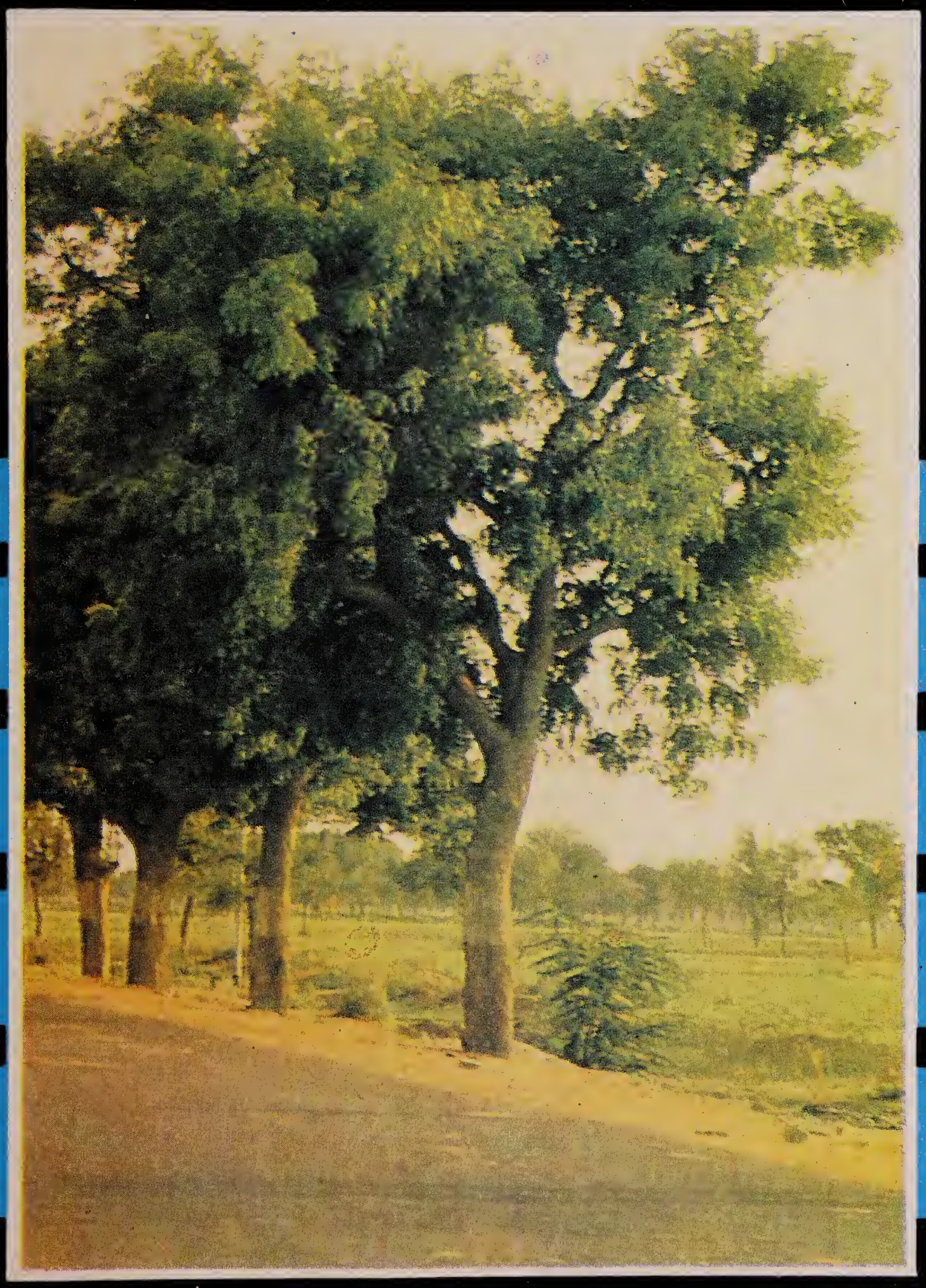
OUR TREES

R.P.N. Sinha



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R. P. N. SINHA

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TO

SHRIMATI INDIRA GANDHI

A LOVER OF FLOWERS, TREES AND BIRDS

PREFACE

Nature has been particularly generous in her gift of sylvan treasures to our country. Laxuriant forests abound in all parts of India and the variety of trees growing in our land is truly rich. These trees may be classified broadly into four major types: (1) Timber trees; (2) Ornamental trees; (3) Trees yielding edible fruits; and (4) Trees that blossom forth into colourful and sweet-scented flowers.

My purpose in writing this book is to acquaint the common man and children, generally, with our prominent trees. A few years back, I had written a similar book in Hindi which had a good reception. Encouraged by its success, I decided to write this book in English for non-Hindi-speaking readers. It is not a scientific treatise on the subject; nevertheless, it tells all that the average reader would like to know about our trees, their peculiar characteristics and their usefulness. I hope it would interest the readers to know that almost all our trees have medicinal value and most of them are of commercial importance too. In India, trees have been not only objects of utilitarian attraction, but also of reverence. Since the hoary past, when the *Vedas* were composed and the *Puranas* written, many of our trees have been worshipped and destruction of green trees is looked upon with disfavour. On the other hand, planting of trees has always been considered as an act of virtue. These ideas show what great importance we, in this country, attach to trees.

I would feel my labour amply rewarded if this book is able to create interest in our trees among the common readers and the children of our country. We could, indeed, feel proud of our country's great wealth in terms of trees.

In conclusion, I would like to express my gratitude to Shri R. R. Lokeshwar who has helped me greatly in the preparation of this book by looking into the text and making useful additions therein, and by helping in the selection of photographs and colour illustrations.

New Delhi,
January 1, 1968

R. P. N. SINHA

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MANGO

Known as the king of fruits, the mango is one of the important and most relished fruits in India. Its English name suggests a derivation from the Tamil word *mangai*. The name 'Aam', used in North India, is a Sanskrit derivative.

The mango is found in both cultivated and wild forms. It is believed to have been grown in this country for more than 4,000 years past. Opinions differ about the place of origin of the mango. Some believe it to be a native of South Asia, while others consider the region around the India-Burma border as its place of origin. In fact, wild mango forests still abound in this area. Mythology too has something to say about it. According to one legend, the daughter of the Sun-god, in order to escape from the harassment caused to her by a witch, jumped into a lake and assumed the form of a lotus. A king who happened to see this lotus fell in love with its beauty, and desired to possess it. The enchantress would not tolerate this and in rage burned the lotus to ashes. It was from these ashes that the mango arose. According to another tale, the mango was introduced into India from Ceylon by Hanuman. Whatever its place of origin, there is little doubt that India is the country where the mango grows most abundantly. In several parts of the world, the mango is still a wild fruit, while in India, as many as 5000 delicious varieties have been evolved, each with its special physical characteristics and flavour. Among the fruits of our country, none can rival the mango in variety or delicacy of flavour.

The mango is closely associated with the religion, custom, art and folklore of India. This is probably due to its utility and beauty. During the Vedic period, it occupied an important place in the daily life of the people. Amir Sinha, in his book *Amar Kosha*, has written in high praise of this fruit. In the *Ramayana* and the *Mahabharata* too, this tree finds a mention. The Buddha is believed to have camped in a mango grove when he visited the ancient place of Vaisali in North Bihar.

Poets have described its flower as one of the five arrows of Manmatha, the God of Love. In folk songs, it is described as a tree whose fragrance is a torture to love-lorn hearts. Valmiki, the great saint, also praised the mango in his poems. In his play *Shakuntala,* the great poet Kalidasa tells that the heroine had planted a mango sapling at the hermitage of the sage Kanva and that she used to tend it herself with loving care. The same poet, in his *Ritusamhara* compares it to the flame of love in the hearts of women. Amir Khusro, the great poet of the 14th century, too, eulogised it as the 'king of fruits'.

Various patterns, with the mango tree and its fruit as motifs, are carved on the stupa at Sanchi, which dates back to B.C. 150. These motifs are quite common in the sculptures of Bharhut and Sanchi. Similar evidence of its use as a religious symbol can be seen in the Ekambaranatha temple at Kanchi.

The mango is considered to be a manifestation of Prajapati, the lord of all creatures, and hence regarded sacred by Hindus. Mango leaves are used by Hindus to decorate their houses on festive occasions ; pots filled with water and topped with mango leaves adorn the doorways, and buntings of mango leaves are hung over the gates and doors. The mango wood is considered sacred and is preferred for the sacrificial fire. Its flowers are given in offering to deities ; for example, on the second day of ***Magha*** they are offered to the moon. In olden times, women used to decorate their hair with mango flowers.

Noted travellers like Fahien, Sung-Yun, Hiuen Tsang and Ibn Batuta have recorded their praise for this fruit in their travel records, describing it as one of the most delicious fruits in the world.

From olden times, the fruit found great favour with Indian princes who used to vie for the exclusive possession of rare varieties and planted large mango orchards. The Mughul emperors were extremely fond of the mangoes. Akbar, the Grand Mughal, who ruled from A.D. 1556 to A.D. 1605, had mango orchards laid out in different parts of his empire. There was one near Darbhanga in Bihar—an orchard of about a

hundred acres—where 'langra' mangoes alone were grown. This orchard, with one hundred thousand (100,000) mango trees, was known as Lakh Bagh. Another orchard was planted at Samastipur in the same district to grow a variety called 'Kaithika,' which ripens early in winter. Aurangzeb, who was generally indifferent to the good things of life, was also fond of the mango. It was he who coined the names 'Sidhras' and 'Rashna Vilas' for two famous varieties of the mango. These names are of Sanskrit origin, which incidentally shows that Aurangzeb was acquainted with this language.

The Nawabs of Murshidabad took pride in their mango orchards. Some varieties from these orchards, still available in Murshidabad, are not found elsewhere in the country. One of these is the 'Rogani', which is so named because of its oily skin.

The mango is grown in India over an area of about six hundred thousand hectares the largest acreage of any fruit crop in the country, It is found throughout the length and breadth of the country, except at altitudes above 900 metres. The important mango growing States are Uttar Pradesh, Bihar, West Bengal, Orissa, Madhya Pradesh, Andhra Pradesh, Maharashtra, Kerala and Punjab.

It is estimated that there are about a thousand varieties of the mango. Some of the important varieties are : Banganpalli Cherukurasam, Suvarnarekha, Neelam, Jahangir, Baneshan (from Andhra Pradesh) ; Bombai, Fajri, Khas-ul-Khas, Zardalu, Sukul, Sindhuriya (from Bihar) ; Kishanbhog, Maldah, Ranee Pasand, Himsagar, Shah Pasand, Samar Bahisht, Rogani (from West Bengal) ; Rajapuri, Vansaraj (from Gujarat) ; Alphonso, Pairi, Fernandin, Totapari (from Maharashtra) ; Mundappa, Kalepad (from Karnataka) ; Dasehri, Langara, Samar Bahisht, Chowsa, Safeda, Zafaran (from Uttar Pradesh); Rumani (Tamil Nadu); Do-phool (Orissa); Fernandin and Mankurad (from Goa).

A number of interesting anecdotes centre round the different varieties of mango. There is one about 'Sukul,' a variety grown around Hajipur in the Muzaffarpur district of Bihar. About a century ago, the Amir of Kabul is said to have

sent an emissary to bring him mangoes from India. The emissary came to Patna where he collected several baskets of mangoes and returned to Kabul. But those were the days of slow-moving vehicles and the mangoes rotted before he could reach Kabul. When the Amir enquired of the emissary about the result of his mission, the latter promptly called for a large quantity of sugar; dissolving it in water and dipping his flowing beard into the syrup he told the Amir "Here, my Lord, is the mango". The Amir was aghast. The emissary then recounted what had happened on the way and they all had a hearty laugh.

Another interesting tale is about the red-pulped 'Bathua' of Bihar. About 200 years ago, during winter, a Sadhu visited the house of a landlord in North Bihar and presented to him a pair of luscious mangoes. The landlord was surprised to see such fine mangoes out of season and had the seed planted. Germinating, it grew, into a lusty tree which began to bear fruit. The landlord jealously guarded his possession and would not share the fruit with anyone lest others also should grow that kind of mangoes. But his gardener, who came from a village called bathua, smuggled a number of its seeds to his village and planted them at his house. In course of time, many orchards of the same variety raised in the neighbourhood, and it was thus that the mango came to be named 'Bathua'. Every year, wagonloads of these mangoes find their way from this village to the markets in Calcutta and various other places.

The mango tree is large, spreading and evergreen with a dense, rounded or globular crown. The lower branches spread out horizontally. The upper ones gradually spread upward till they become nearly erect in the centre. The leaves are leathery, long and narrow, tapering at both the ends.

The mango requires a rainfall of 75 cm. to 375 cm., well distributed over the year, and a dry, hot season. It is, however, not very exacting regarding the nature of the soil, though it prefers a well-drained and deep soil. Propagation can be either by planting seed or by grafting. The grafted trees start bearing fruit after five to seven years and continue to do so up to

50 years. In the case of seedlings, the tree bears fruit from about ten years up to 100 years.

Although the mango is normally a summer fruit, some variety or other is available all the year round. Myriads of tiny, pale flowers which fill the air with a delicate fragrance, appear in stiff erect clusters at the ends of branches. Under adverse weather conditions, caused by clouds, lightning and rain, most of the flowers sometimes wither and fall away.

Four to five months after flowering, the fruits begin to ripen. The mango season varies from region to region. For example, the harvesting period in western India is April and May, in Bombay and the Deccan it is May and June and in Malabar, February and March. In the coastal areas of Andhra Pradesh, the season stretches from April to July, in Karnataka and Rayalaseema from May to August and in North India from June to August. In West Bengal, the harvesting is done in June.

The yield from a mango tree depends to a great extent on its variety, the soil and the climatic conditions. In some varieties, the bearing of fruit is erratic, but it is generally biennial. On the average, the number of fruits borne by a tree is from 300 to 500 in the tenth year, up to 1,500 in the fifteenth year, and up to about 5,000 from the twentieth year onward.

Varied are the uses to which the fruit is put all over the country. The unripe mango is used for preparing chutneys and pickles and is also prepared as a vegetable curry. A beverage is prepared from roasted, unripe fruits, and is widely used in North India as a preventive against and cure for sun-stroke. Baked and sugared pulp of unripe fruit is often given to patients of cholera and plague. The juice of the ripe fruit is used for preparing a number of preserves which are very popular. The juice is extracted in sufficient quantities and is dried layer upon layer in the sun. On drying, it turns into a thick cake, brown in colour and sweet to the taste. The preserve is extensively used in the off season.

Even the stone of the ripe fruit is put to a variety of uses. Roasted and ground to a powder, it is frequently used as a

household remedy for minor intestinal ailments. The kernel is given to asthma and diarrhoea patients. The usefulness of the mango, including its stone, has given birth to the well-known saying "The pulp for eating, and the stone for money". The ripe fruit is considered to be invigorating, fattening, diuretic and laxative.

The smoke of its burning leaves is considered to be effective against hiccoughs and several types of throat troubles. The gum of the tree and the resinous substances exuded from the trunk or the fruit, mixed with lime juice, are used as a cure for skin diseases and scabies. The bark is used for tanning leather. A dye is extracted from the bark and leaves. The timber is used in various ways, *e.g.*, for making door panels, packing cases and even furniture. The mango, being large and evergreen, makes an excellent shade-tree, a boon to the traveller in summer. Emperor Ashoka had thousands of mango trees planted along the highways of his domain.

The world's biggest mango tree is claimed to be in the village of Burail in Ambala District. The circumference of its trunk is 9.75 metres the crown extending over nearly 2,258 square metres. The average yield of this tree is estimated to be about 170 quintals.

Local names: *Aam* in Assamese, Bengali, Hindi; *Amba* in Oriya; *Mamidi* in Telugu; *Mangai* in Tamil; *Mavu* in Kannada and Malayalam; *Amb* in Marathi; *Keri* in Gujarati; *Amb* in Punjabi.

LITCHI

The litchi is an exotic fruit introduced into India many years ago from south-eastern China. It is one of the most nutritious fruits grown in this country. It is believed to have been brought to this country during the days of the spread of Buddhism abroad. A Chinese pilgrim, who visited India during

that period, refers with admiration to the extensive orchards of Vaisali in the story of his travels. Vaisali was situated in north Bihar. It appears that the people of Vaisali were extremely fond of fruits and the litchi was introduced into India when this republic flourished. Muzaffarpur, famous for litchi, formed part of the ancient republic of Vaisali.

Reference to this fruit is made in Chinese literature as early as 140 B.C. to 86 B.C. Sung Tung Po, the famous Chinese poet, who once lived in exile in Canton, claimed that he would not mind even perpetual banishment if only he could get enough litchis to eat. The Chinese are extremely fond of this fruit and no dinner is considered by them to be complete without a course of dried litchi or "lychee" as they call it.

A book on the litchi was written as early as 1059 A.D. by a Chinese named Ts'ai Hsiang. This book is considered to be the first of its kind on any fruit tree. By 1856, there were about eight books in English dealing with all aspects of this tree.

India ranks third in the world in litchi production, the area under the crop being about 10,000 hectares in 1955-56. Recently, more land has been brought under this fruit crop as it yields good profits. Litchi is grown extensively in Bihar (Muzaffarpur district), WestBengal (Hoogly district), sub-montane regions of U.P. (Dehra Dun) and the Punjab (Gurdaspur district), and the foothills of the Nilgiris in the South.

The ideal climate for growing litchi is the sub-tropical and humid climate. Frost during winter and hot winds during summer affect the crop adversely. The litchi needs a deep loamy soil with large quantities of organic matter. Proper drainage and a slightly acidic soil are favourable to its growth. The foothills, providing as they do such conditions, constitute the main litchi-growing areas in the country. A kind of fungus is found growing on the roots of the litchi tree, each helping the other's growth. Hence, it is considered better to grow new plants in soil taken from the vicinity of old litchi plants so as to introduce the fungus into the new area.

The litchi is commonly propagated by air-layering, or

gootee. This method is also known as Chinese layering and is generally done during the month of June. Plants are generally not raised from seeds, partly because they take a long time to bear fruit—usually varying from 7 to 20 years—and partly because the seeds have to be sown when fresh.

The litchi is an evergreen tree growing to a height of 9 to 12 metres and has spreading branches. The leaves are glossy and pinnate. The flowers are small, greenish, and without petals. The flowers are borne in clusters mostly at the tips of the branches.

The fruits are borne in clusters and are usually oval in shape. The fruit is crimson or pinkish, as also pale green in some varieties, and has a prickly surface. Below the rind or outer covering is the fleshy portion that is eaten, and inside is the seed. The edible portion is a juicy, white, translucent pulp, which is very sweet. In the fresh fruit, the pulp forms 70 to 80 per cent of the fruit's weight. It contains from 10 to 15 per cent of soluble sugars, and forms a rich source of vitamin C. Vitamins B and D are also found in small quantities.

There are many varieties of litchi, one of them being seedless. Another variety called 'China' ripens late in the season, while 'Sahi' is one of the sweetest varieties. These two varieties can be distinguished by their size and the lines on their leaves. The chief varieties grown in Bihar, the most important litchi-growing area, are : China, Deshi, Purbi, Bedana and Dehra Rose. Those of U.P. are Early Large Red, Calcutta, Late Seedless, Rose Scented, Gulabi, etc. In West Bengal, China and Muzaffarpur are the important varieties.

The tree bears fruit after four to six years in the case of grafted litchi plants and after eight to twenty years in the case of seedlings. The tree bears fruit for about 100 years. The flowering takes place during the month of February in North India and during December in South India. The fruits ripen three to four months after flowering *i.e.*, from May to June in the North, and from April to May in the South. The season for these fruits is very short. They are highly perishable, remaining in good

A young guava tree

The litchi bears profusely.
The fruits appear in bunches.

The mulberry tree has a dense foliage

Ber trees in an orchard

The tamarind or 'imli' tree is large in size. In this view of part of the tree can be seen bunches of the fruit.

The jack-fruit tree. Its huge ftuits are borne all along the trunk and branches

condition for only a few days. On an average, a tree yields every year four to five thousand fruits weighing about 90 to 136 kg. In some cases, a crop of 453 kg. has been obtained.

The fruit is consumed fresh in India. In China, the fruit is dried and preserved. Canning of this fruit has recently been started in our country on a small scale. The Chinese use the root, the bark and the flowers as a gargle to cure throat troubles. The seed is used as a remedy for intestinal disorders and neuralgic pains. Children love to chew litchi leaves which dye their lips a vivid pink.

GUAVA

The guava has been a popular fruit in our country since long. It is, however, not a native of the land. It is a native of Brazil, and is now found in almost all the tropical countries of the world. The guava grows in abundance all over India and is easily available to the rich and the poor alike. Believed to have been introduced into India in the 17th century, it now covers an area of over 30,000 hectares. Uttar Pradesh is the principal producer of guavas, with about 10,000 hectares under this fruit crop. Next comes Bihar. It is also grown in northern Gujarat, Maharashtra, Karnataka Hyderabad, and the Northern Circars in Andhra Pradesh.

The guava tree is medium-sized (about 10 metres in height) and hardy. It is least demanding regarding the type of soil. It can grow well even in mildly saline soils, but it cannot stand frost. Its bark is light greyish in colour and keeps peeling off in broad patches. The leaves are long and dark green. The flowers are white. They are often found single, but sometimes also in twos or threes. Each flower has four or five wide petals with a large number of stamens.

The guava bears fruit both in summer and in winter. The fruit is pear-shaped and yellowish in colour when ripe. The

summer fruit is smaller in size but abundant. The winter fruit although not found in great profusion, is bigger in size and more tasty. In areas having distinct winter and summer with moderate rainfall, the trees yield heavy crops.

There are many varieties of the guava. The flesh is white in some varieties and red in others. Some have seeds, others are seedless. Besides, the fruits vary greatly in size. Some are as big as an apple and others as small as a berry. Fruits of the smaller variety are round, seedless and very sweet in taste. Even the leaves of trees of this variety are tiny. This small variety is rare in our country. The names of important varieties of guava are 'Safeda', 'Chittidar', 'Karela' and 'Lucknow-49' in Uttar Pradesh, 'Safeda' and 'Harija' in Bihar, and 'Nasik' and 'Dharwar' in Bombay and Deccan. South India does not have any indigenous variety, as the varieties grown there were brought from North India.

Allahabad is well known for its sweet and big guavas. One variety resembles, both in colour and size, a red apple. They are grown here as a cash crop. Orchards of guava abound also in the vicinity of Banaras and Lucknow. The guava is so much liked in West Bengal that it is popularly called *piyara*, which means "the dear one".

The tree bears fruit both in summer and in winter. In North India, the plant flowers twice a year—once in February and then in June. The February or spring flowering is called *Ambe-bahar* and the June or monsoon flowering as *Mrig-bahar*. The fruits in the former case ripen during July-September and in the latter case during November-January. In South and West India, the guava blooms during February, June and October and bears fruit throughout the year. The October flowering is also known as *Mast-bahar*.

The guava tree starts bearing fruit from the fourth year onwards but it is only from the eighth year that the tree bears fruit in full strength. This continues for 30 years or more. The number of fruits borne by the tree varies between 500 and 2,000 during a season. In the early stages, the fruit is dark green in

colour, but slowly changes to yellow. The guava is propagated both by seed and by vegetative methods. Vegetative methods are mainly followed in the case of superior varieties, as the plants grown from seeds are often variable. The vegetative propagation is done by in-arching layering or grafting. The grafted plant begins to bear fruit after two years. The fruits of grafts are bigger in size and sweeter in taste than the fruits of trees raised from seeds.

Jellies and other preserves made from guava pulp are greatly prized as delicacies throughout the country. The juice is extracted from the fruit for preparing sherbets and ice-cream. The fruit is an excellent source of vitamin C. Moreover, it has minerals like calcium and phosphorous in fair quantity.

The guava wood is hard and even-grained. It has been found suitable for making musical instruments and for artistic carving. the bark and the dry leaves of the tree yield a brick-coloured dye. The bark is also used as a cure for dysentry ; the juice extracted from it is believed to heal wounds and ulcers. The infusion prepared from guava bark is said to cure toothache. The guava fruit is a well-known household remedy for colic pain and constipation.

Local names: *Madhuri Aam* in Assamese, *Piyara* in Bengali, *Pijuli* in Oriya, *Jama* in Telugu, *Koyya* in Tamil, *Pera* in Malayalam, *Sebe* in Kannada, *Peru* in Marathi, *Jamphal* in Gujarati, *Amrood* in Hindi, and *Amrud* in Punjabi.

CASHEW

One of the most important cash crops of India and a foreign exchange earner, the cashew is an exotic tree, introduced into this country about 400 years ago by the Portuguese. It is a native of South America. Surprisingly, this tree has, within a short time, become very popular. Nearly ninety per cent of the international trade in cashew kernel and oil is monopolised by

India. Being a recent introduction, the tree has not found place in the literature or art of this country.

Cashew trees grow extensively in South India, particularly along the coast. It is rarely grown in the form of plantations. It occupies an area of 65,000 hectares. The western coast, from Bombay to Cape Comorin, covers, 70 per cent of the total cashew growing area. It is a very hardy and drought-resistant plant. It is not exacting about the soil conditions, but sandy soils are best suited for its cultivation. It thrives in a moderate climate and cannot stand extreme cold or heat. This is why cashew is not common in North India. It can stand rainfall within the range of 75 cm. to 325 cm. Cashew grows in hilly regions up to a height of 600 metres above sea-level. It is usually raised from seed. There are no definite varieties of the cashew.

This evergreen tree is of medium size and has a tendency to spread. Cashews grown along the eastern coast spread widely, often touching the ground and striking roots, which then grow as independent trees. Along the western coast, they show a tendency to grow upwards, and trees of 15 to 18 metres height are quite common. Generally, the life of a cashew tree is 30 to 40 years. Some of the trees have been known to live for 70 years.

The leaves are oblong and hard. The flowers are borne in bunches. The flowering starts in December and extends up to February-March, taking place in two or three distinct waves. The flowers appear in small clusters as panicles at the end of small branches. The panicles are usually broad, short and less compact. The individual flowers are yellow with pink stripes. Cloudy weather and heavy rain at the time of flowering are very unfavourable and cause great damage.

The fruit-bearing period extends from March to May. All the fruits do not ripen simultaneously. The ripening is spread over 45 to 70 days. The nut, which is the real fruit, is kidney-shaped and green or pinkish when tender. It hardens and becomes grey when fully ripe. The fleshy portion, or the cashew apple, is the swollen portion of the stalk. The colour of the cashew apple varies from green in the early stages to red, yellow or a

mixture of red and yellow when ripe.

Each tree produces, on an average, about 33 kg. of apples. The yield of the fruit varies from tree to tree, the average yield being 9 to 13 kg. The maximum yield obtained from a tree is about 72 kg.

The cashew kernel is very popular as a salted snack. This is obtained by splitting the nut. The kernel is delicious to taste and has a pleasant flavour. Nowadays, cashew kernel—raw, fried, salted or sugared—has become a must for parties. It is also used in confectionary. The kernel is very nutritious and has a high percentage of protein, phosphorous, iron and vitamin A besides having vitamins B1 and B2 in small quantities.

The fleshy portion is eaten fresh. The cashew-apple is also used for preparing syrup since it is rich in sugar and vitamin C, and also contains carotene.

An oil is extracted from the hard outer shell which is highly valued as a commercial product. It is used as a water-proofing agent and in making preservative paint for boats, fishing nets and light woodwork. The oil has medicinal uses too. It is applied to cracks in the soles of feet, and on warts and leprous sores. The mixture of this oil and kerosene is used for anti-mosquito spraying.

The tender leaves of the cashew tree are used as a vegetable. Paste prepared from the old leaves is applied to burns and skin infections. The leaves also make green manure of good quality.

A pale yellow gum is exuded by the tree. This has insecticidal properties and is used for book-binding. Indelible ink is prepared from its dried milky sap. The sap is also used for protecting wooden posts and fishing lines against termites. A decoction made from the bark is used to treat acute diarrhoea. Boats, packing cases and charcoal are prepared from the wood. The cashew tree is also planted for reclaiming sand-dunes on the sea-coast.

MULBERRY

Mulberry is a tree of great economic importance as it is basic to the silk industry. Its leaves serve as forage for the silkworms. The fruits, though delicious, are of secondary importance. The mulberry is believed to be native to China or Japan from where it spread to different parts of the world. It is found growing throughout India, but Karnataka has the largest area under it, and has become famous for its silk industry. Besides Karnataka, the mulberry is grown extensively in the Punjab, Dehra Dun (U.P.), Kashmir and the sub-Himalayan Terai area.

The mulberry thrives in a temperate climate, but it also grows in tropical and sub-tropical regions. It can adapt itself to various types of soils, including rocky soils.

The mulberry is a deciduous tree, growing to a height of 5 to 18 metres. There is one variety which grows as tall as the *jamun* or Indian blackberry. The fruit of this variety is longer than that of other varieties. The leaves are broad, vary greatly in shape, and are usually lobed. The leaves fall off at the end of winter and new leaves appear in March or April. Shortly afterwards appear the greenish flowers. The flowers are bunched in the form of cylindrical heads. The female flowers develop into minute globules, which fuse together to form a long, succulent fruit. In about a month's time, *i.e.*, by May or June, they ripen. The fruits are so delicate that the juice spills merely on touching. The fruit does not have anything like a peel. Mulberry fruits are about 5 centimetres long and their shape reminds of the long and thin silkworms that feed on the mulberry leaves. Each tree bears from 9 to 13 kg. of fruits.

Many varieties of the mulberry tree grow in our country. The fruits of some are quite long and of others small. In taste and colour too they differ—some have the sweetness of honey,

while others are sour. The fruit, when ripe, may be yellow, red or dark purple. It is highly perishable.

Propagation is done by seeds, cutting or budding. The last two methods are preferred to propagation by seeds, since the rooting takes place readily in these and the fully grown tree is true to type.

The mulberry has a strange characteristic rarely observed in any other tree in nature. If a branch of the mulberry tree is stripped bare of its leaves at any time of the year new leaves immediately sprout, followed by flowers and fruits. The fruits ripen within the usual time and are found to be as tasty as those borne in the regular season.

The development of the silk industry is closely associated with the raising of mulberry plantations. The worms that produce the famous Monga silk of Assam are reared on mulberry leaves alone. The leaves are plucked six to seven times between March and May. On an average, 1,359 kg. to 2,265 kg. of leaves can be obtained from a plantation covering an acre.

In Western countries, different types of wines are prepared from mulberry fruits. The fruits are often dried, powdered and used as feed for poultry and hogs. The juice of the mulberry fruit is believed to cure sore throat and fever. It is also used as a medicine for dyspepsia and melancholia. The fruits have laxative properties and they also purify the blood. In Kashmir and Afghanistan, the mulberry fruit is regarded as a great delicacy. The fruit found in those areas is amongst the best, and is called 'Shah Toot', which means 'king mulberry'. The skin of the mulberry root is used as a tonic, especially in nervous diseases.

The mulberry timber is hard and even-grained, It is used for making boats, tables, chairs, agricultural implements, and sports goods like cricket stumps, tennis and badminton rackets and hockey sticks. The bark of the tree is used for making paper.

'BER' OR PLUM

The *ber* is another fruit-tree found growing wild throughout the country. It is a native of the region lying between India and south-western China and Malaysia. Cultivation of *ber* in the form of plantations is rare. Its cultivation in India is said to have started when a Muslim cultivator won an *Inam* by presenting fruits from a budded plant to the Maratha chief Raghoji Bhonsle II. It grows in abundance in the plains of the Punjab and Uttar Pradesh and in Rajasthan.

The *ber* finds a place in the ancient literature, folk-lore and religious customs of india. The *ber* fruits as well as the leaves are offered to Lord Shiva, especially on the Shivaratri festival. They are fancied to be His favourite. There is a reference to the *ber* in the *Ramayana,* in the touching episode of the tribal woman Shabari's devotion to Rama. All her life, Shabari was yearning to meet Rama. One day, it so happened that Rama suddenly came across her in a forest during his banishment. Overcome with joy, Shabari, offered him the wild *ber* fruits she had gathered. She took a bite from each fruit to find out which tasted best and offered him only the choicest ones. The Lord went on eating them with relish, not at all mindful that they had been mouthed by her, proving that God cares for His devotees with a love that knows no bounds. Saint-poet Surdas has also immortalised the *ber* fruit in one of his poems.

The *ber* grows practically in all types of soil. It can stand the worst frost, prolonged drought and waterlogging. It thrives in comparatively dry areas. Another interesting feature about this plant is that it quickly recovers from demage of any kind *e.g.*, by burning, grazing and chopping.

The wild *ber* tree is bushy and thickly set with thorns, which are much more numerous than in the cultivated variety. The cultivated variety grows to great height. One tree was found to be 25 metres tall. Its branches are full of thorns which

usually occur in pairs. The leaves are small and of various shapes. At the base of each leaf is a sharp spine, sometimes two. It is here that the flowers, fragrant and greenish-yellow in colour, grow in clusters.

None of the wild varieties is preferred for cultivation. The cultivated varieties are generally grafted. The popular grafted varieties are : Banarasi Karaka, Ber Narma, Ber Thornless, Jogia Ber, Banarasi Pewandi and Mudia Mahara in Uttar Pradesh; Banarasi, Nagpuri and Thornless in Bihar; Kotho in Gujarat (Baroda); Mehrun Ber in Maharashtra (East Khandesh); Narikelee, Ghughudanga, Banarasi Prolific and Baruipur in West Bengal (Murshidabad, Malda, Bankura and Birbhum districts); Dodhia and Banarasi in Andhra Pradesh (Kurnool and Cuddapah districts); and Umran, Kaithli, Dandan and Chonchal in the Punjab and Haryana (Rohtak, Hissar, Panipat, Gurgaon, Jind, Sangrur and Mahendragarh districts).

The *ber* starts bearing fruit in the third or the fourth year. The plucking season starts earliar in south and central India, where it is available for marketing in the month of November. In North India, the plucking starts in February and lasts till April. About 453 kg. of fruits can be obtained from trees of good variety. The tree blossoms after the monsoon (June-September) and bears fruit during winter (October to March). The fruit is fleshy, with a single stone inside it. The pulp of the ripe fruit is very tasty. Green when tender, the colour of the fruit changes to reddish-brown, orange or yellow on ripening. The fruit of the better quality *ber* is oval and pointed, resembling somewhat the apple when ripe. There is a round *ber* too—the wild one—which is much smaller in size and not as tasty as the other variety. The fruits of the cultivated variety are both bigger and sweeter. They are orange-coloured and have a soft skin. The pulp is rich in juice and carries a fine flavour. The *ber* of Banaras is the best and is highly prized in many parts of the country. The growers take a great deal of interest in maintaining and improving the quality of the fruit since the crop yields good profits.

The wild *ber* can be put to a variety of uses. A powder is made from the dried fruit, which is buff-coloured and sour in taste. It is the main ingredient in some kinds of sauces and is good for digestion.

The *ber* timber is hard and is used for making agricultural implements, sandals, golf-clubs and the like. The bark is used for tanning and sometimes the fruit is used for dyeing. The liquid extract of the flower is supposed to cure eye-diseases. *Ber* leaves are used for treating asthma and some liver troubles. The root and bark of the tree are believed to cure diarrhoea and to possess tonic properties.

In the Punjab, the lac worms are reared on *ber*. These worms secrete a substance, the lac, which is orange-red in colour. The lac is processed into shellac. Shellac is used for making bangles, varnishes, gramophone records, etc.

In many parts of the country, silk-worms too are reared on *ber* leaves. The silk produced from their cocoons is claimed to be of fine quality.

Ber leaves are used as fodder in the dry regions of the Punjab and Rajasthan. They are rich in phosphorous and mucilagenous matter.

BEL OR STONE-APPLE

The stone-apple tree, as its name suggests, bears a hard fruit. Orchards of *bel* are common in the country. The tree grows in all parts of India. It occurs up to an altitude of 1,195 metres in some Himalayan regions.

The *bel* is a sacred tree for Hindus and is very rarely cut down by them. Lord Shiva and his consort Parvati are believed to be fond of the *bel*. Its leaves are offered to them in worship Hindu mythology abounds in legends about the sacred *bel* tree. It is said that a wicked hunter had taken shelter on a *bel* tree on the Shivaratri night. Plucking the leaves casually, the hunter

threw them down to the ground, where there happened to be an image of Shiva. As a result of his sacred "offering", although unintended, the hunter was by Divine grace redeemed from all his sins and granted salvation. The legend shows in what veneration the *bel* tree has been held by the Hindus through the ages.

The tree is medium-sized, having leaves normally in groups of three, rarely five and even eleven. The leaves of the *bel* are larger than those of the litchi, but smaller than those of the mango tree. They are broad in the middle and pointed at the ends. The tree sheds its leaves early in summer and soon after puts forth new ones, followed by blossom. The flowers have a sweet scent like that of honey and are large and greenish-white in colour.

The fruit of the *bel* takes almost a year to ripen. A rare and interesting phenomenon has been observed with the fruit. The ripe fruit, when left untouched on the tree, at times undergoes a strange process of rejuvenation. It becomes tender once again and curiously, even the colour of the fruit changes back to green. After some time, however, the fruit begins to ripen again.

The *bel* fruit is smooth and greyish-green, turning somewhat yellow when ripe. It is generally round in shape but there is an elongated variety also. The size of the fruits varies too, some being as big as the human head. The outer shell of the better variety of fruit is thin, but that of the wild fruit is thick and tough. Birds cannot eat the wild fruit, as they are not able to break the hard shell with their beaks. There is an old saying which says : "The *bel* ripens, but of what use is it to the crow ?"

The pulp of the ripe fruit is fibrous and orange in colour. It is very sweet and tasty. *Halwa* and *sherbat* made from it are very delicious. The pulp, which is an astringent, has laxative as well as tonic properties.

Every part of the *bel* tree is useful, no less than the fruit. Poultice made of *bel* leaves is considered to be a cure for ophthalmia. The bark and the juice of the leaves are used as

household remedies for certain fevers and intestinal ailments. *Bel* root is believed to cure palpitation of the heart.

TAMARIND

The tamarind or *imli* is a tall tree with dense foliage. From its original home in Central Africa, the tree long ago found its way into India. It now grows practically throughout the country and is ranked amongst our principal trees. It is evergreen with wide, spreading branches and has a long life. The trunk is usually short.

The tamarind is hallowed by legend. Hundreds of years ago, Chaitanya Mahaprabhu had gone from Nabadwip on a pilgrimage to Vrindaban. There he seated himself under a big tamarind tree, which is claimed to be still alive. The place where he sat is called *Taintul talla* in Bengali, meaning under the tamarind tree'. This ancient tree is regarded as a living proof of the tamarind's longevity. India was being ruled by a king of the Pathan dynasty when Chaitanya Mahaprabhu visited Vrindaban. In and around what is now the town of Vrindaban was a big forest, where wild animals roamed. Chaitanya said that near the place where he sat, Lord Krishna used to tend cows as a boy and played pranks with the milk-maids. Gradually, people from all over India started trekking there to visit the sacred spot. The forest disappeared and in its place came up temples and a township.

The leaves are small but rather thick and divided into many leaflets. From a brilliant emerald colour when tender, the leaves soon turn jade green. It flowers from April to June, and the fruits ripen between February and April. All over the branches appear small scented flowers in loose clusters The flowers are lovely and variegated in colours of yellow and pink. The fruits are not all alike in shape. Some are longish

and some curved while others are flat and small. Initially they are green in colour but turn brown or reddish black on ripening and the skin becomes brittle. The pod contains a fibrous pulp in which are to be found one to ten seeds. Some varieties of the fruit are sweet and some sour. Children are very fond of the fruit.

The fruit has many uses. The pulp is a popular ingredient of several sauces, curries and beverages consumed in the South. Even the leaves and flowers are used for preparing vegetable dishes. A large trade is carried on in tamarind. In North India too, it is often used in households and is popularly considered to be a cure for dysentery. A poultice for boils and a dye for silks are prepared from the leaves. A polish for silver is made out of the pulp of the fruit.

Dried tamarind seeds are used for medicinal purposes. Fresh seeds are powdered, mixed with gum, and used as cementing material. An extract from the seed is used for sizing certain cotton and jute fabrics and woollens. The oil extracted from the seeds is an ingredient of a varnish used for painting dolls and idols. The powder of the seeds is used by the poor to make bread.

The wood is hard and durable. It is found to be good for making cart-wheels, mallets, furniture and several important parts of oil and sugar mills.

The tamarind is often planted on roadsides for shade and beauty. But they are rarely planted in gardens, as they prevent growth of other plants underneath them. There is a prejudice against sleeping in the shade of the tamarind trees as they are considered to exude unhealthy vapours. Some do not eat food prepared on fire made from tamarind wood for the same reason.

In Arabic, the tamarind is called "Tamar-ul-Hind", which means "the date-palm of India". The tamarind is somewhat similar in colour to the Arabian date. The word tamarind is in fact, derived from its Arabic name mentioned above. It was through the Arabian traders that the tamarind was first

introduced into Europe, where also it became increasingly popular.

JACKFRUIT

The jackfruit is an evergreen tree and bears the largest edible fruit in the world. The Sanskrit name of the fruit is *panas*, which means both the jackfruit and the conical studs on the fruit. It emphasises the thorny character of the fruit's skin. Marignolli, a pioneer traveller of the 14th century compared the size of this fruit with that of a lamb and a three-year-old child.

The jackfruit tree is considered to be a native of the Western Ghats. It is a common fruit tree in South India. This tree is not grown as a plantation, but as a shade tree in plantations of areca palm cardamom, pepper, etc. The tree is also found in Uttar Pradesh and Bihar.

The humid and warm climate of hill-slopes is ideal for its growth. The tree is found up to elevations of 1,194 metres. Trees grown in sandy soil yield larger fruits than those grown in stony and hard soils. Propagation of jackfruit is done, mainly by seed, throughout the country.

The tree grows to a height of 18 to 21 metres. The leaves are large, thick, leathery, glossy and green in colour. They are blunt at the edges and taper to a short stalk. The flowers appear at the end of the cold season. They are slightly larger than a man's thumb and are enclosed in yellow sheaths, which soon fall off. The male flowers grow at the end of short, leafy twigs. The female flowers appear in large, prickly heads on the trunk and branches. The flowers and fruits, when young, emit a sweet smell and the air around the tree is laden with fragrance. When tender, the fruits are green but turn yellow and eventually brownish. The fruits are oblong or round, weighing up to about 36 kg. Their skin is rough and is covered

with numerous sharp, conical studs. On young trees, fruits grow on the branches, but on old ones they grow in clusters down the trunk, and sometimes even on the roots. When borne on the roots, the fruit can be seen through a crack in the ground. This fruit is considered to be of great medicinal importance.

It is very difficult to define its varieties because of the large number of variations in the shape, size and quality of the fruit. They are broadly classified into two types, one having firm flesh and the other having soft flesh. However, there are a few varieties which can be clearly defined, *e.g.*, Rudrakashi. This variety has small fruits with a smooth and less spiny rind. Recently, a new variety—Singapore or Ceylon jack—has been introduced into this country. This variety bears fruits within two and a half years of planting. Generally, the tree starts bearing fruits when it is eight years old. The season starts a little before the beginning of the monsoon—generally March to June. It may extend up to September in the case of plants grown at higher elevations. The number of fruits borne by a tree varies from a few to about 250.

The jackfruit serves as a table fruit. It is used for making pickles and *papads*. Raw fruit is used as vegetable. In the West Coast region, the flakes of the ripe fruit are preserved in sugar and honey. The flakes are also salted, dried and eaten fried in *ghee* or oil. The seeds too are edible. They are boiled or roasted before eating. Ripe fruits are nutritious. Taken in a limited quantity, the fruit is a laxative, but when taken in large quantity, it may cause indigestion and diarrhoea. Chewing of betels immediately after a course of the fruit is likely to cause stomach-ache. The fruit is rich in vitamins A and C. The fruit is also canned and used for preparing jam, jelly, etc.

The outer rind of the fruit is used as cattle-feed. This portion is nutritious and is very much relished by cattle. The leaves too are good cattle-feed.

In a number of places particularly in South India, the leaves are joined together for use as a plate for taking food or as a cup for cooking *idli*.

Jackwood is excellent for making furniture. Although the wood is at first yellowish in colour, in due course it turns reddish black like mahogany and takes a fine polish. The wood is resistant to attack by white ants. From the sawdust of jackwood, a pigment is obtained with which the Buddhist monks of Burma dye their robes. The bark of the tree also yields a colouring matter. A sort of latex can be prepared from the juice of the fruit, while the juice of the leaves is used as a plaster to cure glandular swellings. The milky substance extracted from the edible parts of the tree is used for making bird-lime. The jackfruit tree is put to innumerable uses in our country.

JAMUN OR BLACKBERRY

The *jamun*, also called the Indian blackberry, is a tall evergreen tree, with a crooked trunk and many branches. It is often found growing on river banks with branches hanging over the water. Besides India, it is also common in Burma, Ceylon and Malaysia. In our country, it grows almost everywhere. In the South, it is found even at altitudes of about 3,000 metres. The *jamun* is a fruit tree mainly of tropical and sub-tropical regions. It needs dry weather at the time of flowering and fruit setting. It grows wild and is also cultivated.

Hindus believe that the *jamun* flower is dear to the gods Ganesh and Shiva. At the Jambukeswar temple near Tiruchirapalli, there is a huge *jamun* tree whose spreading branches form a canopy over the famous Shiva temple. Buddhists too consider the *jamun* tree sacred. Monkeys frequent the tree most, because of its plentiful fruits and the many hanging branches.

The *jamun* flowers between March and May. The flowers are borne in open clusters; they are small and greenish-white in colour. The fruits ripen in the rainy season (June-August).

The jamun tree with its glossy leaves

The slender amla tree bears fruits in large bunches

The harsingar in bloom

The fruiting season lasts for about a month. Full of juice, they are purplish black, shining and smooth. There are no standard varieties of *jamun* under cultivation. The most common variety is the *ra jamun*. Fruits of better quality are large and sweet with a rich pinkish pulp. In the wild variety, the fruits are tart, roundish and small. The wild varieties are generally known as *kath jamun*, meaning wood-berry.

The wild variety is propagated through seeds and the cultivated variety by graft. The mode of propagation makes a lot of difference in the taste and size of the fruit.

Juice from unripe fruit is used to prepare vinegar, which is carminative and diuretic, and has cooling and digestive properties. From the juice of the ripe fruit, an alcoholic drink and a liquid sauce are prepared. Mixed with salt, the juice is dried to form a powder which is used as an aid to digestion. The leaves, bark and seed have medicinal properties. The seed is rich in protein and carbohydrates and has a small quantity of calcium. Hence it is used as a concentrated cattle-feed. The seed is considered a cure for diabetes, and is a good antidote against Nux Vomica poisoning. The bark is good for cough, asthma and dysentery. The fruit, when taken regularly for a few weeks, has been found to improve the health of diabetic patients.

Tussore-silk worms are reared on this tree. *Jamun* is very common in Bhagalpur (Bihar), Purulia and Bankura (West Bengal). No wonder that these districts are famous for this silk.

The wood, being hard and durable, is used for making boats and lining wells. The leaves are used as poultice for scorpion bites, and its juice is used for treating spongy and painful gums. *jamun* trees are also planted as ornamental plants along roadsides, in parks and as windbreaks or shelter trees.

AMLA

A native of the tropical region of Asia, the *amla* is one of the popular medicinal trees in our country. Mention of this tree in connection with its medicinal value is made in ancient literature. Hindus treat the *amla* as a sacred tree. Eating under the *amla* tree on the day of the Akshaya Navami festival is considered auspicious.

It is a deciduous, medium-sized tree with numerous small narrow leaves, arranged in two opposite rows which look like bird's feathers. The *amla* grows in most parts of the country, except in extremely dry or cold regions.

The leaves fall during the autumn and new leaves and greenish-yellow flowers appear soon after. The tree is laden with fruits almost throughout the year. Normally, the flowers make their appearance in spring and the fruits ripen in winter. Round and yellow, the fruits remain on the tree even after the leaves fall. The fruit is nearly stalkless, smooth, and neatly divided into six segments by pale linear grooves. The size of the fruit varies from that of a small marble to that of a large plum. Banaras is famous for its big *amla*. The fruit is bitter and sour in taste.

Some of the *amla* varieties are : Banarasi, green-tinged, red-tinged and white-streaked. There are two varieties of the fruit—one small and the other as big as a table-tennis ball. The former variety is mainly used in medicinal preparations and the latter for making *morabba* or marmalade. The fruits are also pickled and preserved.

The *amla* fruit is highly valued for its medicinal properties. It is one of the chief ingredients of Chyavanaprasa, a renowned Ayurvedic remedy for chronic cough and consumption. It is claimed that this medicine can rejuvenate persons bed-ridden for years. It is traditionally believed to have cured Maharishi Chyavan of old age. *Amla* again is one of the three ingredients

of the famous Ayurvedic medicine 'Triphala', the other two being *harre* and *bahera*. *Amla* tones up the liver. A fermented liquor made from the fruit is used to cure dyspepsia cough, and jaundice. The fruit is very rich in vitamin C. During the Second World War, the embelic powder tablet and candies were given to the soldiers. It is believed that embelic powder is more effective than the synthesized vitamin C to treat deficiencies. The flowers too have laxative properties and the leaves are also a tonic and a cure for dysentery.

The fruit, bark and leaves are used also for tanning hides and skins and for dyeing fabrics. From the dried fruits, a hair oil and shampoo are prepared which prevent hair from prematurely turning grey and falling. Water in which dried *amla* fruits are soaked is believed to be a good lotion for the eyes. Ink and hair dyes are also prepared from the fruit.

The tree is propagated both by seed and graft. Those propagated by graft bear larger fruits with smaller seeds inside.

Indian languages teem with proverbs concerning the medicinal properties of the *amla* fruit. They say that a mixture of *amla, harre, bahera* and the herb *giloya* taken regularly, makes a man immune to illness. Similarly, it is said that an elephant fed on *amla, harre* and *bahera*, mixed with sugar, will soon grow so sturdy and fat that it can rival even Airavat, the legendary elephant and mount of Lord Indra. In short, every part of the tree is believed to possess some medicinal property or the other.

The wood of the *amla* tree is used for making agricultural implements.

BAHERA OR THE BELLERIC MYROBALAN

The *bahera* is an ornamental tree planted on roadsides for its beauty. In New Delhi, the *bahera* trees adorn the sides

of the Dr. Rajendra Prasad Road. It is a deciduous tree. The *bahera* grows to a height of 12 to 24 metres and has long horizontal branches. The tree thrives even in ordinary soils in the plains and the foot-hills, but not in very dry and hot places. In really good soils, it grows as tall as 36 metres.

The utility of the *bahera* has been greatly reduced because of the superstitions attached to it. Some consider it to be the abode of ghosts and some believe that living in a house in which *bahera* wood has been used for construction would bring ill luck.

The leaves are large and leathery and have long stalks. The tree sheds its leaves during winter. New leaves make their appearance during the months of March and April.

The flowers are of a greenish-yellow colour, and grow in long sprays at the ends of branches. The tiny, scented flowers appear from March to June. The fruit is of the size of an almond and has the shape of an egg. It contains a single seed. The fruits ripen in winter and fall to the ground by summer.

The *bahera* fruit is known for its medicinal properties. It is one of the three ingredients that go into the famous Ayurvedic medicine *Triphala,* the other two being *harre* and *amla.* The fruits are also used as a household remedy in the treatment of diseases of the eye, nose, throat, lungs and heart. The oil extracted from the fruit is good for the hair. The kernel is edible and tastes like the almond. Eaten in excess, it pro duces some intoxication, especially if water is taken with it. Goats, sheep, deer and monkeys like to guzzle it.

The fruit has great commercial value. Not only is it used for medicinal purposes, but also for tanning, dyeing and making ink.

The wood is used for making packing cases and planks, but is liable to be attacked by insects.

Local names : *Bauri hulluch* in Assamese ; *Bahera* in Bengali, Oriya and Hindi ; *Baheda Sag, Hahedan* in Gujarati; *Santi tare, Vibhitaka* in Kannada ;*Thanni, Tusham* in Malayalam ; *Baheda, Beda* in Marathi ; *Bahera, Baharia, Birha* in Punjabi ; *Tanri* in Tamil and *Bhutavasamu* in Telugu.

HARRE

The *harre* is greatly valued as a medicinal tree. It is deciduous, with spreading branches inclined to droop. The tree grows in abundance in North India, extending from Kangra to West Bengal and southwards to the Deccan table-lands where it can be seen at heights of 300 to 900 metres. It is also found in the Western Ghats.

The leaves are broad and pointed. They are shed from February to March, and new ones appear between April and August. The flowers are yellowish white, and are borne on long spikes at the ends of the branches. They make their appearence during April to August. The fruits are pearshaped, and more or less of the size of a *bahera* fruit. The fruits usually ripen between November and March.

There are several varieties of the tree, including one yielding large fruits and another with smaller ones. The smaller fruit is considered to be more useful medicinally. Ayurveda sets great store by its medicinal value. The saying goes that even a mother might sometimes be angry with her children but never so the *harre* with any living being. According to Hindu mythology, as God Indra was one day imbibing nectar in heaven, a drop of it fell on the earth and produced this tree —a rather fanciful way of stating that *harre* is highly benificial to the health of mankind.

The unripe fruit is used to cure dysentery. The ripe ones are good for asthma, sore throat, anaemia, gout, biliousness,

snake-bite and some ailments of the heart. Besides, the fruits are an excellent remedy for constipation. The fruits are also used in tanning and dyeing. Ink is prepared from their kernels.

Local names : *Shilikha* in Assamese ; *Haritaki* in Bengali ; *Har*, *Harar* in Hindi ; *Alak*, *Anile*, *Arale* in Kannada ; *Dirya*, *Katukka* in Malayalam ; *Hadra*, *Hirada* in Marathi; *Halele*, *Murh* in Punjabi ; *Kedakkai*, *Kadukkai* in Tamil ; *Huritaki*, *Karanka*, *Resaki* in Telugu ; *Horida*, *Horitoki* in Oriya.

COCONUT PALM

The coconut palm is held in great reverence. This is evident from the numerous names given to it, *viz.*, Kalpa Vriksha (Tree of heaven), Tree of Life, Tree of Abundance, etc. There are varying views regarding its origin. Among the places mentioned are the Cocos Islands, Andes in tropical America, coastal Central America, and South Asia.

The coconut palm is also linked with legend. References to this palm occur in ancient literature, *e.g.*, in the great epics *Ramayana* and *Mahabharata*. It is considered to be a favourite of Lord Shiva. Varuna, the Lord of the Seas, is represented by a pot of water with a coconut placed over it. According to legend, Parasurama brought it from heaven and planted it in Kerala, which literally means 'coconut'.

The coconut fruit is sacred to the Hindus, and is used by them, either green or dry, on religious occasions. It is sometimes placed on an altar and worshipped in the name of the goddess Durga. In some parts of the country along the sea-coast, a festival called 'Narikel Divas,' is observed at the end of the rainy season, when devotees offer coconut fruits in thousands to Varuna, the sea-god.

The palm grows to a height of 18 to 24 meters. The tall

trunk is rather uneven and is marked with semi-circular scars, which indicate the places from where the fallen boughs had sprouted. The boughs are always found at the top. It has no branches. Its bough is very long—1 to 2.5 metres—and has a number of leaflets on either side of the midrib, arranged like a feather. They are joined with each other in the early stages.

The small yellowish flowers appear in thick bunches on numerous spikes. Each bunch of flowers is covered by a spathe. The fruits come out in clusters at the base of the boughs.

There are several varieties of the fruit. Some coconuts are round, some long; some remain green even when ripe, and others take on a yellowish or brownish colour. The fruit has a fibrous covering and underneath is a hard round shell that contains sweet, delicious water, and white, tasty albumen. There are three pores at the base of the shell; the embryo of a seed lies opposite to one of these pores. Germinating inside, it encompasses the entire shell and throws out roots through the walls of the shell. The seedling is then planted in the soil. Along the sea-coast and in places where the soil is sufficiently saline, the tree starts bearing fruit in five to seven years. On the other hand, where soil conditions are less favourable, the tree may not bear fruit until it is 20 to 30 years old. Though the natural home of the coconut is along the sea-coast, it also grows in Assam which has a moist climate and a somewhat saline soil.

The coconut palm bears fruit twice a year. The first crop is gathered at the end of the winter season, and the second at the end of the rainy season.

The coconut palm is of great commercial value. The fruit when tender, contains delicious water and sweet albumen; after being dried, the kernel is used in numerous ways. The raw kernel is used in cookery. The oil extracted from it is a good medium for cooking. The residue left after oil-extraction is valuable as cattle feed. It is also used as raw material in the manufacture of candles, soap, margarine and hair oil. The dried kernel, known as copra, is exported to Europe in large

quantities. The fibre covering the shell called coir, is used for making ropes, carpets and mattresses ; these products are exported on a large scale from South India. The shell is burnt to make a kind of dye. Copra and coir earn substantial foreign exchange every year.

From the flowering spikes of the coconut palm, toddy is extracted. It is rich in vitamin B and, when fermented, forms a sort of intoxicating liquor. From the toddy is also prepared a kind of brown sugar which, like the kernel, is used for making sweetmeats.

The leaves of the coconut palm are used for thatching cottages and for making brooms. The timber is widely used as a building material and in various articles of handicraft.

Some parts of the coconut tree have medicinal uses. Coconut-water soothes the stomatch and is given for nourishment even to typhoid patients. The root is employed for preparing a gargle for sore throat. The oil is used for making a syrup that soothes cough, and a liniment to cure ringworm. It is also used as hair oil.

In the South, the coconut palm is rightly called "green gold", since every part of the tree can be used for one purpose or another.

Local names : *Narikel* in Sanskrit, Oriya and Bengali ; *Narial* in Hindi; *Naral* in Marathi; *Thengu* in Kannada; *Tenga* in Malayalam ; *Tenkai* in Tamil and Kobbarikaya in Telugu.

ARECA PALM

The areca-palm is one of the most graceful among palms. An eminent botanist, Sir G. D. Hooker, very aptly likened it to "an arrow shot from heaven." There could not be a more picturesque description for this tree with its straight, soaring,

slender trunk and crown of deep green leaves clustered together.

It is one of the important commercial crops of India. Arecanut occupies an area of about three lakh acres. It is found mainly in regions with heavy rainfall. The palm prefers a cool climate with the temperature ranging between 60 F and 100 F. Extreme temperatures are harmful. Well-drained soils which can retain moisture are best suited for this palm.

The palm grows to a height of 18 metres or more. The trunk does not bear any branches and has a diameter of about 15 centimetres. There are a number of scars on the trunk ; which indicate places of dropped boughs.

Believed to have had its origin in Malaysia, the areca-palm has been cultivated in this country since ancient times. Besides the coastal regions, it is also grown in the interior of West Bengal and Assam. It is a very common tree in South India. The Sanskrit name 'Pungi-phal' is said to be derived from Tamil.

In the Kamrup district of Assam, there is hardly a house where a few of these trees are not grown. The name of the city of Gauhati is derived from 'Guha' and 'Bati', meaning a 'grove of areca palms.'

The boughs are divided into a large number of leaflets bending downwards from the middle of the main bough. The leaflets are either free or fused. The small flowers are borne in clusters, known as spadix, below the boughs. They are enclosed in a boat-shaped, flattened covering known as the spathe. The flowers emit a sweet fragrance.

The areca-palm may start bearing fruit at the age of five years, but generally does so at a later age. A tree yields nearly three hundred fruits per year. The fruit, when tender, is green and gradually becomes orange or scarlet as it ripens. The seed lies enmeshed in a fibrous covering. Fruits are borne nine months after flowering. The arecanut fruit is of the size of a small egg. The harvesting season varies with the purpose for which the crop is required. When required for preparing various

kalipak varieties, the nuts are harvested from June to December when they are tender. For ripe fruits, the crop is harvested from October to March.

The utility of this palm lies chiefly in its nuts. They are chewed with betel leaves or alone. It has a mildly narcotic effect. It is digestive, astringent and is said to have tonic properties. The nut contains tannin in a large quantity. It is used also for preparing red and black inks.

The tender leaves are used for treating lumbago. They are also used as headgear, for preparing buckets, for packing vegetables and for thatching roofs. The sheaths enclosing the young leaves are used for packing, writing and as a covering for Burma cheroot.

The arecanuts have various other uses. They are roasted and powdered to make a good tooth powder. Beads of necklaces and knobs of walking sticks are also made out of these nuts.

Its wood is used for making bows, arrows, spear-handles and furniture. The trunk of the palm is quite often used as a pillar to support the roof or as a rafter.

The husk can be utilized for preparing good insulating wool for packing and for producing hard-board.

PALMYRA PALM

The palmyra palm is found in most parts of our country. Palm leaf (*Talpatra*) is considered to be the earliest writing material used by man. Quite a few Sanskrit and Pali books written on palm leaves are still preserved in different libraries and in the houses of Sanskrit scholars. There is a good collection of such ancient manuscripts in Nepal and Tibet. Paintings too were done on palm leaves, particularly in these two countries. In Nepal, this practice is still in vogue.

The palmyra palm is considered sacred both by Hindus and Buddhists. This may be due to the palmyra leaves having been used for writing sacred scripts by the ancients. The 'Linga' or emblem of Lord Siva at the famous Tarakeswar Temple in West Bengal is made out of the stump of a palmyra tree. The very name Tarakeswar is said to be derived from the word 'Tar' meaning palmyra palm. The leaves and fruits are used for decorating marriage pandals.

Although a tall tree, the palmyra does not provide shade, unlike the peepal and the banyan. The palmyra palm grows to a height of about 30 metres. The trunk is about 61 cm. thick and is slightly swollen above the centre. The leaves are fan-shaped and broad, with short, stout stalks. They are borne in clusters at the top. The palm bears a single type of flower, either male or female, enclosed in sheaths. The small male flowers appear in the form of clusters, and are surrounded by boat-shaped bracts. The female flowers are fewer and are found scattered in the female flower sheath. The flowers bloom in March and April. The fruit requires about one year to ripen. They are oval or spherical and contain three nuts. The nuts have a white, soft, fleshy portion, which is edible.

The main product obtained from this palm is toddy, or the sweet sap. Mostly, the male trees are tapped. To extract toddy, an incision is made into one of the flower-laden branches, and a pot is hung below to collect it. The juice keeps dripping and collecting in the pot. If the toddy is to be drunk as 'Neera', the pot has to be taken down before sunrise. After sunrise, it ferments due to heat and becomes frothy and intoxicating.

It is interesting to know that birds too, particularly the crow and a kind of small parrot, are fond of the juice. They drink it and get intoxicated. They are known to sit motionless for hours on the tree in a state of intoxication.

Jaggery made out of palm juice is considered good for health and is used as a household remedy for bronchitis. A sweetmeat (*sandesh*) made with palm-*gur* is very popular in West Bengal.

The palmyra fruit is edible. The jelly-like pulp of the ripe fruit as well as the soft kernels of the tender fruits are delicious, although not as tasty as those of the date palm. It makes good cattle-feed.

The fruit has a laxative effect and the sap is good tonic. Palmyra leaves are used mainly for making fans, mats, baskets, sandals and umbrellas. In villages, they are also used for thatching houses. The ribs of the leaves and the fibres are used for making brooms and brushes.

The palmyra tree has a long life of about 100 years. Its wood does not warp nor is it easily attacked by white ants. It is, therefore, often used as a rafter or pillar in the construction of houses. The palmyra wood is stronger than even the teak or sal. The wood of the female tree is considered to be superior to that of the male tree. The trunk is often used as a pipe after removing the central core; split into halves, it is used as a drain-pipe for conveying water.

In India, there are eight varieties of toddy-yielding palm. The tree starts filling up with sap when it is seven to ten years old. The juice is said to be more delicious in the spring season.

WILD DATE-PALM

Not so tall or stately as the palmyra, the wild date palm generally grows to a height of 9 to 11 metres. Again, unlike the palmyra, this palm is found in forests.

The boughs of this palm are narrow but denser and more drooping than those of the palmyra. They have numerous rigid leaflets, shaped like a sword, which grow outwards and upwards from the mid-rib of the bough. The leaves form a thick, round crown at the top of the tree. The leaves are used for making baskets, mats, and brooms.

The toddy yielded by this palm and the palmyra have

more or less the same taste. Cuts are made in the trunk of the tree and the sap collected in a pot. The tree yields toddy twice a year or more. Toddy tapped during the months of April and May is most delicious.

The scented white or greenish flowers appear in bunches during March. The fruits come out in clusters on long stems and are round or oblong in shape. Green and hard at first, the fruits turn soft and orange-yellow or ripening. Jellies and jams made from them are popular.

The fruits have some medicinal properties. In some parts of the country, the nut of the fruit is chewed with betel-leaf in place of arecanut.

MOHWA OR INDIAN BUTTER TREE

A forest tree, celebrated in the folk songs of North India, the *mohwa* is especially important for its delicious and nutritious flowers. It grows chiefly in dry and hilly regions.

The *mohwa* leaves are shed at the end of winter; new leaves and flowers appear in spring. The flowers are borne in clusters near the ends of small branches. Each flower is borne on separate green or pink and furry stalks. Light yellow in colour, the flower has eight or nine petals, so arranged together as to give the flower the look of a cup-shaped tube. Juicy and having an intoxicating smell, the flowers attract birds and peafowl. Jackals, bears and deers are also fond of these flowers. The fruit is greenish in colour and egg-shaped. Inside its flesh are found a few seeds.

The sweet *mohwa* flowers are used as an article of food. and are believed to be good for health. The villagers particularly, the Adivasis of Chhota Nagpur and Madhya Pradesh, gather and preserve the flowers after drying them in the sun and eat them throughout the year. When the trees blossom, the villagers clear the space under them and keep it clean. The

short-lived flowers bloom during the night and fall before sunrise. In the morning, they are picked up and spread out for drying. From the flowers are prepared a country-liquor and sugar. The *mohwa* trees are thus a good source of income.

Oil extracted from the fruits is used for cooking and soap-making and for manufacturing margarine. The cake left after extracting the oil is a good manure.

The *mohwa* wood is hard and durable and is suitable for making furniture.

The bark of the tree heals wounds and sores. The milky sap is used as a laxative and as a remedy for rheumatism. The flowers are considered to be efficacious in diseases of the heart ear and lungs. The fruit is supposed to purify blood.

Local names : *Mohwa* in Hindi, Bengali, Oriya and Marathi ; *Illupai* in Tamil ; *Illupa* in Malayalam ; *Ippa* in Telugu.

GUL MOHAR

Among the ornamental trees of India, the Gul Mohar is the most gorgeous. Its bloom lasts longer than that of any other flowering tree. The Gul Mohar grows quickly and blooms in the second year. Growing to a height of 10 to 15 metres, it thrives best under dry conditions. Propagation can be done both by seeds and cuttings. The cuttings are preferred as the flowers borne by them are true to the colour. While the seed takes a long time to germinate, the cuttings take root quickly.

The tree is said to have had its origin in Madagascar. Some think that it is a native of Mauritius. In both these islands, it is found in a wild state.

The tree has a slender trunk and numerous spreading branches. The leaf is divided into scores of tiny leaflets arranged on the branches of the mid-rib and has the appearance of a feather. The leaves are often as long as 61 cm. They fall of

in the months of February and March. New leaves appear towards the end of May and june.

On the advent of summer, the flowers appear in broad, erect clusters. The flowering continues throughout the summer season along with the new foliage. There are different varieties of the flower, varying in colour from orange and red to strident scarlet. Each flower is about three inches across, and has five spoon-shaped petals with a wavy border and ten long stamens. One of the petals is larger than the rest and has different colours—yellow or white with streaks of scarlet. The fruits or pods are green in the beginning, turning, black as they mature. They remain on the tree, very often, till the next flowering season.

The Gul Mohar is a popular ornamental tree for lining avenues and provides a light shade. It is strikingly beautiful because of its abundance of flamboyant flowers. The wood of the Gul Mohar is, however, of little use.

Local names : *Gul Mohar* in Hindi and Punjabi ; *Doddaratnagandhi, Katikaya* in Kannada; *Alasippu* in Malayalam; *Gulmohr* in Marathi; *Mayirkkondrai* in Tamil; *Ettaturayi* in Telugu and *Krishna chura* in Bengali.

SILK-COTTON OR SIMAL

One of the most gorgeous trees of our country is the *simal*. It is a deciduous tree and has spreading branches arranged in whorls. Like the *peepal* and the banyan, it has a long-life. There exist silk-cotton trees whose age is estimated at over a thousand years.

The tree is believed to be a native of Malaysia. It is found throughout the country, particularly in the Konkan along the West Coast. The silk-cotton tree thrives in sandy soil and damp climate. It grows in all parts of the country except in very dry and hot areas ; excessive cold does not suit it either.

Many romantic stories, woven round the 'Salmali' tree Sanskrit name for silk-cotton, abound in ancient Sanskrit literature. In folklore, it has been described as the 'parrot's despair'. Lured by the highly attractive fruit of the *simal*, the parrot goes eagerly at it and pecks it with its beak. But it is sorely disappointed to find that the fruit contains not edible substance but an unsavoury lump of floss and fluff. One hears in ancient fables about old 'Salmali' trees by the river-side where every evening the birds would congregate to spend the night with their young ones.

Tall and majestic the *simal* tree has a straight trunk crowned with horizontal branches. The trunk of the young tree is full of hard conical thorns which disappear as the tree grows. The branches spring in whorls from the trunk. The leaves are broad and about 15 cm. long, with five to seven leaflets in each. The leaves fall off by the end of December. In tropical areas, the leaves are often retained till March. Before it puts out new leaves in the months of March and April, buds appear in clusters at the tips of the branches. The buds open up into numerous cup-shaped flowers.

The large flower has a short stalk and five fleshy petals. The stamens are many and almost of the same size as the petals, each tipped with anthers. The ovary is long and club-shaped with five stigmas. Silk-cotton flowers are generally crimson in colour, although golden-yellow flowers can also be seen. The white flowers are smaller in size than the flowers of other colours and appear in bunches.

The tree in full bloom is often compared to Goddess Lakshmi holding numerous coloured lamps in the palms of her outstretched arms. At this time, the tree presents a striking blaze of colour and becomes a birds' paradise; the tree looks like a club of the winged creatures. Attracted by the honey of its flowers, crows, bulbuls, koels and robins perch in large numbers on its branches, constantly chirruping and chattering.

Silk-cotton trees bear fruit in April and May. In the beginning, the fruits are green and look like fingers, then they

grow stout and gradually turn brown. The pressure of the cotton-floss inside cracks the fruit open and the cotton floats down to the ground or is carried away on the wind. The floss contains small, egg-shaped black seeds. The cotton floss is used for stuffing pillows, cushions and life-belts.

The flowers are edible and their calyces are often used in preparing curries. The flowers are used as a cure for many skin diseases. The seeds are given to cattle. The thorns from the trunks of young trees are chewed like betelnuts.

The wood is soft, light and whitish in colour. It is used for making crates, tea-chests and match-sticks. Since the wood is light and durable under water, canoes and well-linings are made from it. The gum exuded by the trunk is widely used in book-binding. The gum as well as the roots of the *simal* tree are believed to possess tonic properties.

The *simal* tree, unlike other trees, casts off dead twigs, which are gathered and used as fuel by the poor.

Parrots and other birds that do not build nests for their young ones, reside in the hollows of old silk-cotton trees and lay their eggs. It is popularly believed that a parrot, born and brought up in the hole of a *simal* tree, chatters more than others of its kind. Whether it is true or not, there is no doubt that the crevices in this tree are a favourite habitat of these birds.

Local names : *Simul* and *tula* in Bengali ; *Burla* in Kannada ; *Shimalo* in Gujarati ; *Pagun*, *Semur*, *Simal* in Hindi ; *Kanteswar*, *Samur*, *Savara* in Marathi ; *Sum* in Punjabi ; *Ilavu Parutti* in Tamil ; *Kendaburaga*, *Shalmali* and Buraga in Telugu ; *Buru*, *Salmali* in Oriya and *Ilavu* in Malayalam.

FLAME OF THE FOREST OR PALAS

Native to India, the *palas* is a medium-sized tree growing

generally to a height of 11 metres. The tree is found in arid parts of the country, but not in regions with excessive heat or heavy rainfall. The *palas* is quite common in West Bengal, Uttar Pradesh, Bihar, Punjab and the western Ghats. It grows in all types of soil, even in waterlogged, black cotton and saline soils.

The *palas* is a very well-known tree of our country. The Hindus, from time immemorial, have regarded it as sacred. The leaf, consisting of three leaflets, is believed to represent the Hindu trinity—Brahma, Vishnu and Shiva. It plays an important part in Hindu rituals. In *homa*, the twigs are offered along with *ghee* to the sacred fire. Its flowers are offered to the gods. References to *palas* wood occur frequently in Sanskrit literature. The *palas* in full bloom has been compared to a repentant sinner dressed in red robes; Amir Khusro, the great poet, compared it to a lion's claws stained with blood. According to Kalidasa, a *dhak* or *palas* forest in full bloom, with the fiery-red flowers swaying in the wind, make the earth look like a bride in red marital robes.

In the grounds of Queen Maya's palace was a beautiful *palas* tree which she loved immensely. It was under the shade of this tree that the Queen gave birth to Gautam the Buddha. Sir Edwin Arnold, in this renowned epic poem "The Light of Asia", writes:

Queen Maya stood at noon, her days fulfilled,
Under a Palsa (palas) in the palace ground,
A stately trunk, straight as a temple-shaft,
With crown of glossy leaves and fragrant blooms;
And Knowing the time come—for all things knew—
The conscious tree bent down its boughs
Thus came the light of Asia into the world.

In Indian history, the battle of Plassey has been an important event. It was fought between Nawab Siraj-ud-Daula of Murshidabad and the English led by Lord Clive. It was one of those crucial battles following which the British entrenched

themselves in Bengal and later on in the rest of India. The place where this battle was fought was once a forest of *palas* trees, and the name Plassey is derived from it.

The leaves are large and trifoliate. With a crooked trunk and irregularly twisted branches, the tree looks ugly in winter when it sheds its leaves and stands stark naked. But, in spring, bright orange-red flowers appear in clusters all over, transforming the tree into a veritable flame. When the tree is in bloom, it is entirely leafless or only with a few leaves on the lower branches. Depending on the locality, flowering continues till April.

Each flower has five petals and the petal at the bottom looks like a curved beak. That is why the *palas* is also called parrot-tree or 'Kinshuka' in Sanskrit, which means, 'Is it a parrot?' The flower is somewhat like the pea-flower, though larger in size and thinner in texture. The vermilion flowers of the *palas* have no fragrance. In a famous Sanskrit verse, a handsome youth of noble birth but lacking in education is compared to the flower of the 'Kinshuka' which is extremely beautiful but without fragrance.

During the flowering period, the tree becomes a birds' club where mynas, bulbuls, honeysuckers and many other birds congregate. Jumping from flower to flower, they keep up their endless chatter.

After the flowering period is over or even during it, that is, in April or May, new leaves appear. The fruits soon follow. They are flat, two to three inches long, and yellowish-grey when ripe.

There is a rare variety of *palas* which puts forth yellow flowers. The one with red flowers is a common variety. The tree is known by several names, such as, *tesu*, *dhak*, and *chichra*.

Lac worms are also reared on the *palas* tree. From the flowers, a yellow dye is prepared which does not wash. During the Holi festival, children sprinkle water coloured with this dye or with the dried flowers.

The gum which exudes from its stem is an astringent known as 'Bengal Kino' or 'Butea Kino'. It is also used for tanning leather. The bark and roots yield a strong fibre suitable for making ropes and sanrals. The leaves are used in the making of plates for serving food in villages. Women in some parts of the country use the *palas* fruits for decorating their hair.

In New Delhi, near the Buddha Jayanti Park, there is even now a small jungle of *palas* trees. In the spring, the trees turn scarlet with the mass of *palas* flowers, and the whole area appears ablaze with colour. The author observed a very interesting feature of the *palas*. The inflorescence of *palas*, kept dry indoors, continued to bloom for six months, but when kept in a flower-vase with water, it withered within two days.

Local names : *Kinana*, *Palas* in Bengali, Oriya and Assamese; *Palas* in Marathi; *Brahmavikrahe*, *Muttala* in Kannada; *Dhak*, *Palas*, *Chalcha*, *Kankrei*, *Tesu* in Hindi; *Khakhro*, *Palash* in Gujarati; *Kimshukam*, *Muriku* in Malayalam; *Kuttumurukku* in Tamil; *Modugu*, *Palashamu* in Telugu.

KACHNAR

The *kachnar* is one of our most beautiful trees. It is a middle-sized, almost evergreen tree. A native of the Himalayan foot-hills, the *kachnar* thrives in dry hilly areas. It can be propagated by seed and starts flowering at an early age.

The leaves are usually more broad than long. Each leaf has two fan-shaped leaflets, jointed together; this gives it a look similar to the cloven foot of some animals. The foliage is shed during the winter. From September to November, it is laden all over with large, fragrant flowers of various colours. The most common colour is purple, but flowers of white, pink, and mauve colour are also found. They appear in groups of two

or three. The petals are narrow at the base and pointed at the tips. They have thin linings on them and each flower usually has five stamens.

The *kachnar* is useful in many ways. A kind of gum is secreted by the trees. From its seeds an oil is extracted. Its dried leaves are used for making *bidis*, and also as fodder. The bark yields fibre which is highly suitable for making ropes and a dye is extracted from it. The bark is also used in tanning leather. Its wood is hard and, therefore, good for making agricultural implements.

Cooked *kachnar* flowers are eaten with relish, since they are delicious. They are also taken as a laxative. The flowers are also pickled. The tree has some medicinal uses too. Its bark is an astringent and is believed to be a cure for ashtma and ulcers. The buds and roots are good for digestive troubles. The root is popularly believed to be a cure for snake-bite.

Local names: *Karabi, Raktakanchan* in Bengali; *Arasinanigge, Bilikandrivala* in Kannada; *Barial, Kachnar* in Hindi; *Kovindaram, Unna* in Malayalam; *Kanchan, Raktakanchan* in Oriya and Marathi; *Mandarai, Semmandari* in Tamil; *Randara, Devakanjanamu* in Telugu.

AMALTAS OR INDIAN LABURNUM

The *amaltas,* or Indian laburnum, is one of the most beautiful flowering trees of the world. It is prettier than its counterpart in Europe because it has a larger and longer cluster of flowers. It is mainly used as an avenue plant because of its decorative effect. In Bombay, a road is named 'Laburnum Road' as there are laburnum trees flanking it. The tree is common throughout the country, and can be seen even at altitudes of 1,200 metres.

At places, they are found growing wild in large numbers, thanks to the monkeys, who are fond of its fruit; they eat the pulp and throw the seeds in the surrounding areas. The seeds sprout and grow into trees. Because of this association with monkeys, the tree is also called 'Bandar-lathi' (the monkey's rod).

A deciduous tree, it has a short trunk with spreading branches. The tree is of medium size, growing to a height of 6 to 9 metres. The leaves are dark green and are divided into broad and pointed leaflets arranged in opposite pairs. There are three to eight pairs of leaflets in each leaf. The leaves are shed during the winter. From April onwards, it puts forth new leaves. These tender leaves have a beautiful copper colour. Simultaneously, flowers also make their appearance.

The large, bright yellow flowers are arranged in drooping bunches, 30 centimetres to 45 centimetres long. The *amaltas*, covered with bunches of bright golden flowers, provides a pleasant sight. There is another variety with white flowers. The *amaltas* flowers have a sweet fragrance. The flowering season usually extends up to June, but this may continue till September if the season remains dry. The flowers of the tree are used in religious ceremonies by Hindus. In Karnataka a pole made from an *amaltas* branch is fixed in the ground and worshipped.

The fruits are long and cylindrical in shape, and can be seen hanging on the bare branches. Because of the shape of the fruits, the tree is also known as 'Pudding-pipe Tree'. Their colour varies from green to dark brown, depending on the stage of ripening.

This ornamental tree is also of great medicinal value. Practically every part of the tree is used for preparing medicine. The flowers are used for preparing a preserve, called *gul-kand*, used for treating fever. The pulp of the fruit is used for flavouring tobacco. The husk of its pods mixed with saffron, rose-water etc., is given to women in cases of difficult delivery. It is also used as a laxative. The fruit is believed to be a remedy for leprosy,

heart disease and stomach pains. Its bark and leaves both are used for treating skin diseases. The root is a strong purgative and the leaves are used as a cure for chilblains.

The wood is considered good as firewood and is used for making charcoal. The timber, used in constructing bullock-carts, is very durable.

Local names: *Amaltas*, *Bandarlathi* in Hindi; *Sonaru* in Assamese; *Sondali*, *Sonali* in Bengali; *Aragina*, *Kakke* in Kannada; *Saturangulam*, *Svarnaviram* in Malayalam; *Girimala*, *Garmala*, *Bhava* in Marathi; *Garmalo* in Gujarati; *Amaltas*, *Kaniar* in Punjabi; *Kondrai*, *Sarakkondrai* in Tamil; *Aragvadham*, *Sampakamu* in Telugu.

ARJUNA OR QUEEN'S FLOWER

One of the most beautiful roadside trees, the *arjuna* imparts a glorious look to the surroundings. The *arjuna* is planted on either side of the road connecting Nallamolta with Tirunelveli (towns in South India) and it undoubtedly makes it one of the prettiest avenues in the country.

The *arjuna* is a large, deciduous tree growing to a height of 18 to 20 metres. When the climatic conditions are not favourable, it grows only to a medium height. It thrives in damp places and river-banks are better suited for its growth. It is extensively distributed in the forests of Assam, Bengal, Malabar, Travancore, North Kanara and South Konkan.

Growing from short stout stalks, the bright-green leaves are long (10 to 20 cm.) and narrow. They are shed gradually during the winter, but the tree is never really bare. Sometimes, the leaves, before falling, turn a coppery red, making the tree look very attractive temporarily. When leafless, the tree looks rather ugly, with its short, knotty trunk and big twisted bran-

ches. However, new leaves and flowers soon appear from April onwards. The flowers appear in wide, open bunches, which look like pyramids. This continues till June or a little later. The flowers, with their attractive and pleasing colour, provide a beautiful sight. The flower bunch is about 30 centimetres in length. On the same tree and in the same bunch, one comes across flowers of varying shades. The sepals have ridged borders. The petals are 6 or 7 in number and are more or less round in shape with narrow stalks and wavy edges. Because of the crumpled and wrinkled appearance of the petals, the tree is also called the tree of crumpled flowers. The buds near the top of the inflorescence are bluish-green, often tinged with pink. They are usually of a brilliant lilac colour. The stamens are many and much smaller than the petals; they are of equal size and purplish in colour while the anthers are yellow. Although the lilac-coloured flowers are more common, flowers of other colours—bright pink, mauve, red and white—are also found. All are equally beautiful. The flowers have a bright colour when they come out; but they turn pale later.

The fruits are found on the tree all the year round; it is not unusual to find the black fruits of the previous year and the green ones of the current year together on the same tree.

The *arjuna* is one of the principal timber-trees of north-eastern India. Its timber is light, red in colour and quite durable. Because of its quality, the timber is used for constructing boats and houses. The root of this treee is used as an astringent and as a cure for diarrhoea. The bark and leaves are good as a laxative; its juice is a well-known medicine for heart diseases and 'beri-beri'. Fresh juice extracted from the leaves is considered a good remedy for earache. Its seeds, if eaten, have a narcotic effect.

Local names : *Sonaru* in Assamese; *Sondal Bandarlate* in Bengali; *Aragina*, *Kakke*, *Rajataru* in Kannada; *Arjuna* in Hindi and Oriya; *Kritamla*, *Svarnakkam* in Malayalam; *Bhava Garmala* in Marathi; *Amaltas*, *Kaniar*

in Punjabi; *Konnai*, *Tiru Kontai* inTamil; *Rela*, *Arga-vadhanu* in Telugu.

ASHOKA

The *ashoka* is an indigenous ornamental tree and is closely associated with our art and religion since the early days. It grows wild in many parts of Asia which have a wet climate, particularly in India, Burma and Malaysia.

The *ashoka* is a medium-sized tree growing to a maximum height of 10 metres. It has spreading branches and evergreen foliage, which make it so pretty that it is often described as the 'ornament of gardens'. No wonder that, in olden days, a garden was not considered complete without an *ashoka* tree. The trunk of the tree is straight like a bamboo. The branches generally bend towards the ground because of the heavy foliage borne in bunches. The full-grown leaves are of dark-green colour, and are divided into four to six pairs of narrow, wavy-edged, pointed leaflets. The new leaves are red, soft and drooping downward.

The tree flowers all the year round, the blooming being more profuse from February to May or June. The flowers are of small size and are arranged in broad clusters close to the branches. The petals fuse with each other at the base to form a long tube. In the beginning, the flowers are yellow or orange in colour, but later become vermilion. One often comes across a cluster of flowers with different shades of these colours. The flowers have a delicate fragrance which is felt more during the night than in the day.

Both Hindus and Buddhists consider the *ashoka* as a sacred tree. There is a controversy in the Buddhist world about the type of tree under which the Buddha was born. Some of them believe that is was a *palas* while others think it was an *ashoka*. However, Buddhists generally worship this tree as the one under which the Enlightened One began his earthly existence.

The Hindus consider it sacred because it was under the *ashoka* tree that Sita lived in Lanka after her abduction by Ravana. In fact, the *ashoka* tree had close association with Sita's life in several ways and it was one of her favourite trees.

According to the *Skandapurana*, when, after their wedding, Rama and Sita arrived at the bank of the Kaushiki (modern Kosi) in Mithila (North Bihar), Sita was so enchanted by the sight of the river and the surrounding forest of *ashoka* trees that she refused to proceed to Ayodhya until she had spent a few pleasant days in that beautiful environment. An apology of a forest, called Sitavan, is still there. It is the starting place of the Kosi barrage, a joint venture of the Governments of Nepal and India.

In the olden days, women used to celebrate regularly a festival called *ashoka-pushparacheyika* after the *ashoka* flower. On this day, they would pick the flowers and adorn there hair with them. In Bengal, women eat the buds on the 'Ashoka Shashti' day. Hindu women drink the water in which six of these flowers are immersed. This is believed to give protection to their children from worry and grief. The flowers are also offered to gods.

There are a number of stories about this tree. The word *ashoka* for instance, means 'sorrowless', and the tree is regarded as a symbol of love that knows no sorrow. The *ashoka* bloom is said to be one of those five flowers that constitute the five arrows of Kamadeva, the god of love. One comes across many references in Sanskrit literature to the sensitivity of the tree in contact with lovely women. It is said that if a lovely woman, happily wedded, gives it a touch with her foot, it blooms profusely. It is also mentioned that if a pregnant women sprays it with water from her mouth, then it bears fruit.

The beauty of the *ashoka* was very much admired by our ancestors. It was praised by great poets, like Kalidasa, in their plays. Motifs of *ashoka* leaves can be seen in the sculptures at Nagarjunakonda and Sanchi.

All *ashoka* trees do not bear fruit, and this is the reason

why *ashoka* fruits sell at a high price—sometimes at five rupees per fruit. The fruit is claimed to be a cure for a number of diseases of serious nature, including cancer.

Parts of this tree have great medicinal properties. The juice of the bark is a medicine for many female diseases. Its flower is a remedy for dysentery. Its bark, root and leaves are used in preparing various medicines. The wood is used for constructing houses.

Local names : *Ashok or Ashoka* in Bengali, Marathi and Hindi; *Achenga, Kankali, Ashoka* in Kannada; *Aseka, Ati, Osoko* in Oriya; *Ashopalava* in Gujarati; *Asogam, Asogu* in Tamil; *Asokamu, Vanjulamu* in Telugu.

SIRIS

The siris is one of the best-known Indian trees. It is a moderate-sized deciduous tree. It has spreading branches when the surrounding vegetation is not dense. In forests where the vegetation is dense, the tree grows to a great height. It is very often grown along the roadsides and avenues as an ornamental tree. The siris grows wild in the sub-Himalayan region, West Bengal, Chhota Nagpur, peninsular India and the Andaman Islands.

It is known in English by different names, such as, the 'parrot tree', 'women's tongue' and 'East Indian walnut'.

Kalidasa, the celebrated Sanskrit playwright, has described Shakuntala's toilet in the following words :

The Siris blossom, fastened o'er her ear
Whose stamens brush her cheek,
The lotus-chain like autumn moonlight soft
Upon her bosom meek.

The renowned poet, Tulsidas, has compared the tenderness of young Rama with siris flowers in his famous epic, the *Rama-*

yana. The sweetness of the flowers is an attraction for birds and the well-known English poet, Kipling, has decribed the siris trees as an abode of the koel or cuckoo in these words :

Oh koel, little koel, singing on the siris bough
Can you tell me aught of England or of spring in England now?

The siris prefers a damp soil. It does not have strong roots and is frequently uprooted by storms. The leaves are divided into a number of leaflets with unequal sides. The leaves are shed during the months of October and November; at times the leaf-shedding extends up to March. The tree remains leafless for a month or so. New leaves start appearing from April onwards.

The flowers bloom in the months of April and May in small clusters from the axil of the leaves. They are very tender and greenish-white in colour. The flowers are comparatively larger than the flowers of other members of this genus. Its sweet scent, like that of the jasmine, is intoxicating and during the night it travels to a considerable distance. In the famous Sanskrit drama, *Shakuntala,* written by Kalidasa, there is mention of women adorning their hair with siris flowers. That is a proof of its popularity in the days of yore.

The fruits start maturing from August onward and by December all the pods are ripe. The pods remain on the tree for a long time up to May. When the breeze caresses the pods, they produce a sound like that of frying meat.

The wood is hard and durable, and is used for manufacturing sugarcane crushers, cart-wheels and agricultual implements. The siris wood is quite popular in England and is exported to that country in considerable quantity.

It has many medicinal uses. The root is a remedy for headache and eye diseases. The bark is used as a cure for skin troubles, bronchitis and toothache, and also for cold and cough. The juice of the leaves cures night-blindness. The leaves are

used as fodder also. Different parts of the tree are used as a remedy for the bites of various venomous creatures.

INDIAN MEDLAR OR MOULSARI

The Indian medlar or *moulsari* is an evergreen tree with a straight trunk and many spreading branches. It grows wild in the Eastern and. Western Ghats and the Andaman islands. It is planted and grown in the plains and is a common sight in West Bengal, Bihar and many other parts of the country. The *moulsari* is grown mainly as an ornamental tree because of its dense foliage which provides a good shade and fragrant flowers.

There are a number of *moulsari* trees on the lawns of Rashtrapati Bhavan in New Delhi. They enhance the beauty of the lawns. It is also a common sight in compounds of most of the Government bungalows. The two *moulsari* trees at the gates of the Alipur Gardens, Calcutta, provide a grand sight.

The slow growth of the branches is helpful in moulding the tree to the desired shape. The tree is often pruned to the shape of an umbrella.

Its small leaves are shiny, thick, narrow and pointed. The tree is famous for its dull white, star-shaped, fragrant flowers, which make their appearance from March to July. They are shed during the night. In the morning, the ground beneath is covered with flowers and, for this reason, it is often planted on the sides of groves. Hindus offer the flowers to gods. The greatest virtue of the flower is that it retains its sweet smell even when dry. There is a rare variety of the tree which blooms even in winter.

The fruit is borne during the hot and rainy seasons. It is a smooth, green berry ; when ripe, it turns vermilion. It has only one seed covered with juicy pulp. Birds, especially bulbuls, love the fruit. It is delicious and is very much relished by people.

The bark of the tree is sometimes used for tanning leather and dyeing fabrics. The oil extracted from the seeds is used in making paints. The hard and durable wood is used for making furniture, carts, boats, etc.

The tree has medicinal value also. The green fruits and seed are used as a cure of tender gums and loose teeth. *Moulsari* leaves boiled in water make a good mouthwash for curing toothache. The bark is used as a medicine for biliousness and diseases of the gums. The leaf is used to cure loss of consciousness caused by snake-bite. In short, Ayurveda has numerous medicinal uses for this famous tree of India.

KADAMB

The *kadamb* is a tall deciduous tree with straight trunk and spreading branches, which have a tendency to droop. The tree grows in the warmer parts of our country. It is also found in China and Malyasia.

The *kadamb* tree is frequently mentioned in the literature of Sanskrit and other languages in writings about Lord Krishna. In Vrindaban, Krishna used to play flute under *kadamb* trees on the bank of the Yamuna river. After he had left Vrindaban and gone to Mathura and later to Dwarka, the *gopis* or milkmaids, suffering from the pangs of separation, are described as embracing the *kadamb* trees and, forgetting that they were mute objects, asking them: "*Kadamb,* dear *Kadamb,* tell us where shall we find our beloved again?" Even today, one can see large numbers of *kadamb* trees all over this area. Barsana nearly 48 km. (30 miles) from Mathura, is known as the birthplace of Radha; it has numerous groves of *kadamb*.

There is a rare variety of *kadamb* with cup-shaped leaves. A popular legend is attached to it. It is said that the milkmaids of the neighbouring villages used to pass through a narrow passage between two hillocks while going to the market to

sell their milk products. This passage, called 'Sankri Khoh', is still there. One day, the milk-maids were going that way. Krishna who was there tending his cows, playfully blocked the way and wanted a tax to be paid to him for giving them passage. The maids refused to pay and tried to move forward. Krishna thereupon signalled to his friends who came out of hiding and took away all the curd the girls had. But, they had no pots in which they could eat the curd. So, Krishna, with his divine power, turned the leaves of a nearby *kadamb* tree into cups. Since then, it is said, the leaves of that particular tree and its progeny are cup-shaped. The story may be true or not, but the fact remains that the leaves of the *kadamb* trees found near Barsana are very uncommon.

The leaves of this tree are broad and good looking. The leaves of young trees are broader than those of older trees. The are shed during the winter.

It flowers at the beginning of the monsoon season. The flowers have a sweet smell and are as big as a golf-ball. They are a combination of many small flowers in a compact spherical head. The petals are of orange colour, but the stigma in white. A strong twig may carry many such flowers. These golden flowers are among the prettiest objects of nature, and have made the tree famous.

The flowers are offered to gods by Hindus. It is said that Goddess Shakti spends some time on *Kadamb* trees. The fragrance of these flowers has often been compared with the smell of fresh wine.

The fruits ripen towards the end of the monsoon. They are pleasantly flavoured and are eaten, both raw and cooked.

The wood is soft and white. It is used for making beams, rafters, boxes, etc. The bark is a remedy for fever and is made into an invigorating tonic. The leaves are used in a decoction for throat gargle.

TEMPLE TREE OR PAGODA TREE

The temple tree is quite common around the holy places of Hindus, Buddhists and Muslims alike. It is considered a symbol of the eternal life, as it flowers even when rooted out of the earth. Muslims plant it near graves and Hindus around the temples. It has an appealing fragrance. Other names of this tree are 'Dead Man's Flower' and 'Gul-e-Chin.' Because of the name 'Gul-e-Chin', *i.e* the flower of China, it is believed to be a native of China. China, however, is not its homeland; it is a native of Mexico and Guatemala in Central America and in all probability, might have been introduced into this country through China.

It is a short, deciduous tree, about six metres in height. It has stiff, stout and spreading branches. The tips of the branches are blunt and swollen, giving an ugly appearance to the tree when leafless. The leaves are long, sometimes about 30 centimetres long, and they are more crowded near the tips of the branches.

The leaf is broadly lance-shaped and has veins, which run parallel to each other from the mid-rib to the leaf-margin. The leaves are shed in the winter and the tree remains leafless up to the beginning of the rainy season. It is, however, a common sight to find young trees bearing leaves throughout the year.

The flowering starts from February and extends up to October. Often, the flowers appear on branches before the leaves come out. It is not unusual to find the tree in bloom throughout the year. The flowers grow in stiff clusters on thick. fleshy, pinkish stalks. They have different combinations of colours in the petals—white, red, pink and yellow. The flowers are bright yellow in the centre, and the outer surface has a tinge of pink.

The fruits are borne in pairs and are long, cylindrical and pendulous pods. The fruits rarely contain seeds. The fruits ripen during the months of October and November.

Its cuttings on contact with the earth, take root as quickly and surely as those of cacti.

A milk-like juice exudes when injury is caused to any part of the tree. Because of this peculiarity, it is also called *Krishna Champa* in Sanskrit.

This tree has many medicinal uses. The milky Juice of the branches is a good medicine for gout. When mixed with sandal paste and camphor, it acts as a cure for eczema. Its buds, chewed with betel leaves, cure ague fever. The bark is used for treating fever, diarrhoea and boils. It helps in correcting enlarged glands. The root and bark serve as a laxative. Poultice made from its leaves cures swellings.

JACARANDA

A beautiful flowering tree, the jacaranda is a native of Brazil. It was introduced into this country about two centuries ago. The jacaranda is a medium-sized, deciduous tree. Ordinarily, its height is 4 to 9 metres, but it may grow up to 18 metres under very favourable conditions. The tree prefers sandy soil.

The leaves are elegant, of large size and divided into 9 to 16 or more pairs of pinnae, which in turn bear small leaflets in opposite pairs. The leaves are about 35 centimetres long. This gives the leaf a resemblance to the fern. Fresh leaves appear during March-April.

The flowering period is quite short. The tree may start flowering any time from March to May. Old trees, however, flower at odd times. The flowers are borne in loose clusters at the tips of branches. Each panicle may have 40 to 100 flowers. The five petals fuse to form a long slender, curved

tube, swollen at the top. The tube widens towards the free end and forms two lips. The upper lip formed by two petals has two rounded lobes, which are curved upwards and have white smudges; the other lip, formed of the remaining three petals, is long and straight. The flowers resemble the fox-glove bloom. The colour is generally a deep mauve-blue. The fruit is a rounded, flat, woody capsule bearing numerous seeds.

The jacaranda is a graceful avenue tree. It has medicinal uses also. Infusions of its leaves are used for the manufacture of drugs for healing wounds; bark infusions serve as a lotion for washing ulcers. The bark and leaves are used for treating syphilis and gonorrhoea. The medicinal uses of this tree have not yet been fully investigated.

Its wood is slightly fragrant. The streaks of purple and black colour add to the beauty of the wood.

HARSINGAR

The *Harsingar* is a small tree with thick bark and numerous branches. It is deciduous. The tree is a native of northern, central and north-eastern India. Practically all the gardens in these regions have *harsingar* trees.

In English, it is known by several names—Tree of Sadness, Indian Mourner, The Sorrowful Tree, etc. Its flowers that fall off during the night are taken as tears that the tree sheds for some unknown woe of which we human beings are not aware. That is the poetic conception.

The leaves are pointed and grow on short stalks in opposite pairs. The tree bears leaflets during the summer; with the advent of rain, new foliage appears, followed by flowers during the autumn.

The tree is famous for its exceedingly fragrant flowers that bloom during the night. They are borne in small, dense clusters

at the stalk-ends. Their petals are partially joined, giving the flower the shape of a tube. The colour of the free upper part of the petals is pure white, while the lower, tube-shaped part is a bright orange. The flowers are honey-scented; they start blooming just after the rains and continue to do so for a couple of months. The fallen flowers are gathered in the morning and used by Hindus for worship; normally the Hindus do not offer fallen flowers to gods.

A number of legends are woven round this tree. According to one of them, Lord Krishna brought it to earth from heaven. No wonder that it has figured prominently in the Sanskrit and other literatures of India. The world-renowned poet, Rabindra Nath Tagore, has written poems on it and so have many, others. In Sanskrit, it is known as 'Parijat' and in Bengali as 'Shefali' and 'Sinli.' *Parijat-Haran* (the robbing of the Parijat) is one of the famous books in Sanskrit based on this flower.

The Muslims in India often plant it near tombs which, by the morning are covered all over with its white-*cum*-orange flowers.

Propagation of the *harsingar* is done through seeds and it needs renewal after three or four years. It cannot stand waterlogging and, during heavy continuous rains, often withers and dies. Numerous small plants keep on growing beneath old trees and take the place of the old ones.

The orange tubes of the flowers are used for dyeing silken or cotton fabrics in a beautiful buff or orange colour. Their sweet fragrance too is imparted to the cloth, but, unfortunately, the colour is not permanent. In Burma, Buddhist monks use them for dyeing their robes.

The wood, though fairly hard and close-grained, serves no purpose except as fuel. The bark is used as an expectorant and for tanning. The roots of the tree are edible. The flowers are used for preparing a kind of tonic. The leaves are employed as a cure for fevers, rheumatism and sciatica, while the

seeds are a remedy for skin diseases. The oil from its bark cures pain in the eye.

INDIAN CORK TREE

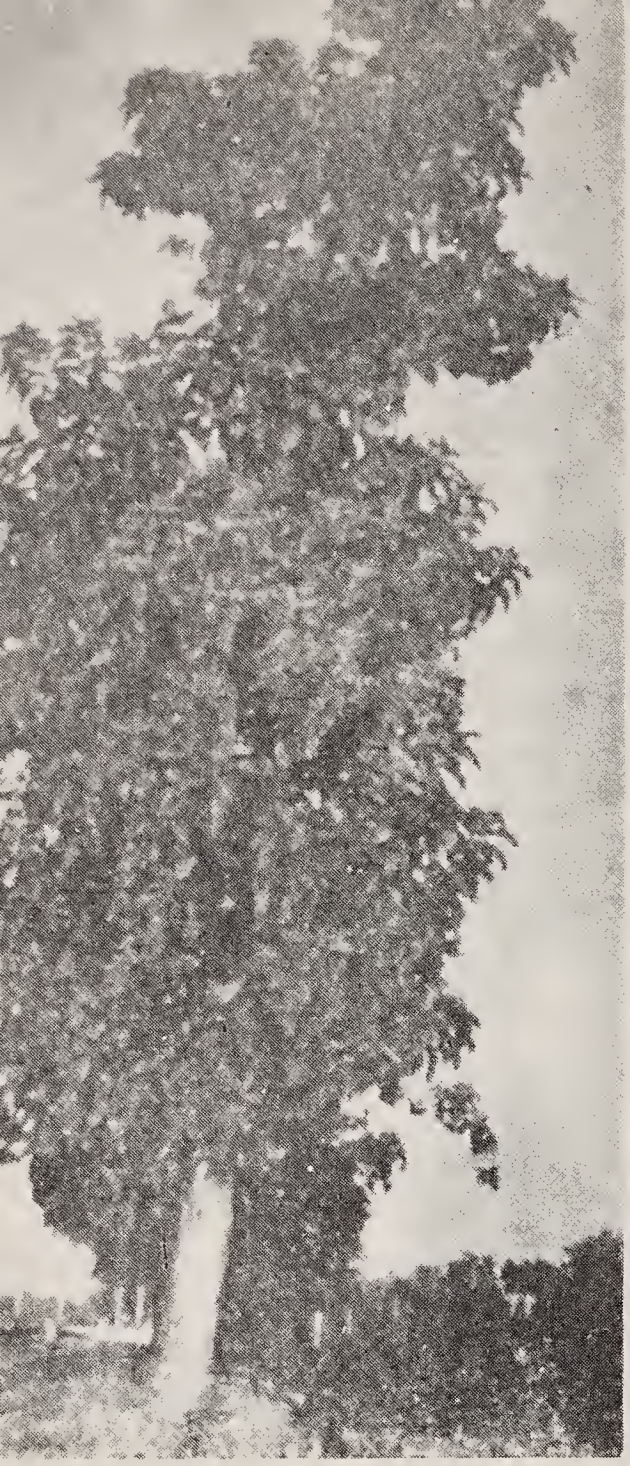
The Indian cork tree is found in most parts of our country. This tree is a native of Burma and Malaya. It is an important ornamental tree planted mainly in gardens and along avenues. A fast-growing tree, it has an elegant, straight trunk. Its average height is about 18 metres and the branches are comparatively few.

The leaves are 45 to 50 cm. long; the mid-rib bears two to three pairs of branches or pinnae, each of which in turn bears five or seven broad leaflets. The leaflets are 5 to 8 centimetres long and have wavy edges. The leaflets near the tip of the mid-rib rise directly from it. There is also a terminal leaflet. Although most of the leaves are shed during the months of January to March, the tree is rarely completely bare. The foliage reappears during the months of April and May.

The flowers continue to bloom from August to December. The upright open clusters of flowers appear at the ends of the smaller branches, forming a silvery white mantle over the green foliage. The waxy petals fuse to form a long, slender tube, but are free at the open end. One of the petals is larger than the rest and has a cleft. The stamens are conspicuous and have yellow anthers. The flowers are snowy white, and are often flushed with pink. The life of the flower is very short; it falls off soon after opening, with the result that the spray mostly consists of buds. The flower is pleasantly fragrant. In India, the trees do not bear fruits very often. The fruits are long, narrow and tapering at both the ends.

The cork tree is propagated mainly through the root-suckers which are borne in profusion. These grow rapidly. It

The delicate oleander tree. This variety has white flowers.



The tall and straight teak-wood tree

In a forest of sal trees

The khair is commercially a important tree

The leaves and fruits of the ritha or soapnut tree

The cup-shaped leaves of the Krishnavat tree

The huge banyan tree with its spreading branches. The hanging roots grow downward and into the soil to form new trunks.

is not uncommon to find the tree attaining a height of nearly 15 metres in a period of 12 years.

The wood is soft. It is mainly used for making furniture and ornamental articles. A kind of cork, though inferior to the real one, is also obtained from it.

Local names : *Akash Neem, Nimichamboli* in Hindi; *Akasnim* in Bengali; *Katesam* in Malayalam; *Cowlanim, Namichanbel* in Marathi; *Beratu* in Kannada; *Karakku, Ketmalli* in Tamil; *Maruki, Akashamalle* in Telugu.

THE CORAL TREE

The coral tree makes a fine ornamental and shade tree. Its original home is in India and Malaya. In India, it can be seen growing wild along the coast and in some of the deciduous forests. The tree grows to heights varying between 7 and 18 metres. Its trunk is straight. The branches wear a gnarled and rugged look, and bear small conical prickles which fall off as the tree grows older.

References to the coral tree are found in the *Mahabharata.* It is said that Lord Krishna stole the flowers of the coral tree from the garden of Indra, the King of the Devas, and that Rukmini and Satyabhama, wives of Lord Krishna, quarrelled with each other to possess them.

The coral tree is planted mainly as an ornamental and shade tree since it is quick-growing and has a dense foliage during the hottest months of the year. It is said, that the soil benefits from the cultivation of this tree. The coral tree is grown also as a hedge to protect the gardens, and as a supporting tree in plantations of pepper and betel-vines.

The leaf consists of three leaflets, two placed opposite to each other at the base and a terminal large one. The leaves

are shed during the beginning of winter. The young trees, however, do not become entirely leafless.

Its flowers appear during the months of February and March when it is still leafless. They come either as single flowers or in clusters arranged at the ends of small branches. The flower is large in size and has a bright, deep-red colour. The flowers and buds are arranged in whorls around the stalk. The flower, in the bud stage, is covered by a brownish sheath. At the time of bloom, the sheath splits open along the back, exposing the five petals to light. One of the five petals, situated at the base, is oblong and pointed, and encloses the remaining four small petals arranged in two pairs. One pair has a rich hue of deep red. The stamens are long and are also red in colour. The flowers have no fragrance. The coral flowers attract a large number of birds, such as, crows, mynahs, babblers, tailor-birds, etc.

The pods appear soon after the flowering is over. Their colour varies from green in the beginning to black as it ripens. The pod contains egg-shaped, brown, red or purple seeds numbering up to twelve.

The tender, new leaves are used in making curry. Coral tree leaves are used also as fodder for cattle and as green manure.

The bark is utilized in the tanning and dyeing industries as also for obtaining fibre. A dye is obtained by boiling the dried flowers.

The tree has a few medicinal uses too. The bark is used as a cure for dysentery and as a medicine for reducing fever. The juice extracted from the leaves helps to relieve pain in the joints, ears and teeth.

OLEANDER OR KANER

The oleander or *kaner* is a beautiful bushy tree. It was

introduced into this country from outside. The West Indies and South America were the original sources of yellow *kaner* and the Mediterranean region provided the white and red varieties. It grows wild throughout our country and is more commonly seen in the dry regions. It is an evergeen tree and grows to a height of 5 to 7 metres. Its bark is thin and reddish-brown in colour. The branches are thin and long.

In India, the oleander, like the pagoda-tree, is often planted near the temples. It serves as a good hedge for compounds since cattle and goats do not eat it. According to Hindu mythology, it was a favourite tree of Lord Krishna who, in his childhood, used to wear the flowers of this tree on his ears. Its flowers are, therefore, considered sacred and are offered in worship to gods, especially to Lord Shiva.

The leaves have a peculiar shape. They are very narrow and long, and practically without the leaf-stalk. They grow in spirals and are more crowded near the tip of the branches.

Its flowers are large and come out in bunches among the leaves. They look like a funnel-shaped tube. The common variety is yellow in colour but there are varieties of other colours too, namely, white, lemon-yellow and pink. At times, flowers with two different colours can be seen on the same tree. The flowers have a pleasant fragrance. The tree blooms practically throughout the year, though a heavy flush takes place during the rainy season. Its fruit has an unusual shape and is blackish in colour when fully ripe.

Oil extracted from its seeds burns well and without smoke. Its wood is hard, but of no particular use. A highly poisonous milky juice comes out of its branches. Its seeds too are poisonous and have a bad effect on the heart. Often, grazing animals eat the seeds and die; one has, therefore, to be very cautious in the use of any part of this tree. Its roots are used as medicine in the treatment of skin diseases like ringworm, leprosy, boils, etc.

TEAK OR SAGWAN

The teak or *sagwan* is one of our best timber trees. It grows in all parts of our country, except in very hot and dry or cold regions. A warm and uniform climate and a well-drained soil are best suited for the growth of this tree. The timber of trees growing in Malabar, Travancore, Karnataka and Coorg is much better than that of trees growing in Bihar, Uttar Pradesh and West Bengal. The Burma teak is considered to be the best and is, of course, the costliest; articles of furniture made of Burma teak are highly decorative and very durable.

The *sagwan* tree has an erect trunk of considerable girth, with a number of branches. Under favourable conditions, the tree attains great dimensions. In an exceptional case, the tree grew to a height of 57 metres with a girth of 7 metres a little above ground level.

The leaves of this tree are large (30 to 60 cm. long), broad and pointed. Being a deciduous tree, it sheds its leaves on the advent of the spring season. New leaves appear by May and June. There is an interesting method to identify *sagwan* leaves. If the leaf surface is scratched and rubbed with saliva, a red colour will emerge.

The flowers are small, whitish in colour and grow in large and open clusters at the ends of the twigs. The petals are joined at the base to form a small tube. The profusion of white flowers makes the tree conspicuous from a great distance. The tree bears flowers from June to August. The fruits ripen from November to January. Its seeds are very small and take a long time to germinate. The growth of this tree is, however, very quick, provided the propagation is done by planting its branch.

Its wood does not warp and is considered to be the most durable. Besides furniture, it was largely used for building ships. Railway coaches and sleepers are also made of it. The

wood contains a kind of slightly but characteristically scented oil, which has the chemical property to immunize it from white ants and other insects. The oil thus acts as a preservative. Sagwan is one of the best grained timbers of the world—one cubic foot weighing about 20 kg.

It has numerous other uses. A red and yellow dye is prepared from its leaves. The leaves are often used for packing, for preparing crude plates and rough umbrellas. From the hollow of the tree, a kind of substance is secreted which is eaten with betel leaves in the South. The juice of the flowers helps cure colds, and its oil promotes the growth of hair. Its wood-dust is a cure for headache, loss of appetite and acidity.

In many parts of the country, the *sagwan* in also grown as an avenue tree, for its majestic appearance.

SAL

Among the best timber trees of India, the *sal* is a large and spreading tree. Its trunk is clean and straight. The crown, elongated in the beginning, gets rounded when it grows older. It is known for its elegant look and majestic height. Under favourable conditions, it reaches a height of up to 36 metres.

It grows well in a well-drained and moist sandy and loamy soil. Both the hilly tracts and plains are equally suited for its growth. That is why it is found in abundance in the foot-hills of the Himalayas in Nepal as well as in the forests of Madhya Pradesh and Orissa. It is also found in Assam, West Bengal and Chhota Nagpur in Bihar. However, *sal* of the best variety is grown in the 'Saranda' area of the Singhbhum district in Bihar.

The popularity of this tree in this country can be gauged from the innumerable tales that are extant in regard to this tree. In the Buddhist *Jatakas,* there are numerous references to it. The famous Lumbini forest, which was so dear to the mother of the Buddha, was a forest of *sal* trees.

There is an interesting story about this tree. Many years ago, there lived a king named Brahmadatta. He was very fond of building palaces. Once it came to his mind that he should construct a royal audience hall, which should rest on only one pillar. He called the royal architect and asked him to find out a tree from which a pillar strong enough for the purpose could be made. The architect went out in search and found in the very garden of the king a great *sal* tree, which was centuries old and was an object of worship for the members of the royal family as well as for the public. The king ordered the tree to be cut. A 'devata' residing on this tree was so upset that, during the night, he entered the royal bed-chamber. Immediately, the chamber got illuminated. The king became frightened and with folded hands asked: "Who are you, O great soul and for what purpose have you come here?"

"O' King," said the Devata, "I am the tree of fortune in your garden. I have been there for the last sixty thousand years, but never did any king order that I should be cut down. It is you alone who has thought of my extinction. Reconsider your decision, O' the King of this holy city."

"Devata ! There is no other tree as pretty as you. As a pillar you will look far prettier and anybody seeing you will get enchanted" replied the King.

"However, if that is your will, you cut me, but for Heaven's sake, first cut the head, then the trunk and lastly the lowest portion of mine. Please do not cut me all at once " said the tree-god.

"But it would be more painful, cutting you in parts." replied the King.

"There is reason for it O' King", spoke the Devata again, "It is true that it would be more painful for me, but it would save my children, the small plants born of me, that live under my shade and shelter; if the tree is felled all at once, they will all get crushed and die. It is better that I suffer more rather than they get destroyed."

The King was moved at these words. Tears came to his eyes. "You remain where you are and rule over the garden as before," said he. The Devata blessed the King and vanished.

Two important facts emerge from this parable, namely, that the *sal* is reputed for its strength and that numerous small trees grow under it and create a thick forest. That is why, even though year after year *sal* trees are cut, the forest never gets completely denuded, as new trees keep on growing.

Poet Kalidasa, in his famous book *Raghuvamsa Kavyam*, compared King Dilip with this tree and said that he was as tall as a *sal* tree and thereby paid a tribute to its loftiness.

The *sal* tree is seldom leafless. For a short period (from February to April), the tree becomes practically bare in dry regions; in other places, the foliage only gets somewhat sparse. Its mature leaves are glossy and 10 to 20 cm. long. The fresh leaves make their appearance from February to May, depending on the locality. The small whitish flowers appear at the beginning of the spring season or a little earlier, when the tree is partially leafless. The seeds ripen from June to July and then begin to fall. They immediately start germinating; often the seeds begin germinating while still on the trees. This does not happen in the case of any other tree.

The *sal* forests are the chief source of revenue to Nepal. The reckless cutting of *sal* forests during the Rana regime there has had a very baneful effect on North Bihar, which is close to the Himalayan foothills where these forests are situated. The *sal* forests on the Himalayan side of this tract used to act as a check to erosion by the violent flow of water from the mountains during the rainy season. The fury of the floods was also lessened to a great extent. Since these foothills were denuded of *sal* trees, the volume and speed of waters of the numerous rivers that flow from this part of the Himalayas into North Bihar, have increased immensely and the devastation caused by the flooded rivers, year after year, is now terrible.

The *sal* plays an important part in the life of the tribals living in Chhota Nagpur. Their villages are situated in the

midst of the *sal* forests. One of the chief sources of their livelihood is the sale of the dry twigs of *sal* trees which they collect and sell in the markets.

As the timber of the *sal* tree is exceedingly strong and durable, it is largely utilised in the construction of railway sleepers, railway carriages, house-beams, etc. On tapping, the tree yields a white substance which is burnt as incense.

SHEESHAM

The *sheesham,* is another important timber tree of India which grows throughout the country. It is a large, deciduous tree which sheds its leaves in autumn.

The leaves are divided into small, rounded leaflets. The leaflets are borne on the mid-rib alternately. The terminal leaflet is longer than the rest. The *sheesham* tree remains leafless only for a short time. In early spring new leaves appear, followed by flowers that are small and shaped like the pea-flower. Yellowish-white in colour, they are very fragrant. The flowers appear in bunches from the leaf axils. The stamens form a tube with a slit on the upper side. The fruits ripen during the months of November, December and January. They are thin and strap-shaped and contain a few flattened seeds. When ripe, the fruits get scattered by wind and water.

There are two prominent varieties of this tree, one having a deep brown colour and the other black. The black *sheesham* timber makes better and prettier furniture and is naturally costlier. The brown one, however, is more common.

The tree is propagated both by seed and grafting. Often it is planted on roadsides, on the boundaries of farms and in plantations. With the passing of years, the trees grow quite tall and acquire considerable girth. They produce good planks suitable for making tables, almirahs and other pieces of furni-

ture. Since *sheesham* wood is hard, durable and well-grained, it is extensively used for furniture-making and boat-building.

An oil extracted from its seeds is a cure for skin diseases. Its wood dust is used as a remedy for leprosy and other skin eruptions.

TOON OR INDIAN MAHOGANY

A tall, quick-growing tree with speading branches, the *toon*, grows in all types of soils. A damp soil induces better growth than hard soil. The *toon* grows wild in most of the hot parts of India, Burma and Malaysia. In India, one can see them in plenty along the sub-Himalayan tract, the valleys of the outer Himalayas, Assam, Chhota Nagpur, the Western Ghats and the hills of peninsular India.

It is a good avenue tree and gives the roadside a pretty appearance. However, a superstition attaches to this tree that it is unlucky. People who believe in this superstition do not plant it in the vicinity of their houses.

Its leaves are shed in the early part of winter. Fresh ones make their appearance during spring and these are often reddish in colour. However, when mature the leaflets turn bright green. The leaves are long, graceful and divided into two rows of leaflets. Each leaflet is curved and generally has unequal sides.

The flowers appear during February-March, soon after the appearance of fresh leaves. The flowers grow in open clusters at the end of the branches. They are white, with an orange-coloured centre, and are honey-scented.

Its fruit has the shape of a small elongated capsule. When ripe, it ruptures and liberates the winged seeds.

Its timber is very light, and is widely used in the making of musical instruments like sitar, tanpura, etc. The big and round part of these instruments is made of this wood. It is also

used in furniture-making and carving. The fragrance in its wood makes it highly suitable for making cigar boxes. The wood is reddish in colour. It seasons quickly and does not warp or break, nor is it eaten by white ants.

Its bark is endowed with medicinal properties. Form its flowers a yellow dye is prepared. In olden times, women of our country used to colour their clothes with the dye prepared from its flowers. The sweet fragrance of the flowers used to get transferred to the cloth along with the dye. Even its dried flowers have a sweet smell.

BABOOL

The *babool* is one of the most common and widely distributed evergreen tree of the country. It is of considerable economic importance. The *babool* is found in abundance in the forests of the Punjab, Bihar and the Western Ghats. It is a shrub-like tree full of white-coloured thorns. The trunk, in most cases, forks near the base.

You might have seen the nest of the baya or weaver-bird. It is long and cylindrical and you can find a colony of them hanging from the branches of this tree. For some unknown reason, the *babool* is a favourite with these birds. It is also a favourite tree for the grey shrike or 'Lahtora', a bird that preys on smaller birds. Its fondness, however, is understandable. It hangs its kill on the spines of the tree and then eats it at leisure.

The *babool* thrives in dry inland regions, where, unlike most other trees, it finds sufficient nourishment. The ability of the tiny leaflets to fold flat during excessive heat endows the *babool* tree with a greater chance of survival. Also helpful is its capacity for doctoring injuries caused to it by exuding a gum which rapidly coagulates and heals its wounds. Its seeds germinate better if first boiled in hot water; otherwise they may take even a year to germinate.

The *babool* leaves are small, greyish or bluish-green in colour and are divided into a large number of leaflets. These minute leaflets are arranged in rows on either side of the branches of the mid-rib. This gives the leaves a delicate feathery appearance. Each leaf has a pair of sharp spines at the base. These spines protect the tree from being eaten away by goats and cows. The old trees are less thorny than the younger ones.

It flowers mostly during the rainy and cold seasons. The flowers are yellow and are found in clusters of spherical shape at the end of slender stalks, rising from the axils of the leaves. The pods or fruits are borne singly and are scattered along the branches. They are 7 to 15 cm. long, narrow, stiff and leathery. Each fruit contains about a dozen seeds.

The *babool* is a tree of considerable economic value. It has many uses. Its leaves are used for medicinal purposes, *e.g.*, as a tonic and a cure for eye-sores. Its wood is quite hard and durable and is widely used in making wheels, agricultural implements, wheat crushers, tool handles, boats, oil-presses, etc. It is even used for making railway sleepers. It is also used as fire-wood and makes good charcoal. Its thorny branches are often used for fixing fences.

Its bark contains an acid which is good for tanning leather. In the villages, a decoction made from it is used as a substitute for soap. The bark and unripe pods are strong astringents. The unripe pods are used for making a medicine for throat gargle, and also for making a kind of ink. The pods are also rich in tannic acid.

A gum extracted from this tree is used for dyeing and cloth-printing. It is also used as a tonic and as a medicine for cough and lung troubles. A sweetmeat is also prepared by frying the gum. Its flowers are a remedy for insanity and the bark-dust for snake-bite. In some parts of the country, its bark is ground and mixed with flour and consumed as food. From the root-bark a kind of country liquor is also prepared. In short, the *babool* tree has numerous uses for the country-folk.

At several places in the country, dense *babool* forests can be found ; at least one *babool* tree is found in almost every cultivated field of northern India.

The *babool* spines are often used as pins. During World War II, when pins became scarce, even the Government offices used them as a substitute for steel pins.

KHAIR

The *khair* is a medium-sized bushy tree. Its nature is gregarious and, usually, it is found in fifties or hundreds. The trunk is slender and the branches are rather drooping and armed with twin, hooked prickles. The leaves are shed in early summer and the new ones appear in the month of June. The small white flowers appear in July or August.

There are two varieties of the *khair* tree. The first one grows wild in the sandy soil of river-banks and also along the foothills of the Himalayas from the Punjab to Assam. Trees of this kind are also found in abundance in Bihar, Uttar Pradesh, Konkan and Kanara. It grows even at a height of 900 metres, where the rainfall is quite heavy. The second one is found in the dry parts of the Karnataka plateau and on the lower slopes of the Nilgiris. The propagation of the *khair* tree is done through seeds.

The *khair* wood is quite hard and is used for making agricultural implements, cart-wheels, house-posts, charcoal, etc. But its greatest use is in preparing 'kattha' which is an imporant ingredient of the betel or 'pan'. Chips of its hard wood are boiled for preparing 'kattha.' In North India, no one would chew 'pan' (betel) without this paste. Its wood is also used for dyeing and tanning.

The well-proportioned fig tree

The gular tree with a profusion of fruits.

The majestic peepal tree with its glistening foliage

The margosa or neem tree provides a good shade and is well known for its antiseptic properties

The drumstick is a picturesque tree

WHITE TEAK OR GUMHAR

The *gumhar* is a large deciduous tree with whitish bark and spreading branches. It is found in most parts of the country. The tree is not of a gregarious nature and, unlike teak, it is never found in abundance. It grows well in fertile soils having good drainage. Besides some parts of Assam, West Bengal, Bihar and Orissa, the foothills of the eastern Himalayas are very suitable for its growth.

The leaves have the shape of the human heart and have long points and lengthy stalks. They are arranged in pairs, opposite to each other. The leaves of old trees have smooth edges while those of young ones have toothed edges. The leaves are generally shed in January-February. New leaves appear in March-April.

The flowers grow in long clusters of brownish-yellow colour from February to April, when the tree is more or less bare of leaves. The flower is tube-shaped with two spreading lips at the free end. The fruits ripen from April to July. They are small-sized, smooth and shaped like a pear. When ripe, the fruits take an orange-yellow colour and are very juicy.

The wood is yellowish or greyish-white in colour, soft and even-grained. It is light but strong and seasons well. It does not warp or crack. The *gumhar* resembles teak in several respects and is, therefore, called 'white teak' in English. It is used for making drums, planks, panels, furniture, boxes, and for ornamental work. Its durability in water is well-known and it is often used for making boats. Because of its lightness, the wood is highly suitable for making matchsticks.

The tribals, especially the Gonds living in the forests, are fond of *gumhar* fruits and the Santhals of Chhota Nagpur use its ashes and fruits for dyeing. The yellow juice of the fruit is used by tribal women for dyeing their fingers.

The tree lends itself to numerous medicinal uses. The root provides a medicine for treatment of stomach-ache and fever, while the flowers are a remedy for blood diseases and leprosy. The fruit is a tonic and is used to promote growth of hair. It is also a remedy for anaemia, ulcers and leprosy. The juice of the leaves is used as a lotion for cuts and ulcers.

SOAPNUT OR RITHA

The soapnut is a handsome deciduous tree with spreading branches. It grows in most parts of northern India, but actually is a native of the South. In the valleys of the western Himalayas, it grows up to a height of 600 to 1,200 metres.

The leaves are divided into two to three pairs of leaflets, the terminal pair being the largest. The leaves fall off in December-January and the tree remains leafless upto March or April. The flowers appear in bunches from May to June in the North and from October to December in the south. They are white or purple in colour. The fruits ripen in November in the North and during summer in the South.

The most useful part of the tree is its fruit. The fruit has two to three partially joined, round fruits. It contains a substance called 'saponin'. When mixed with water, its forms a lather which is employed as a substitute for soap. Its pulp is used by the soap industry. It is used for washing all types of clothes, cotton or woollen. It is also used as a shampoo for the hair.

The fruit has medicinal properties too. It is employed in the treatment of diseases like asthma, hysteria, epilepsy, etc. It is also used for external application in cases of snake or insect bite. One of the varieties of this tree is known as 'aritha' in Hindi. Its leaves are longer and more slender and the flowers are greenish-white. Its seeds are used for removing freckles from the skin. A solution of its fruit is used in curing skin diseases, and

the powder of the seed is used as an insecticide. The fruit, however, is mainly used for washing woollens, fine fabrics and hair.

TAMAL AND KAREEL

These two trees are famous because of their close association with the Krishna legend. Mentioned very frequently in the Krishna lore, they are found in abundance in the districts of Mathura, Agra, Aligarh and other adjoining districts of Uttar Pradesh.

The *tamal* is a small-sized bushy tree which looks like a bower. It sheds its leaves in autumn, but the new leaves appear soon after. The leaves are narrow and pointed, and more or less of the size of a big *tulsi* leaf. The flowers are small and yellowish, somewhat like the flowers of the neem tree. It is one of the favourite abodes of birds like the dove, which prefer to build their nests in its bower.

The *kareel* tree is more or less of the same size as the *tamal*, but its branches are like those of a creeper and full of pointed thorns. These thorns are in pairs and look like pins ; in between the two, there is a leaf which has no leaflet and has the appearance of two pointed spikes. From a distance, it looks as if the tree has nothing else besides thorns. There is a saying in Sanskrit pertaining to this tree : "If the *kareel* branches have no leaves how can the spring be blamed for it ?"

The *kareel* flowers during the spring season. Like those of the 'flame of the forest, the flowers are red but very much smaller in size. The fruits are like those of the neem tree and are round and small. When fully ripe, they take on a scarlet colour. The unripe fruits are used for making pickles that are very popular in Uttar Pradesh. They are known as 'taint' and are very pungent in taste.

BANYAN

The banyan or *bargad* hardly needs any introduction to the people of this country. It is rare to come across a village without a banyan tree, spreading out its horizontal branches majestically. The English name of the tree has an interesting origin. It is said that, in ancient times, there was a tree like this near the Persian Gulf. The 'banias' or the businessmen from India used to camp under the tree when they visited that place and thus it came to be known as the banyan tree. This word was later adopted in English as a name for this type of tree.

The banyan occupies an important place in the religions and art of this country. Old banyan trees are considered to be inhabited by ghosts and spirits. No wonder that this big tree with its snake-like extended arms instils, in darkness, a fear in the hearts of people. Planting the banyan tree along with the *peepal* in front of the house is considered good for the prosperity of the resident. Generelly, the tree is planted on the eastern side of the house.

During the time of the Buddha, the banyan tree was worshipped for begetting children. The women worshipped it on the new moon day of the month called 'Jyaistha' (May-June). The festival is called 'Vat-Savitri'. According to mythology, Savitri worshipped this tree on this day to save the life of the beloved husband Satyavan.

According to Hindu mythology, when creation comes to its cyclic end, there is a deluge and the earth is covered all over with water. Then, from beneath the endless water, springs up a banyan leaf on which rests the incarnation of God Vishnu as a small baby sucking his toe. There comes out a lotus from the navel of this child. On this lotus is seated Brahma, the creator. Brahma then creates a new world. It is this legend that has imparted sanctity to this tree.

In a cave at Ellora, there is a carving of a banyan tree, under which Indra is shown sitting on an elephant. In a number of Rajput Paintings also, one can see the figure of Narayana (Vishnu) sucking his toe, lying on a banyan leaf.

There is a peculiar banyan tree at a place called Gopepur in the Saran district of Bihar. The tree has the look of a massive umbrella, covering nearly an acre. Its leaves are so closely set that one standing under the tree during the heaviest rain would not get wet. Botanists from abroad come to see and photograph the tree, as this variety is not found anywhere else.

There is a variety of this tree called 'Krishnavat', the leaves of which are doubled near the base and are cup-shaped. There is an interesting legend regarding the tree. It is said that when Krishna was young, he used to graze the cows in the jungle and would often play on his flute. The sweet melody flowing from his flute would charm and attract the milk-maids from the neighbouring villages. They would carry with them butter or curd which Lord Krishna relished very much. One day, it so happened that the 'gopis' or milk-maids brought with them a large quantity of butter. Krishna said, "Let us have a feast together". The milk-maids agree, but there was only Krishna's cup. How were the others to eat and drink without more cups ? There was a banyan tree nearby. Krishna, with his Divine power, turned the leaves of the tree into cups in which they ate the butter to their heart's content. Since then the leaves of that tree are said to have become cup-shaped permanently. Through the seeds of this tree, the species has been propagated to distant places. It has a pretty look, but is not as massive a tree as the other one.

From the branches of banyan trees come down aerial roots which look like sturdy ropes. Some of these roots come down to the ground below and get into the soil. Later, they form auxiliary trunks. These help the tree to spread out widely. Often, the main and the older trunks die and the auxiliary trunks take over the function of these trunks. Many old trees have large cavities with space sufficient for a main to sleep in. It is

said that hermits used to live in these cavities.

Old trees sometimes spread out on to several acres of land. The gigantic tree at the Sibpur Botanical Gardens, near Calcutta is one such tree. At a place called Barchicholi in Madhya Pradesh, there is a tree spreading over two and a half acres. Another at Kamtoul in the Darbhanga district of Bihar occupies over three acres. There was a tree in Andhra Pradesh which had a circumference of six hundred metres. This tree was supported by about three thousand trunks or aerial roots. It is said that nearly twenty thousand men could easily sit beneath this tree. This great tree died a few years back. It is not unusual to find trees that are centuries old.

The leaves are broad, oval, leathery and with short and stout stalks. In the bud stage, the leaves are covered by two large scales. When the leaf opens, these scales fall off, leaving a ring-like mark on the stem at the base of the leaf stalks. New leaves appear during February-March and sometimes during September-October also.

To a layman it would appear that the banyan tree does not bear any flowers. In fact, the fig itself contains bunches of flowers in it. The figs are borne in pairs at the base of leaf-stalks.

The fruits, or rather the figs, grow in pairs and are mostly bright red when ripe. There are yellow fruits too. When they ripen, the tree becomes a club-house of birds of various kinds like koels, green pigeons, brain-fever birds, parrots, doves, etc. All seem to relish the fruits greatly. The koel and the papiha eat the fruits and, perching behind the leaves, sing merrily for hours. The fruits are sweet and make their appearance between April and June, but there are trees which bear fruit in December also.

The tree generally grows from seeds. A peculiar characteristic of its seed is that it germinates much quicker if it passes through the stomach of a bird. The figs are eaten by birds; the seeds remain unaffected in their stomach and come out with their excreta. Often the excreta fall on other trees or beside walls of houses and the seeds germinate there. That is how we find

the banyan trees growing on house-tops or walls and on the trunks of other trees. The host tree is killed by the fast growing banyan plant. If permitted to remain on walls and roofs, it ultimately damages the building by penetrating its roots into the interestices of the bricks.

The wood of the banyan tree is porous and, therefore, not sufficiently durable. Because of this, the banyan wood is not much in demand. But its aerial roots have many uses. These are used for brushing teeth; the juice cures pyorrhoea and other tooth diseases. Rods, umbrella heads, tent poles, and yokes are prepared from the wood of these roots. A coarse fibre is also prepared from it for the manufacture of ropes.

The leaves are often used for making plates. The tender leaves are considered to be good for leprosy. The heated leaves are used as a poultice for abcesses.

The milky juice secreted by the tree is known to have medicinal value particularly as a tonic. Rubber is also manufactured from the juice, which however is not of good quality.

One should not, however, forget the great value of the banyan as a shade tree. It gives shelter to travellers during hot days and chilly nights.

WILD FIG OR GULAR

There is an interesting anecdote connected with this tree. Many decades ago, some of the respected political leaders of our country were agitating for Home Rule. Gandhiji had not yet started his Non-cooperation Movement. The Home Rule was a demand for participation in the country's administration and fell short of complete independence. One of the leaders who agitated for Home Rule was Pandit Madan Mohan Malaviya, a powerful orator and founder of the Banaras Hindu University. But the British resisted even this demand. An

English clergyman wrote a satire in Urdu verse ridiculing Pandit Malaviya for daring to ask for Home Rule.
It said:

"We will have Home Rule, says Malaviya.

This is but mid-summer madness: indeed it is like asking for the flower of the gular."

Immediately, the patriotic Indian paid the clergyman back in his own coin by replying in another Urdu couplet:

"When Home Rule is achieved, India will produce scientists like Bairbank.

Then even the gular shall be made to flower."

The wood of the *gular* tree is used as holy sacrificial fire-wood and its leaves and twigs are used in religious ceremonies.

The popular belief that the *gular* does not blossom is, however, a misconception, for no tree can have fruit without flowers. The reason for this confusion is that the *gular*, like other figs, contains the flowers inside the fruit.

The *gular* is a medium-sized tree with long and pointed leaves. The tree is evergreen, with spreading branches. It grows in most parts of the country. The fruit is round and double the size of a *peepal* fig. The fruits are borne in clusters on the trunk and branches of the tree. The fruits remain green when tender, but turn red on ripening. As soon as the fruits ripen, fleas and maggots are attracted to them in thousands. The fruit, therefore, is eaten mostly when green. It is also cooked and taken with staples as a relish. The juice of the *gular* fruit makes an excellent drink. It is a household remedy for stomach disorders and diabetes. A balm made from it is supposed to heal wounds. Its flowers, leaves and bark have medicinal properties and are widely used in the Ayurvedic system of medicine.

PAKAR OR INDIAN FIG TREE

The *pakar* is one of the most popular and common trees of Bihar and Uttar Pradesh. There is hardly a village which does not have a few *pakar* trees. It is found in most parts of India. Many consider the *pakar* to be a variety of the banyan, which it is not. Like the banyan, it also has aerial roots, but only a few. However, it has its own individuality and is not an evergreen tree like the banyan. It is a deciduous tree, pretty and quick-growing, with a thick crown and spreading branches. It is quite tall, often growing to a height of about 9 to 11 metres. The branches start coming out from the trunk at a small height and the tree generally looks as if leaning towards its base.

The leaves are shed in winter. New leaves appear from January to March. In the beginning, they appear in the shape of longish buds which are known as *tusha* in northern India. The buds are used for making pickles and are prepared as a vegetable by frying. After a few days, the buds open and take the form of leaves.

There are numerous varieties of this tree, each differing from the other in the shape and colour of their leaves. The colour of the leaves varies from a clean pale green to pink or bronze. There being several varieties of this tree, it becomes difficult at times to know if the tree is actually a *pakar*.

The figs are small, much smaller than those of the banyan, and are borne at the junction of the leaves, usually in pairs. The figs ripen during summer. Birds eat them with great relish. On ripening, their colour turns either white or pink.

Like the *peepal*, every part of this tree also has medicinal properties. The bark makes an excellent gargle for the throat and a lotion for wounds. A coarse fibre is prepared from the bark. Its timber is not durable and, therefore, is not of much use.

PEEPAL

The *peepal* is another common tree,which is held sacred by Hindus. It is regarded as the holiest tree not only in this country but also in those countries where Buddhism is the popular religion. In the *Gita,* Lord Krishna tells Arjuna : "Among the trees I am the *peepal*" ; by saying so he indicated the high position the *peepal* occupies among trees. Hence the Hindus worship it and never cut it. Its wood was used in olden days for preparing some vessels. On certain occasions, the sacrificial fire was lighted by rubbing together two pieces of its wood.

The *peepal* is believed to bless with children those who worship it. Women desirous of begetting children go round this tree 108 times on Saturday mornings chanting certain mantras. Varahamihira, the great sage, suggested that the *peepal* tree should be planted in front of the house, since it brings prosperity and happiness.

You must have heard of Prince Siddhartha who later became the Buddha. He was the son of the King of Kapilavastu. He realized that the world was full of sorrow and, suddenly one night he left his home in search of salvation. He roamed about from place to place, but enlightenment dawned upon him only when he reached Gaya in the kingdom of Magadha and sat for several days in meditation under a *peepal* tree. Since then he has been called the Buddha, the Enlightened One.

The place where the tree stood is today known as Bodh-Gaya. The tree still exists. Many saplings of this tree have been planted in different Buddhist countries. To Sri Lanka, a sapling was carried by Sanghamitra, the daughter of Ashoka the Great. It was through her that Buddhism came to Sri Lanka. That tree, planted there in 288 B.C., still exists and is an object of great veneration.

The *peepal* tree has earned a place in the field of art also.

In the Bharhut sculptures, the tree is shown being worshipped by devotees and being garlanded by 'apsaras' or heavenly maidens.

It is long-lived. It has neither a thick foliage nor does it have aerial roots like the banyan tree.

There are a number of varieties of the *peepal* There is difference in the shape and colour of the leaves of different varieties. Leaves are generally shed between the months of March and April. New leaves appear and the figs ripen in May or June when birds of all kinds throng to this tree to eat them to their heart's content and sing. Like banyan seeds, the seeds of the *peepal* are also eaten by birds and dropped with their excreta on roofs and walls of buildings or on other trees where these germinate and grow. They are not, however, parasitic inasmuch as the *peepal* takes its nourishment from the rain and the air, and not from the sap of the host tree, until its roots go down into the ground and start receiving nourishment from the earth.

Its leaves are broad and smooth and have long pointed ends or tails. Their upper surface is a deep and glossy green. The tender leaves are coppery red, smooth and glistening. On moonlit nights, these leaves reflect the moonlight and appear like thousands of small lamps. They quiver at the slightest touch of the breeze and make a rustling sound. The tail of the leaf helps in quickly draining away the raindrops from the surface. The leaves are comparatively light in weight.

The *peepal* is one of those trees which have a hundred and one uses. Every part of the tree is a medicine for some disease or the other. The bark and the roots are used for curing numerous diseases. The juice of twigs is a remedy for heart trouble. The milk-like juice of the tree, when hardened into gum, is employed as lac or sealing wax. The lac insects are reared on its leaves. They are also good fodder for elephants and cattle. No wonder that a tree of so much utility has figured so prominently in Hindu mythology.

NEEM

The *neem* is a tall, evergreen tree with dense foliage. Originally native to Burma, it is now found in the greater part of our country.

The tree figures very largely in the folk-songs of northern India and the reason may be the fact that it grows there abundantly and most houses in the villages are built under it. The young girls and boys put up swings on its branches and spend a good deal of their time swinging and singing under it. The songs are mostly of a romantic character.

The *neem* leaves are eaten by Hindus on the New Year day to ward off sickness during the new year. In areas where small-pox is prevalent, the leaves are kept in the houses. Fresh *neem* leaves are also tied across the doors and windows whenever there is a birth or death in the house to ward off the evil spirits and diseases.

In olden days, travellers used to sleep under the *neem* tree in the belief that it would keep them healthy during the journey. There is an interesting anecdote about this. The wife of a person who wanted to proceed on a long journey wished that her husband should return soon. She consulted a doctor, who advised her to ask her husband to sleep under a tamarind tree during his onward journey and under a *neem* tree during the return journey. The tamarind is well known to cause sickness to those who sleep under it. Sleeping under tamarind trees, the husband soon became too sick to continue his journey and returned home. On his return, he slept under *neem* trees, and by the time he reached home, he had fully recovered from his sickness.

The leaves of the *neem* consist of leaflets that are long, narrow and pointed, with serrated, unequal margins. The tender, new leaves of the tree keep on appearing throughout the year, but their biggest flush comes in March-April after the

old leaves are shed. This makes it a very good avenue tree. One can find rows of this tree on both sides of the roads in Delhi, giving shade to thousands of pedestrians and cyclists during the hot summer.

The flowers are small, white, and honey-scented. They are borne in large bunches. They appear twice a year in loose clusters from near the bases of the leaves. The first appearance of the flowers takes place during March and April, and the second during the rains. The fruits turn yellow when ripe and are of the size of small berries. The flowers and sweet, juicy fruits of the tree are a great attraction for birds and bees. The fruit is equally enjoyed by children and adults. It is not only sweet, but also has the property of purifying the blood.

Every part of the tree has medicinal properties and its commercial value, on that account, is great. We have today a number of *neem* products that are manufactured on a commercial scale. Neem soaps and tooth-pastes are some of the well-known products that are in great demand even outside this country. The germicidal quality of *neem* is the main cause of its popularity.

The most important product of the *neem* is the oil that is extracted from its seeds. It is known as margosa oil and is used as an antiseptic and for massage in rheumatism.

The gum obtained from the bark of the tree is a good stimulant and tonic. In fact, many parts of the tree—the tender fruits, the bark, the roots, the stems and the flowers—are used as a tonic. The lotion made from the leaves is an antiseptic and dried leaves kept in shelves and boxes keep away insects that cause damage to clothes, books, etc. Its fresh leaves are placed around small-pox patients to cause a quick drying up of the eruptions. People often sleep under this tree to get their sores cured. Even leprosy, they say, can be cured that way.

Neem twigs make a popular tooth-brush in this country. The juice of the twig is rather bitter in taste, but has germicidal and antiseptic properties.

The timber of the tree is hard and durable and is extensively used for building ships. It is also used for constructing carts, agricultural implements, toys, etc.

INDIAN LILAC OR BAKAIN

This is a medium-sized deciduous tree which is also known as 'mahaneem' or 'bigger neem'. In spite, however, of some similarity to the *neem*, it is not of that species. Its growth is very quick and, in a few years' time, it grows to a height of about 12 metres.

Among the several varieties of this tree there is one which has an umbrella-shaped crown. Its original home is Persia, and perhaps also Arabia and Baluchistan. Its English name is, therefore, 'Persian Lilac'.

Its fruits are poisonous and should never be touched. But surprisingly, these are relished by goats and sheep. The inner hard seeds are used as beads for necklaces.

The leaves are divided into leaflets. The leaflets near the tip are borne directly on the midrib, but those near the base are borne on the lateral branches of the midrib.

The *bakain* is famous for its flowers that grow in branching clusters. They are shorter than the leaves and, therefore, partly hidden by the foliage. The lilac-coloured flowers appear on bare branches at the beginning of the spring season; the leaves too appear soon after and the entire tree is covered with delicate, green leaves and lilac flowers. Each flower has five or six petals around the deep purple tube formed by the stamens. The flowers are honey-scented and, during the nights fill the air with their intoxicating fragrance.

The timber of the tree is soft but usable in making furniture. Its medicinal properties were first recognized by the Arabs and Persians. Now, in this country too, the different parts of

the tree are being used for medicinal purposes. The seeds are used to cure rheumatism, and the leaves for nervous headache and hysteria. The fruits and the leaves are a remedy for skin diseases. The bark is used in the preparation of a tonic.

DRUMSTICK

The drumstick is said to be a native of the western Himalayan forests, but is now common all over India and even in some other tropical countries. It is of medium size and has a graceful look. The tree grows very quickly if propagated by planting twigs or branches in moist soil; from seed it takes a long time to grow.

The large leaves are scattered along the branches and divide into numerous small leaflets that remind one of the leaves of a maidenhair fern. The leaves are shed during the months of December-January. New leaves appear in the months of February-March. The small, scented flowers appear in loose clusters from the axils of the new leaves. The long and slender pods come out and hang in clusters. They contain a number of seeds and look like drumsticks. The fruits ripen from April to June.

There are two varieties of the drumstick tree. One usually bears flowers and fruits once a year. In the other, the tree bears fruits throughout the year at some intervals.

It is a popular vegetable in many parts of the country, especially in Tamil Nadu, Andhra Pradesh and West Bengal where even the flowers, leaves and twigs are used as vegetable. The unripe pods are used for curry as also for making pickles. The root has a pungent taste and is employed as a substitute for mustard. The oil extracted from the seeds is used in the perfume industry.

The wood of the drumstick tree is not of much use since it is soft and decays quickly. The bark is a source for fibre,

from which ropes are prepared. The gum obtained from this tree is utilised in calico-printing.

The oil extracted from the roots as well as the seeds of this tree has medicinal value. Its leaves are a remedy for snake, dog and monkey bites. The root is a cure for sore throat and the flowers for catarrhal infections.

MONKEY JACK OR BARHAL

The *barhal* is a medium-sized deciduous tree, pretty looking with its rounded, spreading head and large, leathery, deep-green leaves. The tree remains bare for a considerable period during the cold season. Its flowers are tiny and appear in clusters at the base of the leaves. They are orange-yellow in colour and appear in March when the new leaves also come out. A second crop of flowers appears again in July.

The fruits have an irregular shape but smooth rinds. They have a yellowish colour, sometimes with a pink tinge.

It is a native of those plains of this country which are damp. The fruits are eaten mostly by the poorer classes. Propagation is done through seeds and the trees start bearing fruit within six to seven years of its growth. The fruit is used for making a very tasty *chutney* and acts as a tonic for the liver. The bark of the tree is often chewed with betels.

The timber of the tree is resistant to white ants and is quite durable. It is used for making beams and rafters. A kind of yellow dye is prepared from its roots. The bark is used for curing skin troubles, while the seeds have a purgative effect.

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