating. If the seed is eaten unbroken it does not get digested and is expelled without causing any harm to the consumer.

The saplings of this avenue tree raised from seeds are planted during monsoon. It can also be grown from cuttings.



Photo: Opp. Sachivalaya, Nariman Point

(25) DEVIL'S TREE / SATVIN

Common Names	:	Ditabark Tree (Eng.); Saptaparni (Sans.); Saitan (Hin); Satvin (Mar.); Pala (Tam. & Mal.)
Scientific Name:	:	***Alstonia scholaris*** R. Br.
Where to see	:	Along roadsides and in parks. There are a number of trees near Dadar Station in the compound of the Municipal Sewage treatment plant.

A beautiful tall evergreen tree of the old world tropical regions growing up to 12-18 m high. The greyish bark is rough and yellowish from inside. When the tree is injured a milky juice comes out. Whorls of branches emerge at the same level. A bunch of seven lance-shaped digitate leaflets arise in the shape of a palm leaf from the end of the stalk, giving its common name Sapta-parna in Sanskrit and Satvin in Marathi.

The greenish white small fragrant flowers emerge in clusters, each with a long slender stalk. The tree flowers between December and March. The fragrance of the flowers is so strong that it can induce headache.

The fruits are long follicles 30-50 cm in length and are produced in pairs. The fruit contains elongated white seeds called *safed indrajau*. They are bitter like the bark and are used as medicine against intestinal worms. The seeds are held in a bunch of cotton-like fibres that help to disperse the seed and propagate the tree.

The scientific name *Alstonia* is in honour of the famous botanist Charles Alston, Professor of Medicine at Edinburgh University. In olden days the wood of this tree was used to make slates for school children, hence *scholaris*.

Animals avoid eating the leaves as the tree is toxic in nature. However, goats eat the leaves and transmit the bitter taste of the tree to the milk. There is a popular belief in Konkan that the tree is an abode of evil spirits and that the devil guards it. Infact, Shaitan (Devil) is the corruption of Satvin (seven-leaved). The massive height and girth adds to the relevance of its name. It is therefore also known as Devil's Tree or Shaitan Tree. The locals avoid even passing by this tree, thus it is protected in its natural habitat.

The tree is grown from seed and is often planted as an avenue tree along roadsides and as an ornamental in gardens. The Dita bark of the tree is used in Indian medicine for treating Asthma and heart ailments, fever and diarrhoea. During the Diwali festival, the bitter bark is consumed before eating sweets to neutralize the excessive intake of sugar.



Photo: S.P. Mukherjee Chowk, Fort

(26) DRUMSTICK TREE

Common Names : Horse Raddish (Eng.); Shobhanjana (Sans.); Saragavo (Guj.); Sainjna (Hin.); Shevga (Mar.); Murungai (Tam.); Murrina (Mal.); Mulaga (Tel.), Mushik (Konk.)

Scientific Names : ***Moringa pterigosperma*** Gaertn. (*Moringa oleifera* Lamk.)

Where to see : All over the city (along Railway tracks, wadis, near building compounds).

A small or medium sized deciduous tree up to 15 m high, with soft wood and corky bark.

The leaves are usually tri-pinnately compound, i.e. they branch three times. They are almost half a metre long, and the ultimate leaflets are about 2 cm long. The tree sheds its leaves between October and December, and fresh leaves appear between January and February.

Flowers are white and produced in large clusters. They are fragrant and are pollinated by bees, bumblebees and sunbirds. A tasty vegetable is made from the flowers.

Fruits are long, ribbed pods up to 50 cm long. They usually have nine ribs from the base to the tip of the fruit. The seeds are triangular and winged on the angles.

The scientific name *Moringa* refers to the Malayalam name of the tree. *pterigosperma* refers to its winged seeds (pterigos = winged and sperma = seeds). It is also known as *oleifera* meaning oil-containing seeds.

The root and stem bark have chemicals that have anti fertility activities. The fruits contain abortive chemicals and are prohibited in early pregnancy in women. Raw fruits are used as vegetable and in a southern Indian preparation 'Sambar' – an excellent curry. The leaves are used as vegetable. The seeds yield oil.

The seeds germinate easily, hence the tree is propagated by germination.



Photo: Jijamata Udyan

(27) FERN TREE

Common Names : Ningal (Tam.); Valmurriccha (Mal.)
Scientific Name : ***Filicium decipiens*** (Wight & Arn.) Thw.
Where to see : Jijamata Udyan (Southern end near small church), Sagar Upvan (Colaba).

An evergreen medium sized tree of African origin, 10-15 m tall, with a straight growing trunk and drooping branches. The leaves are pinnately compound or feathery and resemble the fronds of ferns, hence the name Fern Tree.

The rachis is winged between the leaflets that are up to 21 in number. The leaflets are narrowly elliptic or lanceolate, and glossy on the upper surface. The wings between the leaflets are spoon shaped.

The tree blooms during February-March. The flowers, which appear in axillary clusters, are shorter than the leaves. The petals are white, but insignificant. Stamens are 5, inserted below the disc. The fruits are tiny drupes, which mature in May. They are purple when ripe and contain a single seed.

The scientific name *Filicium* refers to the fern like leaves of the tree. *decipiens* also refers to the deceptive leaves of the tree, which are like fern fronds.

The tree is planted for ornamental purpose and is propagated by seeds. It also hosts lac insects.



Photo: Flora Fountain

(28) BANYAN

Common Names : Bahupada Vata (Sans.); Vadlo (Guj.); Bar, Bargad (Hin.); Vada, Wad (Mar.); Ala, Alam (Tam.); Ala Vatam (Mal.); Marri (Tel.)

Scientific Name : ***Ficus bengalensis*** L.

Where to see : All along the roadsides in the city.

An evergreen tree up to 22 m high. Sometimes in dry climate it sheds its leaves and remains barren for a few days. It has large spreading branches from which a number of aerial roots emerge. On reaching the ground these roots increase in girth and act as props to support thick branches, and help in the lateral expansion of the tree. The leaves are broad, oval with rounded base and blunt apex. The young leaves have a smooth shining surface. They are dark green above and pale on the underside. They become stiff and leathery with age. Each leaf has 3-7 veins arising from its base.

The fig is a pouch with large number of tiny male and female flowers. The real fruits are tiny pips inside the figs that are 2 cm in diameter and grow at an angle between the upper part of the leaf stalk and the branch. When young the figs are green, they turn red on ripening.

The scientific name *Ficus bengalensis* indicates that the tree is a native of Bengal. The English name Banyan is believed to be given during British Raj when traders known as baniyas used to assemble below this tree for business and worship.

The leaves are good fodder. The infusion of the bark is used for treating diabetics. The latex is used as bird lime and is applied in rheumatic pain. The figs or ripe fruits are eaten during drought. They are also enjoyed by birds and monkeys. The seeds passed out with faecal matter or droppings of birds grow easily on other trees and old crumbling walls. When growing on other trees, the banyan strangles them, ultimately killing the host tree.

The tree is raised from cuttings and seeds. It is planted on roadsides to provide shade. It is also planted near temples and in open areas of towns and villages. The tree is drought resistant and can tolerate mild frost.

The Vad is sacred in Hindu religion and is worshipped by married women on Vat Amavasya (new moon day) and Vat Purnima (full moon day). The Banyan tree is long lived. Two such trees planted by the Portugese Governor of Mumbai in the compound of Bombay Castle, more than 450 years ago, survived the British Rule and are still present in the compound near INS Angre, close to the old Central Library, Fort. Wadala was named so because it had a large number of Banyan trees.

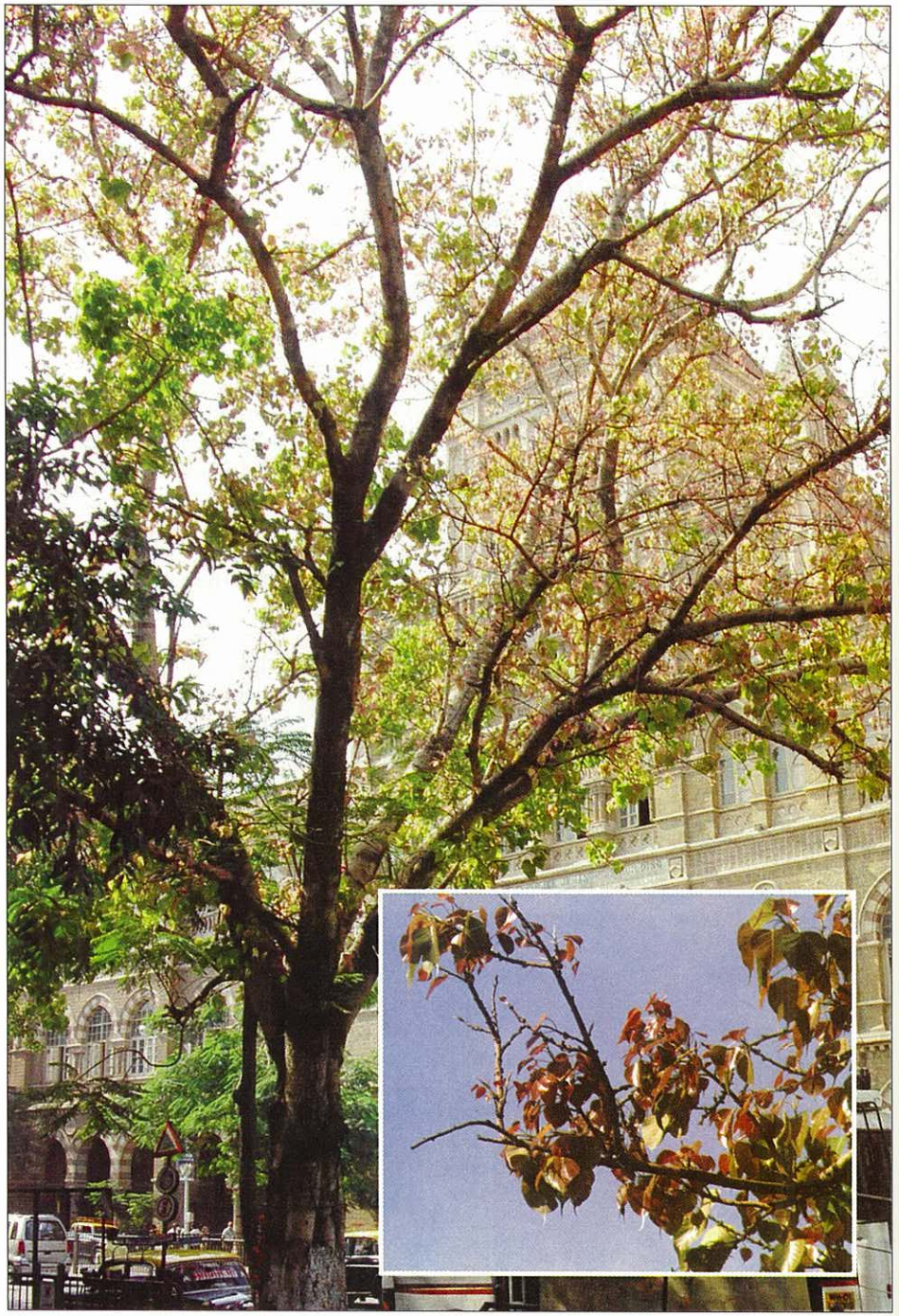


Photo: Near Jehangir Art Gallery

(29) PEEPAL

Common Names : Bodhi tree (Eng.); Ashwattha (Sans.); Pipro, Jari (Guj.); Pipli (Hin.); Pimpala, Ashwattha (Mar.); Arasu (Tam.); Arachu (Mal.); Ashvatthamu, Bodhi (Tel.); Ashwattha (Beng.)

Scientific Name : ***Ficus religiosa*** L.

Where to see : Common all over Mumbai city.

A medium to large sized deciduous tree with a straight trunk and spreading branches, which may give it an umbrella like appearance. The leaves have long stalks and narrow pointed tips, are broad, heart shaped with a smooth shining upperside and narrow pointed apex. When blown by wind the leaves rub against each other to produce musical notes. The tree usually sheds its leaves during winter and new leaves appear during early spring. The young leaves are light pinkish green.

Tiny flowers are present inside the fruits. This arrangement is known as hypanthodeum. The small male flowers with three petals are present near the opening at the apex and the female flowers grow deeper inside the fig. The flowers are pollinated by fig wasps. In the absence of these insects fruiting will not take place.

The new stalkless figs are green, smooth and round; they turn purple when ripe. The fig is a composite fruit with a large number of smaller fruits. Frugivorous birds and squirrels are fond of eating these figs.

The scientific name *Ficus* indicates its relation to the Fig Family. *religiosa* indicates its sacred status.

The fruit and tender leaves are eaten during scarcity of food. Chopped leaves and twigs are good fodder for elephants and cattle. The latex may be used as bird lime and for sealing small holes in tyre tubes.

The seeds germinate in presence of sufficient moisture. The tree grows quickly, and when young it is epiphytic, i.e. grows on other trees or in cracks of wall.

The tree is sacred for Hindus and Buddhists. It is believed that Gautam Buddha meditated under a Peepal tree at Bodh Gaya. In the Atharvaveda, there are references of *Ficus* trees growing on other trees. The wood of *Ficus* growing on *catechu* and *Prosopis* trees are used for various religious rites. According to a Hindu belief, the roots of the Peepal represent Lord Shiva, the branches Lord Brahma and the leaves Lord Vishnu. The tree is frequently planted near temples.



Photo: Sanjay Gandhi National Park, Borivli

(30) BOKEDA

Common Names	:	Rough leaved Fig (Eng.); Dhed umbar (Guj.); Katgularia, Kagsha (Hin.); Kalaumbar (Mar); Peyatti (Tam.); Peragam (Mal.); Bodamamidi (Tel.); Kada Atthi (Kan.)
Scientific Name	:	***Ficus hispida*** L.
Where to see	:	Common all over the city, Nepean Sea Road, near Institute of Science (Fort), Sagar Upvan (Colaba), Sion, Wadala, Goregaon, Sanjay Gandhi National Park (Borivli).

A small tree up to 10 m tall without aerial roots. The trunk and branches are covered by stiff hairs. The grey bark peals off in irregular flakes.

The stiff leathery leaves are 10-30 cm long and form a small crown on the tree. The ovate-oblong leaves with acuminate tips and serrated margins and tips are rough to touch like sand paper, and their lower surface has stiff hairs.

The figs or receptacles grow in pairs or clusters on the tubercles of the stem or on separate leafless rooting runners. They are pear shaped and ribbed. The figs appear between February and July. Hollow branches and opposite leaves are characteristic of Bokeda.

The fruit, seeds and bark are emetic, and the acrid latex is used as medicine.

The tree grows in poor, disturbed soil and is often seen in wastelands. It is propagated by seeds and roots suckers.



Photo: Five Gardens, Dadar

(31) INDIAN RUBBER TREE

Common Names : Assam Rubber (Eng.);
Bor, Attahbar (Assa.)
Scientific Name : ***Ficus elastica*** Roxb.
Where to see : Five Gardens, footpath near Flora Fountain, Opp. Lion Gate, Fort and many city gardens.

A large, robust evergreen tree 20 m tall. The straight trunk has widely spreading branches. The dark green leaves form a thick canopy. A large number of aerial roots arise from the branches, which very often unite with the much buttressed and fluted trunk.

The stiff leathery leaves are 5-10 cm long, elliptic in shape and have a prominent mid-rib. The leaves contain some secretion, which is not elastic. The greyish brown bark is somewhat smooth or scurfy.

The scientific name *Ficus* is derived from the Fig fruits and *elastica* refers to the elastic rubbery leaves.

In the past, the tree was a source of Indian rubber, but it is now replaced by *Hevea brazilensis* for commercial purpose.

The stem and main branches are tapped for latex, which is more in plants growing in shade. The latex yield depends on the age of the tree, the younger trees yield more latex than the older ones. The tree is a good source of fodder and is planted as an ornamental and for shade.

It is propagated from seeds or by cuttings and layering. It is epiphytic in the early stages.

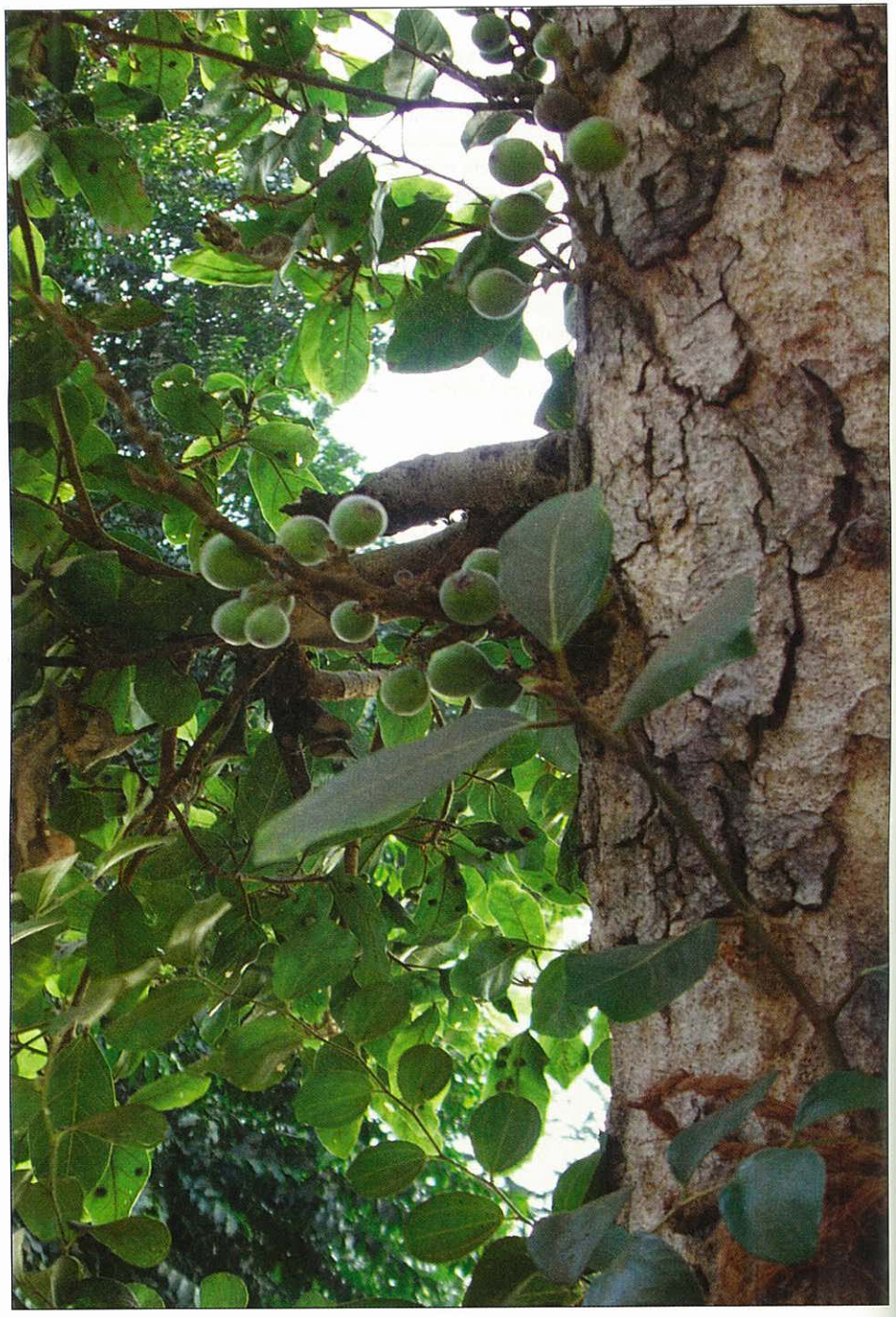


Photo: Near King Circle Station, Matunga

(32) COUNTRY FIG / UMBAR

Common Names	:	Clustered Fig (Eng.); Umaro (Guj.); Gular (Hin.); Audumbar, Umbar (Mar.); Atthi (Tam., Tel.); Atthi-al (Mal.)
Scientific Names	:	***Ficus racemosa*** Linn. [syn. *Ficus glomerata* Roxb.]
Where to see	:	Common throughout Mumbai city.

A large sized evergreen tree of Indo-Malayan origin, sometimes reaching up to 15-20 m high, especially seen on river banks and in wet places. The bark is slightly brownish and covered all over with tubercled outgrowths. The lower portion of the stem is enlarged with buttressed roots.

The leaves are alternate, accompanied by small scales called stipules. They are thick textured, light green, straight along the margins and with blunt tips.

There is a wrong belief that this tree does not flower. The flowers are enclosed in a hypanthodium commonly called fig, which is produced from the tubercled outgrowths on the stems. The fig is not a fruit, but a special type of inflorence, which encloses numerous flowers inside its fleshy receptable. The tiny flowers within the figs are pollinated by tiny wasps, which pierce the soft receptacle and the inner cavity of the hypanthodium and lay eggs among the numerous flowers.

The fruits are tiny globose achenes, which germinate only after passing from the gut of animals. The ripe mature figs (hypanthodea) are relished by monkeys and squirrels. Wild boars and deer feed on the fallen figs.

The scientific name *Ficus* is the Latin name for edible fig. *racemosa* and *glomerata* refer to its inflorescence or hypanthodea, which are borne in racemes in younger stages, but mature into glomeratous fruit-like inflorescences. The Country Fig is a close relative of the edible fig and is also called Wild Edible Fig.

A thin watery sap that oozes out from the roots was used for treating tuberculosis. The bark contains tannins, which are used to treat leucoderma, both as internal medicine and for external application.

A sacred tree, it is planted near temples dedicated to Lord Dattatreya.

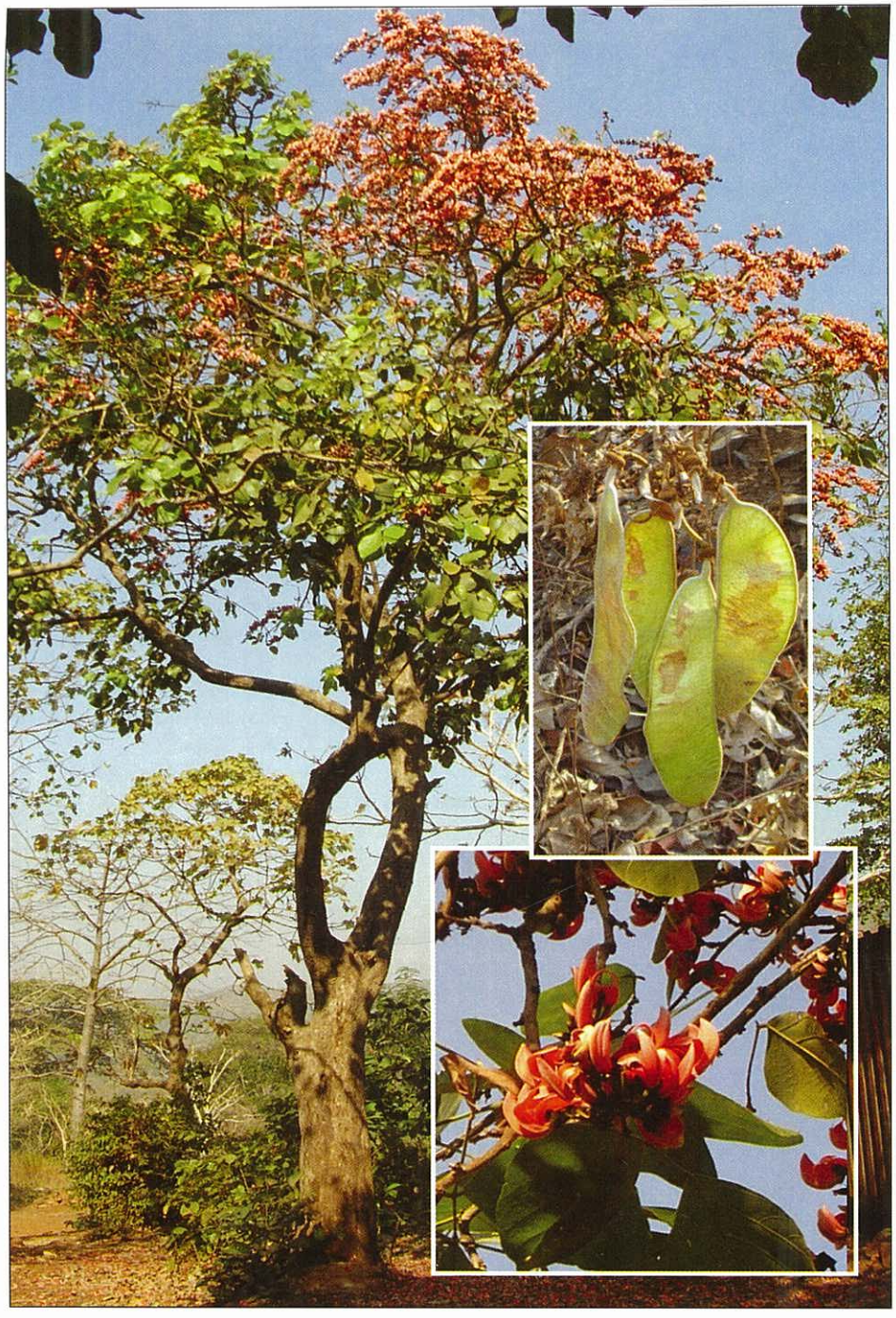


Photo: Sanjay Gandhi National Park, Borivli

(33) FLAME OF THE FOREST

Common Names : Palash, Bramhopadapa (Sans.); Khakharo (Guj.); Dhak (Hin.); Palas (Mar.); Parasa (Tam.); Brahma Vriksham (Mal.); Multuga (Kan.); Porasu (Ori.)

Scientific Name : ***Butea monosperma*** (Lam.) Taub.

Where to see : Along roadsides and Sanjay Gandhi National Park (Borivli).

A deciduous tree up to 12 m high. The tree trunk is not straight and branches originate at various angles. The trunk is covered with light brown or greyish bark. The large compound leaves, each with a long stalk, has three leaflets of which two are opposite and the third is terminal or apical. The leaflets are ovate, broad, stiff and leathery in texture. The upper surface of the leaflet is smooth and shining, while it is densely silky below. The tree sheds its leaves in November and December and is leafless till new leaves appear in April and May.

The barren branches of the tree start bearing dark brown buds of silky texture usually in late January. The crimson orange flowers, almost the size of the human thumb, start blooming soon and continue till April. The flower has five petals; one pair unites and appears like a parrot's beak or tiger's claw.

The fruits are pendulous silky pods with a single seed at its apex. The young pods are pale green and turn yellowish brown with age. The seeds are flat and kidney shaped.

Cracks and incisions in the bark secrete a red juice, which when dry forms a ruby red translucent grain known as Bengal Kino or Palas Gum, a powerful astringent that is given in diarrhoea and dysentery. The seeds are anthelmintic. The dried flowers, commonly known as *Kesudo*, yield an orange yellow colour that is used for dyeing cloth and also used during Holi Festival.

The tree is hardy and drought resistant, and grows well in dry areas. It can also survive in a fair amount of shade and grows well in waterlogged conditions, including saline, alkaline and swampy areas.The tree grows from seeds.

The tree is considered sacred by Hindus. Among the trifoliate leaves, the middle leaflet is believed to represent Vishnu and the two lateral ones are Brahma and Shiva. The wood and leaf-stalks of Palash are used in *havana* (sacred fire), and the tree is considered sacred and symbolises the moon.

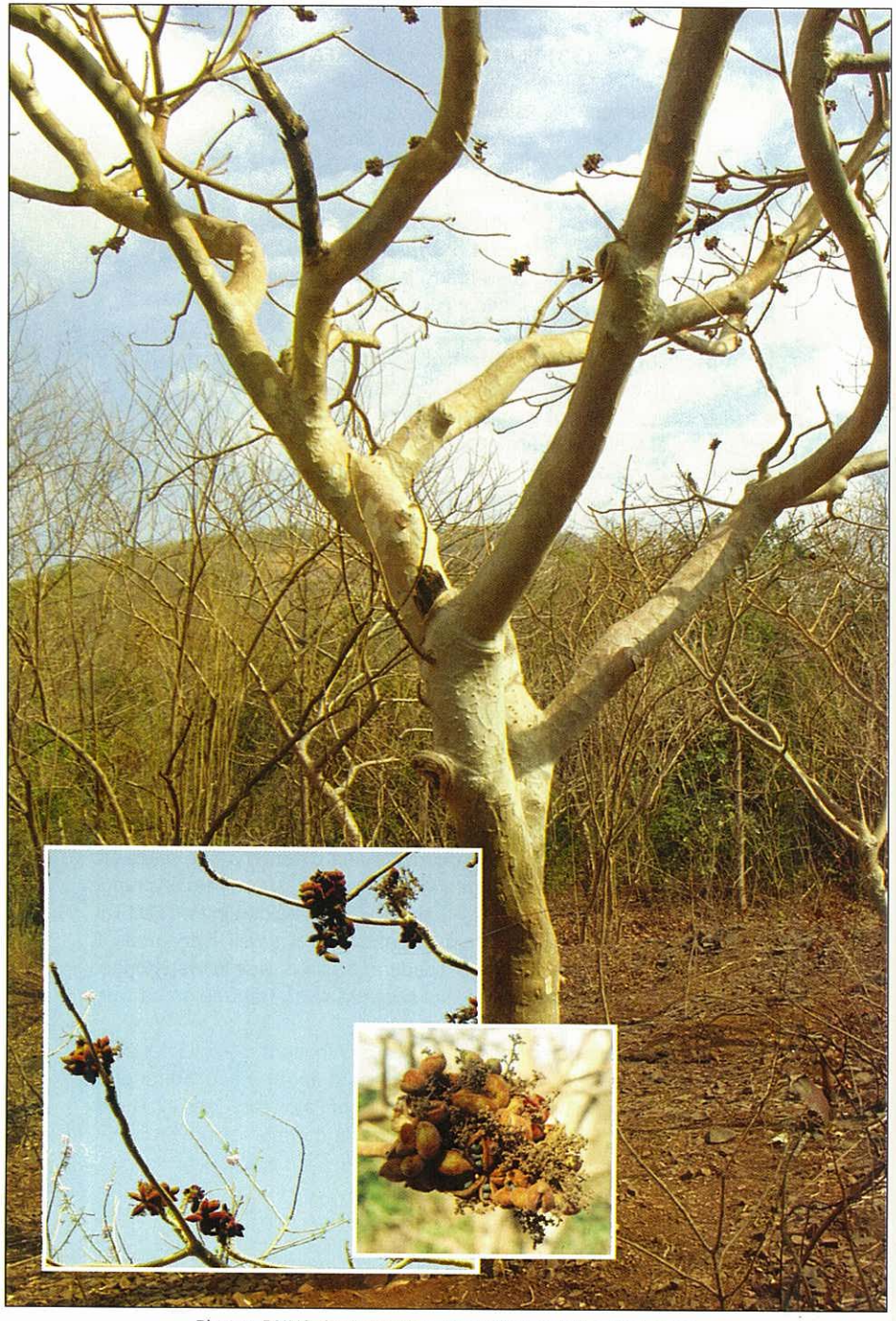


Photo: BNHS-Conservation Education Centre, Goregaon

(34) GHOST TREE

Common Names : Kargol (Guj.); Gulu (Hin.); Karai (Mar.); Kavalam (Tam.); Vakka, Thondi (Mal.); Kempundale (Kan.)

Scientific Name : ***Sterculia urens*** (Roxb.)

Where to see : Cumbala Hill, Dungarwadi (Malabar Hill), Jijamata Udyan, Sion Fort, BNHS-Conservation Education Centre (Goregaon), Sanjay Gandhi National Park (Borivli).

A medium sized deciduous tree up to 15 m tall. The straight tree trunk is covered with greyish white peeling papery flakes. The large, plate-like 5-lobed leaves grow at the end of the branches. The underside of the leaves is velvety and the leaf stalk is equal to the length of the leaf-blade. The tree sheds its leaves during December and January. The leaves, which turn yellow before falling, give it a beautiful appearance. When bare, its whitish bark shines at night giving it an eerie look; it is therefore called the Ghost tree.

The flowers grow in clusters and are greenish yellow. They are covered with a sticky layer of star shaped hairs and have a strong, foetid smell. The barren tree starts blooming between January and March.

The fruits have boat shaped fruitlets, which resemble a starfish and are covered with stinging hair. The young fruits are crimson velvet, turning woody brown with age. Each fruitlet has 3-6 brownish seeds.

The scientific name *Sterculia* is in honour of Sterculius a Roman demi-god of manure symbolising stinking flowers. *urens* means burning sensation, it refers to the stinging hairs of the fruits.

The tree exudes a gum known as Karaya or Katira, which is used as laxative and for treating throat infection. The gum is widely used by the cosmetic industry and as a pulp binder in the paper industry.

The bark fibres are used for cordage. The leaves form nutritious fodder. The roasted seeds are eaten. They are also eaten by birds for their fleshy sweetish covering or aril. The tree grows well in dry, rocky habitat and can be used for greening such areas.



Photo: Sanjay Gandhi National Park, Borivli

(35) SPOTTED GLIRICIDIA

Common Names : Madre de Cocoa, Mother of Cocoa, Nicaraguam Shade Tree (Eng.); Undir-mar (Mar.)

Scientific Name : ***Gliricidia sepium*** (Jacq.) Walpers

Where to see : Jijamata Udyan, Marine Lines, Parsi Colony Dadar, near BNHS-Conservation Education Centre (Goregaon), common in Sanjay Gandhi National Park (Borivli).

A medium sized deciduous tree 12 m high, but can grow up to 18 m under favourable environmental conditions. The young tree shoots upwards. The main stems when cut produce numerous coppices. The compound leaves grow on arch-like branches. The leaf stalk has 8 pairs of leaflets and a single terminal leaflet. The oblong, light green leaflets have black spots on the underside, hence the common name Spotted Gliricidia.

Clusters of pink flowers appear on almost bare branches from January to April. The flowers appear from the axil of the leaf and are arranged in racemes. The pea shaped flowers have a cup-shaped calyx. The flowering tree is a beautiful sight. The fruits are 10-12 cm long pods with flat seeds.

The scientific name *Gliricidia* is derived from the Spanish name 'Mata Raton' meaning mouse killer. 'Gliris' means mouse and 'caedo' means killer. *sepium* means hedge, the tree is at times planted as a hedge.

In cocoa plantations, it is grown as a shade tree. Being a leguminous plant, its leaves are highly nutritious and are useful as green manure. When grown as hedge along crop fields, it acts as a wind-break. The bark of the tree is powdered and mixed with rice/maize floor baits set up to kill rats.

Due to its quick growth, the tree is planted as an avenue tree and for ornamental purposes.

In Mumbai, the tree was introduced in 1916 when Millard, the then Honorary Secretary of the Bombay Natural History Society, exhibited a young tree grown from the seeds sent to him by Mr. Miller from Peradeniya, Sri Lanka during a members meeting.



Photo: Near Matunga Railway Station (CR)

(36) GUEST TREE

Common Names : Kleinhovia, Tree Antigonon (Eng.); Punaitteku (Tam.); Bota (Beng.)
Scientific Name : ***Kleinhovia hospita*** L.
Where to see : Horniman Circle (Fort), Parel, Five Gardens (Matunga), Andheri (East).

A medium sized evergreen tree, 15 m tall. The leaves are long, sometimes reaching up to 10 cm. The cordate shaped leaves grow alternately and form a roundish crown. The leaves are present throughout the year.

When in bloom the tree forms an attractive sight. The flowers appear during monsoon, in July and August. The rosy pink flowers are produced in large terminal panicles, at the ends of branches. The flowers have five rose-pink petals with yellow tips. The fruits are pear shaped membranous capsules, with pepper like small seeds.

The scientific name *Kleinhovia* is in honour of Dr. C. Kleinhoff a Dutch botanist, who was a Government Physician, in Eastern India. The meaning of *hospita* is not very clear. *hospita* means hospitable, but there is no record of it in literature.

An ornamental tree with intermittent flowering periods, it is planted in avenues, parks and along the coast. A decoction of leaves is used for skin ailments. The bark and leaves are poisonous, and used for killing eels and head lice.

The tree is a native of Australia. It is planted near Buddhist temples in Mumbai. In Parel, Mumbai there is an avenue of this tree near a Buddhist temple. The plant is raised from seeds. It is also propagated by layering.



Photo: Horniman Circle, Fort

(37) FLAMBOYANT TREE

Common Names	:	May Flower Tree (Eng.); Gulmohur (Hin., Mar.); Mayirkkondrai (Tam.); Whaturayi (Tel.)
Scientific Name	:	***Delonix regia*** (Boj. ex Hook) Raf.
Where to see	:	All over Mumbai along roadsides, railway tracks and gardens.

A medium sized deciduous tree from Madagascar, growing up to 12 m high. The light green leaves are feathery, elegant and are around 50 cm long. The leaves are twice divided, and are called bi-compound leaves. Each leaf is composed of a number of pinnae, which are arranged in pairs along the mid-rib or the rachis. Each pinna, has 20-30 pairs of small oblong leaflets.

The leaves are shed around mid February and March, when the tree becomes totally bare, except for the old pods, which remain hanging from leafless branches.

At the outset of the summer season, light green buds start appearing on the tree and one can see scarlet petals in the partially open buds. Flowering takes place in a phased manner — a few flowers appear first, followed by peak flowering or mass blooming. The scarlet flowers at times with variegated, and red and yellow petals are a beautiful sight. One cannot ignore the red carpet under the tree and the eyes turn upwards to meet a heart throbbing sight.

Flowering which commences in late April continues till June. The flowers yield a red dye. The fruits are 30-60 cm long, flat and slightly curved pods, green and flaccid when young, which become hard and coffee brown with age. The seeds are oblong like 'rajma' and mottled. The dried pods when shaken produce a rattling sound and children enjoy playing with them.

The petals are spoon shaped, elongated, narrow at the base and spathulate at the apex, some suggesting a claw-like structure giving its generic (first) name *Delonix*. A fast growing tree, it is planted as an avenue tree for shade and ornament.

It grows well in dry conditions as well as in humid coastal regions. However, due to its shallow root system, it is an easy victim of heavy monsoon gales and storms. Usually grown from seeds, it can also be propagated from cuttings. It was brought to India from Madagascar, where it is called Flamboyant. In Mumbai, it is also referred to as Pentecost tree or the Holy Ghost tree as its peak flowering coincides with the feast of Pentecost, 50 days after Easter.

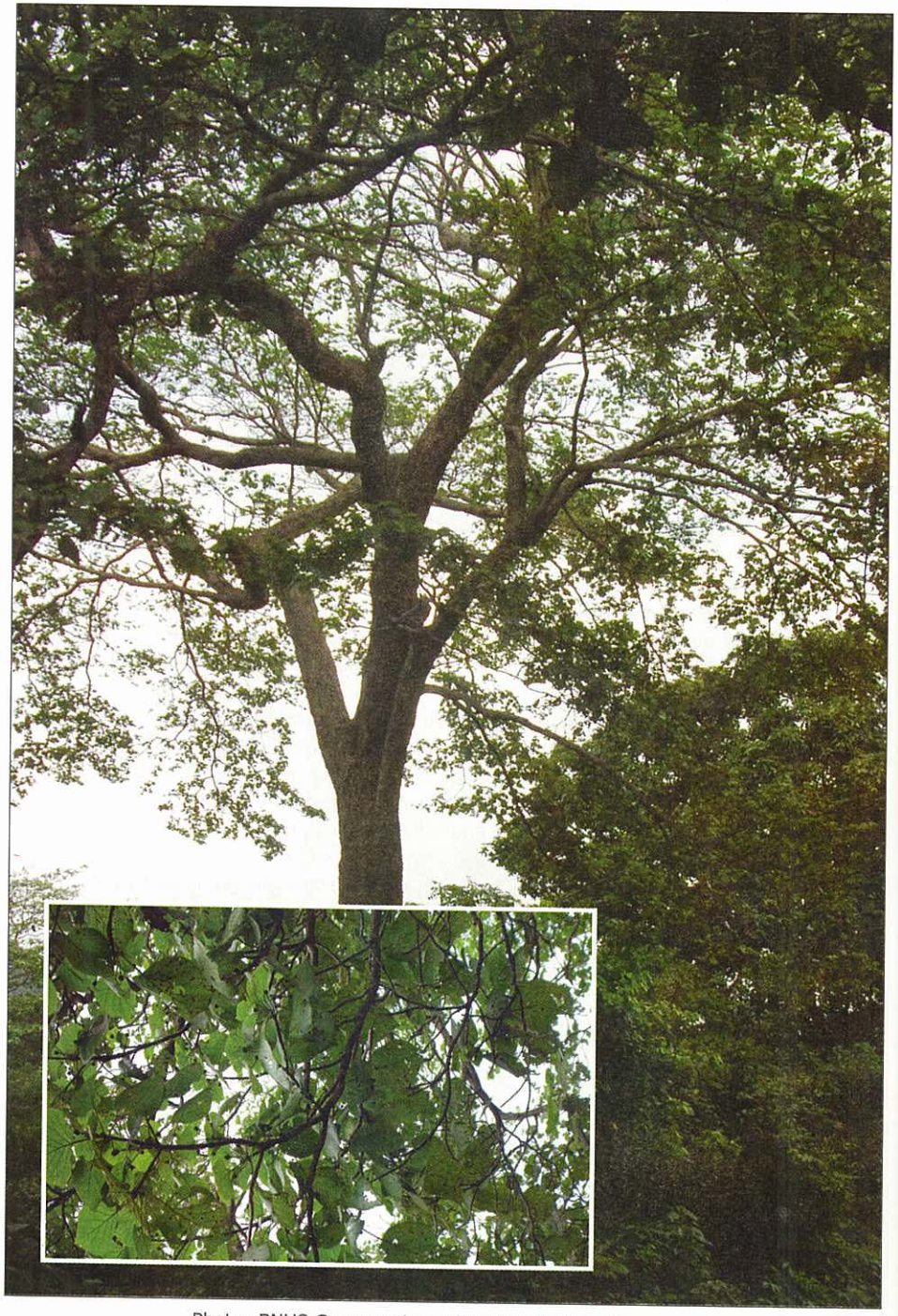


Photo: BNHS-Conservation Education Centre, Goregaon

(38) HALDU

Common Names	:	Haldarvo (Guj.); Hadlu (Hin.); Heddi (Mar.)
Scientific Name	:	***Haldina cordifolia*** (Roxb.) Ridsdale (=*Adina cordifolia* Roxb.)
Where to see	:	In wooded patches around the city, Sanjay Gandhi National Park (Borivli).

A medium sized tree with a large crown, grows to 20 m high. It can grow up to 30 m under favourable conditions. A deciduous tree, it sheds leaves between February and April. The stipules, i.e. two leaf-like small structures covering the buds appear conspicuously in May and June. The heart shaped broad leaves with pointed apex are light greenish-pink when young, but later turn dark. A pair of stalked and opposite leaves each growing on either side of the branch are connected by a pair of stipules.

The globose floral balls of 2 to 3 cm width have tiny yellowish flowers. When open the styles of each small flower collectively forms a golden halo round the floral ball. The tree blooms between June and August. The fruit heads are small, black and remain on the tree till the next June.

The scientific name *Haldina* is derived from its local name 'Haldu' in Maharashtra. *cordifolia* means heart shaped leaf. Earlier it was referred to *Adina*, an Eastern Asiatic genus. It is also called as Kalam or Kalamb tree.

The bark of the tree yields a yellow dye, which was used for dyeing wool and linen. The tree provides good timber and the wood is used for railway sleepers and construction work. The bark is used as an antiseptic. The roots are used as astringent in dysentery. Being a deciduous tree it is not good for avenue plantation. The tree has a religious significance in Hindu marriage rites.

The seeds are shed on the ground during monsoon and grow well on well-drained hills exposed to strong light. Its seedlings are also grown in nurseries for transplantation.



Photo: S.V. Road, Goregaon (W)

(39) INDIAN ALMOND

Common Names : Deshi Badam (Hin.);
Nattu-vadam (Tam.);
Adamarram (Mal.);
Badam Gida (Kan.);
Badamuchettu (Tel.);
Bangla Badam (Beng.)

Scientific Name : ***Terminalia catapa*** L.

Where to see : All over Mumbai as an avenue tree.

A medium size deciduous tree of Malayan origin, reaching to 20 m high, it often develops butressed roots when grown to full size. It has horizontal and whorled branches arising from a common point. The leaves are large, obovate with an acute tip and narrow base, and appear at the end of branches. The mature leaves turn red before falling; the tree appears very beautiful during this period. It sheds its leaves from November to December.

It flowers during April-May. The small star-shaped flowers grow on a slender raceme arising from the axil of the leaves.

The fruits are oval to elliptical, turgid and pointed at both ends. The young fruits are green, and turn purplish red when mature. The fruits have a fleshy red outer layer, with a fibrous inner layer covering the seed. The seed has an elongated kernel that looks like an almond, hence the common name Deshi Badam.

The scientific name *Terminalia* refers to the cluster of leaves at the end of the branches. *catapa* is derived from its local name of Malayan origin.

The tree secretes a gum and the kernel yields an almond-like oil. The stem and root barks are used for tanning. The wood is of moderate strength and is used in minor frame works. The ripe fruits are eaten by children.

The tree is propagated from seeds.

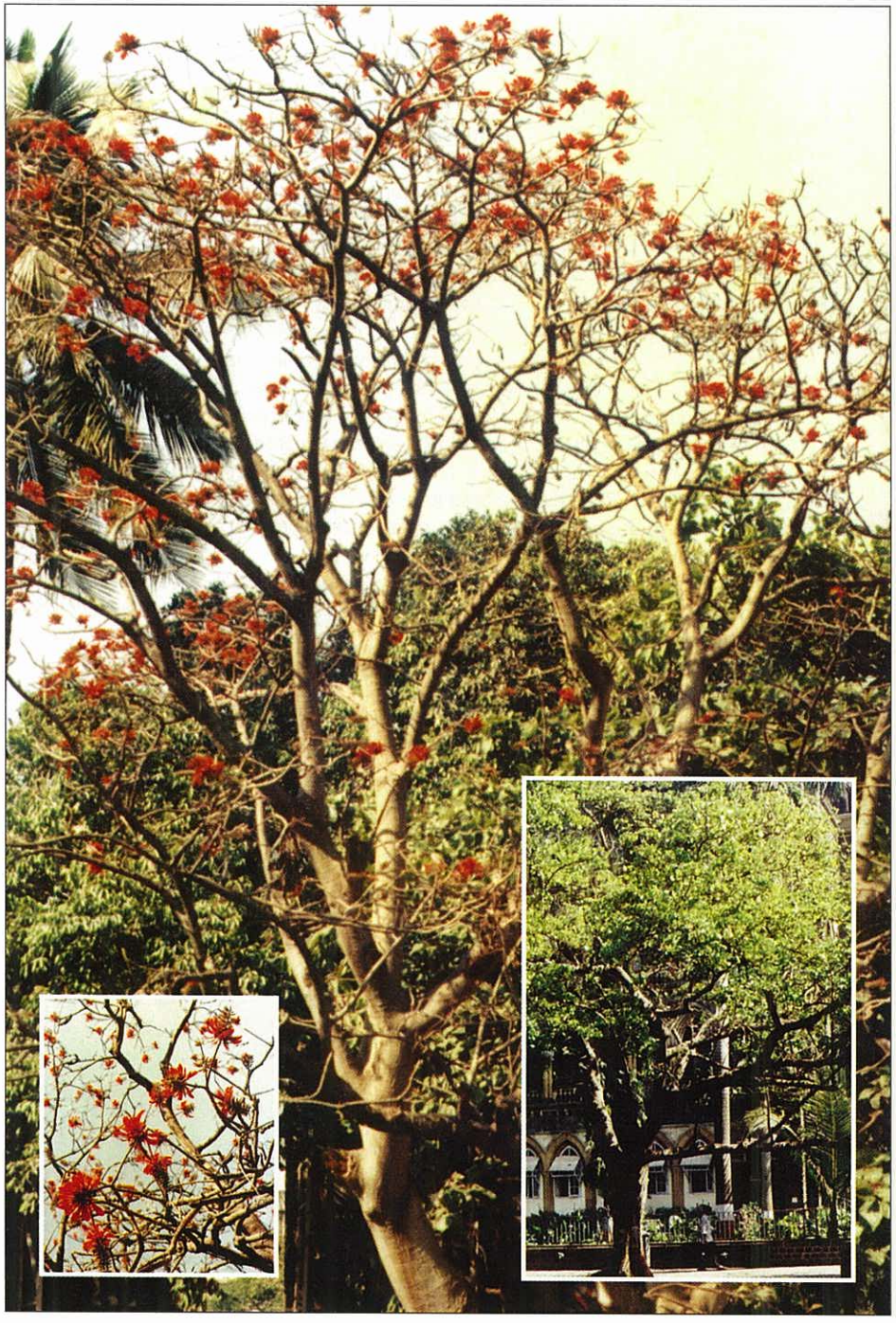


Photo: Near Oval Maidan, Fort

(40) INDIAN CORAL TREE

Common Names	:	Mandar (Sans.); Bangaro, Panarvo (Guj.); Mandaram, Pangara (Hin., Mar.)
Scientific Names	:	***Erythrina variegata*** L. [syn. *Erythrina indica* Lamk.]
Where to see	:	Along roadsides, railway lines and in gardens all over Mumbai.

A moderate sized, deciduous tree reaching up to 15 m high. The trunk and young branches of the tree have sharp prickles that are superficial, embedded in the outer thin bark without any connection to the inner wood. The bark has faint greyish white vertical lines.

The compound leaves have long stalks and three leaflets – the terminal leaflet is larger than the other two. The leaflets are large, rhomboid oval with an acute tip. The leaves are shed from December to January.

The tubular flower has a long petal, bent like a claw, with ten long stamens protruding from it. Flowers attract a variety of birds like myna, crow, babbler, drongo, tailor bird, bulbul and rosy pastor that come for nectar and thereby help in pollination. Flowering starts in March and continues till May. The leafless tree with scarlet red blooms is a feast for the eyes. The fruits are 10-30 cm long, slender, moniliform or constricted pods. The young pods are green and turn brownish black later. They remain on the tree till November. The pods contain kidney shaped seeds, which can be distinguished by the swellings on the pod. The seeds have poisonous alkaloids called **Erythrina**.

The scientific name *Erythrina* is derived from Erythros, meaning red in Greek.

As the Indian Coral Tree is a legume, the soil benefits from its nitrogen fixing capacity. It is an important avenue tree and planted for shade and as a support tree for betel, pepper and some leguminous vegetable vines. The flowers when boiled give a red dye. The wood is light and white in colour, and is used for manufacturing wooden toys and handicrafts. Leaves are fed to cattle.

The young fleshy cotyledons are rich in starch, and are eaten by ants and other insects. Mumbai has two varieties of the Coral tree, the variety with scarlet red flowers is more common than the one with pure white flowers. Both the red and white flowered trees can be seen along the Western Express Highway near the Aarey-Colony junction.

The tree is propagated from saplings raised from seeds and also by planting cuttings which develop roots in short period. The Indian Coral Tree is planted as a hedge or living fence around fields.



Photo: Sagar Upavan, Colaba

(41) INDIAN CORK TREE

Common Names : Neem-chameli, Akas nim (Hin.); Kavala-nimb (Mar.); Maramalli (Tam.); Katesam (Mal.); Kavuki (Tel.); Beratu (Kan.)

Scientific Name : ***Millingtonia hortensis*** L.

Where to see : North end of Oval, Jijamata Udyan, Goregaon, near the railway track at Borivli Station.

A tall tree up to 24 m high. The tree trunk is straight with elongated pyramidal crown of green leaves. The yellowish gray tree bark is rough with corky texture giving its English name Indian Cork Tree. The compound leaves 45- 50 cm long are bi- or tripinnate. Each pinna has oval to lanceolate leaflets of smooth texture. The tree sheds its leaves partially from January. New leaves appear in April and May.

The tree blooms from October. The white flowers arranged in drooping clusters grow at the end of branchlets. The white flowers have pendant corolla composed of 5 petals. The largest petal of the flower has a deep cleft. The flowers generally have a reddish tinge. The mild scent emitted by flowers make the surrounding area fragrant. In Mumbai, the tree flowers from October onwards, while in other parts of Western India it blooms between August and September.

The fruits are long slender capsules with several flat winged seeds.

The scientific name *Millingtonia* is in memory of the English Botanist Sir Thomas Millington. *hortensis* refers to it being confined to gardens.

The wood is suitable for ornamental and furniture work. The bark yields poor quality of cork.

Though a fast growing tree, it is not suitable for avenue plantation as its shallow roots are susceptible to strong wings. It is therefore generally planted as an ornamental tree. The pendant clusters of glossy white flowers growing among the green leaves enhance the beauty of the tree. One can often observe a white carpet of the corolla below the tree.



Photo: Observation Post, Aarey Colony, Goregaon (E)

(42) INDIAN MEDLAR TREE

Common Names	:	Bullet wood (Eng.); Bakul (Sans.); Bolsari (Guj.); Maulsari (Hin.); Ovalli (Mar.); Elengi (Mal.); Pogada (Tel.)
Scientific Name	:	***Mimusops elengi*** Linn.
Where to see	:	Planted in gardens, Jijamata Udyan, Picnic Point at Goregaon.

A large evergreen tree 12-20 m high with thick foliage, forming a dense crown. The stem is hard and covered with thick bark, which shows small vertical cracks. The medium sized leaves are elliptic-oblong with slightly pointed tips.

The star shaped, creamy white small flowers grow in fascicles. A shower of the fragrant flowers covers the ground when the tree is shaken. The flowers retain their fragrance for a long time even after drying.

The fruit is an ovoid berry and has 1 or 3 seeds. The berries are edible and have a mixed, sweet and astringent taste. The shining compressed seeds are greyish brown and resemble the seeds of 'chiku' or 'sapota plum'.

The scientific name *Mimusops* in Greek means Ape-like. *elengi* refers to its local Malayalam name 'Elengi'.

Garlands of its fragrant flowers are sold in the market as Ovali or Valesar. The infusion of flowers is used in perfumes and as a stimulant. The flowers are also stuffed in pillows. A sniff of the dried flowers relieves headache. The ripe yellowish fruits that turn red later are eaten and also pickled. The tree bark is used for dyeing and tanning. The bark and fruits are astringent and tonic. The leaves are good fodder and the tree also yields a gum.

It is planted for shade, as well as an avenue tree and in gardens for its fragrant flowers. The tree grows well in shade and is propagated from saplings.



Photo: Marine Drive

(43) SAMUDRAPHUL

Common Names : Samudraphala(Kan.);Ondolam, Samuthrapplam(Tam.); Suraponnachettu (Tel.); The Queen of Shores (Eng.)

ScientificName : ***Barringtonia asiatica*** (Linn.)

Where to see : Along Marine Drive, Sagar Upvan (Colaba), Opp. Mantralaya, Coastal areas of Goregaon, Malad, Vikhroli.

A small to moderate sized tree of 10 to 12 m height.The fibrous bark of mauve gray colour is faintly streaked. The obovate leaves are 30-40 cm long with narrow base and have shinning leathery texture.The tree blooms through out the year.The large sized flowers appear at the end of branches and are arranged in short erect racemes.The calyx enclosing the buds are two lobed.

Flowers are white and resemble powder puffs. They bloom at night and wither by morning. Fruits are quadrangular, depressed with thick smooth shining pericarp. The seeds are ovoid.

The cooked fruits are eaten in Indo-China and are also used as vermifuge The seeds are roasted and eaten by locals of Andaman Islands. The bark and fruit possess narcotic properties. They are pulled and used to stupefy fish. The roots and fruits are used in Polynesia to heal wounds. The oil extracted from the seeds is used as an illuminant. Wood is light and soft used for furniture.

It is planted as an ornamental and avenue tree and is also good for afforestation of swampy grounds. Treated seeds are used for propagating the tree. In coastal areas seeds are dispersed by sea.

The scientific name *Barringtonia* is given in honour of Daines Barrington an English Naturalist and *asiatica* applies to its native country.



Photo: Jijamata Udyan

(44) IRONWOOD TREE

Common Names	:	Ironwood Tree (Eng.); Nága Champaka (Sans.); Naga-Champa (Mar.); Suruli (Tam.); Churuli Nanga (Mal.); Nagalesara (Tel.); Atha (Kan.)
Scientific Name	:	***Mesua ferrea*** L.
Where to see	:	Jijamata Udyan

A medium to large sized evergreen tree up to 45 m tall. The tree trunk is short and has reddish brown bark. The new leaves which appear in February on young shoots are crimson, they later turn pink and finally become green. The leaves are dark green above and bluish-grey underneath with a waxy bloom.

The tree flowers between January and March. The solitary white flowers with a bunch of golden stamens at the centre look like rose. The fragrant flowers have 4 sepals and 4 wedge shaped petals.

The ovoid fruits are pointed at the apex and have a persistent calyx. The fruit is somewhat woody and has a single cell, which encloses 1-4 dark brown, shining seeds.

The tree is propagated from seeds, but seedlings raised in nurseries grow faster. This handsome tree wth beautiful foliage and fragrant blossoms is planted in gardens for ornamental purpose. The dried flowers are fragrant and are used for stuffing pillows. The tree is sacred and grown near temples. In Sanskrit literature, it is mentioned that one of the five arrows of Kamadeva was tipped with Nagachampa wood. The wood is used for railway sleepers and to make musical instruments, tool handles and poles.



Photo: Near Elephant Gate, Sanjay Gandhi National Park, Borivli

(45) PALA-INDIGO / SAFED KUDA

Common Names : Pala-indigo (Eng.);
Krishna Kutaja (Sans.); Dudhi (Hin.);
Swet Indrajao; Safedkuda (Mar.);
Nila palai (Tam.);
Aiyapala (Mal.); Thellapala (Tel.)

Scientific Name : ***Wrightia tinctoria*** R.Br.

Where to see : BNHS-Conservation Education Centre (Goregaon), common in Sanjay Gandhi National Park (Borivli)

A small deciduous tree 3-4 m tall with minutely tubercled thin white bark. The bark is bitter and contains anthelmintic properties. The leaves are light greenish yellow, thin like paper, with long produced tips and turn bluish when dry. They yield a greenish blue dye, which gives the tree its specific name *tinctoria* meaning bearing colour. The tree remains leafless from December to March, which also happens to be its flowering period.

The flowers are produced in bunches, at the end of the branches. The white, fragrant flowers have fringed lace-like petals.

The fruits ripe in May. They are long, stick like follicles in pairs and are joined at the tip. Pods contain winged seeds, which are bitter like the bark of the tree.

The seeds are called 'safed indrajav' and are used in Ayurvedic treatment of diarrhoea and dysentery. The white bark of the tree merits its name 'safed kuda' or 'sweta indrajav'. The bark is used as tonic and seeds are astringent and have antidiarrhoeal properties. The wood is used for carvings and for making toys.

Seeds have hairy appendanges which assist dispersal by the wind.



Photo: Sagar Upvan and Parsi Colony, Dadar

(46) BLUE JACARANDA

Common Name : Nili Gulmohur (Hin.)
Scientific Name : ***Jacaranda mimosaefolia*** D. Don
Where to see : Avenue tree along roadsides, Sagar Upvan (Colaba), Jijamata Udyan, Parsi Colony (Dadar).

A moderate sized tree up to 16 m high. The leaves are fern-like and bipinnate, or twice divided, and resemble leaves of *Mimosa*. The compound leaves, each having up to 15 pinnae, grow alternately from the branch. Each pinna has 15-20 oblong-rhomboid leaflets. The basal leaflets are larger than the apical ones.

The tree blooms between March and May. The pyramidal cluster of violet blue flowers is up to 20 cm long. The colour of the flowers becomes pale with passing days. Each cluster bears about 40-90 flowers. The flowers have long, bent swollen tubes with two lips, one of them is 2-lobed and the other 3-lobed.

The fruits of Jacaranda are circular hard pods, which contain papery samara-like seeds that are compactly arranged in the fruit.

The scientific name *Jacaranda* originated from its Brazilian vernacular name. *mimosifolia* refers to its leaves that resemble leaves of *Mimosa*.

The bark and leaves are used for treating syphilis. The powdered leaves are used for treating wounds. It is also a host plant of the Indian Lac Insect. The wood is fragrant, hard and heavy, and is called Pallixander Wood. It is used to make wooden tools.

The tree was introduced in India from Brazil, because of its beautiful flowers and foliage. It is planted as an avenue tree at many places. It can be propagated from seeds or by planting cuttings of half ripened wood.



Photo: Parsi Colony, Dadar

(47) JACKFRUIT TREE

Common Names : Panasa (Sans., Tel.); Kanthal (Hin.); Phanas (Mar.); Palaphalam (Tam.); Chakka (Mal.); Halasu (Kan.)

Scientific Names : ***Artocarpus heterophyllus*** Lam. [syn. *Artocarpus integrifolius* (auct. non L.f.)]

Where to see : Common in the city.

A large evergreen tree growing to 15 m tall, with a straight hard trunk and a dense crown of leaves. Stem sometimes up to 2.5 m in diameter. The 10-20 cm long leaves are elliptic, acutely tipped, green above and pale beneath and have a leathery texture. The bark sometimes peels off in irregular pieces, exposing pinkish red tuberculations.

The male and female flowers grow on the same tree at the tip of branches or on the trunk. The male flowers are 1-2 mm in size. They have perianth lobes, i.e petals and sepals are of the same colour, and minute yellowish anthers. The female flower heads have a long stalk by which they are attached to the branch or trunk. They have several flowers, each having 2 mm long styles.

The fruits are oval or oblong, 30-90 cm long and 20-40 cm wide. In rare cases the fruit is longer than a metre in length. The fruit skin is studded with short spikes, is pale green and turns greenish yellow to brown when ripe. Each spike represents one flower in the aggregate inflorescence. The fruits have somewhat kidney shaped or oblong seeds which are enclosed in yellowish fleshy pulp. They are of two varieties, the *kapa* has a sweet flesh, and the *barka* has thin mucilaginous pulp. It is said that these two varieties alternate in generations, i.e. seeds of *kapa* will give rise to *barka* and vice versa. The ripe fruits have a peculiar smell.

The scientific name *Artocarpus* is derived from the Greek word Artos meaning bread and Karpos means fruit.

As the tree has good canopy, it is planted around houses and along roadsides for shade. Unripe fruits are used as vegetable and for making pickles. The ripe fruits are eaten and used for making syrup. The wood is used for making furniture and musical instruments. The leaves are eaten by cattle. A sticky white latex obtained from young shoots is used as bird lime. Sawdust from the heartwood is boiled to obtain a yellow dye often used by Buddhists to dye thin robes. The Nambudari Brahmins of Malabar generate sacred fire, by friction from its dry branches. The tree is propagated from seeds.



(48) JAMUN

Common Names	:	Java Plum, Black Plum (Eng.); Jambu (Guj.); Jambhal, Jamun (Hin.); Jambul (Mar.); Naval (Tam.); Nava (Mal.); Neeram (Tel.)
Scientific Name	:	***Syzygium cumini*** (L.) Skeels
Where to see	:	This is one of the Jamun Tree species seen along the roadside

A moderate sized evergreen tree with thick bark and hard, woody trunk. The leaves are simple with a straight margin and with closely arranged veins arising from the central midrib and ending at an intra-marginal vein, running parallel to the margin. They are dark green and without any hairs or appendages.

The flowers occur in terminal bunches called panicles, flowering is without any particular pattern. The petals of the flowers are united. The tree flowers between February and April.

The unripe fruits are green and turn pinkish later, like a pigeon's egg, when fully ripe they are bluish-black. The fruits ripen during April to June. Twenty-five or more fruits can be seen together on a branch. The fruits are edible and sweet to taste. They contain a purplish juice, which is water soluble and stains the mouth.

The scientific name *Syzygium* is derived from the Greek word suzugos meaning united, and refers to the united petals. *cumini* refers to the bunch formation of the fruits.

In Mumbai, a number of other *Syzygium* species are erroneously called *Syzygium cumini.*

The water extract of the bark is administered to sick cattles, especially in diarrhoea. The bark contains tannins that are used by the tanning industry. The fruits are used for making jams, jellies and squashes. The fruits yield a Jambul flavoured alcohol. The seeds are known to lower blood sugar and are used in the treatment of diabetes.

The seeds germinate en masse in monsoon and the tree can be propagated from them. Grafting can be done easily for better fruiting varieties, as in mango trees.



Photo: Oval Maidan, Fort

(49) WILD ALMOND

Common Names : Wild Badam, Poon Tree (Eng.); Pinari (Mar.); Potta Kavalam (Mal.); Gurapa (Tel.); Bhatala Penari (Kan.)

Scientific Name : ***Sterculia foetida*** L.

Where to see : Northern corner of Oval Maidan, near Sion Bus Depot, roadside along Wadala, approach road to UDCT at Matunga, outside Mahim Rly. Stn. (West).

A tall, straight deciduous tree 15-20 m high with a girth of 1-1.5 m at chest height. When fully grown, it produces buttressed roots at the base. The branches are whorled. The bark is ash-grey and has vertical cracks.

The leaves are crowded at the end of the branches and are palmately compound. They are made of 5-9 leaflets, arising from the end of the petiole. The leaflets have a short stalk, which may be absent in some leaves. The tree starts shedding leaves from October, and new foliage appears in June. The tree blooms and produces fruits between October and June. The male and female flowers are separate, but both appear on the same raceme-like inflorescence. The small sized flowers are dull orange and have a foul smell, which attracts flies for pollination.

The fruits, 1-5 (commonly 3), are boat-shaped, pointed at the apex and have hard shells. They are brownish red with a short stalk. Each fruit shell contains 10-12 seeds. The seeds are the size of neem fruits, and are covered with brownish or ashy coloured papery skin.

The generic and specific names have a similar meaning *Stercus* in Latin means dung and *foetida* means stinking.

The fruits have a sweet oily edible pulp that is enjoyed by children. The seeds are commonly called Java olives or stinking beans. They are eaten raw or roasted. When eaten in large quantities, the seeds cause dysentery. The tree exudes a gum that resembles tragacanth, and is used for book binding and similar work.

The seeds germinate freely in July; the tree can be propagated by transplanting seedlings. A quick growing tree, it is planted as an ornamental roadside tree.



Photo: Matunga (W) Rly. Station

(50) KADAMBA

Common Names	:	Kadamba (Sans., Guj., Hind., Mar., Kan); Kadawala Vellai Kadambam (Tam.); Bol-Kadamba (Beng.)
Scientific Name	:	***Neolamarkia cadamba*** (Roxb.) Bosser
Where to see	:	Many parts of the city, BNHS-Hornbill House, Matunga (West), IIT-Powai, IGIDR (Goregaon).

A tall, robust, deciduous tree with a straight trunk and horizontal branches, which are usually produced in all directions, it grows up to 35 m high. The large, oval shaped leaves are sometimes broadly elliptic oblong.

The tree sheds leaves in summer and blooms during June-July. Its yellowish orange ball-like flower bearing heads, and light yellowish green leaves provide a beautiful sight. The golden yellow flower-heads are the size of golf balls and bear small sweet scented flowers. A variety of insects visit these flower heads for nectar.

The orange fruits start ripening in August. They have several small seeds, which are dispersed by bats and birds.

The ripe fruits of Kadamb are pleasantly flavoured and are eaten raw as well as cooked, but can cause stomach problems due to their acidic nature. The fruit juice with cumin seeds and sugar is given to children for stomach ailments. Its sharbet provides relief in fever and persistent thirst. Flowers are used as vegetable and leaves provide fodder for cattle.

The tree in its natural habitat is found in moist deciduous forests, along the sides of rivers and streams in warm climate. It is also planted as an ornamental. It requires sufficient sunlight for healthy growth.

The tree is associated with Lord Krishna in ancient Indian folklore and often planted near temples.

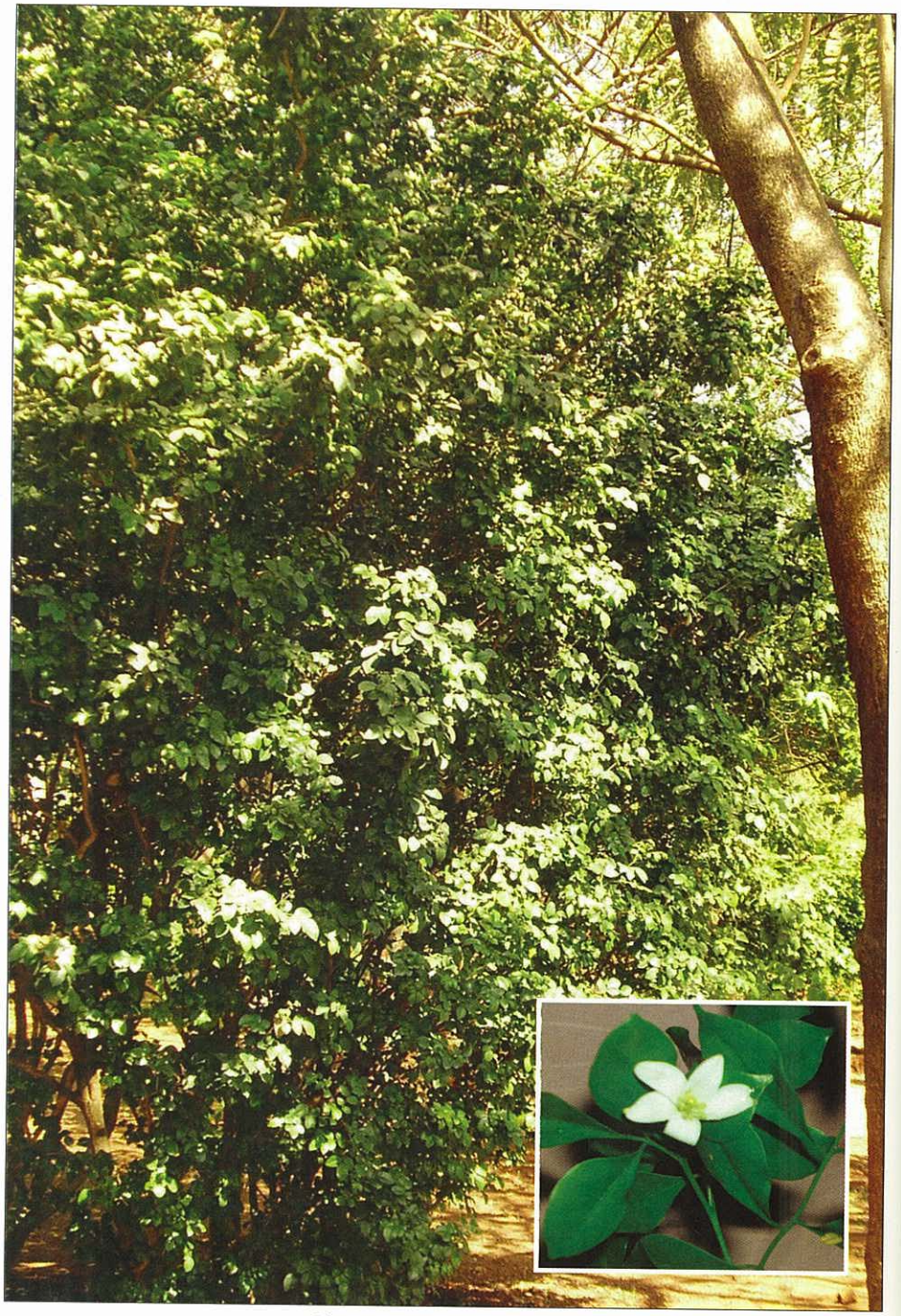


Photo: Sagar Upvan, Colaba

(51) KAMINI

Common Names : Orange Jessamine (Eng.);
Kamini (Hin., Beng.);
Kunte, Pandari (Mar.); Konji (Tam.);
Nagagolunga (Tel); Angarkana (Kan.)

Scientific Names : ***Murraya paniculata*** (L.) Jack
var. exotica (L.) Almeida

Where to see : Opp. Varsha (Malabar Hill);
Jijamata Udyan, KEM Hospital Garden,
Andheri roadside, Goregaon (W).

A small tree up to 5 m high. The trunk is short and crooked, and is covered with yellowish brown bark. The bark is fragrant and has a corky texture. The glossy green foliage of the compound leaves form a spreading crown. Each imparipinnate leaf has 3-9 lance shaped ovate leaflets with a mild fragrance.

The flower buds are light green and the tree flowers slowly after the onset of monsoon. The tree continues to flower in the postmonsoon period. The small white flowers appear in small clusters. They have a pleasant fragrance, which is enhanced at night. Each flower has 5 petals arranged in a circle.

The fruits are small berries, which when ripe turn orange red. Each berry has 1 to 2 seeds.

The leaves have astringent and stimulant properties and are also given for the treatment of diarrhoea and dysentery. The powder of the leaves is also applied on cuts and wounds, due to its antibiotic properties. The twigs are also used as tooth brushes. The wood, which is also sold as Chinese boxwood, is used to make various wooden items.

The tree is grown in gardens for its green foliage and fragrant flowers. It is propagated from seeds and cuttings.

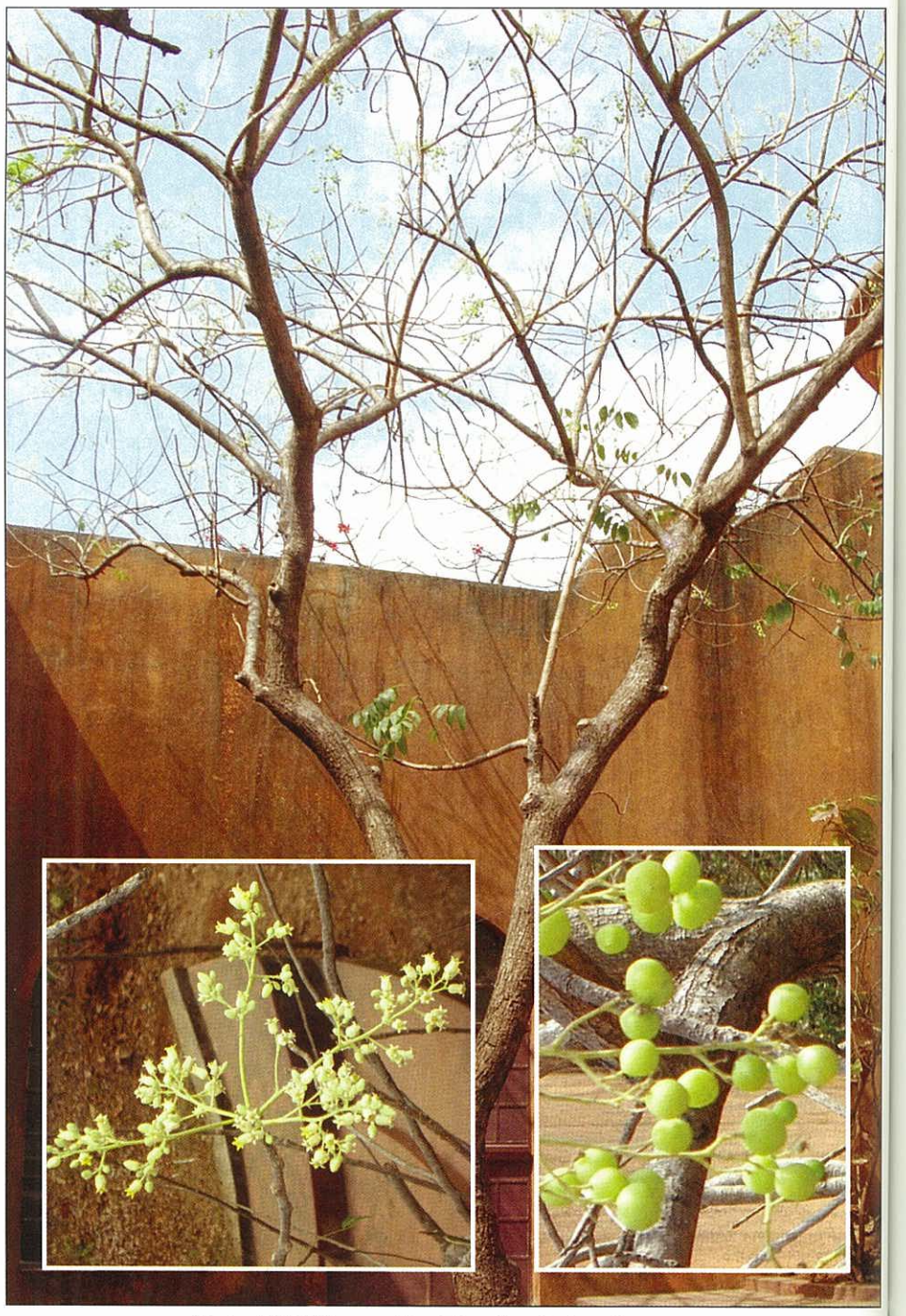


Photo: BNHS-Conservation Education Centre, Goregaon

(52) KAKAD

Common Names	:	Khusimb (Guj.); Kharpat, Kaikar (Hin.); Kakad (Mar.); Karrevembu (Tam.); Garuga (Tel.); Kosramba (Mal.)
Scientific Name	:	***Garuga pinnata*** Roxb.
Where to see	:	BNHS-Conservation Education Centre (Goregaon), Sanjay Gandhi National Park, (Borivli).

A small sized deciduous tree of Indo-Malayan origin extending up to the Pacific Islands. The stem is somewhat vertically furrowed with peeling bark. The leaves are compound pinnate with 6-10 pairs of leaflets and a terminal odd one. The tree remains leafless from December to January. The leaves have saw-like teeth along the margin, with a long produced tip.

The flowers produced in dense clusters are hairy but not significant in size or colour. The tree starts blooming from February till the beginning of monsoon; the leaves develop simultaneously.

The fruit, a round fleshy drupe, is yellow and contains 2 seeds that have markings on the surface and wings on the sides. It is not edible as it contains an irritant – calcium oxalate crystals, and is astringent to taste. However, it is pickled and eaten by tribal communities.

The scientific name *Garuga* is derived from Garuga – a native Telugu name of the plant and *pinnata* refers to its pinnate, feathery leaf.

The leaf is a larval food plant of the Tassar Silk Moth. There are other insects associated with galls that develop on leaves. Insect galls initially look like globose or elongated fruits that later burst open to look like flowers. The galls contain gallic acid used in Ayurvedic medicines. The tree has antioxidant properties and it also provides useful timber.

The tree is propagated by seeds.



Photo: S.V. Road, Santacruz (W)

(53) KAPOK TREE / WHITE SILK COTTON

Common Names	:	White Silk Cotton (Eng.); Sveta Salmali (Sans.); Safed Simul (Hin.); Hirvi-Savar (Mar.); Ilavu (Tam.); Mullilavu (Mal.); Burga (Kan.)
Scientific Names	:	***Ceiba pentandra*** (L.) Gaertn. [syn. *Bombax pentandrum* L.]
Where to see	:	Very common, planted along roadsides in Mumbai.

An introduced deciduous tree with horizontally spreading whorled branches, 3-5 branches arising from a single point successively on the main stem at regular intervals. The tree reaches up to 20 m high in Mumbai, but in other countries it reaches up to 70 m high. The stem is green, and occasionally turns greyish on maturity. It is smooth with spines or thorns.

The tree sheds its leaves from November and remains leafless till May. The leaves are palmate, digitately compound, with a long petiole and 5-8 leaflets.

The flowers appear in clusters and the peduncles arise from leaf axils. The petals are dirty white and somewhat woolly on the outside. The tree begins to bloom in December or January; each flower has 5 stamens. The fruits, which are oblong pods, are ready in March.

The scientific name *Ceiba* is derived from its native name in Brazil. *pentandra* refers to the 5 stamens of the flower.

The black seeds are embedded in silky, woolly floss, which is used for stuffing pillows and mattresses, and for insulating pipes and tubes that carry heated solvents or steam. The seeds yield oil which is similar to cotton seed oil. The wood is light and soft, and is used to make canoes and toys. The tree yields a dark red gum, which has astringent properties.

The tree has come to India from South America. It is easily propagated from seeds, which germinate en masse in the capsule. Germinated saplings can be transplanted easily as the tree requires very lititle water, and grows well in arid habitat.



Photo: Opp. Churchgate Station

(54) PONGAM TREE / KARANJ

Common Names	:	Karanj (Hin., Guj., Mar.); Pongam (Tam.)
Scientific Names	:	***Pongamia pinnata*** (L.) Pierre [syn. *Pongamia glabra* Vent.]
Where to see	:	All over Mumbai along roadsides, in housing colonies and gardens.

A medium sized deciduous tree growing up to 20 m high. The trunk has spreading branches and its greyish bark is covered with tiny tubercles. The 12-25 cm long compound leaves have 5-9 leaflets that are green, oval with a pointed tip, often with white serpent-like markings made by nematode worms. The leaves are shed in February-March and new light green leaves emerge soon after.

The flowers are arranged in raceme, i.e. old flowers at the base, and new flowers and buds at the apex of stalk. The small bluish white or pinkish white flowers have a mild fragrance. The tree blooms from April to June, when it is almost leafless, but soon the leaves start covering the entire tree. The tree looks really beautiful with its pinkish white flowers on a dark green background of leaves. The fallen petals form a beautiful carpet under the tree.

The fruits are hard, bronze coloured pod with the apex slightly curved like a bird's beak and matures by the next monsoon and it is comparatively large in size. Solitary seeds that fall from the fruit germinate to forming a green carpet of seedlings. The tree can be propagated by transplanting these seedlings.

The scientific name *Pongamia* is derived from its Tamil name Pongam. *glabra* refers to its smooth green leaves. The name *pinnata* refers to its compound leaf with pinnate (parallel) leaflets.

It is believed that Karanja Island near the Mumbai coast was named so because of the large number of Pongam trees growing on it. Karanj oil is used as a fuel. It also has medicinal properties, and is used for rheumatism and skin diseases. It is used to lubricate wheels of bullock-carts. Recent research indicate that Karanj oil has the property of filtering and reducing ultraviolet rays, it is therefore used in sun-screen lotions.

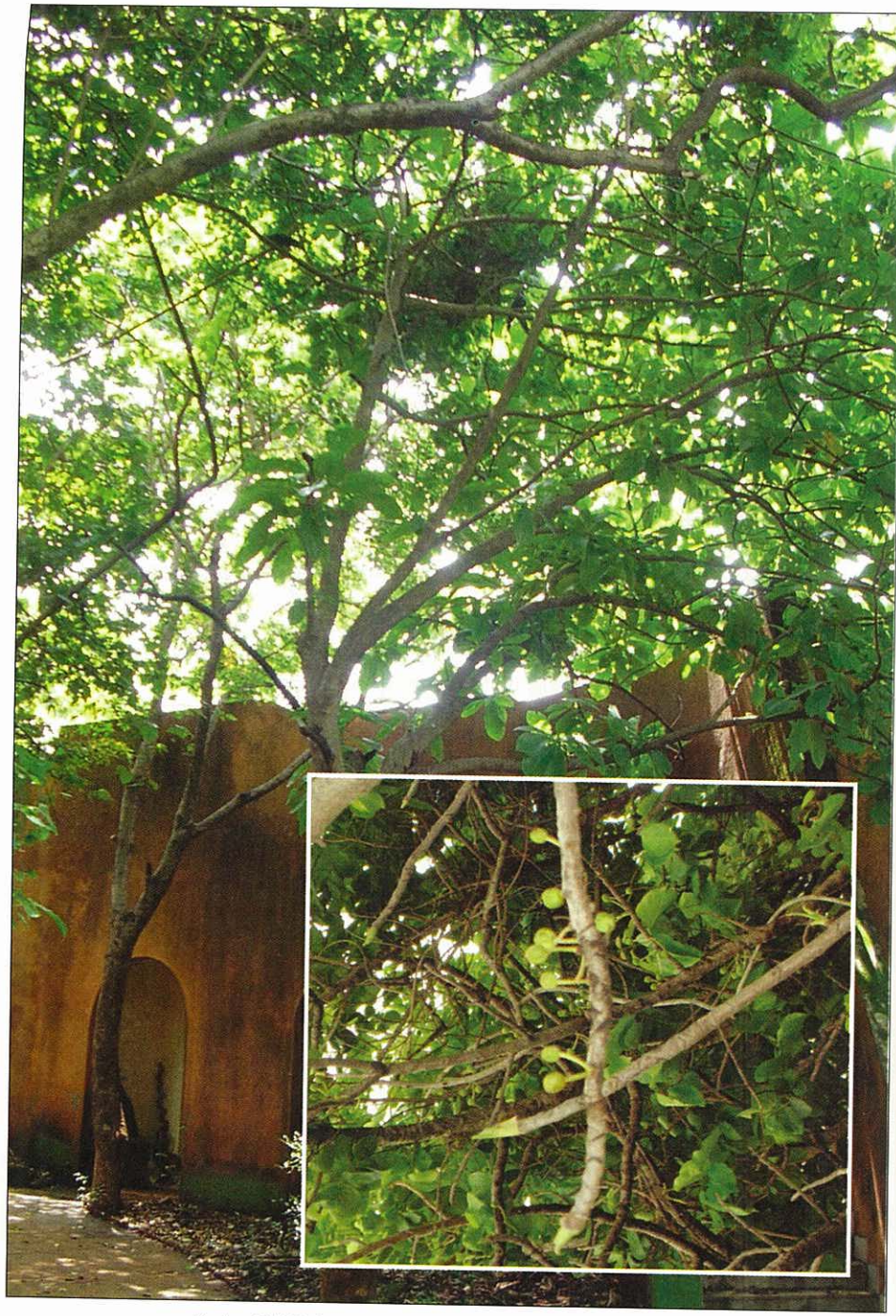


Photo: BNHS-Conservation Education Centre, Goregaon

(55) KARMAL

Common Names	:	Aggai, Kallai (Hin.); Naytekku (Tam.); Punna (Mal.); Chinna Kalinga (Tel.); Kangala (Kan.)
Scientific Name	:	***Dillenia pentagyna*** Roxb.
Where to see	:	BNHS-Conservation Education Centre (Goregaon), Sanjay Gandhi National Park, (Borivli).

A medium sized deciduous tree reaching up to 15 m high and with a girth of 2.5 m. The tree has a round crown of large leaves, growing at the end of branches, which are bigger in young plants as compared to older ones. The leaves are 60-90 cm long and 15-30 cm wide having parallel veins running from the mid rib to the margin. They have fine teeth, pointing upwards, along the edges. The leaves are shed in February and new leaves appear in June.

Flowering takes place from March-April on leafless branches. The flowers are produced on raised tubercles with each fascicle having 5-10 flowers. The yellow flowers bloom in large numbers and have mild fragrance.

The orange yellow fruits 15-20 cm in size are succulent, slightly sour and edible. They appear on branches from May to June. Each fruit has one or two kidney shaped seeds.

The scientific name *Dillenia* was given by Linnaeus in honour of Johann Dillenius, a German Physician and Professor of Botany at Oxford (1734). Linnaeus while describing the flower of *Dillenia indica,* another species of this group had mentioned that "*Dillenia* plants have showy flowers and fruits, as Dillenius has made a brilliant show among the botanists". The ovary has five chambers, hence the specific name *pentagyna.*

The tree can be raised from seeds by growing saplings, to some extent. The saplings are resistant and withstand fire. The wood is used for furniture. The fruits are also eaten by wild herbivores and the leaves are used as manure.

Botanists are of the opinion that the tree is one of the most primitive among flowering plants existing today.



Photo: Sanjay Gandhi National Park, Borivli

(56) KUSUM

Common Names	:	Lac Tree, Ceylon Oak (Eng.); Koshimb, Kusumb (Mar.); Puvathipuvam (Tam.); Puvam (Mal.); Posuku (Tel.)
Scientific Name	:	***Schleichera oleosa*** (Lour) Oken. (Syn. *S. trijuga* Wild.)
Where to see	:	Very common, Sanjay Gandhi National Park (Borivli).

A large tree of Indo-Malayan origin, 10-15 m tall. It has a hard woody stem with thick bark. The tree has compound trijugate leaves. Leaflets may sometimes vary from 2 to 4 pairs. When young they are of beautiful red hue and the tree looks most attractve when the new leaves appear in winter. When a good number of trees are present together the whole jungle becomes colourful, a sight to behold. Lac insects prefer feeding on Kusum leaves; the tree is therefore also called Lac tree.

The flowers are small and yellowish or white, and arranged in branched racemes arising from axils of leaves. The fruits are the size of a small plum, pointed at the upper end and covered with stout and blunt prickles. They fall at the end of summer or at the beginning of rains. The fruits have one or two seeds enclosed in fleshy edible pulp, which has a pleasant acid taste.

The seeds yield an oil called 'Kusum' or 'Macassar', which is used by tribals for lighting lamps, as lubricant oil, for candles, hair dressing and soaps.The wood is used for furniture and mortars. The bark yields tannins for tanning hides.

The scientific name *Schleichera* is in honour of J.C. Schleicher, a Swiss botanist; *oleosa* means oil yielding.

The tree can be propagated by germination of seeds and root suckers.



Photo: Film City, Goregaon (E)

(57) LEBBECK TREE, SHIRISH

Common Names : East Indian Walnut (Eng.); Sirisha (Sans. & Mar.); Pilo Sarasio (Guj.); Siris (Hin.); Siris, Vagei (Tam.)

Scientific Name : ***Albizia lebbeck*** Benth.

Where to see : Avenue Tree in Sanjay Gandhi National Park along the roadsides in the suburbs.
A tree opposite Fire Station, Fort.

A large deciduous tree native of tropical Asia, 12-25 m high, with dark brown to greenish black bark. The compound leaves are bipinnate with hairy or sometimes glabrous rachis having 8-18 leaflets arranged in pairs. The leaflets have a mid-vein which is somewhat lateral, one half of the leaflet being much broad than the other. The tree sheds its leaves in summer just before flowering.

The greenish yellow flowers grow in globose heads and have a mild fragrance. The fruits are yellowish white pods. The linear pods are flat, strap-shaped, papery and white in colour with 6-10 seeds, and have prominent raised edges. The rattling of the papery pods in the breeze produces a peculiar sound, therefore it is also called as "Woman's Tongue".

The scientific name *Albizzia* is in honour of the Italian naturalist Filippo del Albizzi.

The tree is a minor substitute for timber. The wood is comparatively soft and prone to white ant attack. It is not used for construction, but is used for inexpensive furniture like stools and storage racks. The reddish brown gum produced by the plant is often mixed with gum arabic as an adulterant. A leguminous plant, its leaves are rich in nutrients and are fed to cattle as fodder. They are also used for green manure. Various parts of the tree have medicinal properties and are used as an antiseptic, in tubercular fever and also in dysentery. The tree is grown to control soil erosion. It is also planted in coffee and cardamom plantations as a shade tree.

It is grown by direct sowing of seeds or preparing seedlings and transplanting them during the rainy season. Seeds germinate faster with heat treatment.

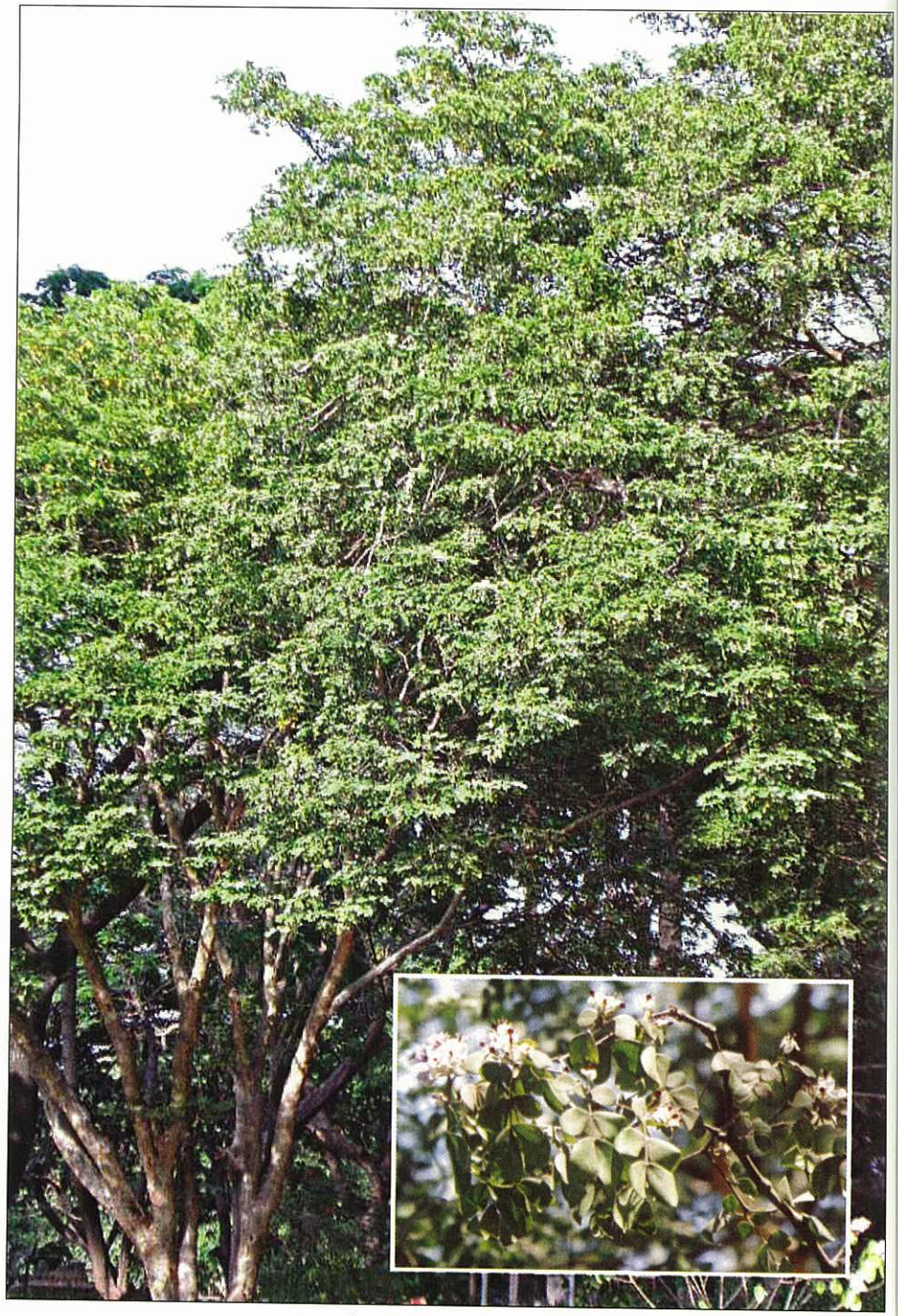


Photo: Jijamata Udyan

(58) LIGNUM VITAE

Common Name : Gum Guaiacum (Eng.)
Scientific Name : ***Guaiacum officinale*** L.
Where to see : Malabar Hill (Nr. Post Office), KEM Hospital Compound (Parel), Ballard Estate, Jijamata Udyan.

A medium-sized evergreen tree 10-16 m high. The crooked trunk of the tree has knotty branches covered with dark grey bark, variegated with greenish spots. The young shoots are flattened and glabrous, but the old branches are ash coloured and striated. The dark green compound leaves form a thick crown. Each leaf has a long rachis with 2-3 pairs of leaflets opposite each other. The leathery leaflets are stalkless and have a small orange spot at the base.

The tree blooms after the cold season in October-December. Clusters of flowers appear from the base of the leaves at the end of the branches. The small, dark blue flowers have 5 ovate petals with acute tips. After a few days, the flower fades to become white before falling to the ground. The tree flowers profusely.

The green fruits are flat obcordate capsules enclosing ovoid seeds. They turn orange brown on ripening.

The tree is cultivated in gardens for ornamental purpose. It produces gum guaiacum. The gum or resin is exuded naturally from the tree and is also obtained by burning a log from one end. The gum is used as a reagent to detect blood stains. It is a mild laxative and is used for the treatment of rheumatism. The wood is used for making wooden tools and ship blocks.

The tree is native of West Indies and was first introduced into Mumbai by Dr. Wellington Gray, raised from seeds.

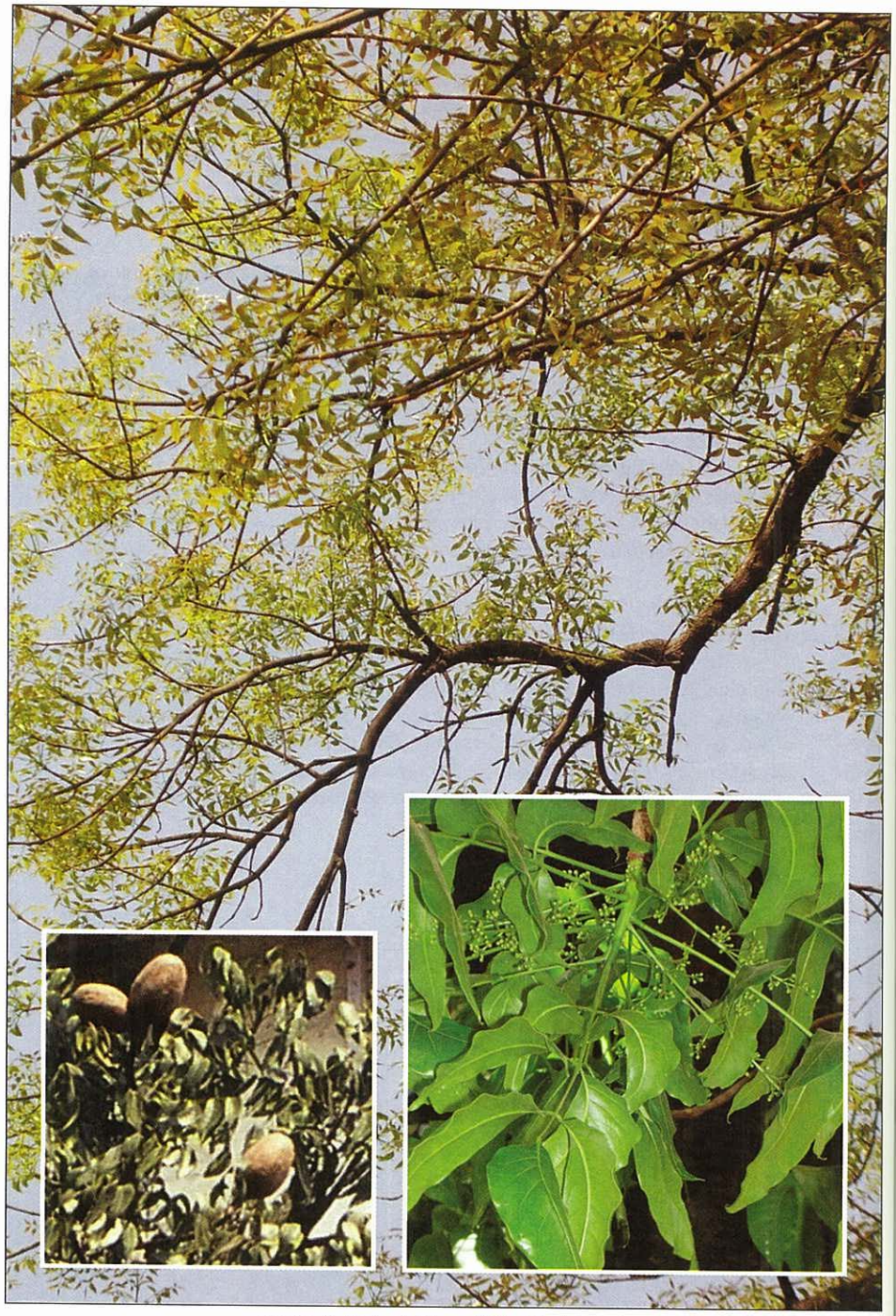


Photo: K. Dubash Marg, Kala Ghoda, Fort

(59) MAHOGANY

Common Names : Cuba Mahogani,
Jamaica Mahogany (Eng.);
Mahagoni (Tam.);
Cheria Mahogany (Mal.);
Mahagani (Beng.)

Scientific Name : ***Swietenia mahogani*** (L.) Jacq.

Where to see : Dadar (East) on a street between the road parallel to the Railway line and the highway. There are a few trees near Chembur garden on the main highway.

A tall evergreen tree of Tropical American origin, up to 25 m high and 1.5 m in diameter. The bark is black and has vertical cracks.

The leaves are sub-opposite, petioled (petiole 5-6 cm long), pari-pinnately compound (terminal leaflets are also in pairs) or feathery. They have 4-6, rarely more, pairs of leaflets. The leaflets are 4-6 cm long and less than 2 cm broad, slightly curved, oblique at the base, i.e. one side of the base is broader than the other, and somewhat ovate in shape.

The flowers are produced in April and May, and they come in panicles from the axils of leaves. They are tiny and insignificant, and greenish yellow. During this period the ground below the tree is carpeted with the green, scented blooms.

The fruits are rusty-brown woody capsules with a broad base and tapering end. They are about 1.5 times longer than broad. Seeds many, about 6 cm long, winged, insurged at upper end.

The scientific name *Swietenia* is in honour of General Van Swieten, a Dutch botanist of the 18th century, a student of Pharmacy and Medicine, and a pupil of the famous botanist Boerhhave. Mahogany is the South American (Cuban) local name of the plant.

The hard and bulky stem yields good timber, which is used for making household furniture and for ship building.

It is planted along roadsides for shade and as an ornamental tree. The tree can be propagated from seeds.

A very close relative of the Mahogany is found at Dadar, Jijamata Udyan and other places in Mumbai. This tree has large leaves (6-12 cm long and 4-5 cm broad) with large leaflets (only 3-4 pairs), and is called the Large-leaved Mahogany or Mexican Mahogany. Its scientific name is *Swietenia macrophylla* King.



Photo: Sanjay Gandhi National Park, Borivli

(60) MALABAR KINO

Common Names : Malabar Kino tree (Eng.);
Hirdalchan, Biyo (Guj.);
Bijasal or Bijra (Hin.);
Pale Aasan, Bilula (Mar);
Vengai (Tam.)

Scientific Name : ***Pterocarpus marsupium*** Roxb.

Where to see : Jijamata Udyan, King Circle,
Goregaon (East).

A tall deciduous tree up to 30 m tall, it occasionally attains a girth of up to 2.5 m. Bark is rather thick and rough on the surface.

The leaves are compound with 2-4 pairs of leaflets and an odd one at the end of the leaf. Leaflets are a little large, egg-shaped and with a slightly produced leaf-lip. The margins of the leaflets are straight and without any cuts or teeths. The tree sheds its leaves from December onwards, and refoliates soon after flowering.

The purplish red flowers appear in March-April and are pollinated by bees and flies. The fruits on terminal branches, in axils of the leaves ripen in May.

The scientific name *Pterocarpus* is derived from pteros - wing and carpus - fruit, i.e. winged fruit. The fruit is enclosed in a pouch, hence the specific name *marsupium*.

The tree contains dark red sap and if a deep incision is made into the bark, after some time a thick syrupy blood red fluid oozes out, which on drying turns into dark-coloured nuggets. This dark dried sap of the tree is called Malabar Kino and is used in the treatment of asthma. The bark is also used for tanning and for making red dyes. The wood is hard and used for timber, especially for making doors, windows and shelfs. In the Konkan area, cups carved from the wood are used for preparation of water extracts used in the treatment of diabetes. The cups are filled with drinking water and kept overnight to extract the chemical contents of the wood. In the morning, the water turns reddish or dark brown.

Being a leguminous plant, the leaves are rich in nutrients and are fed to cattle during scarcity of fodder.

The seeds are dispersed by wind. The seed germinates very easily and the tree can be propagated by seed germination.



Photo: Chhatrapati Shivaji Maharaj Sanghralaya, Fort

(61) MANGO TREE

Common Names	:	Aambo(Guj.); Aam, Aamba (Hin.); Aamba (Mar).; Amram (Mal.); Namidi (Tel); Mavu (Kan.)
Scientific Name	:	***Mangifera indica*** L.
Where to see	:	Along roadsides all over the city.

An evergreen tree of 10-45 m high. The tree has a stout bole covered by thick, rough and dark grey bark. The bark flakes off into small pieces in old trees. The linear oblong or lanceolate leaves grow on spreading branches to form a dome-shaped thick crown. The leaves are shiny, stiff leathery in texture and when crushed give an aromatic odour, due to the presence of a fragrant resin.

The tiny flowers grow in large bunches or panicles with each having around 300 flowers. The blossoms are produced at the end of the branches. The flowers are reddish white or yellowish green and emit a pungent smell. The tree usually blooms in December-January, but some trees flower at different times of the year and are called baramasi. The flowers open at dusk or early in the morning; their strong punget odour attracts bats and a variety of insects that feed on their nectar. In some varieties the tree flowers between 7 and 10 a.m. Ethylene gas has been observed to stimulate flowering.

The fruits are called drupes (i.e. fruits with thick fleshy covering and a large stony seed) and are usually heart shaped, but the structure and size varies in different varieties. Some of the well known varieties of mango are apoos (Alphonso), pairi (Pareira), mandkul (Monsurat), fenna (Fernands) in western India; neelam and banganapally in southern India, mulgoa, suvarna rekha in Andhra Pradesh, chowsa dushaheri and Banarsi langra in Uttar Pradesh and Bihar, and gulabkhas and bombai in West Bengal.

The scientific name *Mangifera* is derived from its Tamil name Manga. *indica* refers to its Indian origin.

The mango is the King of Indian fruits. Alphonso its best variety grows in the Konkan region. The ripe fruit is edible and a variety of items like pickles, chutneys, murraba and aamchur are made from the raw fruit. In summer, a refreshing sour-sweet drink called "Panha" is prepared from raw mango. The bark is used for tanning and for colouring. The gum produced from the tree is used as a substitute of gum Arabic. The seed kernels are used as human food in times of scarcity. The timber is used for making furniture, for flooring, ceiling boards and window frames.

The tree grows from seedlings. The better varieties are obtained by grafting or layering. This art of natural selection in mangos was picked up by Goans from the Portuguese.

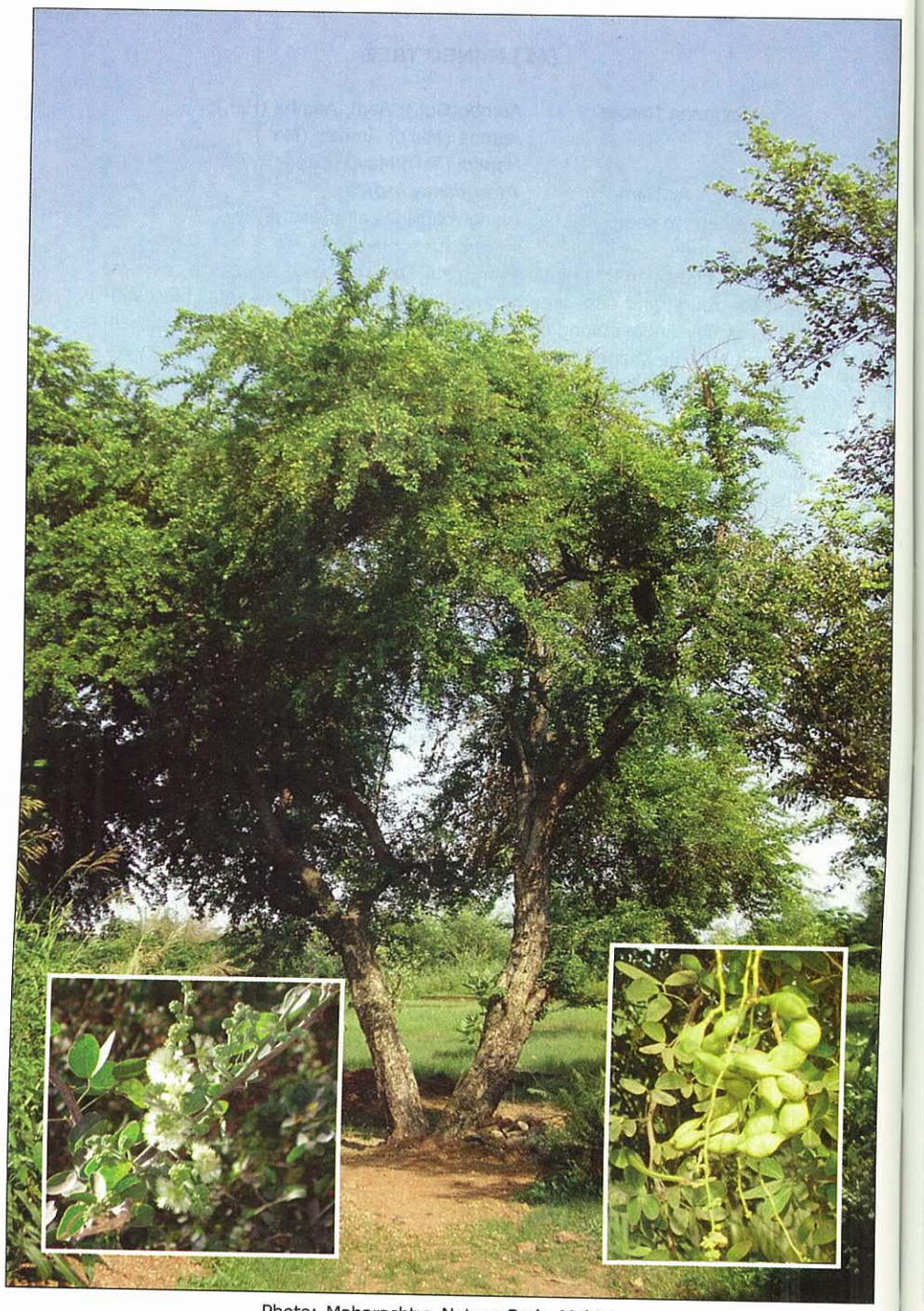


Photo: Maharashtra Nature Park, Mahim

(62) MANILA TAMARIND

Common Names : Madras Thorn (Eng.);
Vilayati Babul, Jangal Jalebi (Hin.);
Vilayati Chinch (Mar.);
Kodukkapuli (Tam.);
Korukkapuli (Mal.); Simachinta (Tel.)

Scientific Name : ***Pithecellobium dulce*** Benth.

Where to see : All over Mumbai, along roadsides, wastelands in colonies and near the seashore.

A medium sized evergreen tree 18 m tall. The branches have long sharp spines. The bark is smooth and grey in colour. The leaves are bipinnate, each pinna bears two leaflets of unequal size. The small leaves are leathery and green.

Small white flowers grow in thick heads at the end of the branches. The tree blooms between November and April. The reddish brown fruits are curved or twisted 10-15 cm long pods with constrictions between the seeds. The black seeds are covered by whitish pulpy aril.

The scientific name *Pithecellobium* means monkey ear-ring. *dulce* in Latin refers to sweet pulp.

The pods are twisted like the curl of a Jalebi, a common Indian sweet. Therefore, it is also known as Jangal Jalebi. The tree is known as Vilayati Chinch because it was originally found in the tropical forests of America, it is also called Manila Tamarind as it is found in the Philippines.

The pods and leaves are used as cattle fodder. The seeds are eaten raw or in curries. The pulpy aril of ripe fruits is sweet and edible, and is also used to prepare beverages. The leaves are larval food of the Grass Yellow butterfly. The bark yields a yellow dye. The wood is used as timber for various purposes.

The tree is planted along roadside hedges, as the sharp spines on the branches protect the young plant from browsing animals and the tree grows fast, the tree also provides good shade.

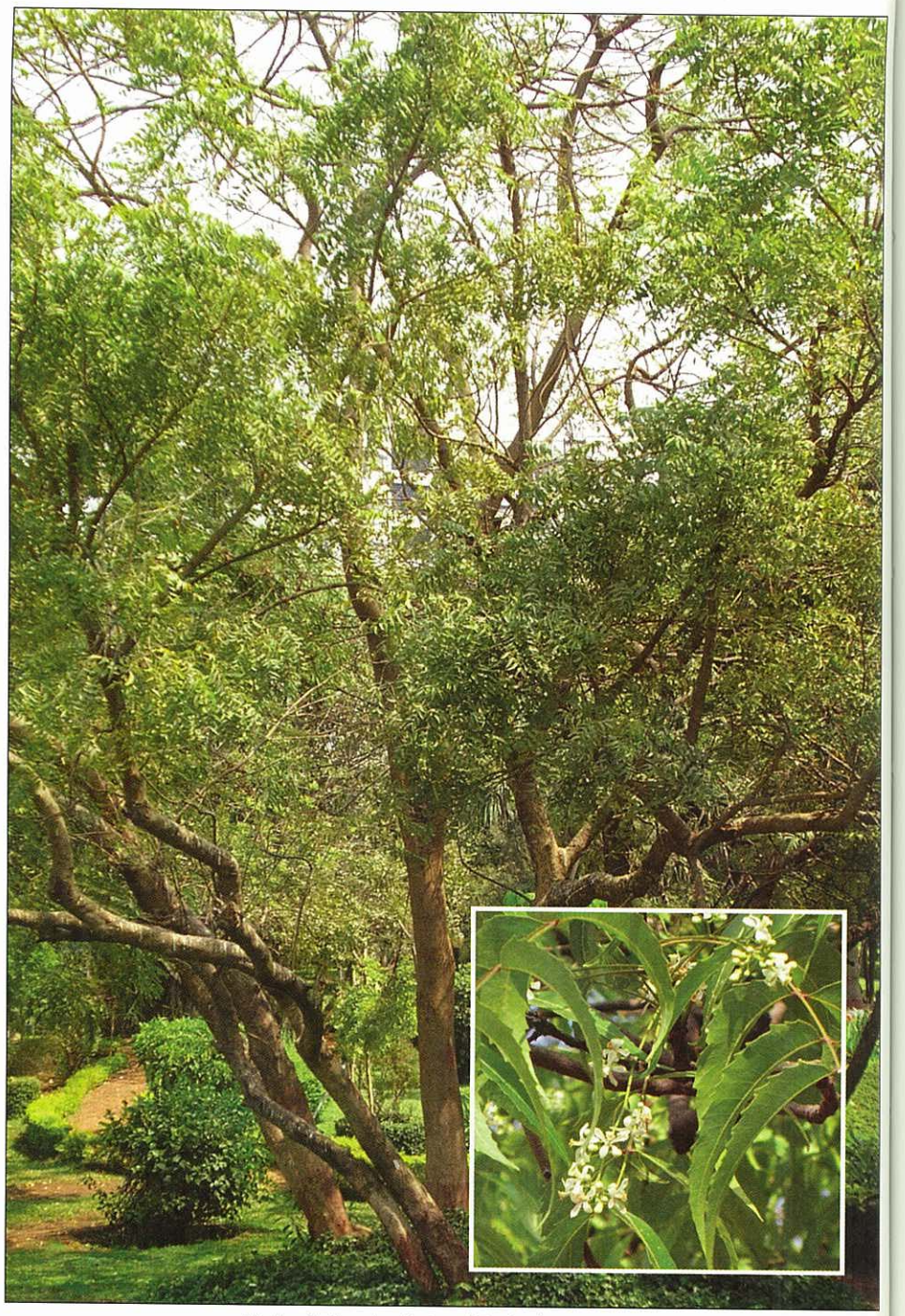


Photo: Indian Institute of Technology, Powai

(63) MARGOSA TREE

Common Names : Arishta (Sans.); Limdo (Guj.); Neem (Hin.); Nimba (Mar.); Vembu (Tam.); Vippu (Mal.)

Scientific Name : ***Azadirachta indica*** A. Juss.

Where to see : Avenue tree, growing along roadsides and in building compounds.

A large evergreen tree 12-18 m tall. The straight bole and long spreading branches form a broad crown. The bark is dark greyish on the outside and reddish brown inside, and has numerous oblique furrows.

The compound leaves grow at the end of the branches and each leaf has 4-7 pairs of leaflets and a terminal leaflet at the end. The ovate lanceolate leaflet with a wedge shaped base has a toothed margin and tapering apex. The leaves have a smooth surface. The new leaves are light greenish-maroon in colour, they turn dark green with age. New leaves appear between February and April.

The small creamish white flowers grow in axillary bunches. The scented flowers attract a variety of insects. The tree blooms between January and March. The fruits are greenish yellow, egg shaped drupes of 1-2 cm length. The ripe fruits are yellowish brown and have a single seed.

The scientific name *Azadirachta* is derived from the Persian word 'azad darakht' meaning noble tree. *indica* means Indian.

All parts of the Neem tree are bitter and are used for various purpose. The twigs are used to brush teeth. The bark and leaves have medicinal properties. The Neem or Margosa oil is used in creams, hair lotions and soaps. The gum is a stimulant and tonic. The dried leaves are used to prevent pests. They keep the environs healthy and absorb air pollutants.

The tree is planted as avenue and for shade. The flowers and leaves are eaten on Gudi Padwa or Hindu New Year. The fruits are enjoyed by birds, who also help in their dispersal. The seeds collected from bird dropping germinate easily.

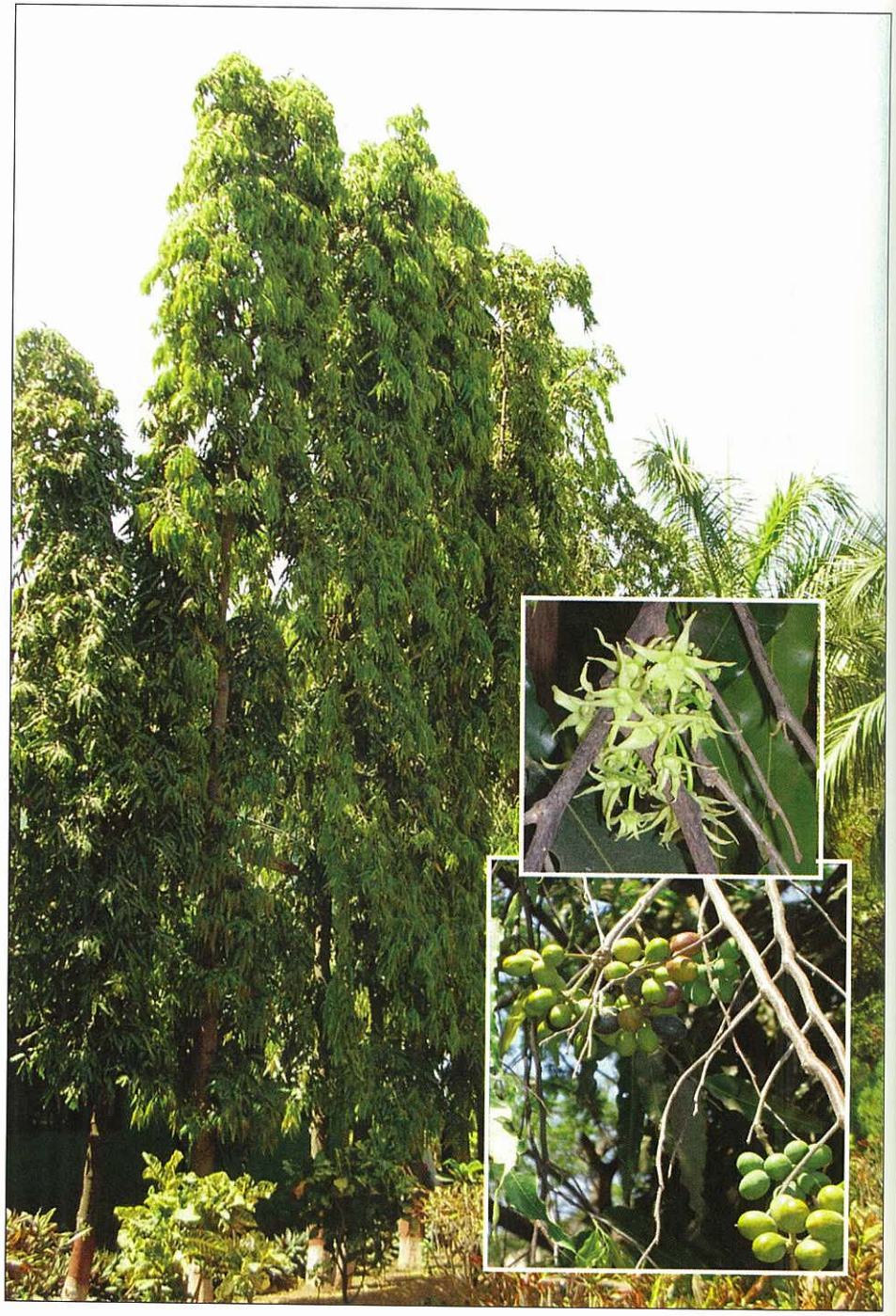


Photo: Parsi Colony, Dadar

(64) MAST TREE

Common Names	:	Mast Tree (Eng.); Asopalav (Guj); Asoothi (Tam.); Arana (Mal.)
Scientific Name	:	***Polyalthia longifolia*** (Sonn.) Thw. **var. *pendula*** Benth.
Where to see	:	Common all along footpaths, roadsides, building compounds and garden.

A tall handsome tree native of Sri Lanka, it grows up to 15 m tall. In Mumbai, it is known to exist since the last one and a half century.

The beauty of the tree is its elegant pyramidal appearance. The branches instead of spreading out remain close to the main trunk in drooping condition. The dark green leaves with wavy margins appear like a lance head. The young leaves are tender and light green in colour. Each leaf is around 9-20 cm long with a smooth shiny surface on both sides, and with a small petiole.

Clusters of small flowers appear in February and March. The short stalked light green flowers remain hidden in foliage.

The fruit bunches are initially green, but turn purple when ripe during August-September. Bats are fond of eating them and one can see discarded seeds under the trees early in the morning. The variety *pendula* has a columnar crown with its branches and foliage remain closer to the main stem making the tree appear like a flag-staff.

The scientific name *Polyalthia* is derived from two Greek words that mean many cures; *longifolia* refers to the long leaves.

The leaves are significant as they are larval food of Tailed Jay and Swallowtail butterflies that are commonly seen all over Mumbai in busy city areas.

Asopalav leaves are somewhat aromatic and are used for making welcoming arches called 'toran' displayed during auspicious occasions. The tree is also known as false Ashoka and is considered sacred, and therefore planted near temples.



Photo: Outside Hornbill House

(65) PINK TABEBUIA

Common Names : Pink Tecoma,
Salvador Pink Trumpet (Eng.)
Scientific Name : ***Tabebuia rosea*** (Bartol.) DC.
Where to see : On footpath near Capitol Cinema, Fort area and near Cross Maidan

A medium sized deciduous tree 10-12 m high. The compound leaves have long stalks about 12 cm long. The leaflets 3-5 in number originate from the stalk and are arranged digitately with the central one being larger than the others. The leaflets have a smooth surface and the margins are dark green above and pale on the underside. The elliptic oblong leaflets have an acute apex. The tree sheds its leaves partially before blooming.

Clusters of three large funnel-shaped flowers grow on a peduncle. When flowering, the rosy-pink flowers make a beautiful sight. The flower opens at dawn and falls off at dusk, when one can see a carpet of pink flowers under the tree. The fruits are 12-28 cm long flat capsules with winged seeds.

The scientific name *Tabebuia* is derived from its Brazilian name; *rosea* indicates the pink or rose coloured flowers.

The wood of the tree is yellowish grey-brown and is sold as West Indian Boxwood. It is used for various woodwork. The bark has diuretic and antipyretic properties.

A native of Mexico, the tree is planted in gardens and squares and along the roadside for its beautiful flowers. The tree is propagated by seeds.

There is a tall elegant tree on pavements in front of Hornbill House of Bombay Natural History Society just outside the compound wall. It is also found on Western Express Highway at Santacruz. It is a majestically tall tree with mauve coloured flowers. It completely leafless and is covered with flowers, which last for few days. This tree is called Mauve Tabebuia and its scientific name is *Tabebuia pentaphylla* (L.) Hemsley. Its specific name pentaphylla denotes its five-leaflet compound leaves. The tree is native of Mexico and West Indies.

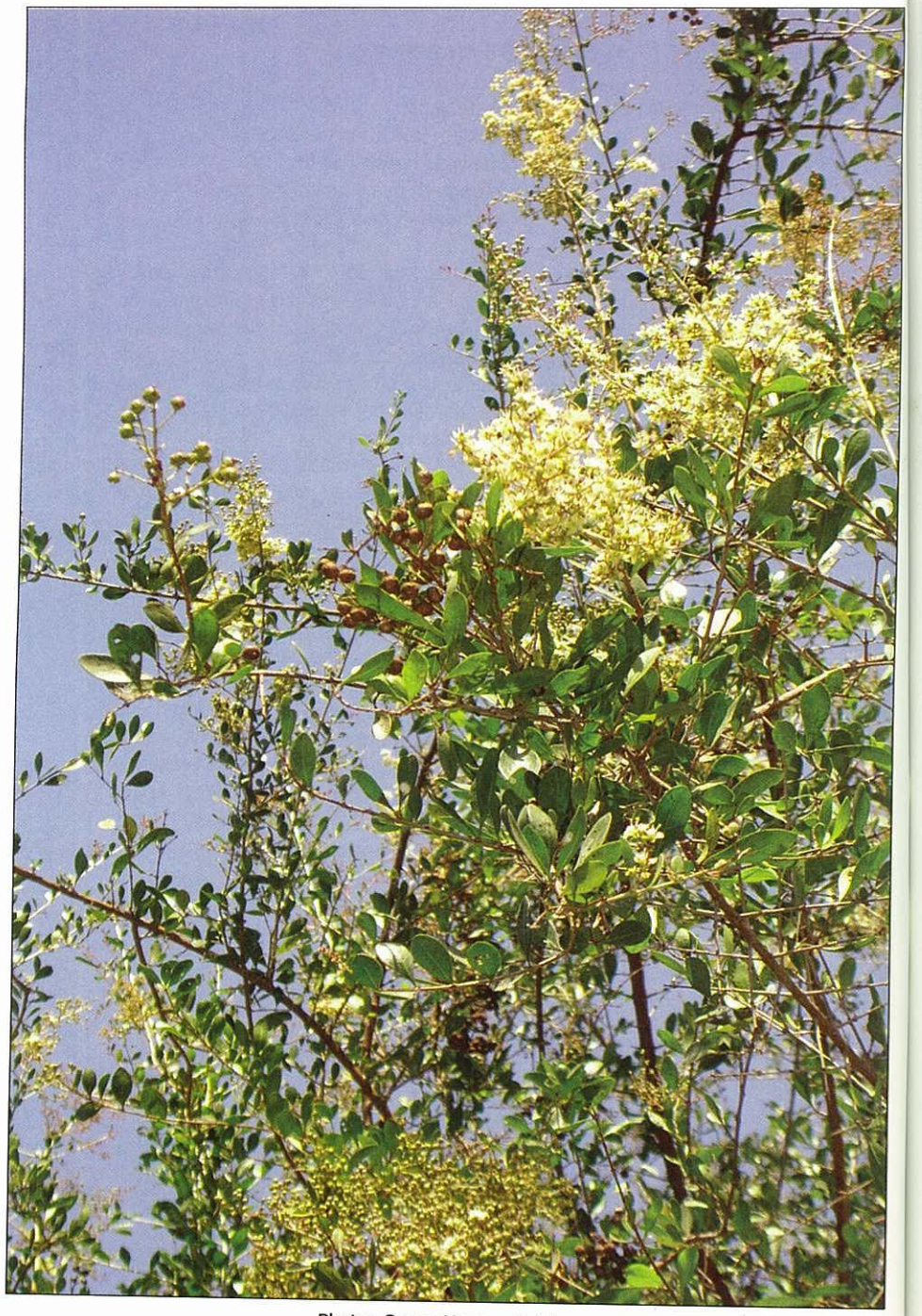


Photo: Sagar Upvan, Colaba

(66) MEHNDI / HENNA

Common Names : Mignonette Tree, Indian Privet (Eng.); Mendika (Sans.); Mendi (Guj.); Mehndi (Hin.); Mendhi (Mar.); Marithondi (Tam.); Mailanchi (Mal.); Goranti (Tel.); Mayilanchi (Kan.)

Scientific Names : ***Lawsonia inermis*** Linn. [syn. *Lawsonia alba* Lam.]

Where to see : Sagar Upvan (Colaba), Jijamata Udyan (Byculla), Vidyanagari Campus (Santacruz).

A small tree 3-4 m tall. The branches originate from the lower portion of the tree so that at times it appears like a large shrub. The thornless branches have small, ovate or lanceolate leaves arranged oppositely.

The flowers are white or rose coloured, small and fragrant. They grow in large clusters of cymes at the end of the branches. The tree blooms during April-May and its fragrance attracts a variety of insects.

The fruits are small pea-shaped capsules, each with numerous small seeds. The seeds are dispersed by wind.

The scientific name *Lawsonia* is in honour of John Lawson; *inermis* means unarmed. The common name Henna has originated from its native Arabian countries.

The tree has several medicinal properties. Its leaves are used to treat ulcers and various skin ailments. The decoction of the bark helps in the treatment of stomach ailments and jaundice. The fragrant flowers yield Henna attar. It is planted in home gardens. The dried leaves are made into a paste to colour hands and feet as a cosmetic, and as a hair conditioner.

The tree is commonly cultivated as a hedge plant. It is propagated by planting seedlings raised in a nursery.



Photo: Horniman Circle, Fort

(67) MEXICAN GOLDEN TRUMPET

Common Name : Suvarna-pushpa (Hin.)
Scientific Names : ***Tabebuia argentea*** (Bur. & Schum.) Britton (= *Tabebuia chrysantha* Nicholson)
Where to see : Sagar Upvan (Colaba), Horniman Circle (Fort).

A small tree up to 8 m tall with a straight trunk and spreading branches. The leaves are compound, each with 5-7 lanceolate leaflets. The leaflets are thick and when young have minute silky hairs.

The tree sheds its leaves in January and February followed by mass flowering in March, which continues up to April. The bunches of trumpet shaped golden yellow flowers cover the tree and form a beautiful golden crown. The nectar of the fragrant flowers attracts a variety of insects. The tree is planted for its beautiful golden trumpet flowers.

The scientific name *Tabebuia* is derived from the Brazilian name of the tree and argentea refers to its silvery leaves; *chrysantha* refers to its golden flowers.

It is a salt resistant tree and is planted for landscaping coastal areas.



Photo: Indian Institute of Technology, Powai

(68) MUCHKUND

Common Names : Kanak Champa, Kaniar, Muchkund (Hin.); Cembolavu (Tam.); Malavuram (Mal.); Naradu (Kan.); Muskunda (Beng)

Scientific Name : ***Pterospermum acerifolium*** (L.) Willd

Where to see : Sagar Upvan (Colaba), IIT Powai, Compound of Santacruz Police Station.

A large evergreen tree up to 25 m tall with mostly a straight growing trunk, with a vertically cracked bark. It has rounded, palmately lobed leaves that are shaped like *Acer* leaves. The leaves are peltate; the petiole is attached directly to the leaf-blade and not to the margin of the leaf. The leaf lobes are sometimes sharply toothed. The leaves are green on the upper surface, but silvery white on the lower surface.

The flowers appear between March and May. They grow from the axil of the leaf singly or 2-3 in a bunch. The flowers are fragrant and remain so even after drying. Sunbirds, flowerpeckers and mynas relish the nectar.

The fruits are slightly 5-angled capsules covered with rusty small hairs. The capsules open to expose dark brown winged seeds, arranged in two rows.

The scientific name *Pterospermum* is derived from the winged seeds of the tree; *acerifolium* refers to the *Acer* like leaves.

Its broad leaves are used as plates and for the inner lining of thatch. The dried flowers are kept in cupboards to drive away pests. The wood is used for packing cases, planks and for plywood.

The tree grows well in swamp forests, evergreen forests and on river banks. In city areas, it is planted in gardens and avenues because of its fragrant flowers. The seeds germinate easily.



Photo: Sagar Upvan, Colaba

(69) NIGHT SHADE POTATO TREE

Common Name : Night Shade (Eng.)
Scientific Names : ***Solanum grandiflorum*** Ruiz & Pavon [syn. *Solanum wrightii* Benth.]
Where to see : Sagar Upvan (Colaba).

A small tree 4-5 m tall with short stems and spreading branches. The leaves are simple, large and oval shaped with deeply lobed margins. The underside of the leaf has a few prickles.

The large beautiful flowers appear in clusters each having 5-7 flowers. The new flowers are purple in colour that turns light blue and later becomes white with age. The tree blooms throughout the year. The fruits are round berries, the size of golf balls, each encloses several seeds.

The scientific name *Solanum* is derived from the Latin word Solatium meaning comfort or solace; *grandiflorum* refers to its large sized flowers and *wrightii* is in honour of the American naturalist Charles Wright.

The tree is planted in gardens because of its showy flowers. It is propagated by seeds. The tree is indigenous of South America.

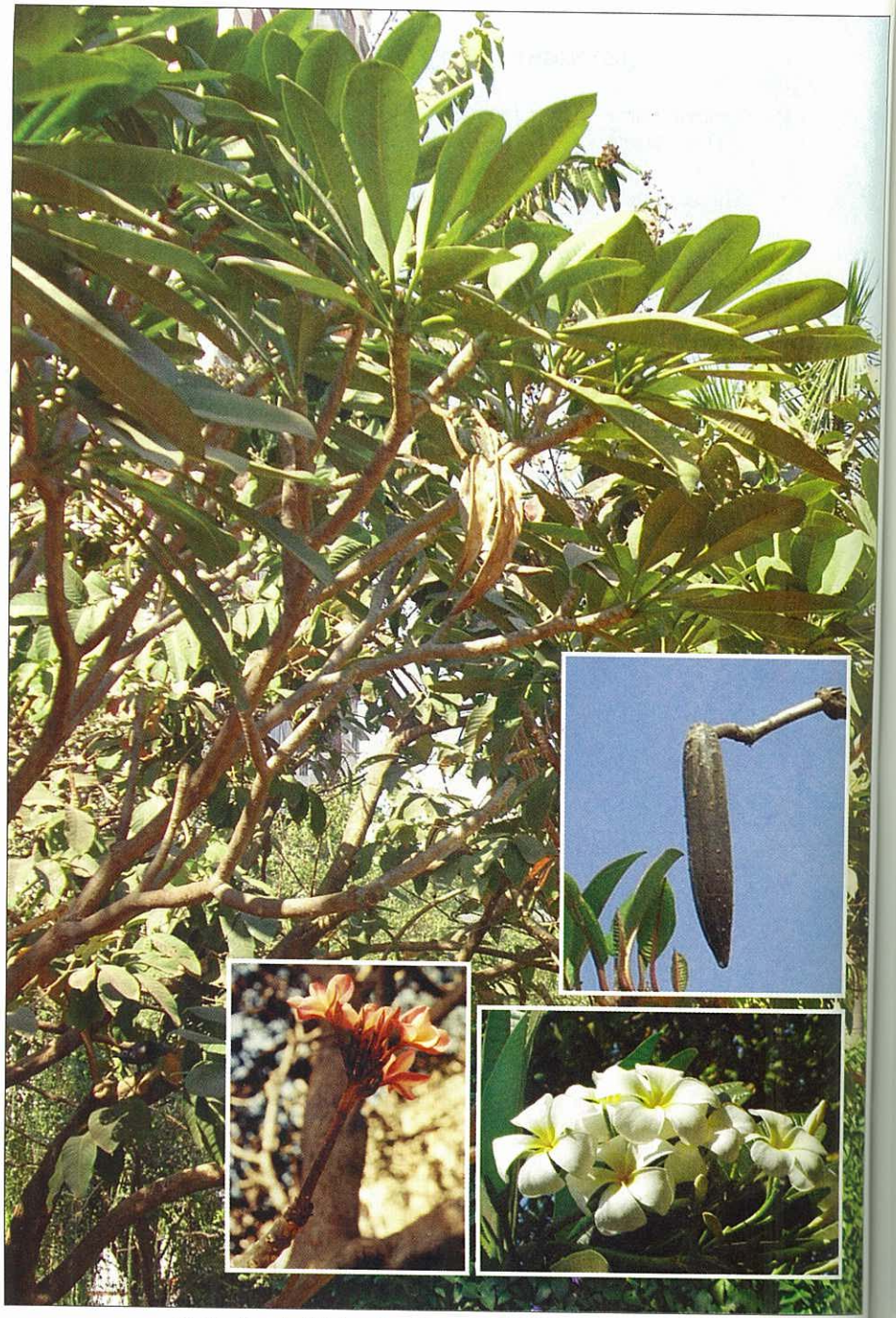


Photo: Mumbai University Campus and Sagar Upvan, Colaba

(70) PAGODA TREE

Common Names : Temple Tree, Frangipani, Dead Man's Flower (Eng.); Kshira Champa (Sans.); Rhada champo (Guj.); Gul-e-Chin (Hin.); Khair Champa (Mar.)

Scientific Name : ***Plumeria rubra*** Linn.

Where to see : Near temples, in gardens, traffic islands all over the city.

A 4-6 m tall tree with greyish, rough and scaly bark. It blooms throughout the year. The leaves, 30 cm in length, are arranged in a crowded spiral at the ends of the branches. The leaf is smooth, lance shaped and tapering at both ends. The Pagoda tree sheds its leaves during November-December and new leaves appear at the beginning of the monsoon. The tree looks elegant in leaf, but when bare the crooked trunks with blunt and swollen branches have an awkward and gouty appearance.

The flower has five petals and is produced in upright clusters from the tip of the branches. The funnel shaped flower is large, reddish white or fully waxy white with a golden centre. The left margin of each petal has a tendency to curl over. The flower has an attractive fragrance.

The scientific name *Plumeria* is in honour of the French Botanist Charles Plumier.

A native of Mexico and Guatemala, the Pagoda tree is believed to have come to India through China, and is therefore known as "Gul-e-Chin" or "Chini Champa." Even when uprooted it continues to bloom, and has therefore become an emblem of immortality.

The sap of the tree mixed with camphor and sandalwood oil is considered a cure for various types of itches. The leaves and branches are tied round coconut palms to protect them from the Borer beetle (*Batocera rubus*). The seeds are considered an antidote for snake bite. Children are not allowed to go near the tree at night in belief that the strong fragrance of the flowers attracts cobras, but this is nothing more than a myth.

When injured the tree exudes a copious flow of thick white milk-like juice. Therefore, it is called "Kshira champa" in Sanskrit.

The tree is planted in gardens and near temples. The fresh fragrant flowers are offered to deities. Buddhists and Muslims plant it in graveyards, so that the fragrant flowers fall on the grave throughout the year. Due to its presence in graveyards, it is also known as Dead Man's flower.

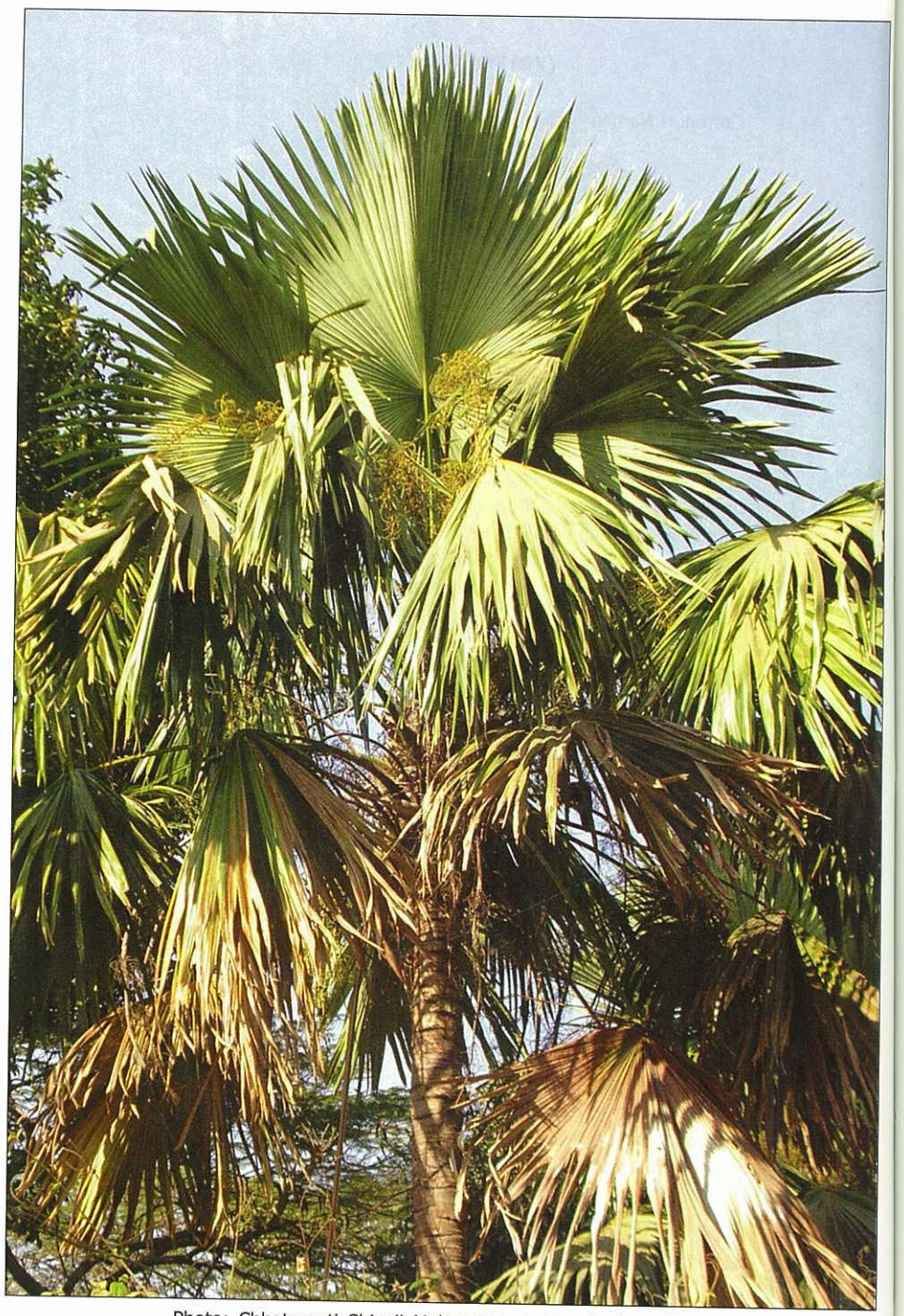


Photo: Chhatrapati Shivaji Maharaj Vastu Sanghralaya, Fort

(71) CHINESE FAN PALM

Common Names	:	Chinese Livistona (Eng.)
Scientific Names	:	***Livistonia chinensis*** R. Br. [syn. *Livistonia mauritiana* Wall.]
Where to see	:	Sagar Upvan (Colaba); CSV Sangrahalaya (Fort), Jijamata Udyan (Byculla), common in Mumbai gardens.

A stout tall palm 6-9 m tall with obscurely ringed stems and a round crown. The leaves 1-2 m in diameter are reniformly flabellate, plicated and also conduplicate along the centre with 50-60 linear- lanceolate acuminate segments. The leaf stalk is of around 1.5 m long and 15 cm wide marked up to the middle with horny brown spines.

The small white flowers have an unpleasant odour, they grow on long interfoliar peduncles. This palm flowers in January and February.

The fruits are olive shaped dull blue berries. The greyish seeds are reniform and are produced in great abundance.

The scientific name *Livistonia* is in honour of the English horticulturist Patrick Murray, Baron of Livistone and founder of the Botanic Garden at Edinburgh.

The leaves are used to make fans and fibrous sheaths of the leaf stalk are made into ropes.

A native of China and Japan, the Chinese Fan palm is widely grown in Indian gardens. It is frost resistant and can be propagated by seeds.

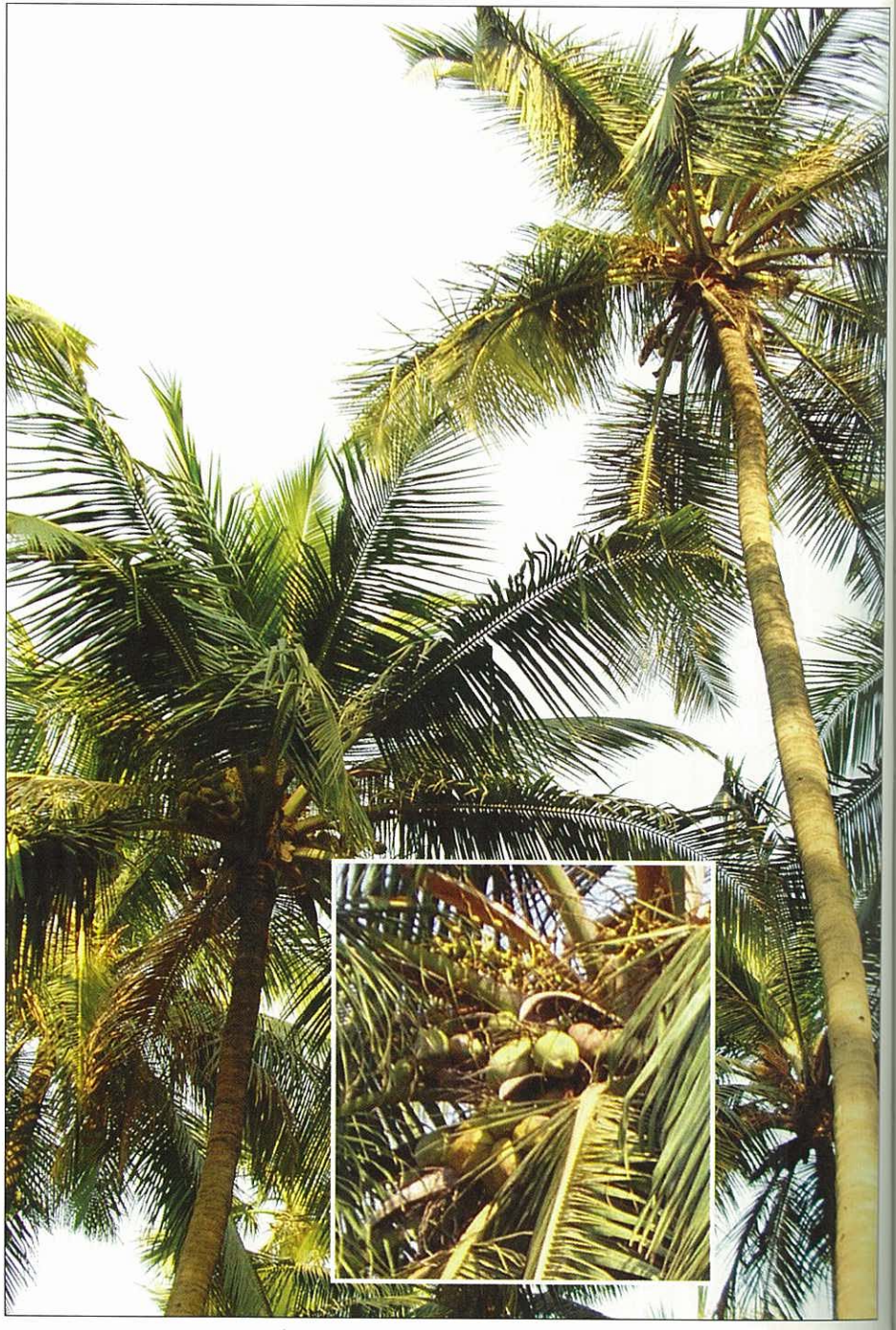


Photo: Observation post, Goregaon (E)

(72) COCONUT PALM

Common Names : Nariyal (Guj., Hin., Mar); Tennaimaram (Tam.); Thenna (Mal.); Kobbarichettu Narikelamu (Tel.); Tengu (Kan.); Dab (Beng.)

Scientific Name: : ***Cocos nucifera*** L.

Where to see : Common along the Mumbai coast and in the city.

A tall unbranched palm up to 25 m tall. The straight or slightly curved trunk is marked with ring like leaf scars. The leaves are 2-4 m long with a stout rachis, which has several 60-80 cm long leaflets that make a beautiful crown for the tree.

The flower buds grow on a 1.5 m long straw coloured branched spadix, which is covered by a boat shaped spathe. The male and female flowers grow on the same spadix. The small cream coloured flowers have a sweet fragrance.

The fruit is an egg shaped or rounded drupe with a single seed. The drupe is covered by a water proof green skin followed by a dense protective layer of coir around a stony shell. The shell is lined on the inside by a thick coating of milky white flesh, and contains a nutritious liquid known as coconut water.

The various parts of the Coconut tree are used as food and in preparation of economically important products. The coir industry uses coir obtained from the coconut fibre. Coconut oil is edible and also used for making soaps, while the kernel cake is used as fodder.

The coconut is a beautiful palm for large gardens and coastal areas. It also grows well along riverbanks. It is propagated from seeds. The nut is placed on its banks in the wet soil and takes about three months to germinate.



Photo: Jijamata Udyan and Sagar Upvan

(73) FISH-TAIL PALM

Common Names	:	Indian Sago Palm, East Indian Wine Palm, Malabar Sago Palm, Kitool Palm (Eng.); Shankarjata (Guj.); Mari (Hin.); Bherli Mad (Mar.); Thippili (Tam.); Jilugujattu (Tel.); Bagani (Kan.)
Scientific Name	:	***Caryota urens*** L.
Where to see	:	Near Shanmuganand Hall (Matunga).

An exquisite palm, particularly when flowering and fruiting, of Indo-Malayan origin reaching up to 12-18 m high and 30-45 cm in girth when mature. Stems cylindrical with circular scar markings of fallen leaves, slightly tapering at upper end. This is the only palm that has bipinnate leaves. Leaves are large with opposite long pinnae and prominent secondary mid-rib or stalk. The shape of the leaf has given the tree its name – Fish-tail Palm.

Fruits are produced in thousands per inflorescence. They are round and contain two semi-circular seeds. The fruits are exactly half the size and shape of a betel-nut and locally called 'Ardhi supari', i.e. half betel-nut. They are used for treating migrane. If consumed in excess they are toxic. The fruits are used to prepare scented flakes of betel nut.

The palm flowers after completion of its growth. The flowering stalks and inflorescence arise from the axil of the topmost leaf and advance to the lower leaves, until the lowermost axil comes into bloom. Sometimes, the lowermost inflorescence spike is produced long after the leaf has fallen. The tree dies soon after the fruits on the lowermost inflorescence mature.

The scientific name *Caryota* is derived from the Greek word Karyos meaning nut and refers to the nut-like hard seeded fruit; *urens* refers to the burning feeling when the pulp is tasted.

The young developing inflorescence from a healthy tree when tapped yields 7-14 litres of sap called 'Toddy' per day. Toddy is used to prepare palm sugar and an alcoholic drink 'Palm feni'. Sheathing leaf-bases of the Fish-tail Palm contain strong fibre, called 'kitul' or kitool (Piassava in Ceylon) fibre. The fibre is used to make fishing lines and scrubbing brushes. The pinna are used for decorating wedding and festival celebration pandals. The stem base is carved to prepare buckets for drawing water from wells.

Trees can be easily propagated by germination of seeds soon after they are mature. The tree has a short life span and does not live more than 40 years.

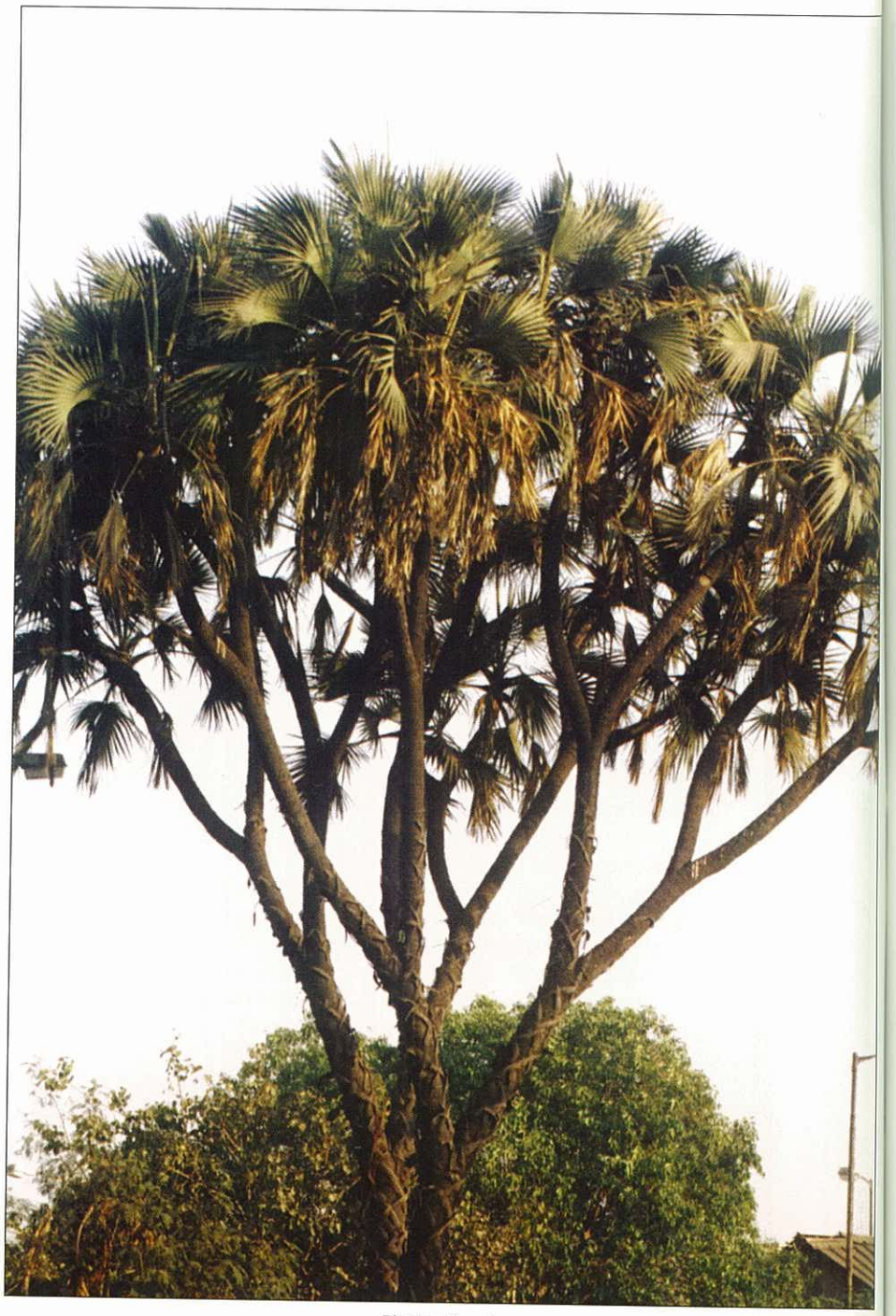


Photo: Sewri

(74) INDIAN DOUM PALM

Common Names : Branching Palm (Eng.);
Ravan-tad (Hin.); Oka Mundel (Guj.);

Scientific Names : ***Hyphaene dichotoma*** (Graham) Furtado
[syn. *Borassus dichotoma* White ex Graham]

Where to see : Malabar Hill, in Godrej Baug, on the hill near Dockyard Road Railway Station, at Mazagao.

A rare tree of uncertain origin. It is about 15 m tall; the stems are dichotomously branched, black and with horizontal, circular marks or scars of fallen leaves. The palmate leaves present in terminal crown of branches are more or less round and divided into a number of segments in the upper half. They measure 90-100 cm from the tip of the central segment to the base of the leaf. The stalk or the petiole of the leaf is almost as long as the blade and has rows of black spines.

The male inflorescence (spadix) is stout and about 100 cm long, and 2.5 cm broad at the base. The spathes are tubular and are covered with woolly hairs. The female spadix is shorter than that of the male and scaly when young.

The tree flowers from January and the fruits mature in April. The obovoid fruits gradually attenuate at the base. The seeds are obovoid and have a fibrous cover.

The scientific name *Hyphaene* – entwined fruit, refers to the fibrous covering of the seed; *dichotoma* refers to the forked branches of the palm.

It is related to the Egyptian Doum Palm and must be of African origin, and since it is distributed more in coastal areas, it must have been brought by the African Hubsi navigators.

The sweet fleshy fibrous part of the fruits look like ginger bread and is edible. In African countries, the dried fruit is pounded into flour, which is used in cakes and sweets. The unripe kernel is also used as a substitute for millet. The tree trunk yields a sago and the young apical buds are eaten. The young leaves of the Palm are used as fodder for camels.

New plants germinate from seeds. However, the percentage of seed germination is meagre.



Photo: Observation post, Goregaon (E)

(75) PALMYRA PALM

Common Names : Tal (Hind.); Tad (Mar.); Panel, Karimpanai (Tam.); Pana, Karimpana (Mal.); Tali (Tel.); Taali, Mara, Panai (Kan.)

Scientific Name : ***Borassus flabellifer*** L.

Where to see : Aarey Colony, Sanjay Gandhi National Park (Borivli).

A tree with a straight trunk up to 30 m high and around 3 m broad at the base. The stems are cylindrical, dark in colour with semicircular rings of fallen leaf-scards, which gradually become less in diameter towards the apex. The leaves have long stalks, are fan-shaped and arranged in a crown at the top of the stem. The segments of the leaves are 60-80 cm long, linear-lanceolate and are folded along the midrib.

The flowers are produced in large interfoliar spadices, which are covered by spathes. The male and female flowers grow on separate plants. Flowering begins in March or April, and the fruits ripen in May and June. All the flowers open at the same time.

The male spikes 1-3 together grow at the end of the padix. They are cylindrical and drooping. The female spikes are few flowered panicles and are with numerous bracts. The fruits are rounded, dark purple or black and smooth drupes 15-20 cm in diameter, containing 1-3 white flexy kernels that resemble the seed of a small mango. The kernel is very soft and sweet, it is relished in the initial stages, but becomes hard and unpalatable on maturity.

The wood of Palmyra is used for construction works, for rafters and stems after removing central pith used as water conduits. Leaves are used for thatching houses. In older times the leaves were used for writing manuscripts of sacred books and were called "Talpatra".

The young flowering spadices when cut horizontally yield a sweet sap called "Toddy", which is consumed freshly or fermented to give alcoholic drinks. The juice is also dried to yield jaggery. A famous Tamil poem on this tree called "Tala Vilasam" is believed to have described more than 800 uses of this palm.



Photo: Sagar Upvan, Colaba

(76) ROYAL PALM

Common Names	:	Bottle Palm, Mountain Glory – Palmiste Cuban Palm (Eng.)
Scientific Names	:	***Roystonea regia*** C.F. Cooke [syn. *Oreodoxa regia* H.B. & K]
Where to see		All over Mumbai City, common in gardens (Sagar Upvan, Jijamata Udyan, Five Gardens)

A tall elegant palm of up to 15 m tall with a columnar bole. Its smooth trunk is slightly swollen in the middle and is marked with horizontal rings. It is also covered with a white substance. The leaves of up to 3 m long are feathery.

The small, straw-coloured flowers appear on 3-4 drooping clusters, and are enclosed by two boat shaped spathes.

The fruits are globose-oblong, purplish berries that turn violet on ripening.

The scientific name *Roystonea* is a commemorative name after general Royston (1836-1905), an American army engineer from Poerto Rico; *regia* means royal.

Young leaves are eaten as vegetable. The trunks are used as wharf piles. The fleshy portion of the fruit when crushed yields oil, which is used as pig feed.

The palm is indigenous to Cuba. The slight swelling in the middle of the trunk gives it the shape of a bottle and it is therefore commonly called Bottle Palm. It is propagated from seeds. It is popularly planted in gardens and avenues for ornamental purposes.

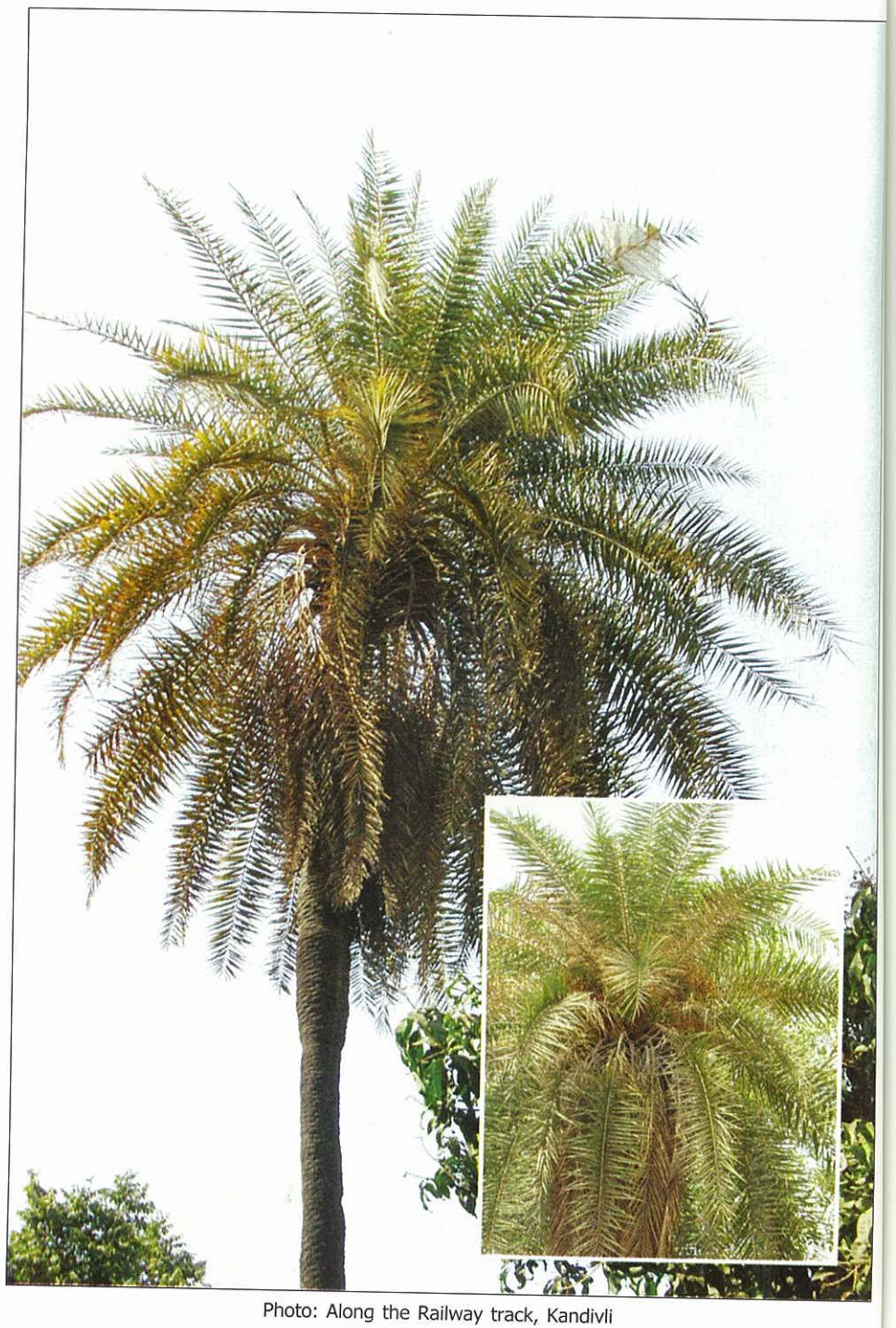


Photo: Along the Railway track, Kandivli

(77) WILD DATE PALM

Common Names : Wild Date Palm, Date Sugar Palm (Eng.); Kharek (Guj.); Khajur (Hin.); Shindi, Sendi (Mar); Jeham (Tam.); Khorjurri (Ori)

Scientific Name : ***Phoenix sylvestris*** (L.) Roxb.

Where to see : In city gardens growing as a hedge.

An elegant palm with a large crown, up to 10-16 m high. The crown is formed by upper erect and lower horizontal drooping leaves of 3-4 m long. The remnants of petiole bases are visible as scales on the tree trunk. The leaves are greyish green with a few short spines at the base. The leaf segments or pinnae are linear with pointed ends.

The male and female flowers grow in spadices on separate trees. The male flowers are white and fragrant, and are enclosed in a rusty spathe. The female flowers are light green. The Palm flowers at the beginning of summer and the fruits ripen by September end. The fruit is an orange yellow, ellipsoid berry with a large hard 'stone', which has a furrow.

The scientific name *Phoenix* refers to the purple colour of the fruit.

The fresh unfermented sap is sweet and makes a refreshing drink. Wild dates are edible, but their fruit is small and has a large seed and little edible pulp. *Phoenix dactylifera* yields the best edible khajur. It is interesting to note that the name Khajuraho was given due to the presence of numerous Khajur trees in the vicinity.



Photo: Five Gardens, Dadar

(78) PERSIAN LILAC

Common Names : Bead Tree, Indian Lilac,
Pride of China (Eng.);
Bakan Limdo (Guj.);
Bakin, Drek (Hin.);
Pejri (Mar.); Malai Vembu (Tam.);
Kattuveppu (Mal.);
Thurakavepa (Tel.);
Bakarjan, Gora Nim (Beng.)

Scientific Name : ***Melia azedarach*** L.

Where to see : Parsi Colony, Maheshwari Udyan (Dadar), Sanjay Gandhi National Park (Borivli).

A medium sized deciduous tree with a straight trunk and spreading branches that form a crown. The feathery, compound leaves are bi- or tri-pinnate. The leaflets appear like a neem leaf, have a toothed margin and are unequal sided at the base. The leaves fall in winter.

The tree blooms from February to May; clusters of small lilac flowers appear at the base of the leaves and are hidden among them. The flowers are sweet scented and attract a variety of insects.

The fruits are yellowish fleshy drupes and when old they wrinkle. One can see clusters of dried fruits hanging on the branches. Each fruit has four small seeds.

The scientific name Melia is derived from the Greek name of "Ash tree" tree, Fraxinus excelsior. The leaves look like those of the Neem; *azedarach* is the Persian name of the plant.

The tree is lopped for fodder and its bark and fruits have insecticidal properties. The leaves are kept in cloth cabinets and book shelves to protect them from insects. The fruit has a bad odour and is bitter to taste. The stones of fruits are used as beads to make necklaces and rosaries; they are poisonous to man and animal. Various parts of the tree have medicinal values.

It is planted as an ornamental and avenue tree. A native of West Asia it grows well in the plains. The tree regenerates from seeds during rains.



Photo: Marine Lines

(79) PORTIA TREE

Common Names : Umbrella Tree, Portia Tree (Eng.);
Gardha-bhanda(Sans.);
Parasa Piplo (Guj.);
Parsipu, Paras Pipal, Gajadanda (Hin.);
Parsacha-jhada (Mar.);
Poovarasu (Mal.)

Scientific Name : ***Thespesia populnea*** Soland

Where to see : Very common in the city, along roadsides and in coastal areas.

A medium sized evergreen tree growing up to 10-15 m high. It has dense foliage, which forms an umbrella shape, therefore it is also called Umbrella Tree. The Peepal shaped leaves are broad and heart-shaped and turn yellow in February. A tree with yellow leaves from a distance appears as if it is in bloom.

The flowers are large, lemon-yellow with a maroon eye in the centre. The petals are crinkled at edges like the Holy Hock and Bhendi flower, giving it another popular name Bhendi Tree. The flowers turn yellow to purple in 24 hours due to oxidation of the yellow anthocyanins present in the petals. The tree blooms throughout the year.

The fruits are globular, slightly compressed near the stalk, and supported by a cup of calyx at the distal end and have a long stalk. They are small, like a table tennis ball, and appear like a top. The young fruits are green and become greenish brown when dry. The fruits are capsules. Each capsule has several hairy seeds.

The seeds contain a chemical called gossypol that causes infertility in human males. Gossypol is also found in cotton seeds and it is the favourite food of red-cotton-bugs.

The bark yields good fibre. All parts of the tree are used by locals for medicine. The leaves are applied as poultice to swelling and abscess. They are also used for wrapping food. The deep red, thick oil produced from the seeds is known as 'huile amere'.

It is propagated from seeds and cutting. A common avenue tree planted along roadsides for shade and beautification. It grows well in the coastal region.



Photo: Jijamata Udyan

(80) PRIDE OF INDIA / TAAMAN

Common Names : Jarul (Hin.); Taaman, Motabondara (Mar.); Kadali, (Tam.); Manimaruthu (Mal.); Varagogu (Tel.)

Scientific Names : ***Lagerstroemia speciosa*** (L.) Pers. [syn. L. flos-reginae Retz.]

Where to see : Along the roadside at Oval Maidan, Traffic training Island, Mumbai University Sport Complex, and in various gardens.

A medium to large sized deciduous tree growing up to 6-15 m high in the city. In its natural habitat in the Western Ghats the tree grows up to 25 m. The leaves and branches originate from the straight greyish trunk to form an oval canopy. The simple, long leaves are oblong-lanceolate with a pointed apex and a short thick stalk. The tree sheds its leaves between January and March. The leaves usually turn yellowish-red before falling from the tree, and new leaves and flower buds appear in May.

The cluster of flowers or panicles originate from the end of the branches. The panicle has old flowers at the base and buds in the apical region. The flowers are purplish mauve having yellowish red stamens. When in bloom the tree stands out to form a mass of single colour, later one can also observe a colourful carpet of petals under the tree, hence the name Pride of India.

The fruits are globular or egg-shaped capsules pointed at the tip and have pale brown seeds. They remain on the tree till the next flowering season.

It is also known as the Queen's Flower because of it's beautiful flowers. The Jarul or Taaman is the state flower of Maharashtra. The scientific name *Lagerstroemia* is in honour of Magnus Lagerstroem, a friend of Linnaeus; *speciosa* refers to its splendid showy flowers. *reginae* – the old specific name means flower of the Queen.

The tree provides timber for construction. The leaves are purgative and diuretic. A decoction of the fruits and leaves is used in diabetic problems. The seeds have narcotic properties.

Another small sized tree up to 4 m tall found in gardens which bear mauve or white flowers and smaller in size is called 'Crape Myrtle or 'Chini Mendi' as its origin is China, its scientific name is *Lagerstroemia indica* L.

There is a row of trees in front of University of Mumbai, Fort Campus, and also common near the entrance of Jijamata Udyan at Byculla, which is believed to be a hybrid between Taman and Chini Mendi and is known to botanists as *Lagerstroemia thoreli* Gagnep. This hybrid is intermediate in size and bears pinkish-white flowers.

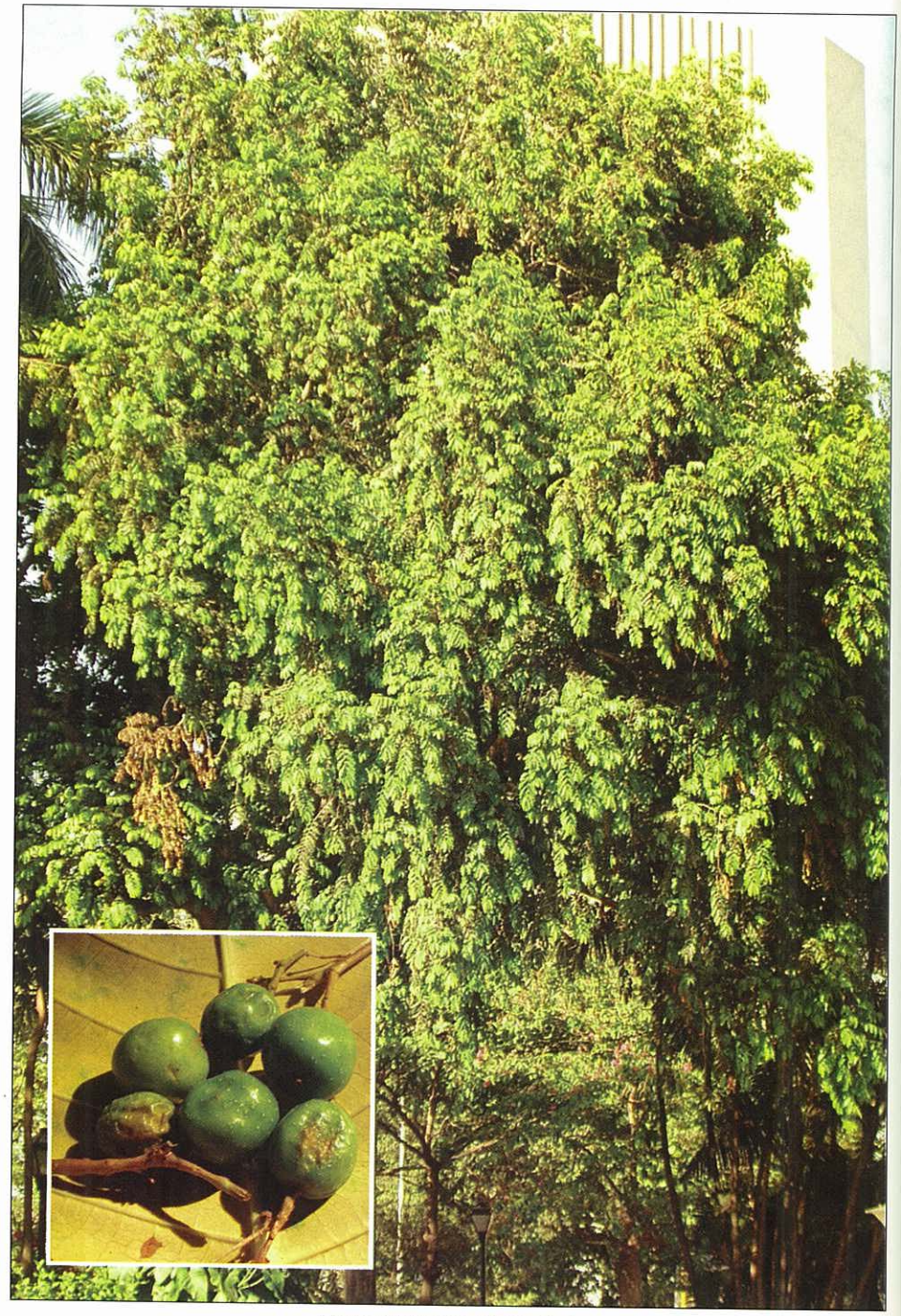


Photo: Horniman Circle, Fort

(81) PUTRANJIVA

Common Names	:	Lucky bean tree (Eng.); Putija, Jijaputa (Hin.); Jewanputr (Mar.); Irukolli (Tam.); Pongalam (Mal.); Kudrajuvi (Tel.)
Scientific Names	:	***Drypetes roxburghii*** (Wall) Horusawa [syn. *Putranjiva roxburghii* Wall]
Where to see	:	Garden near Plaza Cinema, Dadar (near Khodadad Circle), Churchgate, Marine Lines, Currey Road Rly. Station along roadside.

An evergreen tree with a straight trunk growing up to 18 m high. It is a native of West Bengal. The branches are pendant and form a dense shady head. The leaves are elliptic oblong to ovate lanceolate, leathery shining and dark green in colour.

The flowers are small and unisexual, i.e. the male and female flowers grow on different trees. The yellowish male flowers grow in round clusters and the green female flowers grow singly or in twos or threes.

The fruit is a small, egg shaped drupe (like mango) with a hard seed. The white fruit is covered with dense hairs.

The earlier scientific name *Putranjiva* is of Sanskrit origin – putra = son's, jeeva = life or 'child's life'. *roxburghii* is in honour of William Roxburgh, the first superintendent of the Botanical Garden at Calcutta.

The leaves are used as fodder. The seeds are disseminated by deer and bats. Its nuts are sold in the market and made into necklaces by parents, who put them round the necks of their children to ward off evil spirits to ensure good health. The sadhus also tied them on the wrists. It is also known as Indian Amulet plant.

The tree provides good shade and is planted as an avenue tree, and also along hedges and in gardens. The tree is found in evergreen forests along rivers and in swamps. One or two year old nursery seedlings are planted during the rainy season.

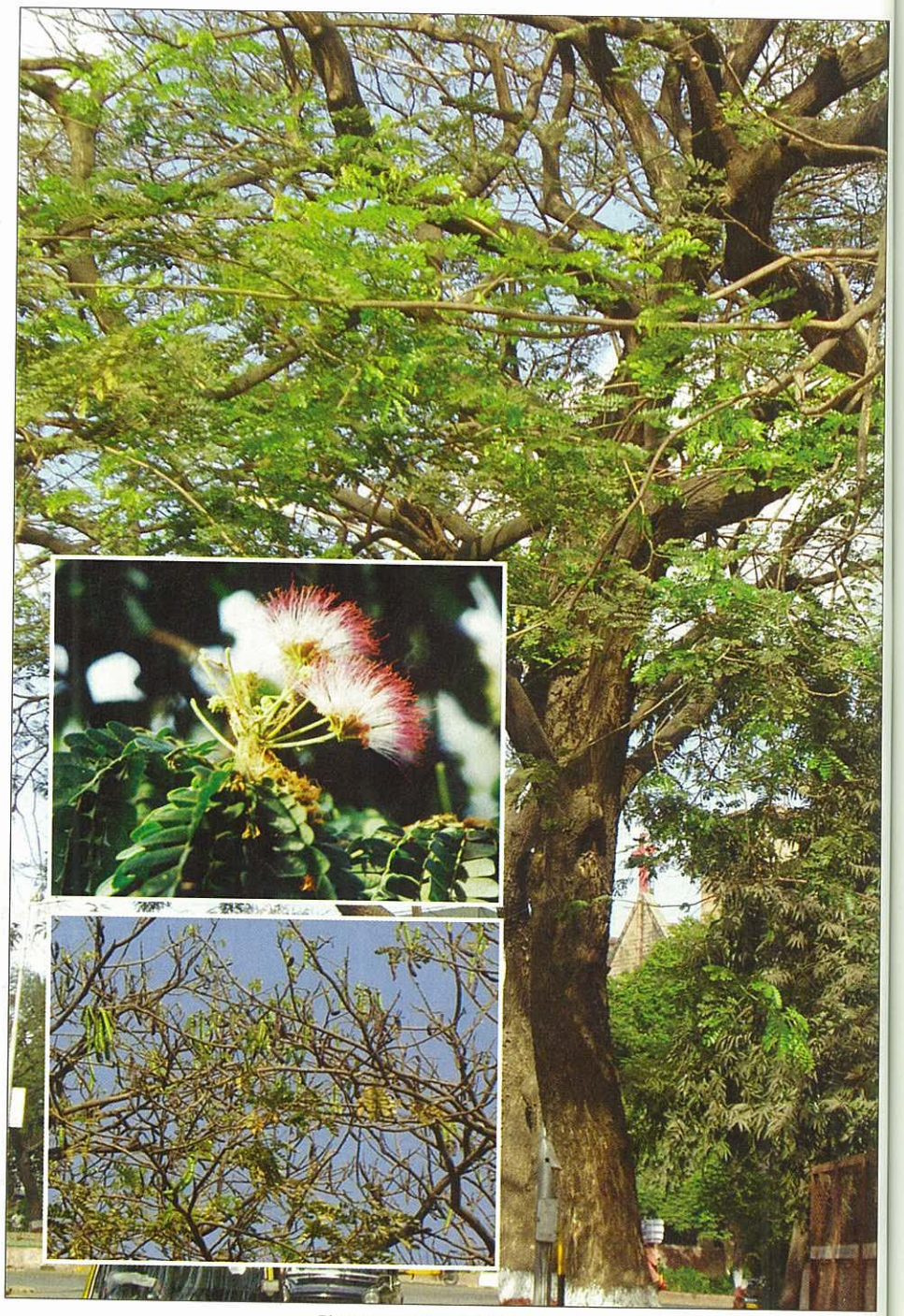


Photo: Five Gardens, Dadar

(82) RAIN TREE

Common Names : Belati Siris (Hin., Beng.); Thungumoonji (Tam.); Nidraganneru (Tel.)

Scientific names : ***Samanea saman*** (Jacq.) Merrill. [syn. *Albizia saman* (Jacq.) F. Mueller, *Enterolobium saman* (Jacq.) Prain ex King]

Where to see : Seen along the railway track (Western suburbs), roadsides (along Western Express Highway) Parsi Colony, Five Gardens and Bandra Kurla Complex.

A massive tree of tropical American origin, growing up to 30 m high, with an evergreen canopy of foliage forming a broad umbrella-like crown. The leaves are long, bipinnate and feathery in appearance. Each pinna bears 3-7 oval, sessile leaflets without stalk.

The green canopy is dotted all over with pinkish white flowers, which appear from March to May and again in December. Some trees flower all through the year. The flowers appear like a round silken powder-puff, and are comprised of a distinct central and surrounding circles of florets which are up to 20 in number. Each floret has a tube-shaped calyx and tiny yellow, lobed, crimson trumpet from which half white and half pink stamens protrude.

This species differs from other *Albizia* species in having white and pink stamens (not yellowish white) and a turgid pod (not flat strap-shaped). The popular name 'Rain Tree' is given because of the peculiar habit of its leaves. In sunshine, the leaves are horizontally spread and prevent sunlight from passing through the dense crown. However, at night and during cloudy weather the leaflet pairs fold together and the leaf stalks droop. In Malaya, this forecasts the coming of monsoon and hence the name Rain Tree. It is also said that cicadas feed on the leaves and their droppings come down like raindrops, and so 'Rain Tree'.

The leaves and pods (fruits) are widely used as fodder for livestock during summer. The turgid pods are 15-20 cm long, contain 10-12 seeds embedded in sweet edible pulp, which is said to improve the quality of milk yielded by the livestock.

This tree was first introduced to Sri Lanka and from there brought to India, being of great value for railway fuel. It is a fast growing tree, yielding a high percentage of biomass in a comparatively short time. It is widely planted as an avenue tree because of its ability to keep its symmetrical conformation inspite of strong winds. It is propagated by seeds and cuttings, and thrives best in hot and humid localities. Seed germination can be enhanced by heat treatment.



Photo: Five Gardens, Dadar

(83) RIO GRANDE TRUMPET FLOWER TREE

Common Name	:	Rio Grande Trumpet Flower (Eng.)
Scientific Name	:	***Tabebuia megapotamica*** Dugand in Spreng
Where to see	:	Parsi Colony, Five Gardens (Dadar).

A small deciduous tree up to 10 m tall with ashy-grey bark. The elegant spreading branches with several branchlets bear compound leaves, each having one or two pairs of leaflets and a terminal leaflet. The oblong shaped leaflets are bright, olive green and have blunt tips.

The tree flowers throughout the year. The lilac pinkish flowers appear in small clusters at the end of branchlets. Each cluster has three flowers hidden among the foliage. The flowers are trumpet shaped with a yellowish corolla tube, which is lined inside by purplish orange streaks. The corolla has five frilled and crinckled lobes. The scentless flowers are short-lived and soon fall off. One can often see more flowers on the ground than on the branches.

The tree fruits randomly displaying sprinklets of green cylindrical pods.

The tree is a native of Brazil and was introduced to India for its beautiful flowers. It is planted as avenue and ornamental tree. It is propagated by seeds.



Photo: Jijamata Udyan

(84) SACRED BARNA

Common Names : Varuna (Sans.);
Bhatavarna, Varno (Guj.);
Vayvarna (Hin.);
Haravarna, Kumala (Mar.);
Mavilingam(Tam.);
Kili, Niravila (Mal.); Bilavaram (Tel.)

Scientific Names : ***Crataeva tapia*** L.
[syn. *Crataeva roxburghii.* Br.]

Where to see : Near Cama Hospital, Sagar Upvan (Colaba), at Marine Drive, behind Marine Lines Rly. Station, Jijamata Udyan.

A moderate sized deciduous tree reaching up to 8-12 m high. The compound, trifoliate leaves grow in clusters at the end of the branches. The leaf has a long stalk and oval to lance shaped leaflets with tapering points. The leaflets are 1.5-6 cm long, glossy on the upperside, green and paler on the underside. The tree sheds its leaves in winter; new leaves appear in February and March, by when the tree is also ready to flower.

The sturdy stalks at the end of the branches bear clusters of greenish white flowers. The oval sepals of the flower are greenish when young, turning pinkish yellow when old. The white petals also turn yellow in older flowers. A bunch of thread-like purple stamens protrude from the flower. The female organ, i.e. ovary grows on a 5 cm long stalk.

The fruits are round woody and green when young, turning scarlet when ripened; they have several brownish seeds. The branch is often attacked by insects that form galls on the tree, which appear like fruits.

The scientific name *Crataeva* is in honour of Crataevas — a writer on medicinal plants; *tapia* is derived from American local name, which was confused by Linnaeus for plant in 'Hortus Malabaricus'.

The fruit is mixed with mortar to form a strong cement. The rind is used as a mordant in dyeing. The bark is bitter, and is used as a tonic and demulcent; it has a stimulating effect on the liver. The bark extract is also used as laxative and in infections of the urinary tract.

The tree is planted near temples and tombs. The Barna in full bloom is a handsome sight. The tree is propagated from seeds, which germinate well on moist bare ground.



Photo: Sanjay Gandhi National Park, Borivli

(85) SAND PAPER TREE

Common Names : Siamese Rough – Bush (Eng.);
Karchanua (Hin.);
Kharvat, Kharota (Mar);
Piraayamaram (Tam.); Paruka (Mal.)

Scientific Name : ***Streblus aspera*** (Retz.) Lour.

Where to see : One big tree at Amboli near Andheri, on S.V. Road just before the turning at St. Blaiz School. Common in Sanjay Gandhi National Park (Borivli), along roadsides in the suburbs.

A medium sized tree of Asian origin, common all over Mumbai. It grows up to 15 m high and its girth at the base is up to 40 cm.

The leaves are small 4-5 cm long and elliptic with a pointed apex. The leaf margins have a few teeth and a rough texture; if rubbed with pressure the leaf can scratch a surface. The rough leaves of the Sand Paper tree were used for polishing articles made of ivory and precious wood, like chandan and raktachandan.

The male and female flowers are produced separately on the same tree. The male flowers arise in short stalked groups on pedunculate heads. The female flowers are solitary and placed in axils of the leaves. Pedicels are usually branched, but only one of them will develop flowers.

The fruit is pisciform. Initially green, it is enclosed in enlarged persistent perianths. It turns orange yellow when ripe and can be eaten, but only birds have been noticed feeding on them.

The scientific name *Streblus* means crooked branches, *aspera* refers to the rough underside of the leaves.

The wood is quite hard, but commonly used as firewood. Its thin bark has compounds that are being studied for probable treatment of cancer.

The tiny seeds are difficult to germinate. But seeds passed out with bird droppings separated (by soaking them in water) and sowed in trays containing a mixture of sand and soil germinate.



Photo: Parsi Colony, Dadar

(86) SAUSAGE TREE

Common Names	:	Common Sausage Tree, Fetish Tree (Eng.); Jhar Phanoos (Hin.); Maracchurai Anai-pudukkan (Tam.); Sasega mara (Kan.)
Scientific Name	:	***Kigelia pinnata*** DC.
Where to see	:	Dadar, Five gardens (Matunga), Sagar Upvan (Colaba), Vashi in New Bombay.

An evergreen medium sized tree up to 6-15 m tall. It has a short trunk with long distorted branches, which are covered with greyish brown rough bark. The compound leaves are imparipinnate, i.e. they have 3-4 pairs of leaflets with an odd leaflet at the tip. The elliptic or oblong leaflets are 7-15 cm long and are stiff and leathery. The tree sheds its leaves twice during a year.

The deep chocolate red flowers grow in long pendulous clusters. The cup-shaped calyx of the basal flowers has a reddish brown, funnel shaped corolla. The flowers bloom at night and fall in the morning. Their strong odour attracts many bats at night that help in pollination.

The gourd shaped fruits, 45 cm long and 12 cm wide, hang by a rope like peduncle. They appear like a sausage, hence the common name Sausage tree.

The scientific name *Kigelia* is derived from an African name; *pinnata* refers to its pinnate leaves.

Roasted seeds are eaten during food scarcity. However, they have some purgative properties. A preparation from the bark is used in rheumatism and dysentery.

The tree is propagated from seeds during rains. It also grows well in moist habitat, i.e. near margins of tanks.

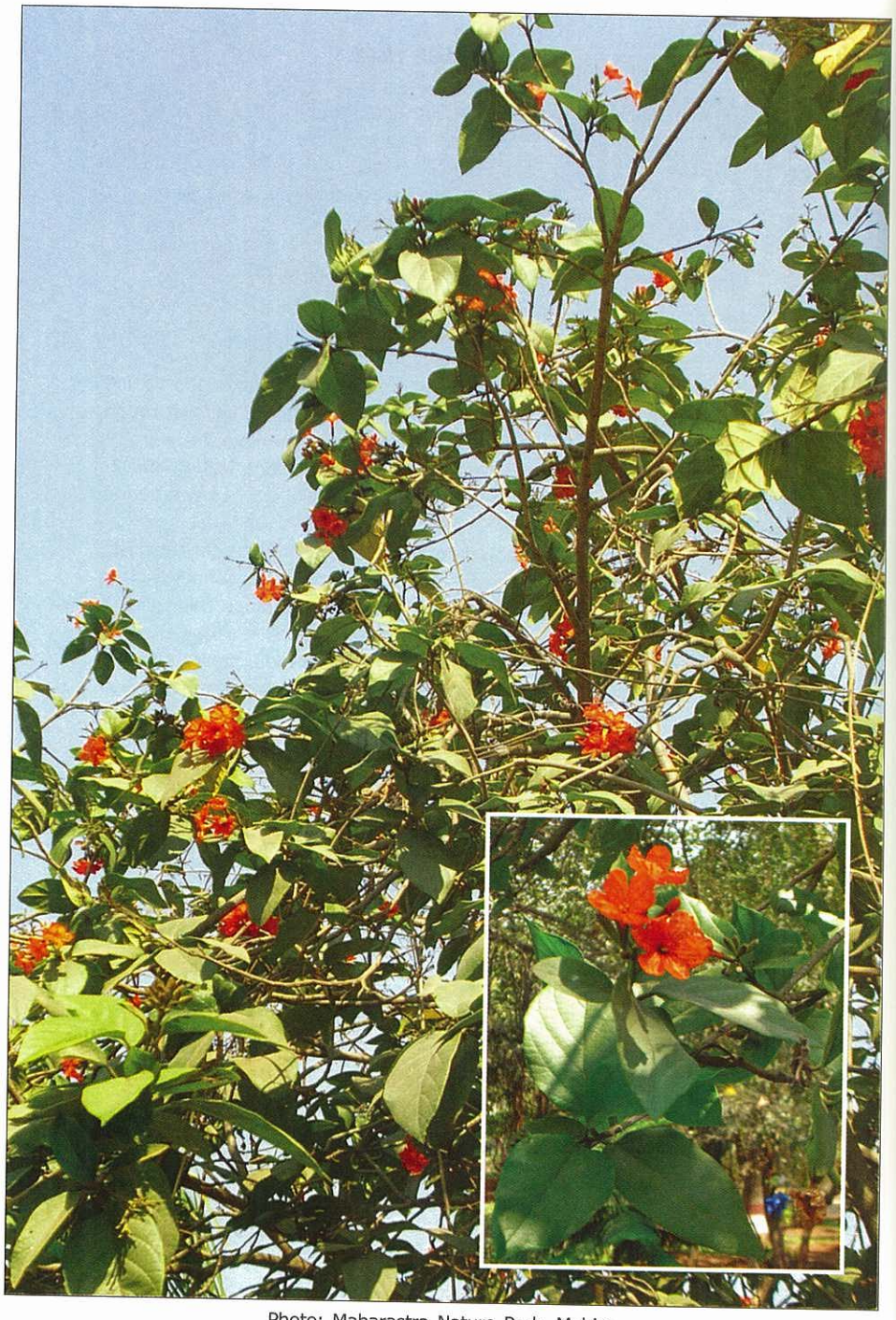


Photo: Maharastra Nature Park, Mahim

(87) SCARLET CORDIA

Common Names : Aloe Wood, Sebesten Plum, Gelger Tree (Eng.); Lal Lasora (Hin.); Ponnaruvili (Tam.); Virigi (Tel.); Kempuchalle, Challenkendala (Kan.)

Scientific Name : ***Cordia sebestena*** L.

Where to see : Sagar Upvan (Colaba), Jijamata Udyan, Annabhau Sathe Udyan (Chembur).

A small semi-evergreen tree up to 10 m tall, it is known for its beautiful flowers. The simple leaves are oval with a broad base and acute or blunt apex. The dark green leaves have a rough wrinkled surface. The leaves are short stalked and grow near the ends of twigs.

The funnel shaped, small orange-red flowers have 6 petals, the dull yellow coloured anthers are visible at the mouth of the coralla tube. The flowers appear in small clusters at the end of branchlets.

The fruits are small, egg shaped yellowish berries with a sweet smell. Their sticky pulp encloses small seeds.

The scientific name *Cordia* is in honour of the German botanist V. Cordus; s*ebestena* is derived from the Persian word Sapistan – a fruit of a similar plant growing near Sebesta town.

The wood when burnt gives a sweet smell. It is propagated by seeds and cuttings. The tree is planted for ornamental purpose.

Cordia subcordata Lamk. is a medium size tree 10-15 m tall. There are couple of plants of this species in Jijamata Udyan. One tree is near park office, on right-hand side near the green-house. Another tree is at the end of entrance road, at first right turn. It has large, ovate, 8-15 cm long leaves and orange-red flowers. The tree is said to be native of Andaman.

Another species of cordia commonly seen in Mumbai is *Cordia sinensis* Lamk. which is known in Marathi as 'goundani' or 'Lindri'. It has small white flowers and upto 1 cm long, ovate fruits. The tree can be seen at Bangur Nagar, Goregaon, (W), at last entrance gate, left hand side towards Malad.



Photo: Campus of Cama Hospital, Fort

(88) SEBESTEN PLUM / BHOKAR

Common Names : Bahuvaraka (Sans.); Bargund (Guj.); Lasora (Hin); Slashmantak, Shelvant (Mar.); Naruvilli (Tam.); Cheruviri (Mal.); Chinna Nakkeru (Tel.)

Scientific Name : ***Cordia dichotoma*** Forst. f.

Where to see : Sagar Upvan (Colaba), Near Cama Hospital (CST), Jijamata Udyan.

A medium sized tree with a short crooked trunk *c.* 1 m in girth. The simple 7-12 cm long leaves of variable shapes have a leathery texture.

The flowers grow in terminal clusters hidden among leaves. They are white and have strong fragrance and bloom in the evening. The flowers have a cup shaped calyx and fine curling petals, exposing the long stamens.

The fruits are pear shaped 1-2.5 cm in diameter and have a sticky pulp, embedding a hard seed. Popularly called Sebesten, the fruits are sweet and mucilaginous. A pickle is prepared from the green fruits, which is popular in households.

The scientific name *Cordia* is in honour of Valerius Cordus a German Herbalist, who died at an young age; *dichotoma* refers to the branching pattern of the tree. The plant was earlier misidentified as *Cordia myxa* by a botanist from Mumbai. *myxa* refers to its slimy fruits. All *Cordia* species have slimy fruits.

The fruit is astringent, anthelmintic, diuretic, demulcent and expectorant. The wood is strong and durable, and is used for making cases. The kernel cover is used in fevers and dyspepsia.

The tree is propagated from seeds and also from cuttings of woody stems. It is planted for ornamental purposes.



Photo: Film City, Goregaon (E)

(89) SHENDUR

Common Names	:	Raktanga (Sans.); Kapilo (Guj.); Kamala, Sindur, Rohini (Hin.); Kapli (Tam.); Ronati (Mar.); Manjana (Mal.); Kumkuma (Tel.)
Scientific Name	:	***Mallotus philippensis*** Muelt.-Arg.
Where to see	:	At Film City and Sanjay Gandhi National Park (Borivli).

A small profusely branching evergreen tree. The trunk has a greyish bark. It has two different shaped leaves, some are ovate oblong while others are lanceolate with pointed tips. The leaves are smooth, shining above and pubescent with several red glands below.

The tree blooms in December and January. The male and female flowers are produced on different tree. The small flowers appear in spikes. The fruits are three-lobed round capsules covered with reddish brown glandular pubescence. The colouring matter or a red dye, which is present in the glandular pubescence of ripe fruits is available in February and March.

The scientific name *Mallotus* refers to its woolly seeds; *philippensis* refers to its native country from where the tree was collected when first described.

The red pubescence is separated from the fruit by shaking and beating it. The orange red dye is used for dyeing silk and wool. It is also used as an antioxidant for ghee and vegetable oils. Indian women use the powder as Kumkum or sindur. The powder has purgative and anthelmintic properties, it is especially used for treating tapeworm infection and is administered with oil or curd. The ointment of the powder is used to cure ringworm.

The tree is frost resistant and can also survive in shade. It grows from the seeds that fall on the ground. It can also be propagated by germinating seeds in a nursery and planting them, and from root suckers.



Photo: Sagar Upvan, Colaba

(90) SISSOO

Common Names	:	South Indian Redwood (Eng.); Sishavi (Hin. & Mar.); Sissoo, Sisham (Tam.); Agara (Kan.)
Scientific Name	:	***Dalbergia sissoo*** Roxb.
Where to see	:	Jijamata Udyan, BNHS-Conservation Education Centre (Goregaon).

A medium sized tree, originally native of the sub-Himalayan tracts in North India, but now cultivated in various parts of India. It generally branches from the lower portion of the stem and grows up to 10 m high, and about 1.5-2 m in girth. The canopy of the tree is generally spreading. The bark is grey and longitudinally furrowed, peeling in narrow strips.

The leaves are imparipinnately compound with 3-5 leaflets in each leaf. The leaflets are alternate, rhomboid, with zigzag rachis. They are 5-10 cm long, and are covered with minute hairs when young, but become hairless when mature.

The flowers are produced in axillary paniculate racemes. They begin to appear in April-May and the fruits develop in December-January. The flowers are pale white in colour. The fruits of Shisham are strap shaped. They are generally borne in fascicles, are 2.5-3 cm long and 1 cm broad, and generally have a single seed in the centre.

The scientific name *Dalbergia* is in honour of Nicholas Dalberg, a Swedish botanist, and a friend of Carl Linnaeus; *sissoo* is the local name of the species in North India.

The wood of Shisham is used for making furniture, but it is less valued than *Dalbergia latifolia* Roxb. (Indian Rose Wood).



Photo: BNHS-Conservation Education Centre, Goregaon

(91) RED SILK COTTON

Common Names : Shalmali, Yamadruma (Sans.); Sawar (Guj.); Semul (Hin.); Kate Savri (Mar.); Elavamaram (Tam.); Ilavu (Mal.); Burga (Kan.); Simli (Ori.)

Scientific Names : ***Bombax ceiba*** L. [syn. *Salmalia malabarica* (DC.) Schott & Endl.]

Where to see : Along roadsides in the western and eastern suburbs, railway tracks, in the green patches in the City.

A tall, erect deciduous tree reaching up to 40 m high, usually with buttressed roots. The tree trunk is straight and has 3-4 branches that grow almost at right angles to the main trunk. The tree bark has vertical furrows and is often densely covered with hard conical spines, which are detachable. The wide spreading branches have large green leaves, each having a long stalk and 5-7 leaflets. The long lance-shaped leaflets are tapering at both the ends. The leaves are shed in December and January.

New flower buds appear during February. The tree blooms in late February and March. Each flower has six petals, and a bundle of stamens in the centre and opposite each petal. The leafless tree covered with bright red flowers is a beautiful sight. The large, bell shaped scarlet red flowers attract a variety of birds. The flowers are pollinated by birds and one can spot, common drongos, babblers, mynas and rosy pastors visiting them.

The fruits are 5-angled capsules open to disperse seeds embedded in white silky cotton fibres that help them to float through the air and travel long distances.

The specific name *ceiba* refers to the silk cotton like floss.

The young roots of the tree are considered as tonic and used in medicines. The hard spines are used in Ayurvedic medicine as remedy for facial pimples. The extract from the spines is dark red and is used as a red dye. The stem is used for making matchsticks. The silky cotton fibres are used for stuffing pillows. The Red Cotton Bug feeds on the fibre.

In Orissa, a district is named Similipal because of the large presence of this tree. Its wood is used in sacred ceremonies.



Photo: Five Gardens, Dadar

(92) SMALL INDIAN OAK / DATRIPHAL

Common Names : Samudra Phala (Guj.); Hijjal (Hin.); Datriphal (Mar.); Adampa (Tam.); Attampu (Mal.); Holekauva (Kan.); Hinjolo (Ori.)

Scientific Name : ***Barringtonia acutangula*** (L.) Gaertn.

Where to see : Swampy areas along the coast. Two trees can be seen at Unnatnagar, (Goregaon (W), Jijamata Udyan.

An evergreen tree 9-12 m tall. The bark is rough and dark brown. The leaves are large, obovate with a slightly denticulate crenate margin. The leathery leaf is broad at tip and narrowing at the base with short stalk.

The small flowers grow in long pendulous racemes at the end of branches. The flowers are fragrant and have bright red stamens. The tree blooms from August to September. The fruits are bluntly quadrangular berries and have single seeds.

The scientific name *Barringtonia* is in honour of the English botanist Barrington; *acutangula* refers to sharp edges of the fruit.

The young leaves are edible and their juice is given in diarrhoea. The bitter roots have properties similar to cinchona. The fruit is also bitter and has antibiotic properties. It is given to relieve toothache and also as an astringent and tonic. The seed powder has expectorant and emetic properties. It can be inhaled as snuff for relief from headache. The bark and seeds are used as fish poison. The powdered bark is applied to relieve pain from bites and stings of insects. The timber is used for boat building.

The tree grows naturally at the edge of swamps and near the sea coast, and is suitable for afforestation of swampy areas. The pendulous fruit and thick leaves enhance the beauty of the tree. It is therefore also planted for ornamental purposes. The tree is raised from seed.



Photo: Godrej Garden, Vikhroli

(93) SONCHAMPA

Common Names : Champo, rae-champo (Guj.); Champa (Hin.); Pivlachampa (Mar.); Shembuga (Tam.); Champakam (Mal.); Champa Kamu (Tel.)

Scientific Name : ***Michelia champaca*** L.

Where to see : Jijamata Udyan, Santacruz (West)

An evergreen tree growing up to 30 m high, it has a thick, long, straight bole. The leaves are 18-25 cm long with a glabrous upper surface and hairy under surface.

The tree flowers in summer and monsoon. The flowers grow singly in the axils of the leave, are yellowish orange in colour and strongly scented. Pure-white flowered hybrids are also cultivated in Mumbai gardens.

The fruits, which appear in August, are ovoid capsules 5-10 cm long. The brownish seeds are angular in shape and have pink fleshy aril.

The scientific name *Michelia* is in honour of the Florentine botanist P.A. Micheli; *champaca* is derived from its vernacular name.

The wood is used for posts, boards, veneer and furniture. The flowers yield champaca oil used in perfumes. They also yield a yellow dye used for textiles. The fragrant flowers are used by women to decorate their hair. The drying flower emits an unpleasant stench and is therefore not used in religious ceremonies. The bark has stimulant and diuretic properties. The root bark is purgative, while the juice of the leaves is used in colic and fever. The fruits are used as antispasmodic, stomachic and in renal diseases.

The tree is grown near temples and often seen in gardens because of its fragrant flowers. It requires a damp climate with moderate light to propagate. It can be propagated by preparing saplings in a nursery and transplanting the older ones. It is also easily grown by planting a stump or cutting.



Photo: Kala Ghoda, Fort

(94) STAR APPLE

Common Name : Cainito (Eng.)
Scientific Name : ***Chrysophyllum cainito*** L.
Where to see : In Fort area growing on the footpath near Mumbai University at Kalaghoda and the corner opposite CTO, Jijamata Udyan, KEM Hospital Compound.

A medium sized evergreen tree growing up to 10-15 m high, with a dense crown. The tree can be easily identified by the colour of its oval shaped leaves, which are dark green on the upperside and golden with silky lustre on the underside.

The small greenish white or purplish flowers appear in clusters during July and August. The round fruits are 5-10 cm in diameter and when cut horizontally show a star like core, therefore the common name Star Apple. The fruits are purple; they ripen on the trees and have a delicious flavour. The colour of the fruit varies from white to purple.

The scientific name *Chrysophyllum* is derived from the Greek word Chrysos – gold, and phyllum – leaf.

The ripe fruits are used to treat diabetes.

If you are passing through the Kalaghoda or Fort area do not forget to observe these trees, which look marvellous when sunlight falls on its golden leaves.

The tree is a native of West Indies and Central America and is planted in the warmer parts of India. It thrives well on deep, well drained rich soil. The plant is propagated by seeds.

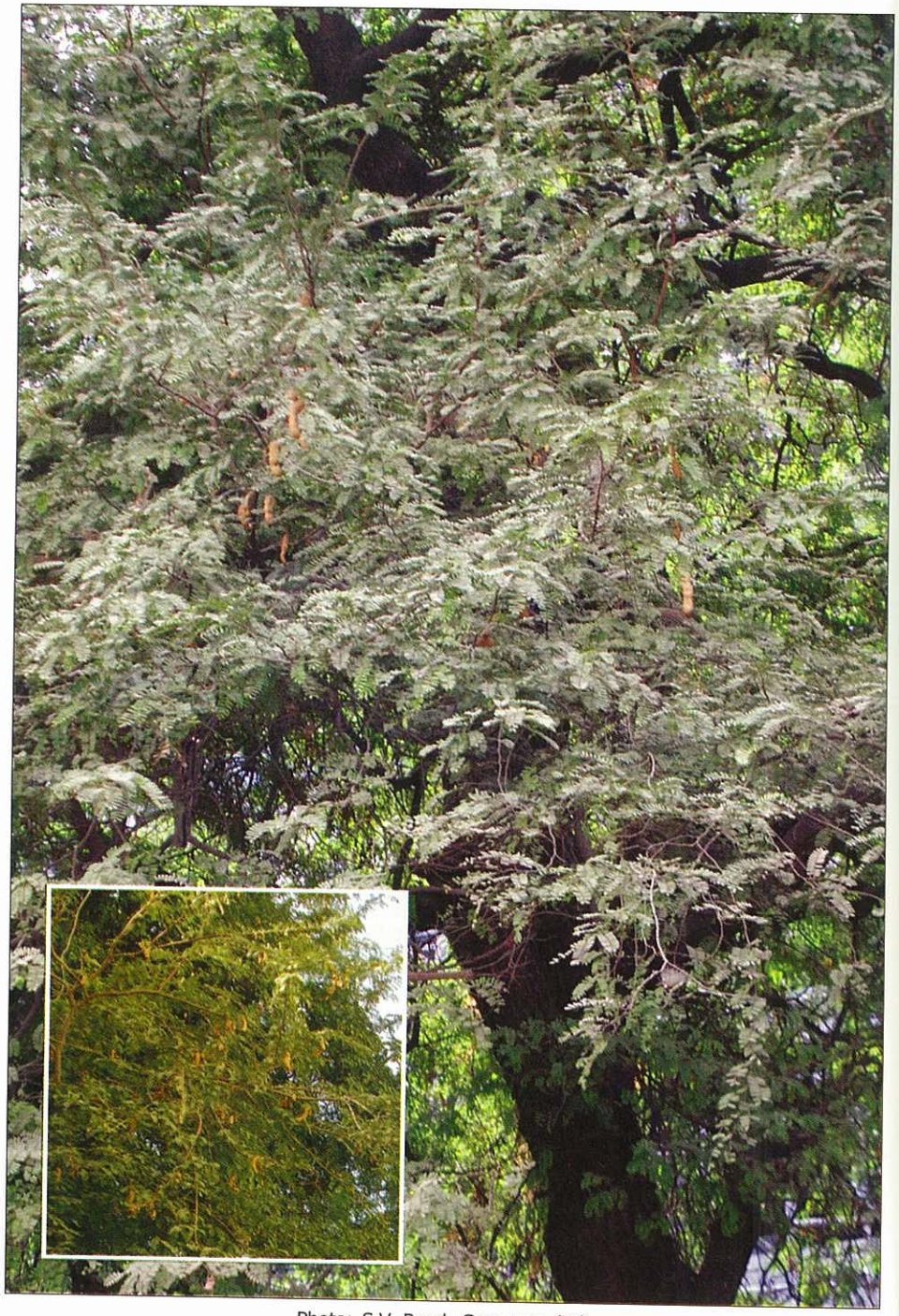


Photo: S.V. Road, Goregaon (W)

(95) TAMARIND

Common Names : Amli (Guj.); Imli, Amli, Ambli (Hin.); Chincha (Mar.); Puli (Tam.); Chinta, Tentuli (Ori.)

Scientific Name : ***Tamarindus indica*** L.

Where to see : Two large trees in Excel-Estate Compound, Goregaon. Commonly found near human habitation.

A large sized evergreen tree growing 24 m high, with dark stout trunk and broad canopy. The 5-12 cm long compound leaves have ten or twelve pairs of small leaflets. The young leaves are pale green and turn dark green when old. The tree when covered with young green leaves is a beautiful sight.

It flowers from May to June. The small flowers are arranged in loose clusters among leaves at the end of the branches. The spotted yellowish red flowers have 3 normal and 2 reduced petals. During the peak flowering season, the ground below the tree is covered with a carpet of falling petals.

The fruits are slightly curved pods of various shapes and sizes, constricted between seeds. The tender young pods are brownish green, but turn dark brown when mature. The pods have dark coffee coloured edible pulp with branched ligneous strands embedding hard dark-brownish seeds.

The scientific name *Tamarindus* is derived from its Persian name Tamar-e-Hind, meaning Indian date; *indica* refers to India.

The tree is a native of Africa. It was introduced into India by Arabian traders who sold the pulp of the fruits to Indians, bringing it all the way from Africa. The ships carrying the pulp were unloaded at a place called "Chinch Bunder" and they were stored for sale at "Tamarind Lane" in the Fort area of Mumbai. Due to its thick canopy and shade, the Tamarind tree is planted along roadsides and in avenues. Though a slow grower, the tree has a long life and some of the old areas of Mumbai like Chinchbunder, Chinchpokli and Tamarind Lane were named so due the presence of tamarind trees.

Tamarind pulp has Vitamins A and C. The pulp makes delicious chutney, curries and is widely used in Indian cooking. A sherbet made from it has cooling effect. The ripe fruits are astringent, digestive, carminative and laxative. Some believe that the tree is the abode of devils and ghosts, and are scared of going near it at night. The seed is very hard and yields white starch, which is used by book-binders as a gum. The tree is propagated by saplings from cuttings and by budding. The survival of seedlings is very low because the delicious germinating cotyledons are devoured by ground dwelling insects.



Photo: Sanjay Gandhi National Park, Borivli

(96) TEAK

Common Names	:	Sag (Guj. & Mar); Sagwan (Hin.); Tekkumaram (Tam.); Theku (Mal.); Tekku (Tel.); Segu (Beng)
Scientific Name	:	***Tectona grandis*** L. f.
Where to see	:	Sagar Upvan (Colaba), along railway track (Goregaon, Kandivli), Sanjay Gandhi National Park (Borivli).

A large deciduous tree 40 m high with a round crown. The fibrous bark is light brown or grey in colour. The branchlets are characteristically quandrangular. The leaves are opposite and large, 30-60 cm long and broadly elliptical or obovate, rough on the upper surface and with greyish star shaped hairs on the undersurface. The leaves have red glandular dots, which turn black when mature.

Young leaves when crushed and rubbed on the palm stain it with red colour. In dry regions, the leaves are shed between November and March, but in humid regions they remain on the tree till March. The tree is usually leafless during summer and new leaves appear thereafter.

The tree blooms between July and October, but the flowers appear early in abnormal weather. The flowers are small, white, sweet scented and appear in long clusters visible from a distance.

The fruits are hard, bony and irregular globose with a pointed apex. They are wrapped by light brown bladder like calayces, which have white egg-shaped seeds.

The generic name *Tectona* is derived from its native name Thekku in Malayalam.

Teak wood is well known for its physical and mechanical properties. The leaves yield a yellowish-red dye and in ancient times it was used to prepare red colour. Green leaves are used as wrappers, in thatching and to make cheap umbrellas. Flowers are used in bronchitis and urinary infections.

The tree is planted in forests, parks and gardens. The tree is propagated from seeds by developing seedlings in nursery.



Photo: Maharashtra Nature Park, Mahim

(97) TIMBURI

Common Names : Tinduka, Krishnasara (Sans.);
Kala tendu (Hin.);
Timburi (Mar.);
Kattatti, Kavikattai (Tam.);
Panachi (Mal.); Tinduki, Gabu (Tel.)

Scientific Names : ***Diospyros peregrina*** (Gaertn.) Gurke
[syn. *Diospyros malabarica* Desr.]

Where to see : Jijamata Udyan (Byculla),
Mahim Nature Park, Uran.

A moderate sized evergreen tree 10 m high with numerous branches forming a dense shady canopy. The tree bark is thick, smooth, black and flakes off in large pieces. The leaves are thick, oblong, glabrous and shiny. The male flowers grow in a bunch of 2-8 flowers. The female flowers are larger in size compared to the male flowers. The flowers usually grow solitary from the axil, drooping and have short pedicels. The tree flowers between March and May.

The large sized fruits are subglobose. They are covered with rusty scurf i.e. flakes on the surface of the skin and are supported by spreading calyx. Each fruit has 4-8 flattened, smooth seeds of reddish brown colour embedded in viscid glutinous pulp.

The Gabu or Persimmon fruit is a spherical berry the size of a 'Chikku'. The ripe fruit has a mawkish sweet taste and is edible. A tree yields around 4,000 fruits in a season. The unripe fruits are rich in tannins and are used for tanning hydes and dyeing cloth. The fruit pulp is also used as a preservative for fishing nets and as glue in book binding.

The tree grows well in shady wet places near streams. The tree is propagated by preparing seedlings in nursery; seedlings are sensitive to frost.



Photo: Near Marine Lines Station (W)

(98) TREE MALLOW / BELAPATA

Common Names	:	Coast Cotton Tree, Yellow Mallow Tree (Eng.); Bola (Hin.); Belapata (Mar.); Nirparathi (Tam & Mal.); Etagogu (Tel.)
Scientific Name	:	***Hibiscus tiliaceus*** L.
Where to see	:	Marine Lines (Near Cricket Maidan), Jijamata Udyan, Chembur.

A small tree 10-12 m high. The trunk is short with a small canopy of heart shaped leaves. The leathery leaves have an entire or crenulate margin with acute apex. The leaf petiole is around 10 cm long. The tree sheds its leaves partly. It blooms between November and January.

The flower racemes grow at the terminal end of the branches. The short peduncled flowers have five sepals and five crinkly petals. A ring of ten bracts grows at the base of the sepals. The staminal tube projecting from the flowers has golden coloured anthers and is surmounted by the stigma. The creamish yellow flower with a dark crimson centre resembles the flower of the wild Bhendi Tree in colour and texture. It can be differentiated from the Bhendi Tree flower by the absence of the bell shape and different colour. The yellow flower of Belapata turns light purple red by evening and with age it opens wider.

The fruits are round capsules with a short beak and enclosed in persistent calyx. The reniform seeds are black in colour.

The scientific name *Hibiscus* means Mallow in Latin; *tiliaceus* refers to its resemblance to another tree *Tilia.*

The bark fibres have water resistant properties and are used for cordage, ropes and to make mats. The bark is also used for making paper.

The Belapata is commonly found along the edge of mangrove swamps and tidal streams on the seashore. It is planted to prevent soil erosion. The tree is propagated from seeds and cuttings. It is planted in gardens for ornamental purposes.

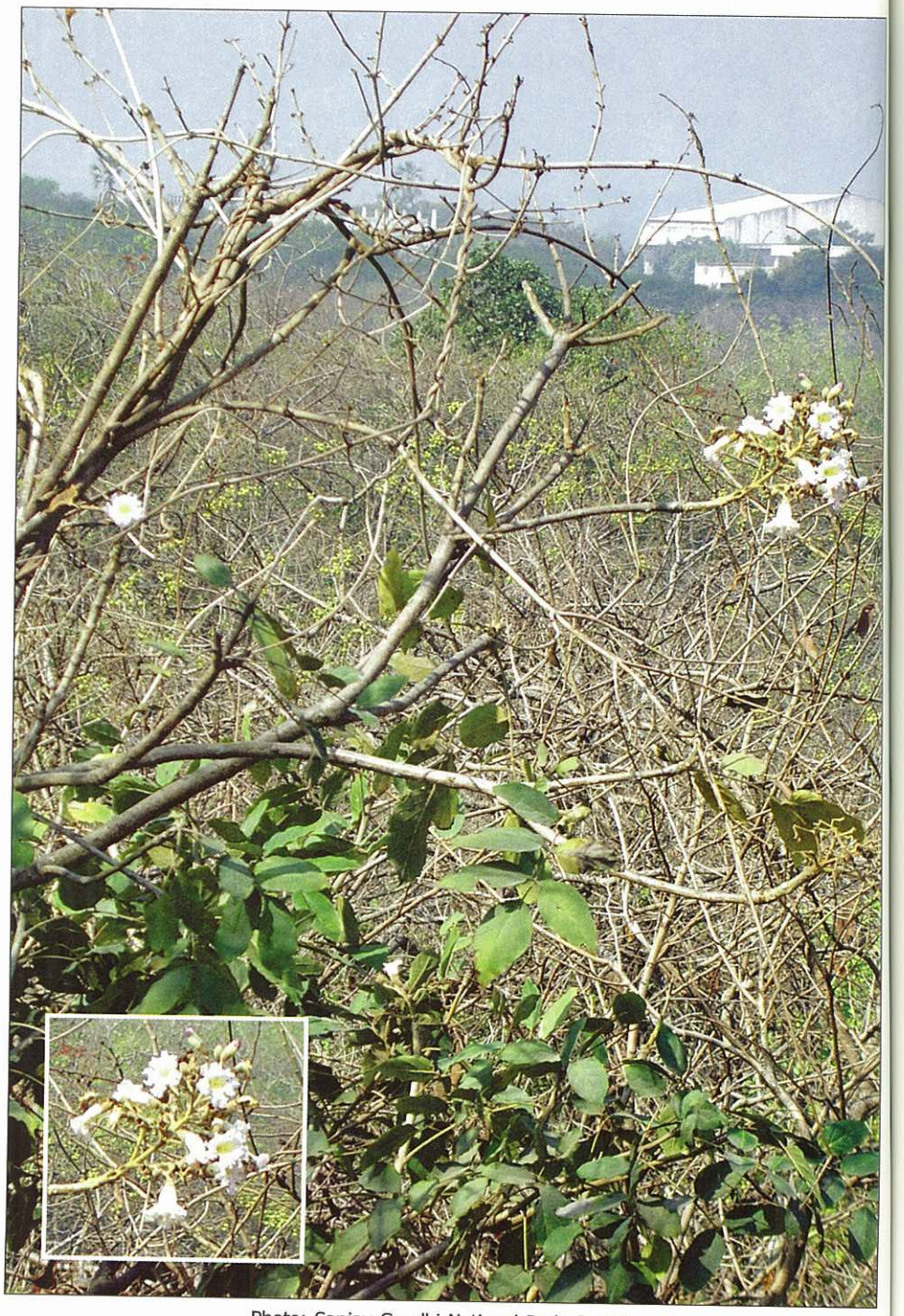


Photo: Sanjay Gandhi National Park, Borivli

(99) WARRAS

Common Names : Warras (Hin.); Warras (Mar.); Baro-Kala-goru (Tam.); Bondgu (Tel.); Adwl nuggi (Kan.)

Scientific Name : ***Heterophragma quadriloculare*** (Roxb.) K. Schum

Where to see : Malabar Hill, BNHS-Conservation Education Centre (Goregaon), Malad, Sanjay Gandhi National Park, (Borivli).

A large tree with brownish grey scaly bark. The compound leaves are 30-60 long and have 3-5 pairs of leaflets with a single odd one. The elliptic oblong leaflets have an unequal sided base with an entire or serrulate margin and pointed apex. The leaves grow opposite or in whorls at the end of the branch.

The tree blooms in March-April. The pinkish white flowers are fragnant and grown in terminal panicles. The tubular flowers have a thickly tomentose calyx and crisped margined corolla.

The fruits are straight capsules 20-30 cm long. The wood of the tree is used as fuel. A thick tar extracted from the tree is used for skin ailments.



Photo: Parsi Colony, Dadar

(100) YELLOW OLEANDER

Common Names	:	*Lucky Nut Tree* (Eng.); Ashvaghna, Ashvantaka (Sans.); Pilu Kaner (Guj.); Pila Kaner (Hin.); Pivla Kaner (Mar.); Pachaiyalari (Tam.); Manja areli (Mal.); Pachaaneru (Tel.); Koklaphul (Beng.)
Scientific Name	:	***Thevetia peruviana*** (Pers.) Merrill
Where to see	:	Commonly seen near temples in gardens and households.

A large evergreen shrub or a small tree up to 6 m tall. The leaves are long, linear and pointed at the apices.

The flowers are bell shaped, yellow, at times pure white or with pinkish shade, and grow in terminal clusters. The fragrant flowers have stamens and stigma at the bottom of a funnel, which are protected by tufts of hairs. This tree blooms throughout the year, but mainly after monsoon.

The green stony fruits are a little smaller than a golf ball in size and are obtusely angular. Each fruit has 2-4 seeds.

The scientific name *Thevetia* is in honour of the 14th century monk Thevet; *peruviana* indicates that the tree is a native of Peru.

The leaves are poisonous and are not browsed by cattle, it is therefore used for afforestation and as a hedge tree. It is also drought resistant. All parts of the tree produce a poisonous latex. The brownish wood is poisonous to fish. The decoction of wood and leaves has cathartic and emetic properties. The kernels are toxic, bitter and when chewed cause numbness of the tongue, affect respiration and paralyze the heart muscles. Peruvoside, a glycoside isolated from the fruit has cardiac activity and is under further investigation.

The tree is grown from seeds and cuttings. It is planted for its fragrant and beautiful flowers, and for shady foliage.



Photo: BNHS-Conservation Education Centre, Goregaon

(101) YELLOW SILK COTTON

Common Names : Galgal, Kumbi (Hin.); Kongilam (Tam.); Appakutakka (Mal.); Kondagogu (Tel.); Arasinaburga (Kan.); Katira (Arabic)

Scientific Name : ***Cochlospermum religiosum*** (L.)

Where to see : Sagar Upvan (Colaba), one tree in the SRP Campus near Vijay Nagar at Andheri, one tree in the compound of the BNHS-Conservation Education Centre (Goregaon).

A small to moderate sized tree 3-7 m high. The diameter of the stout trunk is *c.* 30 cm, and it is covered by an ash coloured bark. The tree has a heavy crown of several branches bearing scattered leaves at their end. The palmate leaves have 5 lobes and the thick long stalks are green above and greyish below. The leaves are shed from November to January; the tree remains barren during this period.

The buds start appearing in small clusters at the beginning of February and March. When open they shed their silky sepals or outer covering, exposing the golden yellow petals. The presence of several stamens, emerging from the centre, each having a golden red anther at the tip, enhances the beauty of the flower. When in full bloom, the barren tree, loaded with yellow flowers, provides a picturesque sight.

The fruits are pear shaped capsules, which have 5 lobes. They have several kidney shaped seeds, each embedded in soft silky wool. The fruits ripen in May and June.

The scientific name *Cochlospermum* is a combination of two Greek words – *Kochlos* meaning shell and *sperma* – a seed. The tree is planted near temples and in sacred places, hence the specific epithet *religiosum*.

The bark exudes a gum called Kutira gum, which is similar to the Karaya gum and is occasionally used as a substitute for Tragacanth. The gum is sweetish, and has cooling and sedative properties. The dried leaves and flowers are used as stimulant. The floss covered seeds are silky soft, and used for stuffing pillows and cushions.

The tree grows well in hot, dry and stony regions. It can withstand forest fires, and is useful for afforestation. It is planted as an ornamental and avenue tree.



Photo: Mangrove Park, Godrej land, Vikhroli

(102) WHITE MANGROVE

Common Names : Tavarian (Guj.); Bani (Hin); Tivar (Mar.); Venkandan (Tam.); Mada (Tel.); Ipati (Kan.)
Scientific Name : ***Avicennia marina*** Vierh.
Where to see : Common along Mumbai Coast, Mithi river banks and Mahim Creek area.

A small tree 15 m tall growing in tidal waters and salt swamps along the Mumbai coastline. The branches are pale white in colour. The leaves have a leathery texture and are dark green above and pale below. The upperside is glossy and smooth, and the underside is tomentose. The leaf has salt glands and air pores, which are more visible on the under surface. The leaves are oval shaped with acute apex.

Clusters of the small, yellow flowers appear in April and May. The fruits are ovoid, beaked capsules with thin hairy surface. The seeds often germinate on tree. The tree has numerous spongy pneumatophores at the base, which grow vertically upwards through the soil and allow the roots to breathe.

The leaves are often used as fodder. The hard wood is used for boat building and as fuel. The plant juice is abortifacient. The bark is used for tanning. The bark contains 12.5% tannins and term Mangrove is defined as tannin yielding plant.

It is one of the secondary host plant of the Teak defoliator *Hyblea puera*. When heavily attacked by the pest it assumes deserted look and plant appears like dried and dead.

Though a commonest species along Mumbai coast it is under threat due to expansion of city by clearing of the mangrove vegetation and reclaiming these areas for construction work.

The generic name *Avicennia* is commemorative name derived from Ali-ben-shina a persian philosopher and epithet *marina* is indicative of its habitat close to the sea coast.





OTHER SPECIES OF MANGROVES

(103) GREY MANGROVE, TIVAR

Common Names : Baen (Hin.); Tivar (Mar.); Oepata (Mal.)
Scientific Name : ***Avicennia officinalis*** L.
Where to see : On coastal areas along Ghodbundar (Thane).

This differs from *Avicennia marina* in having ovate or egg-shaped leaves, which are blunt at the apex and its stamens exceeding its petals in length.

The earlier record of this species is found in Drakestein van Rheede's 320 year old 'Hortus Malabaricus' published in 1683, under its Malayalam name 'Oepata' with its description in Latin and black and white line-drawings.

The tree bears dingy yellow flowers, which appear between April and June.

Its specific epithet *officinalis* is indicative of its use in medicine. Its kernels contain a compound called Lapachol, which is known to have antitumor properties. Its aerial parts show anti protozoan activity. The flesh of unripe fruits is used for healing skin lesions. The leaves are used as fodder.

(104) BLATTI

Common Names : Sudarigan, Chipi (Guj.); Blatti (Mal.)
Scientific Name : ***Sonneratia caseolaris*** (L.) Englar (syn. *Sonneratia acida* L. f.)
Where to see : Colaba Causeway, Elephanta, Khar Danda.

A small tree of Indo-malayan origin growing upto 10 m tall (one very tall tree about 20 m in height and over 2 m in diameter can be seen at Keri, Goa on the bank of Terekhol Creak). The sub-terranean roots have soft and cork-like pneumatophores or breathing roots.

Leaves are opposite without prominent stalks, thick and fleshy, obovate or elliptic-oblong, with narrowing bases and obtuse apices.

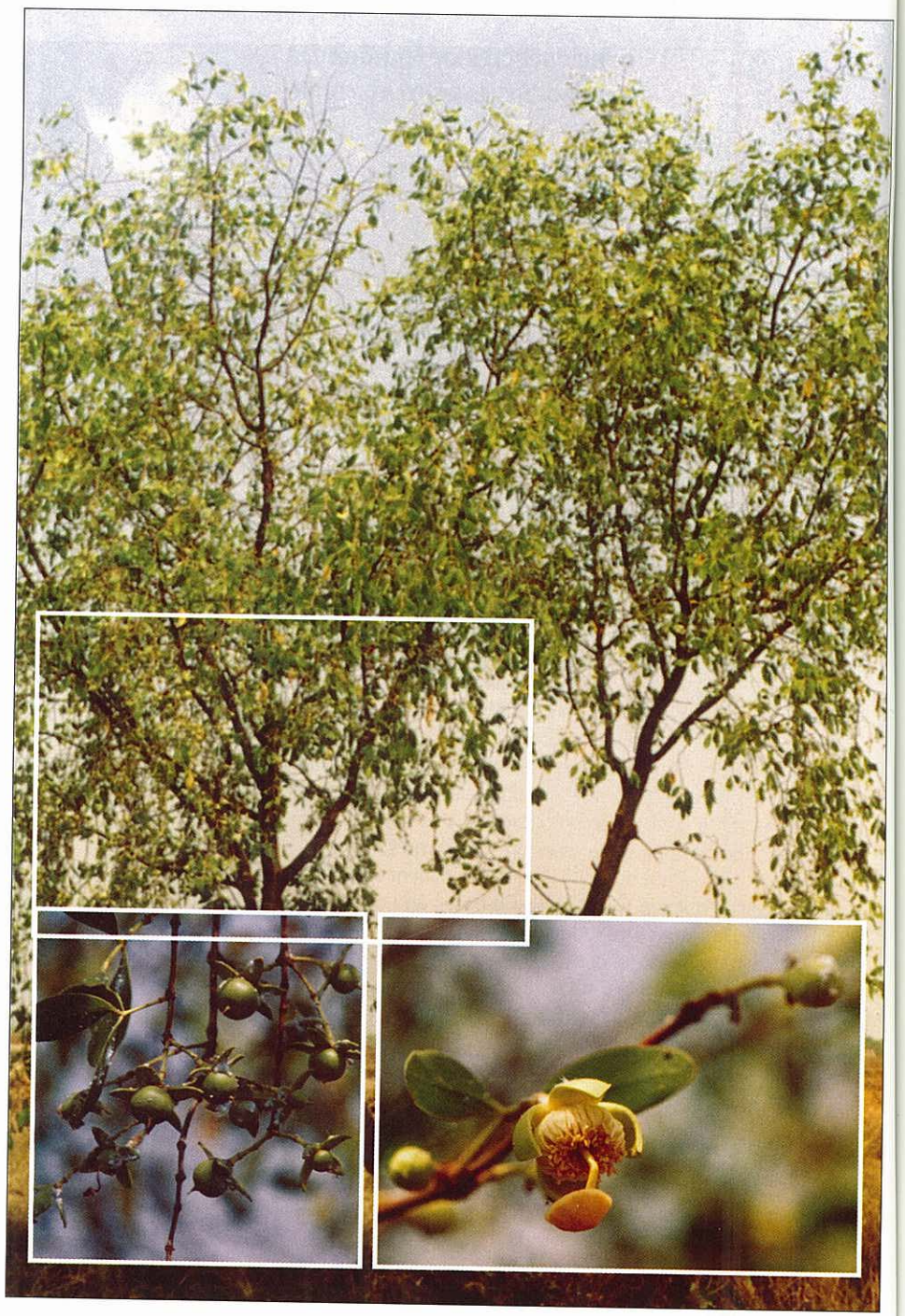
Flowers start blooming from February and continue till March. They appear singly at the ends of branches, on short and thick stalks.

Flowers have 6 sepals and 6 dark rose-coloured petals. Stamens are in many rows, arising from the throat of calyx-tube. The style is long, much longer than the filaments of the stamens. Capsular fruits begin to form from March and ripen in July. They are cushion shaped with a pointed apex. They are acidic in taste.

The first name in the binomial *Sonneratia* is given in commemoration of Pierre Sonnerat, a traveler and botanist. The other specific ephithet *acida* indicates the acidic nature of its fruits.

The fruits are used as a poultice in sprains and swellings.

This species has become the target of Mumbai's coastal development. It is almost wiped out from mangrove areas of Mumbai city.



(105) MANGROVE APPLE

Common Name : Chipi (Mar); Keora (Beng.); Thirala (Mal.)
Scientific Name : ***Sonneratia apetala*** Buch.-Ham.
Where to see : Marve bundar, Ghodbundar, Mumbra, Sewri

This species differs from other species of *Sonneratia* by absence of petals as indicated by its specific name.

It is an erect tree about 12 m tall with slender branches. Leaves are oblong-lanceolate and narrowed into a petiole at the base.

Flowers are large, axillary, 1-3 together, bloom in Februay-May. Sepals are arranged in cup-shaped calyx and petals are totally absent indicating that the tree is not pollinated by any day flying insects. Stamens slightly protruding from calyx cup are mounted on sepals having kidney-shaped anthers with filaments attached in the centre. The stigma is umbrella-shaped.

The Stem is used for preparing paper pulp; matches and poles. Leaves are used as fodder. The edible fruit is used to prepare vegetables and pickles.

(106) ORANGE MANGROVE, KANIL-KANDEL

Common name : Kanil-Kandel (Mal.)
Scientific name : ***Bruguiera cylindrica*** (L.) Blume
Where to see : Bandra, Goregaon (behind Ayyappa Temple)

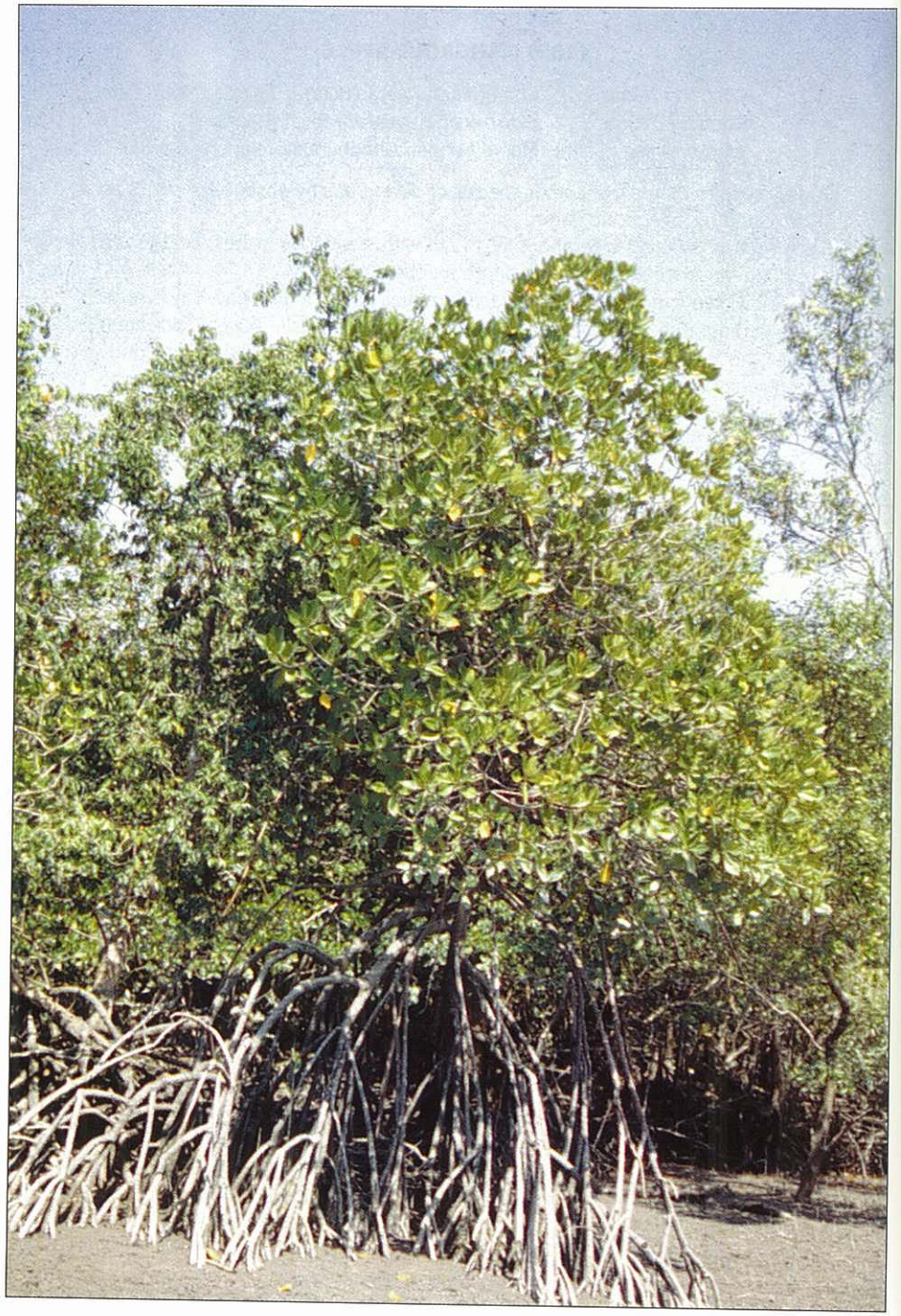
A shrub or small slender tree up to 3-4 m tall. Leaves are elliptic-lanceolate or slightly oblanceolate and smooth. Flowers are in the axils of the leaves, 2-3 (usually 3) together. They begin to appear from August to September. Calyx with 8 lobes divided up to half way down. Petals 8, white, divided at the tips. They are shorter than the calyx lobes and are hairy on the outer surface and margins. Stamens 2, opposite each petal, but each pair of stamen has unequal filaments. They have pod like green fruits of 10 to 14 cm long. The bark having tannins is used in sole leathers. The wood is light red and is used as rafters in thatch roofed houses.

(107) KANDEL

Common name : Kaukra (Mar.); Kandel (Mal.); Kankara (Beng.); Sigapuko Kandam, Thuddaponna (Tel.); Kekar, Rasinia (Ori)
Scientic name : ***Bruguiera gymnorliza*** Lamk.
Where to see : Versova, Ghodbundar.

This differs from *B. cylindrical* (L.) Blume in having larger flowers, 2.5-4 cm long and bearing a solitary flower in axils of leaves.

It is an evergreen shrub or small tree upto 4 m tall. Flowers appear from December to February. Calyx is divided into 10-14 (often 11 segments). Petals are also equal in number to calyx lobes and 2-lobed at the apices. Stamen 2, opposite each petal. Filaments alternatively long and short. The



bark is utilised for preparation of tannin. The wood is used in house construction, for posts, beams and door frames. The stems and branches are used for thatching mud wall. The bark is used as an astringent in diarrhoea.

Scientific Name : ***Bruguiera parviflora*** (Roxb.) Wt. & Arn.

The third species of this genus was collected from Ghodbundar and also reported by Graham (1839) from Mahul.

It is a shrub with small flowers, the calyx lobes measure only one-fourth of the length of its tubes. This is the only character that differentiates it from *B. cylindrica* (L.) Blume. It is bears flowers in December.

(108) RED MANGROVE, KUMO, KANDAL

Common name : Kandel (Gujarati), Kandel, Dumbi (Mar.)
Scientific name : ***Rhizophora mucronata*** Poir.
Where to see : Ghodbundar, Bandra, Versova

It is a small tree up to 4 m tall, raised higher on adventitious stilt roots, generally the stem remains above the high tide mark of the rising saline water. Its bark contains tannins and it is called a true mangrove.

Leaves are thick and oppositely arranged. They are elliptic in shape and acute or mucronate at the tip.

Flowers appear in August-December, arising from axils of leaves in few flowered cymes. They have 4 sepals and 4 white petals. Stamens are 8 in number, 2 opposite each petal and having linear anthers.

Fruit 4 cm long ovoid conical having at the base remains of persistent calyx lobes. Protruded radicle cylindric, reaching up to 60 cm in length before it falls from the tree. The radicle is thick and heavy at the distal end and falls under the weight of the lower end and gets buried in the marsh below keeping the viviparously germinating seed in erect position and high above the salt water.

The generic name *Rhizophora* is derived from Rhizos meaning roots, and phoros meaning tangle. It refers to the prominent tangled roots that raise the plant above the salt water mark, during high tide. The specific epithet refers to the mucronate apex of the leaf.

LIST OF TREES IN MAHARASHTRA AND MUMBAI CITY (WITHIN CITY LIMITS)

	Genera	Phytogeographical zones	spp. in Maharashtra	spp. in Mumbai
1.	*Acacia*	Trop. & Warm. Esp. Australlia.	34	(c) 10 + 3
2.	*Acer*	India.	1	(c) 1
3.	*Acrocarpus*	Indomalaya.	1	(c) 1
4.	*Acronychia*	Indomalaya, Australia, Pacific.	1	-
5.	*Actinodaphne*	Indomalaya & E.Asia.	1	1?
6.	*Actinorhitis*	Malaya, Solomon Isl.	1	(c) 1
7.	*Adansonia*	Africa, Madagascar.	1	(c) 1
8.	*Adenanthera*	Trop. Asia, Australia Pacific.	1	(c) 1
9.	*Aegle*	Indomalaya.	1	(c) 1
10.	*Agave*	S.America.	6	(c) 6
11.	*Ailanthus*	Asia, Australia.	2	**(1c) + 1?**
12.	*Aiphanes*	Trop. America, Brazil.	1	(c) 1
13.	*Alangium*	Indomalaya, S.E Asia, Australia.	1	1
14.	*Albizzia*	OW Tropics, S, America.	9(2c)	9 (2 c)
15.	*Aleurites*	Indomalaya, W. Pacific.	1 (c)	-
16.	*Alstonia*	Indomalaya, Polynesia.	2	(1c) 2
17.	*Amherstia*	Burma.	1 (c)	(c) 1
18.	*Anacardium*	Tropical America.	1	(c) 1
19.	*Annona*	Tropical America & Africa.	3	(c) 3
20.	*Anogeissus*	OW Tropics, Africa, Arabia, S.E Asia.	3	(1c) 2
21.	*Antiaris*	India, Java.	1	-
22.	*Aphanamixis*	Indomalaya, Solomon.	2 (1?)	1c
23.	*Aphananthe*	Madagascar, Indomol. Australia, Mexico.	1 (c)	-

LIST OF TREES IN MAHARASHTRA AND MUMBAI CITY (WITHIN CITY LIMITS) (*contd.*)

	Genera	Phytogeographical zones	spp. in Maharashtra	spp. in Mumbai
24.	*Aporusa*	Indomol., Solomon Is.	1	-
25.	*Araucaria*	America, New Guinea, Australia New Zealand, Nork-folk Is.	2	2 (c)
26.	*Archidendron*	Indomalaya, New Guinea, Australia	1 (c)	-
27.	*Archontophoenix*	E. Australia.	1	1 (c)
28.	*Areea*	Indomal., Solomon, N. Australia	1	1 (c)
29.	*Arecastrum*	Brazil.	1 (c)	1
30.	*Arenga*	Asia, Australia.	4	4 (c)
31.	*Artocarpus*	Indomalayan.	5, 2(c)	5 (c)
32.	*Arundinaria*	Madagascar, Asia, America.	1 (c)	1 (c)
33.	*Atalantia*	Tropical Asia.	4 (1c)	3 (c)
34.	*Attaleya*	Africa, America, W. Indies, India.	1	1
35.	*Averrhoa*	E. Brazil, Malaysia	2	2 (c)
36.	*Avicennia*	Warm Regions, coasts.	2	2
37.	*Azadirachta*	Indomalaya.	1	1
38.	*Baccaurea*	Indomalaya, Pacific, Polynesia.	1	1
39.	*Balanites*	Tropical Africa, India, Burma.	1	-
40.	*Bambusa*	America, Asia, Africa.	3	3 (2 cult.)
41.	*Barringtonia*	Indomal. Australia Africa, Madagascar.	3	3 (2 cult.)
42.	*Bauhinia*	Pantropic.	16	10 (5c)
43.	*Beilschmiedia*	India, Australia, N. Zealand	1	1
44.	*Bentinckia*	India, Nicobar	1 (c)	1 (c)
45.	*Berrya*	Indomalaya.	1 (c)	1 (c)
46.	*Bischofia*	Indomalaya.	1	-

LIST OF TREES IN MAHARASHTRA AND MUMBAI CITY (WITHIN CITY LIMITS) (*contd.*)

	Genera	Phytogeographical zones	spp. in Maharashtra	spp. in Mumbai
47.	*Bombax*	India, America, Australia	2	2
48.	*Borassus*	OW Tropics	1	1
49.	*Boswellia*	India, OW tropics.	1	1 (c)
50.	*Brexia*	Madagascar.	1 (c)	1 (c)
51.	*Bridelia*	OW Tropics.	2	2
52.	*Bruguiera*	India, Africa, Pacific.	2	2
53.	*Brya*	W. Indies, Cuba, Nicaragua.	1	1
54.	*Buchanania*	Indomalaya, W. Pacific.	1	1
55.	*Bursera*	Tropical America.	1	1
56.	*Butea*	Indomalaya.	1	1
57.	*Butia*	America.	1	1
58.	*Caesalpinia*	Trop. & Warm Regions, Malesia, Namibia.	1	1 (c)
59.	*Callicarpa*	Tropics & Subtropics of the World.	1	1 ?
60.	*Callistemon*	Australian.	1(c)	1 (c)
61.	*Callophyllum*	Tropical.	3	1 (c)
62.	*Cananga*	Asia, Australia.	1	1 (c)
63.	*Canarium*	OW Tropics.	1	1 ?
64.	*Canthium*	Africa, Australia, OW Tropics.	1	-
65.	*Capparis*	Warm Regions.	1	-
66.	*Carallia*	Indomalaysia, Madagascar, Australia.	1	1
67.	*Careya*	Tropical Asia.	1	1
68.	*Carica*	Warm American.	1	1
69.	*Caryota*	Indomalaya, Australia.	2 (1 c)	2 (1 c)

LIST OF TREES IN MAHARASHTRA AND MUMBAI CITY (WITHIN CITY LIMITS) (*contd.*)

	Genera	Phytogeographical zones	spp. in Maharashtra	spp. in Mumbai
70.	*Casearia*	Trop. America, Asia.	1	1
71.	*Cassia*	Trop. & Warm regions.	34	11 (10c)
72.	*Cassine*	Pan Tropic.	2	1 (c)
73.	*Castanopsis*	Trop. & Warm Asia.	1	? 1 (c)
74.	*Castanospermum*	Australia, New Caledonia.	1	1 (c)
75.	*Castilloa*	Trop. America, Cuba.	1 (?)	-
76.	*Casuarina*	OW Tropics , Australia	2	2(c)
77.	*Catunaregam*	Trop. Africa, Asia.	1	1
78.	*Ceiba*	Tropical America.	1 (c)	1 (c)
79.	*Celtis*	Tropical, Temp. Europe.	2	1 ?
80.	*Ceratonia*	Somalia, Arabia.	1	1 ?
81.	*Cerbera*	Costal India, W. Pacific.	1	1 ?
82.	*Ceriops*	India, W. Pacific.	1	1 ?
83.	*Ceriscoides*	Asia, Malayasia.	1	?
84.	*Chamaerops*	Europe	1	1
85.	*Chionanthus*	Trop. Africa, Asia, Africa.	2	- ?
86.	*Chlorophora*	Trop. America, Africa.	1	- ?
87.	*Chloroxylon*	India, Sri Lanka.	1	- ?
88.	*Chorisia*	Tropical America.	1	1
89.	*Chrysalidocarpus*	Madagascar, Pemba, Comoro Is.	2	2 (c)
90.	*Chukrasia*	Indomalaya, China.	1 (2 vars.)	?
91.	*Cicca*	Malay, Peninsula	1	1 (c)
92.	*Cinchona*	Andes, Costa Rica	1	-

LIST OF TREES IN MAHARASHTRA AND MUMBAI CITY (WITHIN CITY LIMITS) (*contd.*)

	Genera	Phytogeographical zones	spp. in Maharashtra	spp. in Mumbai
93.	*Cinnamommum*	Asia, Australia.	16	2 (c) ?
94.	*Citharexylon*	Trop. America Argentina	2	2
95.	*Citrus*	Asia, Malay Peninsula	9 (c)	6 (c)
96.	*Clausena*	OW Tropics, Africa, India	1	1 (c)
97.	*Cleidion*	Tropics, India	1	1 (c)
98.	*Cleistanthus*	OW Tropics India.	1	-
99.	*Clusia*	America, Madagascar, Near Caledonia.	1 (c)	1 (c)
100.	*Coccoloba*	America.	1	1 (c)
101.	*Cochlospermum*	Tropics, Asian.	1	1 (c)
102.	*Cocos*	Asia, Polynesia.	2	2
103.	*Coffea*	OW Tropics, Africa.	3 (c)	2 (c)
104.	*Colvillea*	Madagascar.	1	1 (c)
105.	*Cordia*	Tropics, India.	9	6, 4 (c)
106.	*Corypha*	Asia, Australia, Indochina.	2	2(c)
107.	*Couroupita*	Trop.America.	- 1 (c)	1 (c)
108.	*Crtaeva*	OW Tropics, India.	- 2	2
109.	*Crescentia*	Trop. America.	- 2 (c)	2 (c)
110.	*Croton*	Trop. & Warm Regions.	-1 (c)	1 (c)
111.	*Cryosophila*	Mexico, C. America.	-1 (c)	1 (c)
112.	*Cryptocarya*	Trop. & Warm Regions.	1	-
113.	*Cupressus*	Madagascar, Sahara, Asia, N. America.	2	2
114.	*Cyathea*	Trop. & Warm Africa & Asia.	2	?
115.	*Cycas*	Indomalaya, Australia, Polynesia, Madagascar.	2	3 (c)

LIST OF TREES IN MAHARASHTRA AND MUMBAI CITY (WITHIN CITY LIMITS) (*contd.*)

	Genera	Phytogeographical zones	spp. in Maharashtra	spp. in Mumbai
116.	*Dalbergia*	Tropical areas of OW.	13	3
117.	*Delonix*	Africa, Madagascar, India.	2	2 (c)
118.	*Dendrocalomus*	Asia.	2	2
119.	*Dichrostachys*	Africa, Australia, Madagascar, India.	1	1 (c)
120.	*Dillenia*	Indomalaya, Australia	4	2 (1c)
121	*Dimorphocalyx*	Indomalaya, Australia.	1	-
122.	*Diospyros*	America, Africa, Madagascar, Asia.	14	10 (9c)
123.	*Diplocnema*	Indomalaya.	1	1 (c)
124.	*Dipterocarpus*	Indomalaya.	1	-
125.	*Dolichandrone*	Africa, Caledonia, Madagascar, Australia, Asia.	3	2
126.	*Drypetes*	Trop. Asia & Africa.	3	1 (c)
127.	*Duabanga*	Indomalaya.	1	1 (c)
128.	*Dysoxylum*	N. Zealand, Tonga, Malaysia.	1	-
129.	*Ehretia*	Trop. & Warm Asia & Australia.	5	1
130.	*Elaeis*	Trop. America.	1	1 (c)
131.	*Elaeocarpus*	Trop. of OW, Asia, Indomalaysia, Australia, Pacific.	2	-
132.	*Ensete*	OW Trop., Africa, Madagascar, China, Indomalaya.	1	1
133.	*Enterolobium*	Trop. America, W. Indies.	1	1
134.	*Erinocarpus*	Endemic to India	1	-
135.	*Eriolaena*	Indomalaya, E. Asia.	4	-
136.	*Erythrina*	Warm Regions.	11	11 (4c)
137.	*Eucalyptus*	Australia, Malaya.	13 (c)	10 (c)
138.	*Evodia* (= Melicope L.)	Indomalaya, Australia, Newzealand.	1	1

LIST OF TREES IN MAHARASHTRA AND MUMBAI CITY (WITHIN CITY LIMITS) (*contd.*)

	Genera	Phytogeographical zones	spp. in Maharashtra	spp. in Mumbai
139.	*Excoecharia*	Trop. Asia & Africa.	1	1
140.	*Fernandoa*	OW Tropics, Africa, Asia, Madagascar.	1	1 (c)
141.	*Ficus*	Trop. & Warm, Asia, Australia, Indomalaysia.	51 (16 c)	38 (30c)
142.	*Fililiicum*	E. Africa, India.	1 (c)	1 (c)
143.	*Firmiana*	OW Tropics, Africa Eastwards.	1	1
144.	*Flacourtia*	Trop. & S. Africa.	3	2
145.	*Garcinia*	OW Tropics, Asia, Africa.	5	3 (2c)
146.	*Gardenia*	OW Tropics Warm regions.	3	3 (1c)
147.	*Garuga*	Indomalaya, Pacific.	1	1
148.	*Gliricidia*	C. America.	1	1 (c)
149.	*Glochidion*	Madagascar, Pacific, Asia, America.	10	-
150.	*Gmelina*	Africa, Asia, Indomalaya, Australia.	1	1
151.	*Grevillea*	New Guinea, New Caledonia, Australia.	1	1 (c)
152.	*Grewia*	OW, Africa, Asia, Australia	3	2
153.	*Guaiacum*	West Indies, America.	1	1 (c)
154.	*Guazuma*	Tropical America.	1	1 (c)
155.	*Gustarvia*	Tropical America.	1	1 (c)
156.	*Gyrocarpus*	America.	1	1 (c)
157.	*Hakea*	Australia.	1	1 (c)
158.	*Haldina*	India, Asia.	1	1
159.	*Hardwickia*	India.	1	-
160.	*Harpulea*	Trop. Australia, Pacific.	1	?
161.	*Heritiera*	Africa, Indonesia, Australia, Indomalaya.	1 (c)	1 (c)

LIST OF TREES IN MAHARASHTRA AND MUMBAI CITY (WITHIN CITY LIMITS) (*contd.*)

	Genera	Phytogeographical zones	spp. in Maharashtra	spp. in Mumbai
162.	*Heterophragma*	Asia, Indo – China.	1	1
163.	*Hevea*	Amazon, Trop. America.	1(c)	1 (c)
164.	*Hibiscus*	Warm Temp. & Tropics.	1	1 (c)
165.	*Hildegardia*	Trop. Africa, Madagascar, China.	1	1 (c)
166.	*Hippomane*	Mexico, W. Indies.	1	-
167.	*Holarrhena*	Trop. Africa, Indomalaya.	1	1
168.	*Holigarna*	Indomalaya.	2	-
169.	*Holoptelea*	Trop. Africa, Indomalaya.	1	1
170.	*Homalium*	Africa, Madagascar, Malaya, America.	1	-
171.	*Hopea*	Indomalaya, China.	1	-
172.	*Howeia*	Howe Island.	1 (c)	1 (c)
173.	*Humboltia*	India, Sri Lanka.	1	-
174.	*Hura*	Mexico, W. Indies.	1 (c)	1 (c)
175.	*Hydnocarpus*	Indomalaya.	1	1
176.	*Hymenodictyon*	Trop. Africa, Madagascar, Cebebes, India.	2	2
177.	*Hyphaenae*	Madagascar, Arabia, India, Africa.	2 (c)	2 (c)
178.	*Ixora*	Trop. Africa, Asia.	2	2
179.	*Jacaranda*	Trop. America.	1 (c)	1 (c)
180.	*Jatropha*	Trop. & Warm N. America.	1 (c)	1 (c)
181.	*Juniperus*	Europe, Africa.	1	1 (c)
182.	*Kandelia*	E. Asia, Malaysia.	1	-
183.	*Khaya*	Trop. Africa, Madagascar.	2	1
184.	*Kigelia*	Mozambique.	1	1 (c)

LIST OF TREES IN MAHARASHTRA AND MUMBAI CITY (WITHIN CITY LIMITS) (*contd.*)

	Genera	Phytogeographical zones	spp. in Maharashtra	spp. in Mumbai
185.	*Kleinhovia*	S. Africa, Arabia.	1	1 (c)
186.	*Knema*	Indomalaya SE Asia.	1	-
187.	*Kydia*	India.	1	1
188.	*Lagerstroemia*	Trop. Asia, Africa.	7	5 (3c)
189.	*Lannea*	Indomalaya, Trop. Africa.	1	1
190.	*Laurus*	Mediterannean, Mascarhen Island.	1	1
191.	*Lawsonia*		1	1
192.	*Lepisanthes*	OW Trop. Asia.	2	2 (1?)
193.	*Leucaena*	Trop. America, Polynesia.	1	1 (c)
194.	*Licuala*	Asia, Australia, Solomon Island.	5	1 (c)
195.	*Ligustrum*	Europe, Africa, Asia, Australia, Indomalaya.	2	1 (c)
196.	*Litchi*	India, China.	2	2 (1c)
197.	*Litsea*	Warm & Trop. Asia, Australia.	11	(1c)
198.	*Lonchocarpus*	Trop. America, Africa.	2 (c)	2 (c)
199.	*Livingstona*	China.	1 (c)	1 (c)
200.	*Lophopetalum*	India.	1	-
201.	*Maba*	Indomalaya.	2	?
202.	*Macaranga*	OW Tropics, Indomalaya Africa, Madagascar, Australia.	2	1
203.	*Madhuca*	Indomalaya, Australia, China.	2	1
204.	*Magnolia*	India, Java, America, Venezuela.	1	1
205.	*Mallotus*	Indomolaya, Australia, Africa.	1	1
206.	*Mammea*	Indomolaya, America, Madagascar.	1	1
207.	*Mangifera*	Trop. & Warm America, India.	2	1

LIST OF TREES IN MAHARASHTRA AND MUMBAI CITY (WITHIN CITY LIMITS) (*contd.*)

	Genera	Phytogeographical zones	spp. in Maharashtra	spp. in Mumbai
208.	*Manilkara*	Trop. America, India.	3 (2c)	3 (2c)
209	*Margaritaea*	Tropical.	1	-
210.	*Martinezia*	S. Amer, W. Indies.	1	1 (c)
211.	*Mastixia*	Indomalaya.	1	-
221.	*Meiogyne*	Indomalaya, China.	1	-
213.	*Melaleuca*	Indomalaya, Australia, Pacific.	1	1 (c)
214.	*Melia*	OW Tropics.	2	2 (c)
215.	*Memeeylon*	OW Tropics, Africa, Asia, Australia.	5	1
216.	*Mesua*	Indomalaya	1	1 (c)
217.	*Meyna*	Trop. Africa, S.E Asia.	1	?
218.	*Michelia*	Indochina, Asia.	1	1 (c)
219.	*Microcos*	Indomalaya	1	1
220.	*Miliusa*	Indomalaya, Australia.	2	-
221.	*Millingtonia*	Burma, Malaysia.	1	1 (c)
222.	*Mimusops*	Indomalaya.	1	1
223.	*Mitragyna*	OW Trop. Asia, Africa.	1	1
224.	*Morinda*	Trop. America, Asia, Australia.	5	2 1c)
225.	*Moringa*	Africa, Asia, Madagascar, Arabia.	2	2
226.	*Morus*	N. America, Africa, Japan, India.	2	1
227.	*Muntingia*	Trop. America, W. Indies.	1	1 (c)
228.	*Murraya*	Indomalaya, Pacific.	2	2 (c)
229.	*Musa*	Trop. Asia.	13	1 (1c)
230.	*Myristica*	Trop. Asia, Australia.	3	1 (1c)

LIST OF TREES IN MAHARASHTRA AND MUMBAI CITY (WITHIN CITY LIMITS) (*contd.*)

	Genera	Phytogeographical zones	spp. in Maharashtra	spp. in Mumbai
231.	*Myroxylon*	Trop. America, OW.	1	1
232.	*Nanorrhops*	Arabia, India.	1	1
233.	*Naringi*	Indomalaya.	1	?
234.	*Nauclea*	OW Tropics, Africa, Asia, Polynesia.	1	?
235.	*Neolamarkia*	India.	1	1 (c)
236.	*Neolitsea*	Indomalaya, Asia.	1	1 (c)
237.	*Nothopegia*	Indomalaya, Sri Lanka.	1	?
238.	*Nyctanthes*	Indomalaya.	1	1 (c)
239.	*Ochlandra*	India, Sri Lanka.	1	?
240.	*Olea*	OW Tropics & Warm Regions.	3	3 (2c)
241.	*Oroxylum*	Indomalaya, SE Asia.	1	1
242.	*Osmanthus*	Asia, Hawai.	1	?
243.	*Oxytenanthera*	OW Tropics.	1	?
244.	*Pachyra*	Trop. America	1	1 (c)
245.	*Palaquium*	Indomalaya, Taiwan, Solomon, Islands.	1	?
246.	*Pandanus*	Indomalaya, Australia	2	1 (c)
247.	*Parkia*	Trop. Africa, Madagascar.	1	1 (c)
248.	*Parkinsonia*	Trop. America, Africa, India.	1	1 (c)
249.	*Parmentiera*	America.	1	1 (c)
250.	*Peltophorum*	Tropics, Indomalaya.	2	2 (c)
251.	*Persea*	Tropics, India.	2	1 (c)
252.	*Phoenix*	2	2 (1c)	2 (1c)
253.	*Pinanga*	Indomalaya, Asia.	1	?

LIST OF TREES IN MAHARASHTRA AND MUMBAI CITY (WITHIN CITY LIMITS) (*contd.*)

	Genera	Phytogeographical zones	spp. in Maharashtra	spp. in Mumbai
254.	*Pinus*	Europe, America, Java, Sumatra, India.	1	?
255.	*Piscidia*	America.	1	-
256.	*Pisonia*	America, Madagascar, Polyesia.	1	1
257.	*Pithecolbium*	S. America	1	1 (c)
258.	*Pittosporum*	Africa, New Zealand, Pacific.	2	?
259.	*Plumeria*	Trop. America.	6	3 (c)
260.	*Podocarpus*	Africa, Australia.	2	2 (c)
261.	*Polyalthea*	Trop. Africa, Madagascar, Indomalaya, Asia.	3	3 (2c)
262.	*Pongamia*	Indomalaya.	1	1
263.	*Populus*	N. Temp. Europe.	1	1 (c)
264.	*Pritchardia*	Fiji, Hawai.	1	?
265.	*Prosopis*	Persia, India orientalis.	3	3 (c)
266.	*Prunus*	India, Europe, Africa and America.	4	2 (c)
267.	*Pseudobombax*	Trop. America, Mexico.	1	1 (c)
268.	*Psidium*	Trop. America, W. Indies.	1	1 (c)
269.	*Psychotria*	Trop. America.	1	?
270.	*Psydrax*	India.	1	?
271.	*Pterocarpus*	Tropics.	3	3 (1c)
272.	*Pterospermum*	Tropical Asia, Indomalaya.	4	2 (c)
273.	*Pterygota*	Tropics of OW.	1	1 (c)
274.	*Quercus*	America, Eurasia, Africa.	1	?
275.	*Radermachera*	Asia.	1	?
276.	*Ravenala*	Madagascar.	1	1 (c)

LIST OF TREES IN MAHARASHTRA AND MUMBAI CITY (WITHIN CITY LIMITS) (*contd.*)

	Genera	Phytogeographical zones	spp. in Maharashtra	spp. in Mumbai
277.	*Rhamnus*	Europe, Brazil, S. Africa.	2	?
278.	*Rheedia*	Trop. America, Africa, Madagascar.	1	?
279.	*Rhizophora*	Tropical Coasts.	2	?
280.	*Roystonia*	America.	2	2
281.	*Sabal*	America.	2	?
282.	*Sageraea*	Indomalaya, Sri Lanka.	1	-
283.	*Salacca*	Indomalaya.	1	?
284.	*Salix*	Temp. Europe, Cold Regions.	2 (c)	1 (c)
285.	*Samanea*	Trop. America and Africa.	1	1 (c)
286.	*Santalum*	Indomalaya, Australia, Hawai.	1	1 (c)
287.	*Sapindus*	Tropical and Warm Countries.	3	2
288.	*Sapium*	Trop. America, China, Bolivia.	2	?
289.	*Saraca*	Indomalaya, Sri Lanka.	1	1
290.	*Shefflera*	Trop. & Warm Regions.	3 (2c)	1 (c)
291.	*Schinus*	Trop. America.	2	?
292.	*Schleichera*	Indomalaya.	1	1
293.	*Schrebera*	Trop. America, Africa, SE Asia.	1	?
294.	*Semecarpus*	Indomalaya.	2	1
295.	*Sesbania*	Warm and Wet Regions, India.	1	1 (c)
296.	*Shorea*	Sri Lanka, Indomalaya.	1	?
297.	*Sideroxylon*	OW Tropics.	1	?
298.	*Sonneratia*	India, Pacific.	1 (c)	1
299.	*Soymida*	Tropical Asia.	1	?

LIST OF TREES IN MAHARASHTRA AND MUMBAI CITY (WITHIN CITY LIMITS) (*contd.*)

	Genera	Phytogeographical zones	spp. in Maharashtra	spp. in Mumbai
300.	*Spathodia*	Tropical Africa.	1	1
301.	*Spondias*	Indomalaya, SE Asia, America.	2	2
302.	*Sterculia*	Tropical, Africa.	8	6, (4c)
303.	*Stereospermum*	Tropics of OW.	2	2
304.	*Streblus*	Indomalaya, Madagascar.	1	1
305.	*Strombosia*	Trop. Africa, Indomalaya.	1	?
306.	*Strychnos*	Tropical, Africa, India.	2	?
307.	*Swietenia*	Trop. America.	2	2 (c)
308.	*Symplocos*	Trop. America, OW.	2	?
309.	*Syzygium*	Tropics of OW.	17	10, (6c)
310.	*Tebebuia*	Trop. America.	3	3 (c)
311.	*Tamarindus*	Tropical Africa.	1	1
312.	*Tecomella*	Arabia, SW Asia.	1	?
313.	*Tectona*	Indomalaya, SE Asia.	1	1
314.	*Terminala*	Tropical.	9	5 (3c)
315.	*Tetrameles*	Indomalaya.	1	1 (c)
316.	*Thespesia*	Trop. Africa.	1	1 (c)
317.	*Thevetia*	Peru.	1	1 (c)
318.	*Thuja*	Asia, America.	1	1 (c)
319.	*Toona*	Indomalaya, Australia, China.	3	2 (c)
320.	*Trema*	Tropics & Sub-tropics.	3	1
321.	*Trewia*	India, Sri Lanka.	2	?
322.	*Vateria*	India, Sri Lanka, Seychels.	1	?

LIST OF TREES IN MAHARASHTRA AND MUMBAI CITY (WITHIN CITY LIMITS) (*contd.*)

	Genera	Phytogeographical zones	spp. in Maharashtra	spp. in Mumbai
323.	*Vepris*	Africa, Madagascar, Mascaranha.	1	?
324.	*Vitex*	Trop. & Temperate.	4	3
325.	*Washingtonia*	America, Africa.	1	1 (c)
326.	*Wendlandia*	Indomalaya, Queensland, Formosa.	1	1
327.	*Wrightia*	OW, Trop. Timor.	4	2
328.	*Xantolis*	India, SE Asia, Philippines.	1	?
329.	*Xylia (= Escleronia)*	Trop. OW, Asia, Africa.	1	?
330.	*Xylocarpus*	OW Tropics, Africa, Sri Lanka.	2	?
331.	*Zanthoxylum*	Indomalaya, America, Japan.	1	?
332.	*Zizyphus*	Europe, America, Africa, Indomalaya.	12	8 (1c)
	Total			475

c = cultivated exotics

(c) = found only in cultivation

HINTS FOR PLANTING TREES

Success in tree-planting depends on many factors. Some beautiful trees look sick and shabby if they are planted at wrong locations. Tree-planting is an art and can be developed with experience or by consulting experts or literature.

Categories of trees

During photosynthesis different trees besides oxygen biosynthesize other chemicals utilizing different proportions of light, heat, water and carbon dioxide. Since trees cannot move to procure these optimal conditions, only those that get them in right proportion survive.

Depending on requirements for light, heat and water the following categories of trees are known (Only those categories which are relevant for planting trees in Mumbai have been included).

1. **Sun-loving trees growing in scanty water supply** (*Xerophytes*)

Xerophytes can survive or thrive in areas with very little free moisture. These trees prefer strong sunlight and fully exposed areas. They are often leafless, spiny and fleshy, have soft water storing tissues and thick layers of waxy coating on the surfaces which often contains watery sap or milky latex. They shed their leaves in the hot season to reduce loss of water due to transpiration. This category includes trees like the Baobab (*Adansonia digitata*), Deo champa (*Plumeria rubra*), Maharuk (*Ailathus excelsa*), Babul (*Acacia nilotica*) spp. indica, Bael (*Aegle marmelos*), Pangara (*Erythrina variegata*), Karmal (*Dillenia pentagyna*), Australian Acacia (*Acacia auriculiformes*).

2. **Shade-loving trees** (*Sciophytes*)

Sciophytes are generally short-leaved plants. They are shade-loving and cannot tolerate strong sunlight. They are not affected by heavy rainfall and grow well in humid and moist ground conditions. Tree-ferns (*Cyathea* spp.), Canes (*Calamus* spp.), Coco-plant (*Theobroma cocoa*), Fish-tail palm (*Caryota urens*) are some of the trees in this category.This category has very few species.

3. **Trees growing near water** (*Hydrophytes*)

Hydrophytes are capable of growing even when partially submerged in water or near water. Trees that are partially submerged in water are called amphibious hydrophytes.

Amphibious hydrophytes found on dry lands are called partial hydrophytes or facultative hydrophytes. Cadamba (*Neolamarkia cadamba*), Arjuna (*Terminalia ovata*), Jarul or Taman (*Lagerstroemia speciosa*), Jambhul (*Syzygium* spp.), Umbar (*Ficus racemosa*) are some of the trees in this category.

Amphibious plants that grow in marshy places in saline soils are called halophytes. Most mangrove plants like *Avicennia* spp., Rhizophora spp., *Candelia candel*, *Bruguiera* sp. fall in this category. We have not come across an example of totally submerged hydrophytic trees.

4. **Trees growing in sunny areas that are neither very dry nor very wet** (*Mesophytes*)

Most trees in Mumbai are *Mesophytes*, including deciduous trees.

5. **Trees growing on sands** (Psammophytes)

Psammophytes prefer sandy soils, though they can also be grown in normal soil, e.g. Suru, Beef-wood Tree (*Casuarina equisetifolia*), Keuda *(Pandanus tectorius*), Paras-bhendi (*Thespesia populnea*), Undi (*Calophyllum inophyllum*).

6. **Trees growing on rocky surfaces** (*Lithophytes*)

Some trees prefer hard rocky surfaces. *Hymenodictyon* sp., Pandruk or Ghost Tree (*Sterculia urens*), *Ficus* spp. are examples of this category.

The trees should be selected keeping in mind the peculiarities of the site where they have to be planted.

Soil selection

Different types of trees require different types of soils and growth mixtures for optimum growth. Mango tree (*Mangifera indica*) requires red earth (containing high percentage of iron), while tree ferns require white loam (containing high percentage of bauxite or Aluminium Ore). Succulents and Xerophytes grow better in sandy well-drained soils; while dry desert plants prefer rocky boulders and crushed stones. Plants like ferns grow better on bricks, charcoal, coir and their mixtures. Soils, therefore, have to be chosen and prepared carefully as per the specific demand of the tree species.

Types of soil

Sand, clay, chalk and humus are different ingredients of soil. Loam is a mixture of sand, clay and humus. Similarly, mard or top dressing soil is a mixture of clay and chalk. However, these basic ingredients by themselves cannot support a tree. In practice when we refer to a type of soil we simply mean that a particular ingredient is predominating in that mixture. All other things being equal, dark soils are warmer than light soils, because they absorb more heat compared to light coloured white loams, which reflect sunlight. Addition of humus forming substances such as compost, cow-dung, leaf mould and peat is valuable for tree growth, due to their dark colour.

Chemical analysis of soil is an advanced technical job involving considerable time and money and therefore it is out of scope of this book.

Site and pit size

Once the area is selected and trees to be planted are decided the size of planting pit has to be decided. Trees such as Mango tree (*Mangifera indicia*), Rain Tree (*Samanea saman*) need a pit measuring 3 x 3 x 3 feet or larger. For massive trees like *Samanea saman* one must dig bigger pits, because when such plants are watered the water spreads on the surface instead of percolating into the

soil. The roots of the tree then start developing parallel to the ground; such trees fall easily when heavy gusts of wind shake them.

Digging

There are vast differences in the quality of top soil and sub-soil, it is therefore necessary to dig the ground until uniform soil composition is obtained. Most trees thrive well in soils that are slightly acidic or neutral. The acidic, neutral and alkalinity values of soil are measured by their ph values. ph 7 represents neutral soil, ph values below 7 indicate acidic nature of the soil and above 7 indicates alkaline nature of the soil.

Value of lime

When the soil is very acidic it can be neutralised by adding lime, however excess use of lime is also harmful to trees. Lime is also used to treat heavy soils. Clay is sticky when wet; when lime is added to wet clay particles they aggregate and become less slippery. This process is known as Flocculation.

Filling pits

Pits dug for planting trees should be filled with enriched soils. Pulverized or shredded bark, saw dust and grain-husk (eg. rice-husk) are used as soil conditioners. They increase humus content, help the soil surface to retain moisture, protect roots and suppress weeds. Soil conditioners are beneficial for newly planted young trees.

Adding a nitrogen-rich fertiliser to the soil mixture is advised. Phosphate containing fertilisers like bone meal are steady in action. Bone meal contains 20-25% phosphoric acid and is particularly useful in autumn and winter. Coal ashes lighten heavy soils.

Compost is decayed organic matter such as fallen leaves, green leaves (leaf mould), grass mowings, hedge clippings, rejected vegetables. When organic matter is allowed to decay in large pits it turns into a dark brown or blackish mass called compost. Aeration is essential for healthy decay of the composting materials. It is therefore necessary to keep compost heaps at an optimum height and width of about 90 cm (3 feet), their length should be of manageable convenience. In recent years, methods of applying bacterial cultures to composts with nitrogen and lime have been developed.

Planting

Trees require deep planting. Pits 3 x 3 x 3 feet or 4 x 4 x 4 feet filled with cow-dung and leaf-mould are the minimal requirements when planting a tree. Deep planting is most essential for trees planted around and in the middle of lawns.

Prunning

Prunning controls the growth and regulates the development in trees. It helps to maintain the tree in a desired shape. There are no general rules regarding

the time of prunning, and it can differ from time to time and from place to place for different species depending on favourable climatic conditions. Very often prunning is neglected; this neglect is the main reason for the failure of tree planting.

Watering

Water is one of the essential components of photosynthesis in plants. When plants assimilate carbon in the presence of sunlight and water the required quantities of water should reach the leaves before the plant receives sunlight and carbon-dioxide. As the day advances, water in the trees is lost due to transpiration. It is therefore essential that the trees are watered at the right time; plants should be watered at the break of day.

■ ■ ■

COLOUR OF FLOWER AS AN AID FOR IDENTIFYING A TREE

COMMON NAME	SCIENTIFIC NAME
WHITE AND CREAM	
ALEXANDRIAN LAUREL	*Calophyllum inophyllum*
AAL TREE	*Morinda citrifolia*
BAEL	*Aegle marmelos*
BAOBAB	*Adansonia digitata*
BAKUL	*Mimusops elengi*
CORAL JASMINE	*Nyctanthes arbor-tristis*
CORAL WOOD	*Adenanthera pavonia*
DESHI BADAM	*Terminalia catappa*
DEVILS TREE	*Alstonia scholaris*
DRUMSTICK TREE	*Moringa pterygosperma*
FISHTAIL PALM	*Caryota urens*
INDIAN CORK TREE	*Millingtonia hortensis*
SAMUDRAPHUL	*Barringtonia asiatica*
IRONWOOD TREE	*Mesua ferrea*
JAMUN	*Syzygium cumini*
MUCHKUND	*Pterospermum acerifolium*
MAHOGANY	*Swietenia mahogni*
NEEM	*Azadirachta indica*
PAGODA TREE	*Plumeria rubra var. acutifolia*
KAPOK	*Ceiba pentandra*
SANDPAPER TREE	*Streblas asper*
SACRED BARNA	*Crataeva tapia*
CHINESE PALM	*Livistona chinensis*
CAJUPUT TREE	*Melaleuca leucodendron*
SISVI	*Dalbergia sissoo*
YELLOW/YELLOWISH SHADE	
PARAS-BHENDI	*Thespesia populnea*
INDIAN LABURNAM	*Cassia fistula*
COPPER POD TREE	*Peltophrum pterocarpum*
SONCHAMPA	*Michelia champaca*
CORAL WOOD	*Adenanthera pavonia*
MANGO TREE	*Mangifera indica*
PUTRANJIVA	*Dryptes roxburghii*
MEXICAN GOLDEN SHOWER	*Tabebuia argentea*
YELLOW SILK COTTON	*Cochlospermum religiosum*
SIAMESE CASSIA	*Cassia siamea*

COLOUR OF FLOWER AS AN AID FOR IDENTIFYING A TREE (*contd.*)

COMMON NAME	SCIENTIFIC NAME
RED PINK OR ORANGE	
AFIRCAN TULIP	*Spathodea campanulata* (Red)
AMHERSTIA	*Amherstia nobilis* (Pink)
ASOKA	*Saraca asoka* (Orange)
BOTTLE BRUSH	*Callistemon citrinus* (Red)
BONFIRE TREE	*Firmiana colorata* (Orange)
BURMESE PINK CASSIA	*Cassia renigera* (Pink)
JAVA CASSIA	*Cassia javanica* (Pink)
GULMOHUR	*Delonix regia* (Red)
INDIAN CORAL TREE	*Erythrina variegata* (Red)
MALABAR KINO	*Pterocarpus marsupium* (Purplish red)
GUEST TREE	*Kleinhovia hospita* (Pink)
FLAME OF THE FOREST	*Butea monosperma* (Orange)
SCARLET CORDIA	*Cordia sebestena* (Red)
SILK COTTON TREE	*Bombax ceiba* (Pinkish red)
TIVAR	*Barrigtonia acutangula* (Reddish pink)
TABEBUIA	*Tabebuia pentaphylla* (Pink)
GREENISH WHITE	
DEVILS TREE	*Alstonia scholaris*
FISH-TAIL PALM	*Caryota urens*
ROYAL PALM	*Roystonea regia*
COCONUT PALM	*Cocos nucifera*
PALMYRA PALM	*Borassus flabellifer*
MAST TREE	*Polyalthia longifolia*
MEHNDI	*Lawsonia enermis*
PURPLE, LILAC, BLUE	
DEO-KANCHAN	*Bauhinia purpurea*
JACARANDA	*Jacaranda mimosaefolia*
KARANJ	*Pongamia pinnata*
LIGNUM VITAE	*Guaiacum officinale*
NIGHT SHADE	*Solanum macranthum*
PERSIAN LILAC	*Melia azedarach*
PRIDE OF INDIA	*Lagerstroemia speciosa*
BALL SHAPED FLOWERS	
CHENDU-PHUL	*Parkia biglandulosa*
KADAMBA	*Neolamarkia cadamb*
HALDU	*Haldina cordifolia*

HOW TO PREVENT TREE CUTTING

(a) It is a criminal offence to 'cut' trees without taking permission under the MAHARASHTRA (URBAN AREAS) PROTECTION AND PRESERVATION OF TREES ACT, 1975.

(b) One can be jailed for one year, or fined Rs. 5,000/- for each offence.

Whom to contact

(1) Dial the Police Control Room at 100
(2) Local Police Station (Register a complaint of tree cutting).
(3) Assistant Municipal Commissioner of the local ward
(4) Dial 2375 9821 to file complain with the Tree Authority of Mumbai.
(5) Report to NGOs active in the field of nature conservation: BNHS 2282 1811, AGNI 2344 5875, CPRA 2287 1684, FOT 2287 0860.

MAHARASHTRA (URBAN AREAS) PROTECTION AND PRESERVATION OF TREES ACT, 1975

(Only the relevant parts of the Tree Act are given for information)

RESTRICTIONS ON FELLING OF TREES AND LIABILITY FOR PLANTING AND PRESERVATION OF TREES

CHAPTER I

PRELIMINARY

1. (*1*) This Act may be called the Maharashtra (Urban Areas) [3][Protection and Preservation] Trees Act, 1975.
(*2*) It extends to the whole of the State of Maharashtra.
(*3*) It shall come into force in any urban area or part thereof on such date as the State Government may, by notification in the *Official Gazette*, specify; and different dates may be specified for different urban areas or parts thereof.

2. In this act, unless the context otherwise requires,

[4][(*1a*) "Prescribed" means prescribed by rules made under section 22 of this act;]
(*a*) "preservation of trees" includes planting of new trees and [5][other operations for survival and propagation of the trees;]
(*b*) "relevant Act" means the Act under which the urban local authority concerned is constituted;
(*c*) **"to fell a tree" includes burning or cutting or [6][in any way damaging a tree**;]
[7] [(*d*) **"tree" means any perennial woody plant, whether in the seeding or sapplingstage or fully grown stage, and includes shrubs whose branches spring from the ground level**;]
(*e*) "Tree Officer" means an officer appointed as such by the Tree Authority

for the purpose of this Act;

(*f*) "urban area" means a municipal corporation area for which a municipal corporation is constituted under the Bombay Municipal Corporation Act, the Bombay Provincial Municipal Corporation Act, 1949 or the City of Nagpur Corporation Act, 1948, or a municipal area for which a Municipal Council is constituted under the *Maharashtra Municipalities Act, 1965, and includes a notified area for which a Special Planning Authority is constituted or appointed under section 40 of the Maharashtra Regional and Town Planning Act, 1966 or an area designated as the site for a new town for which a Development Authority is constituted under section 113 of the Maharashtra Regional and Town Planning Act, 1966;

1 For Statement of Objects and Reasons, see *Maharashtra Government Gazette*, 1975, Part V p. 596.
2 These words were substituted for the words "for preservation" by Mah. 7 of 1996, s. 2.
3 These words were substituted for the words "preservation" *ibid*, s. 3.
4 Clause (*1a*) was inserted *ibid* s. 4.
5 These words were substituted for the words "transplanting trees to other sites" by Mah. 3 or 1977, s. 2(*a*).
6 These words were substituted for the words "lopping a tree to cause substantial damage or destruction thereto" *ibid*, s. 2(b)
7 Clause (d) w1s substituted for the original, *ibid*., s. 2 (*c*).

+ This indicates the date of commencement of the Act.

**See* now, The Maharashtra Municipal Councils, *Nagar Panchayats* and Industrial Townships Act, 1965.

(1) On and after the date on which this Act is brought into force in any urban area, notwithstanding any custom, usage, contract or law for the time being in force, no person shall fell any tree or cause any tree to be felled in any land, whether of his ownership or otherwise, situated within that urban area, except with the previous permission of the Tree Officer.

(2) If [1][any person, including an officer of the urban local authority or an officer of the State Government or the Central Government, proposes] to fell a tree, he shall apply in writing to the [2][Tree Authority] for permission in that behalf. The application shall be accompanied by the description of the tree and asite, indicating the position of the tree required to be felled and the reasons therefor.

[(3) (a) On receipt of such application, the Tree Authority shall cause the Tree Officer to personally inspect the tree and hold enquiry and submit a report to the Tree Authority within a period of thirty days from the date of receipt of such application. Adequate public notice shall be given by the Tree Officer by advertising in local newspapers as well as by affixing a notice on a conspicuous part of the tree that is required to be fell. Thereafter, the Tree Authority may give permission

with or without conditions or refuse it, within a period of sixty days from the date of receipt of the application. However, no tree shall be fell until fifteen days after such permission is given:
Provided that, no such permission shall be refused if, in the opinion of the Tree Authority, the tree is dead, or diseased or windfallen, or it constitutes a danger to life or property, or obstructs traffic; and if any objection is received against such permission, the matter shall be placed before the Tree Authority for reconsideration, and a decision shall be taken within two weeks after giving a hearing to the person who has raised the objection.

(b) A report of permissions granted by the Tree Authority for felling trees shall be submitted at least once in six months to the concerned urban local authority in whose jurisdiction the Tree Authority is functioning.]

[5](4) If the Tree Authority fails to inform the applicant of its decision within sixty days, from the date of the receipt of the application by it, or if the receipt of the application has been acknowledged by it within this period, from the date of acknowledgement of the receipt of the application, the permission applied for shall be deemed to have been granted.]

(5) Where permission to fell a tree is granted [6][Tree Authority] may grant it subject to the condition that the applicant shall plant another tree of the same or other [7][suitable local species] on the same site or other suitable place within thirty days from the date the tree is felled, or such extended time as the Tree Officer may allow in this behalf.

9. (1) If, in the opinion of the Tree Officer, the number of frees in any land is not adequate according to the standards prescribed under paragraph (c). of section 7, the Tree Officer may, after giving a reasonable opportunity to the owner or occupier of the land of being heard by order require him to plant such trees or additional trees and at such places in the land as may be specified in the order.

(2) When an order is made under sub-section (1), the owner or occupier of the land shall comply with the order within ninety days from the receipt thereof.

10. (1) Where any tree is fallen or destroyed by wind, fire, lightening or torrential rain the Tree Officer may, *suo motu* or on information given to him, after holding such inquiry as he deems fit and giving a reasonable opportunity to the owner or occupier of the land where the tree existed, by order, require such owner or occupier [8][to plant one or more trees of the local species] in place of the tree so fallen or destroyed of the same or [9][other local species] at the same or other suitable place as may be specified in the order.
(2) Where an order is made under sub-section (1) the owner or occupier of the land shall comply with the order within ninety days from the receipt thereof.

11. 1(1)] Where an order is made [2] * * * under sections 8, 9, or 10 subject to the provisions of section 12, it shall be the duty of the owner or occupier of

the land who is directed to plant a tree to see that the tree grows properly [3][and is well preserved and shall give a report to the Tree Officer once in six months about the-conditions of such tree or trees for a period of three years]. It shall also be the duty of such owner or occupier to preserve all other trees existing on the land on the date of coming into force of this Act in the urban area in which the land is situated.

[(2) Where an order is made under sections 8, 9 or 10, the Tree Officer may a require the owner or, as the case may be, the occupier, of the land to deposit with him such sum as he may specify in this behalf, as security for ensuring proper compliance with the order made [5][under sections 8, 9 or 10]. The sum to be deposited shall not exceed such amount as may be prescribed.]

12. (1) Notwithstanding anything contained in this Act or in any other law for the time being in force, the Tree Authority may, subject to such terms and conditions as it may specify in that behalf, allow by a written permission any individual, body corporate or institution to adopt any tree for such period as may be specified in the permission and during such period the said individual, body corporate or institution shall be responsible for the maintenance and preservation of the said tree.

(2) Where any order is made[7] * * * under sections, 8, 9 and 10, in lieu of planting a new tree, the Tree Authority may by written permission allow the person concerned to adopt a tree specified by, it and the the person shall be responsible for the maintenance and preservation of that tree for such period as may be specified [8][by the Tree Authority]:

[9][Provided that the trees to be adopted shall be less than one year old and their number shall not be less than the number of trees, which the person concerned could have been required to plant under sub-section (5) of section 8, sub-section (1) of section 9 or sub-section (1) of section 10, as the case may be.]

13. Where the owner or occupier of any land fails to comply with any order made [10][under sections 8, 9 or 10, the Tree Authority or the Tree Officers as the case may be, may,] after giving a reasonable opportunity to such owner or occupier of being heard [11][forfeit the deposit, in full or in part to the Tree Authority] and without prejudice to any other action which may be taken against the defaulter under this Act, take the necessary action [12] * * * and recover the expenditure incurred therefore from the owner or the occupier, as the case may be. [13][For the purpose of recovery of the amount of such expenditure, the Tree Authority [14][or the Tree Officer] shall have the same powers as are available to the urban local authority for the purpose of recovery of arrears of a property tax or where such tax is not levied, for the purpose of recovery of arrears of betterment charges or other dues levied by the urban local authority under the relevant Act.]

14. (1) Where any decision is given or order is made under section [1] * * * **9 or ??** to by the Tree Officer, an appeal shall lie to the Tree Authority.

(2) The appeal shall be made within fifteen days from the date the decision

is communicated to, or the order is received by, the owner or occupier of the land and shall be accompanied by a fee of Rs. 50/-.

(3) The Tree Authority shall, as far as possible, decide the appeal within sixty days from the date of its receipt, after giving a reasonable opportunity to the appellant of being heard. The decision of the Tree Authority shall be final, and shall not be questioned in any Court of law:

Provided that, where an appeal is made in time, the period of compliance, specified in the order of the Tree Officer appealed against, shall be reckoned from the date on which the appeal is decided against the appellant and where the appeal is allowed, the fee of Rs. 50/- paid with the appeal shall be refunded to the appellant.

19. Notwithstanding anything contained in the relevant law or any other law for the time being in force,-

(a) any authority or officer of the urban local authority, who is empowered to give any permission for development of land, shall not give such permission, except with the approval of and subject to the conditions, if any, imposed by the Tree Officer in regard to the preservation or plantation of trees on such land.

(b) no completion or occupation certificate in respect of any building shall be issued under the relevant law unless the authority competent to issue such certificate is satisfied that the conditions subject to which permission for development of the land as aforesaid was given have been complied with.

20. The Tree Authority may, from time to time, give to the Tree Officer and other Officers and servants subordinate to him such general or special directions as it thinks fit as to the policy to be followed by them in the discharge of their functions and for carrying out effectively the purposes of this Act, and such officers and servants shall comply with such directions.

[1][20A. The Tree Officer or any other Officer of the urban local authority authorised by such authority in this behalf or any Police Officer may take such steps and use such force as may be reasonably necessary to prevent the felling or destruction of any tree or for the protection of any tree.

20B. (1) [2][It] shall be lawful for the Tree Officer, or any Officer authorised by him or by the Tree Authority in this behalf to enter, with such assistants as he may deem necessary, upon any public premises for the purposes of proper enforcement of this Act and for that purpose carry out such inspection and take such steps and use such force as may be expedient.

21. [1](1)] Whoever fells any tree or causes any tree to be felled in contravention of the provisions [2][of the Act] or without reasonable excuse fails to comply with any order issued or condition imposed [3][by the Tree Officer or the Tree Authority or voluntarily obstructs any member of the Tree Authority or the Tree Officer or any Officers and Servants subordinate to him in the discharge

of their functions under this Act, shall, on conviction, be punished with the fine of not less than one thousand rupees which may extend upto five thousand rupees for every offence and also with imprisonment for a term of not less than one week, which many extent upto one year.
Provided that, nothing in this section shall apply to the felling of trees on or along the public roads undertaken by the Public Works Department of the State or Central Government.]

[4][(2) The felling or causing of felling of each tree without the permission of the Tree Authority shall constitute a separate offence.]

TREES THAT ATTRACT BIRDS

Trees provide food shelter and nesting sites for birds and in return birds perform important services like pollination of flowers and dispersal of seeds.

Birds can be classified into different categories depending on their food habits.

Birds like parakeets, hornbills, barbets and koels which normally feed only on fruits are called 'Frugivores'. Some birds like Coppersmith, mynas, babblers, orioles, bulbuls and crows feed on both plant and animal matter and are called 'Omnivores'. These birds mainly help in the dispersal of seeds of fleshy fruits. Once the eaten fleshy part of the fruit is digested the intact seeds are passed out through faeces and dispersed to distant places.

Birds like drongos, bee-eaters, flycatchers, hoopoes that feed mainly on insects are known as 'Insectivores'. These birds visit flowers in search of insects and indirectly help in their pollinations. Birds like sunbirds and flowerpeckers visit flowers for nectar are called 'Nectarinivores'. Birds like mynas, starlings, magpie robins and Chloropsis also sometimes play the role of flower pollinators.

Trees to attract fruit eating birds

Adenanthera pavonia	Coral Wood Tree
Areca catechu	Arecanut Palm
Azadirachta indica	Neem
Bridelia retusa	Asan
Caryota urens	Fishtail Palm
Cordia dichotoma	Sebestan Plum
Diospyros melanoxylon	Tendu
Ficus benghalensis	Banyan
Ficus glomerata	Country Fig
Ficus religiosa	Peepal
Michelia champaca	Sonchampa
Morus alba	Mulberry
Syzygium cumini	Jamun

Trees to attract nectar feeding and insect eating birds

Acacia nilotica	Babul
Bauhinia purpurea	Purple Bauhinia
Bombax ceiba	Silk Cotton Tree
Butea monosperma	Flame of the Forest
Ceiba pentandra	Kapok
Cocos nucifera	Coconut Palm
Erythrina indica	Indian Coral Tree
Garuga pinnata	Kakad
Delonix regia	Gulmohar
Millingtonia hortensis	Indian Cork Tree
Moringa oleifera	Drum Stick Tree
Spathodea campanulata	African Tulip
Sterculia colorata	Bonfire Tree
Thespesia populnea	Porita Tree

TREE DIVERSITY IN MUMBAI

Mumbai has a rich tree diversity, but their number is not diverse (as per the last Tree Census Report). One can see different trees all across the city and in suburban areas of the city in avenues, housing societies, along railway tracks and gardens. The following areas of Mumbai have a good diversity of indigenous and exotic trees.

Sagar Upvan (Mumbai Port Trust Garden), Colaba.

Mumbai University Garden, Fort and Kalina Campus, Santacruz.

Jijamata Udyan, Byculla.

KEM Hospital Complex, Parel

Five Gardens, Maheshwari Udyan

Parsi Colony, Dadar.

Maharashtra Nature Park, Mahim.

Godrej Udyan and Mangrove Park,Vikhroli.

IIT Complex, Powai.

Sanjay Gandhi National Park, Borivli.

BNHS Conservation Education Centre (CEC), Goregaon (E) Filmcity Campus, Goregaon (E)

TREES IN INDIAN ASTROLOGY

In Indian Astrology the Sun is known to pass through 27 Constellations during the course of one year. The constellation to which person is born is calculated from the date and time of his birth. He is accordingly advised to worship tree dedicated to that constellation.

The constellations and trees dedicated to them are as follows :

CONSTELLATION	TREE SPECIES	PLANET	SUN SIGN
1. Ashwini	*Strychnos nuxvomica*	Ketu	Pisces
2. Bharani	*Emblica officinalis*	Venus	Capricorn
3. Krittika	*Ficus racemosa*	Sun	Aries
4. Rohini	*Syzygium cumini*	Moon	Aries
5. Mrigsira	*Acacia catechu*	Mars	Taurus
6. Aadra	*Aquilaria agallocha*	Rahu	Taurus
7. Punarvasu	*Dendrocalamus strictus*	Jupiter	Gemini
8. Pushya	*Ficus religiosa*	Saturn	Gemini
9. Aslesha	*Mesua ferrea*	Mercury	Cancer
10. Magha	*Ficus benghalensis*	Ketu	Cancer
11. Poorva Phalguni	*Butea monosperma*	Venus	Cancer
12. Uttara Phalguni	*Ficus religiosa*	Sun	Leo
13. Hasta	*Jasminum auriculatum*	Moon	Leo
14. Chitra	*Aegle marmelos*	Mars	Virgo
15. Swati	*Terminalia ovata*	Rahu	Virgo
16. Visakha	*Flacourtia indica*	Jupiter	Libra
17. Anuradha	*Mimusops elengi*	Saturn	Libra
18. Jeshtha	*Bombax ceiba*	Mercury	Scorpio
19. Mula	*Shorea robusta*	Ketu	Scorpio
20. Purva-ashada	*Calamus rotang*	Venus	Scorpio
21. Uttara-ashada	*Artocarpus heterophylla*	Sun	Sagittarius
22. Shravana	*Calotropis gigantea*	Moon	Sagittarius
23. Dhanishtha	*Prosopis spicigera*	Mars	Capricorn
24. Shat-taraka	*Neolamarkia cadamba*	Rahu	Capricorn
25. Purva Bhadrapada	*Mangifera indica*	Jupiter	Aquarius
26. Uttara Bhadrapada	*Azadirachta indica*	Saturn	Aquarius
27. Rewathi	*Madhuca indica*	Mercury	Aquarius

TREES USED BY BUTTERFLIES AS LARVAL HOST PLANT

Some trees described in this book are used as larval host plant by butterflies. These trees can be planted to attract the butterflies species mentioned against them.

TREE NAME	BUTTERFLY NAME
Aegle marmelos (Bael)	Lime Butterfly, Common Mormon
Albizzia lebbek (Sirish)	Common Grass Yellow
Bauhinia purpurea (Deo-kanchan)	Common Emigrant
Bombax ceiba (Semul)	Common Sailer, Chestnut streaked Sailor
Butea monosperma (Flame of the Forest)	Common Emigrant, Pea Blue, Common Cerulean & Gram Blue
Caryota urens (FishTail Palm, Bherli Mad)	Indian Palm Bob & Giant Red Eye
Cassia fistula (Indian Laburnum, Amaltas)	Common Emigrant, Mottled Emigrant, Common & Three Spot GrassYellows
Cassia siamea (Siam Cassia, Kasod)	Common Emigrant
Cocos nucifera (Coconut Palm)	Palmfly & Giant Red Eye
Dalbergia sisoo (Sisoo)	Short-Banded Sailor
Delonix regia (Gulmohar, Sisvi)	Three Spot Grass Yellow
Diospyros melanoxylon (Ebony)	Baronet & Red Spot Duke
Drypetes roxburghii (Putranjiva)	Common Albatross & Plain Puffin
Ficus benghalensis (Banyan)	Common Indian Crow & Silver Streak Oak Blue
Ficus religiosa (Peepal)	Common Indian Crow & Silver Streak Oak Blue
Ficus racemosa (Country Fig)	Common Indian Crow
Ficus hispida (Bokeda)	Brown King Crow
Haldina cordifolia (Haldu)	Staff Sergeant
Lagerstroemia speciosa (Queen's Flower)	Large Oak Blue
Mangifera indica (Mango)	Common Baron
Michelia champaca (Sonchampa)	Common Jay & Tailed Jay
Murrya paniculata ssp. exotica (Kamini)	Common Mormon
Neolamarkia cadamba (Cadamba)	Commander
Polyalthia longifolia (Mast Tree)	Common Blue Bottle,Common Jay,Tailed jay & Spot Sword Tail
Phoenix slyvestris (Date Palm)	Common Palmfly Giant Red Eye & Indian Palm Bob
Pongamia pinnata (Karanj)	Indian Sunbeam & Common Cerulean
Saraca asoka (Asoka)	Common Banded Awl
Schleichera oleosa (Kusum)	Common Cerulean
Streblus asper (Sand Paper Tree)	Forget-Me-Not Butterfly
Terminalia catapa (Indian Almond)	Common Indian Crow & Brown King Crow
	Large Oak Blue

TREES SUITABLE FOR SPECIFIC AREAS

All trees are best suited for some areas. You should therefore select the correct tree to plant in an area. Listed are some areas and the prefered trees for them.

AVENUES

Alexandrian Laurel	*Callophyllum inophyllum*
Bhendi \ Portia tree	*Thespesia populnea*
Bonefire tree	*Firmiana colorata*
Bottle Palm	*Roystonea regia*
Copper Pod	*Peltophorum pterocarpum*
Indian Laburnam	*Cassia fistula*
Burmese Pink Cassia	*Cassia renigera*
Siam Cassia	*Cassia siamea*
Sonchampa	*Michelia champaca*
Coral Jasmine	*Nyctanthes arbor-tristis*
Fishtail Palm	*Caryota urens*
Indian Almond	*Terminalia catapa*
Blue Jacaranda	*Jacaranda mimosaefolia*
Kadamba	*Neolamarkia cadamba*
Mast tree	*Polyalthia longifolia* var. *pendula*
Mahogany	*Swietenia mahagoni*
Neem	*Azadirachta indica*
Pink Tabebuia	*Tabebuia rosea*
Putranjiva	*Drypetes roxburghii*
Muchkund	*Pterospermum acerifolium*

ROADS & HIGHWAYS

African Tulip Tree	*Spathodea campanulata*
Badminton Ball Tree	*Parkia bigladulosa*
Indian Almond	*Terminalia catapa*
Indian Coral Tree	*Erythrina variegata*
Copper Pod Tree	*Peltophorum pterocarpum*
Coral Wood	*Adenanthera pavonia*
Devils Tree	*Alstonia scholaris*
Flame of the Forest	*Butea monosperma*
Country Fig	*Ficus racemosa*
Banyan	*Ficus benghalensis*
Peepal	*Ficus religiosa*
Malabar Kino	*Pterocarpus marsupium*
Jack Fruit Tree	*Artocarpus heterophyllus*
Jamun	*Syzygium cumini*
Jangli Badam	*Sterculia foetida*
Muchkund	*Pterospermum acerifolium*
Karanja	*Pongamia pinnata*

Mango	*Mangifera indica*
Neem	*Azadirachta indica*
Persian Lilac	*Melia azedarach*
Putranjiva	*Drypetes roxburghii*
Rain Tree	*Samanea saman*
Sausage Tree	*Kigelia pinnata*
Silk Cotton Tree	*Bombax ceiba*
Gulmohur	*Delonix regia*

GARDENS & PARKS

Aal Tree	*Morinda citrifolia*
Ashoka	*Saraca asoca*
Baobab	*Adansonia digitata*
Bartondi	*Morinda pubescens*
Bhendi /Portia Tree	*Thespesia populnea*
Cannonball Tree	*Couroupita guianensis*
Copper Pod Tree	*Peltophorum pterocarpum*
Gulmohur	*Delonix regia*
Guest Tree	*Kleinhovia hospita*
Kapok	*Ceiba pentandra*
Sonchampa	*Michelia champaca*
Scarlet Cordia	*Cordia sebestena*
Pagoda Tree	*Plumeria rubra*
Pink Tabebuia	*Tabebuia rosea*
Night Shade Potato Tree	*Solanum macranthum*
Red Silk Cotton	*Bombax ceiba*
Yellow Silk Cotton Tree	*Cochlospermum religiosum*

COSTAL REGIONS

Alexandrian Laurel	*Callophyllum inophyllum*
Baobab	*Adansonia digitata*
Bhendi/Portia Tree	*Thespesia populnea*
Beefwood Tree	*Casuarina equisetifolia*
Samudraphul	*Barringtonia asiatica*
Small Indian Oak	*Barringtonia acutangula*
Coconut Palm	*Coccos nucifera*
Copper Pod Tree	*Peltophorum pterocarpum*
Indian Almond	*Teminalia cattapa*
Karanja	*Pongamia pinnata*
Fishtail Palm	*Caryota urens*
Royal Palm	*Roystonea regia*

MARSHY AREAS

Australian Acacia	*Acacia auriculiformes*
Small Indian OAK	*Barringtonia acutangula*

Samudraphul	*Barringtonia asiatica*
Karanja	*Pongamia pinnata*
Mango	*Mangifera indica*
Manila Tamarind	*Pithecellobium dulce*
White Mangrove	*Avicennia marina*
Grey Mangrove	*Avicennia officinalis*
Orange Mangrove	*Bruguiera gymnorhiza*
Milky Margrove	*Excoecaria agaliocha*
Red Mangrove	*Rhizophora mucronata*

SACRED PLACES

Ashoka	*Saraca asoca*
Amla	*Emblica officinalis*
Bael	*Aegle marmelos*
Bakul	*Mimusops elengi*
Cannonball Tree	*Couroupita guianensis*
Purple Bauhinia	*Bauhinia purpurea*
Indian Laburnum	*Cassia fistula*
Iron Wood Tree	*Mesua ferrea*
Champak	*Michelia champaca*
Coral Jasmine/Parijat	*Nyctanthes arbor-tristis*
Banyan	*Ficus benghalensis*
Peepal	*Ficus religiosa*
Gular	*Ficus racemosa*
Kadamba	*Neolamarkia cadamba*
Mango	*Magnifera indica*
Neem	*Azadirachta indica*
Pagoda/Temple Tree	*Plumeria rubra* var. *acutifolia*
Putranjiva	*Drypetes roxburghii*
Sacred Barna	*Crataeva tapia*

Index of Common Names

A

Aal Tree 5
African Tulip 3
Alexandrian Laurel 7
Ashoka 11
Australian Acacia 13

B

Badminton Ball Tree 15
Bael 17
Banyan 57
Baobab Tree 19
Bartondi 21
Beefwood Tree 25
Blatti 207
Blue Jacaranda 93
Bokeda 61
Bonfire Tree 27
Bottle Brush 29
Bread Fruit Tree 31
Burmese Pink Cassia 35

C

Cajuput Tree 33
Cannon Ball Tree 41
Ceylon Iron Wood 43
Chinese Fan Palm 143
Coconut Palm 145
Copper Pod 45
Coral Jasmine 47
Coral Wood 49
Country Fig 65

D

Devil's Tree 51
Drumstick Tree 53

F

Fern Tree 55
Fish-tail Palm 147
Flamboyant Tree 75
Flame Amherstia 9
Flame of the Forest 67

G

Ghost Tree 69
Grey Mangrove, Tivar 207
Guest Tree 73

H

Haldu 77

I

Indian Almond 79
Indian Coral Tree 81
Indian Cork Tree 83
Indian Doum Palm 149
Indian Laburnam 39
Indian Medlar Tree 85
Indian Rubber Tree 63
Ironwood Tree 89

J

Jackfruit Tree 95
Jamun 97

K

Kadamba 101
Kakad 105
Kamini 103
Kandel 209
Kapok Tree 107
Karmal 111
Kusum 113

L

Lebbeck Tree, Shirish 115
Lignum Vitae 117

M

Mahogany 119
Malabar Kino 121
Mango Tree, Aamba 123
Mangrove Apple 209
Manila Tamarind 125
Margosa Tree 127
Mast Tree 129
Mehndi 133
Mexican Golden Trumpet 135
Muchkund 137

N

Night Shade Potato Tree 139

O

Orange Mangrove 209

P

Pagoda Tree 141
Pala-indigo 91
Palmyra Palm 151
Peepal 59
Persian Lilac 157
Pink Tabebuia 131
Pongam Tree, Karanj 109
Portia Tree 159
Pride of India, Taaman 161
Purple Bauhinia 23
Putranjiva 163

R

Rain Tree 165
Red Mangrove 211
Red Silk Cotton 183
Rio Grande Trumpet Flower Tree 167
Royal Palm 153

S

Sacred Barna 169
Samudraphul 87
Sand Paper Tree 171
Sausage Tree 173
Scarlet Cordia 175
Sebesten Plum 177
Shendur 179
Siam Cassia 37

Sissoo 181
Small Indian Oak, Tivar 185
Sonchampa 187
Spotted Gliricidia 71
Star Apple 189

T

Tamarind Tree 191
Teak 193
Timburi 195
Tree Mallow

Name197

W

Warras 199
White Mangrove 205
Wild Almond 99
Wild Date Palm 155

Y

Yellow Oleander 201
Yellow Silk Cotton 203

Index of Scientific Names

A

Acacia auriculiformis 13
Adansonia digitata 19
Adenanthera pavonia 49
Aegle marmelos 17
Albizia lebbeck 115
Alstonia scholaris 51
Amherstia nobilis 9
Artocarpus altilis 31
Artocarpus heterophyllus 95
Avicennia marina 205
Avicennia officinalis 207
Azadirachta indica 127

B

Barringtonia acutangula 185
Barringtonia asiatica 87
Bauhinia purpurea 23
Bombax ceiba 183
Borassus flabellifer 151
Bruguiera cylindrica 209
Bruguiera gymnorliza 209
Bruguiera parviflora 211
Butea monosperma 67

C

Callistemon citrinus 29
Calophyllum inophyllum 7
Caryota urens 147
Cassia fistula 39
Cassia renigera 35
Cassia siamea 37
Casuarina equisetifolia 25
Ceiba pentandra 107
Chrysophyllum cainito 189
Cochlospermum religiosum 203
Cocos nucifera 145
Cordia dichotoma 177
Cordia sebestena 175
Couroupita guianensis 41
Crataeva tapia 169

D

Dalbergia sissoo 181
Delonix regia 75
Dillenia pentagyna 111
Diospyros peregrina 195
Drypetes roxburghii 163

E

Erythrina variegata 81

F

Ficus bengalensis 57
Ficus elastica 63
Ficus hispida 61
Ficus racemosa 65
Ficus religiosa 59
Filicium decipiens 55
Firmiana colorata 27

G

Garuga pinnata 105
Gliricidia sepium 71
Guaiacum officinale 117

H

Haldina cordifolia 77
Heterophragma quadriloculare 199
Hibiscus tiliaceus 197
Hyphaene dichotoma 149

J

Jacaranda mimosaefolia 93

K

Kigelia pinnata 173
Kleinhovia hospita 73

L

Lagerstroemia speciosa 161
Lawsonia inermis 133
Livistonia chinensis 143

M

Mallotus philippensis 179
Mangifera indica 123
Manilkara hexandra 43
Melaleuca quinquenervia 33
Melia azedarach 157
Mesua ferrea 89
Michelia champaca 187
Millingtonia hortensis 83
Mimusops elengi 85
Morinda citrifolia 5

Morinda pubescens 21
Moringa pterigosperma 53
Murraya paniculata 103

N

Neolamarkia cadamba 101
Nyctanthes arbor-tristis 47

P

Parkia biglandulosa 15
Peltophorum pterocarpum 45
Phoenix sylvestris 155
Pithecellobium dulce 125
Plumeria rubra 141
Polyalthia longifolia 129
Pongamia pinnat 109
Pterocarpus marsupium 121
Pterospermum acerifolium 137

R

Rhizophora mucronata 211
Roystonea regia 153

S

Samanea saman 165
Saraca asoca 11
Schleichera oleosa 113
Solanum grandiflorum 139
Sonneratia apetala 209
Sonneratia caseolaris 207
Spathodea campanulata 3
Sterculia foetida 99
Sterculia urens 69
Streblus aspera 171
Swietenia mahogani 119
Syzygium cumini 97

T

Tabebuia argentea 135
Tabebuia megapotamica 167
Tabebuia rosea 131
Tamarindus indica 191
Tectona grandis 193
Terminalia catapa 79
Thespesia populnea 159
Thevetia peruviana 201

W

Wrightia tinctoria 91

NOTES

NOTES

NOTES

NOTES

NOTES

LIST OF PUBLICATIONS

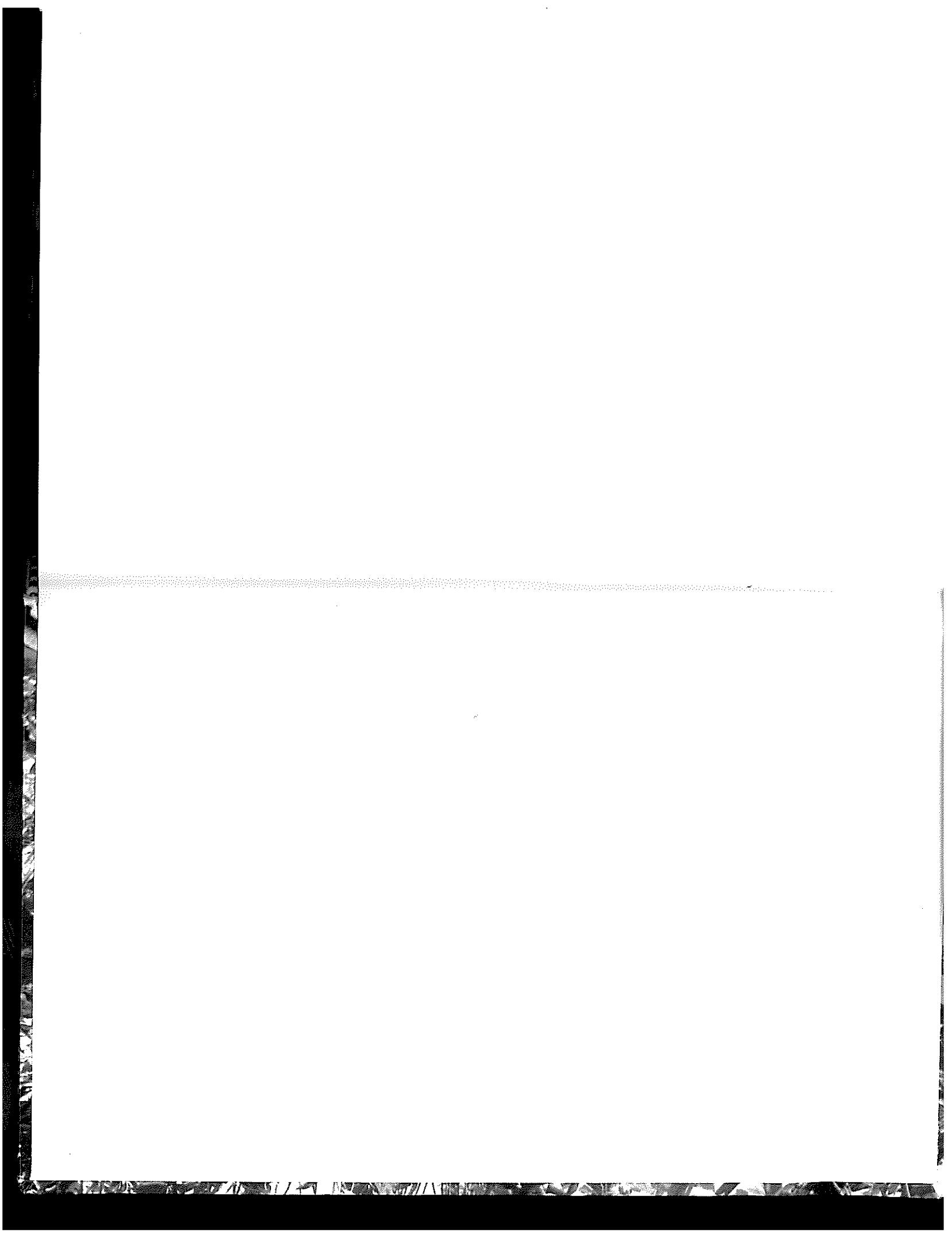
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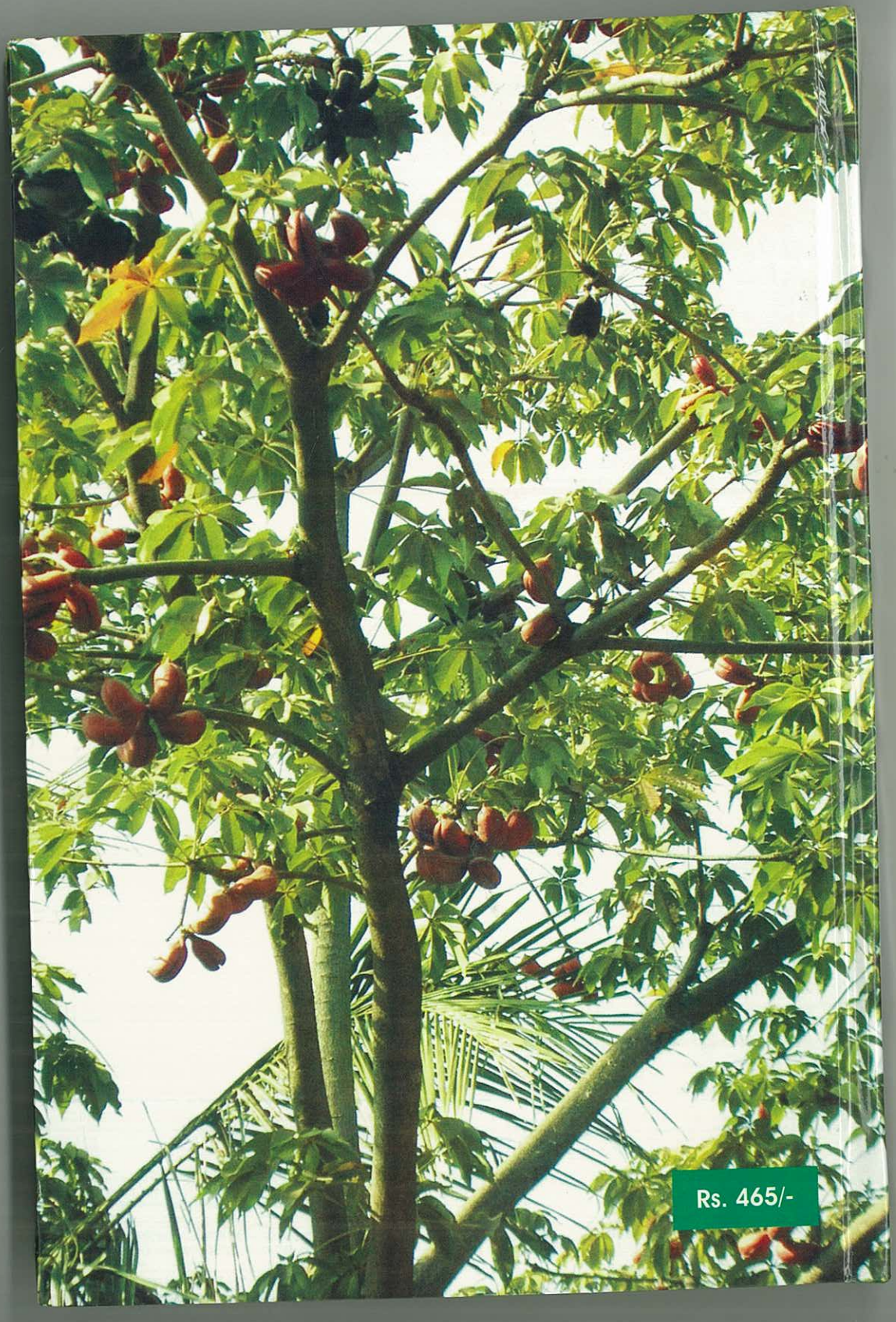
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