

CHAPTER IV.

BOTANY.

I. *Forest Flora.*

THE situation of Mysore within the tropics, combined with an elevation which gives it an equable climate, the great variation in rainfall within it and its almost complete environment by lofty mountain chains, are features which contribute to the formation of a rich and varied flora. Richness of the flora.

The reserved forests and plantations of the country cover a total area of 3,685.9 square miles exclusive of District and unclassified forests. Area of forests.

The forest area can be divided into three more or less distinct belts running from north to south. Starting from the extreme west there are :— Forest belts.

(i) *The evergreen belt.*—This stretches along the Western Ghat slopes, with a width varying from 6 to 40 miles, from about the north of Sorab to the south of Manjarabad ;

(ii) *The deciduous belt.*—This is at present the most valuable timber tract and lies to the east of the above and extends more or less continuously from the north of Shikarpur to Chamrajnagar, varying from 20 to 30 miles in width ;

(iii) *Dry deciduous fuel tract and scrub.*—This lies to the east of the central waterparting of the State and runs north to south in two narrow strips.

Each of these types of forests may be further differentiated as follows :—

(a) *The moist evergreen belt.*—The pure moist evergreen forest stretches in a narrow strip along the Western

Ghats for over 225 miles from the Jog Falls in Sagar Taluk to Bisale Ghat in Manjarabad. The approximate area of the forest is 1,000 square miles. The tract is mountainous with deep ravines and narrow valleys. Bare grassy ridges with richly wooded valley slopes are the characteristics of this belt; the annual rainfall in this region is about 250 inches. The typical species of trees to be found in this area are:—

Balagi	...	Poeciloneuron indicum	
Surahonne	...	Calophyllum Inophyllum	... The Alexan-
Dhuma	...	Dipterocarpus indicus	drian laurel.
Yennemara	...	Hardwickia pinnata	
Sataga	...	Elæocarpus tuberculatus	
Ranja	...	Mimusops Elengi	
Nagasampige	...	Mesua ferrea	... Ironwood
Hadasale	...	Dichopsis elliptica	tree.
Dalchinni	...	Cinnamomum zeylanicum	
Guragi	...	Garcinia indica	
Ramanadike	...	Myristica magnifica	
Karimarlu	...	Diospyros Spp	
Bale	...	Diospyros ebenum	... Ebony.

Kiralbhogi (*Hopea parviflora*) is found in some places over extensive areas. Devagarige (*Dysoxylum malabaricum*) and Mangappe (*Toddalio bilocularis*) are found in small numbers. Nandi (*Lagerstroemia lanceolata*) and Hebbahalasu (*Artocarpus hirsuta*) are met with occasionally. The tract is very thinly populated with scattered and isolated hamlets. Except for the few provincial roads that cross the frontier, there are no other roads or means of communication.

The important forests in this tract.

The following forests may be mentioned as the most important ones in this tract:—

Jog	Agumbe
Govardhanagiri	Balehalli
Kilandur	Narasimha parvata
Varahi	South Bhadra and Tunga-
	bhadra, Kabbinala, Bisale,
	Kemphole and Kagneri.

(b) *Mixed belt of evergreen and deciduous forests.*— This is a broader strip of forest about 30 miles broad and

extends from the north of Sorab to the south of Manjara-
bad through Sagar, Nagar, Tirthahalli, Narasimharaja-
pura, Koppa, Mudgere and Belur Taluks. But for
numerous villages and hamlets, large paddy and arecanut
tracts, and extensive clearings for *Soppinabettas*, this
belt forms one rich stretch of forest with many valuable
timber species. Though better than the last, the popula-
tion is thin. There are rough cart-tracks leading from
hamlet to hamlet. The labour supply is scanty. The
principal species of trees found growing over this tract
are:—

Hunal	...	...	...	...	Terminalia paniculata
Mathi	...	...	...	...	Terminalia tomentosa
Nandi	...	...	...	...	Lagerstroemia lanceolata
Nerlu	...	...	...	...	Eugenia Jambolana
Jambe	...	...	...	...	Xylia dolabriformis
Gandhagarige	...	...	...	...	Cedrela Toona
Kalgarige	...	...	...	...	Chickrassia tabularis
Hebbahalasu	...	...	...	...	Artocarpus hirsuta
Haiga	...	...	...	...	Hopea wightiana
Naviladi	...	...	...	...	Vitex altissima
Holagara	...	...	...	...	Holigarna Arnottiana
Gobbaranerlu	...	...	...	...	Bischofia Javanica

Dalchinni (*Cinnamomum zeylanicum*) and Guragi
(*Garcinia indica*) and other *kan* species are found only in
the shady valleys or ravines called *kans*. Hebbidaru
(*Bambusa arundinacea*) is largely found. Occasionally
Jalari (*Shorea Talura*) seem to grow in pine crops.
Sandal is particularly abundant in this region.

The rainfall is from 60 to 100 inches or a little more.

The following are the important forests in this tract:—

Sagar *kan* forests
Bellandur
Mallandur
Masrur
Harohittal
Hanagere

Ubbur
Aramballi
Kusgal
Mallandur gudda
Halasur
Koppa and Mudgere forests.

The impor-
tant forests
in this tract

(ii) *Deciduous teak high forest belt*.—The last named
tract gradually merges into this forest belt, in Shimoga
and Kadur Districts and along the frontier in Mysore

District and extends from Shikarpur to the extreme end of Chamrajnagar, with a break in Hassan. The average annual rainfall over this portion is from 45 to 60 inches. This is the most valuable strip of teak forests in the State and is about 647 square miles in extent. The most important species is teak; its valuable associates are the following:—

Bete	Dalbergia latifolia	... Rosewood tree
Matti	Terminalia tomentosa	
Honne	Pterocarpus marsupium	... Gum-kino tree
Thadsal	Grewia tiliæfolia	
Dindiga	Anogeissus latifolia	
Yethega	Adina cordifolia	

Other deciduous species like Godda (*Garuga pinnata*), Buruga (*Bombax malabaricum*), Sagade (*Schleichera trijuga*), Kadavala (*Stephegyne parvifolia*), Bende (*Kydia calycina*), Nelli (*Phyllanthus Emblica*), Kuli (*Gmelina arborea*), etc., make up the rest of the forest with a dense growth of small bamboo over hill slopes and ridges, big bamboos being confined to the banks of streams and moist low lying tracts.

The principal species attain very good size; teak, bete (Rosewood), yethega (*Adina cordifolia*) and honne (Gum-kino tree) ranging in girth from 10 to 15 feet and matti and other species of girth varying from 8 to 12 feet are very common.

In the outskirts of this belt of forests, there are well populated villages and the forests themselves attain heights averaging about 70', are easy of access with convenient fair weather roads, and equipped with well-designed and comfortable Inspection Lodges, staff and labour quarters.

The important forests in this belt.

The following are the important forests in this belt:—

Karadibetta	Chornayedehalli
Kumsi	Aldhara
Shankar	Muthodi
Sakrebyle	Thegurgudda

Lakkavalli	Kakankote
Dodharuve	Begur
Mavukal	Ainur-marigudi
Katchuvanahalli	Berambadi
Veeranahosahalli	Bandipur
Mettikuppe	Chamrajnagar

Deciduous teak pole belt.—The strip of forest which extends from Anavatti in Sorab to Chamrajnagar is similar in composition to the above, but the growth is very poor, the trees not attaining a girth of more than about 4 feet anywhere. The average rainfall varies from 30 to 35 inches and the crop is open with an undergrowth of grass. The forest yields small timber. The total area of this type of forest is about 262 square miles. The major portion of this belt of forest has all conveniences in the matter of roads and labour. The principal forests that may be enumerated under this type are:—

Kowdi	Thyagadabagi
Chandrakal	Portions of Veeranabhsahalli and Mettikuppe.
Kunchenahalli	Katwal
Kukwada-ubrani	Naganapur
Antargange	Bargi and portions of Chamrajnagar.
Bhadrapur	
Hadikere	

(iii) *Dry deciduous fuel forest.*—This may also be divided into two definite strips of forests on account of certain characteristic differences.

(a) *Superior type of fuel forest.*—This strip starting from about the south-western limits of Davangere Taluk extends to the north of Channapatna. Towards the east, it extends to the provincial boundary of the State in the Bangalore and Kolar Districts. The average rainfall over this tract varies from 25 to 30 inches. The principal species to be found are:—

Kaggali	...	Acacia Catechu	...	...	The Cutch tree
Devadari	...	Erythroxylon monogynum			
Chigare	...	Albizzia amara			
Channangi	...	Lagerstroemia parviflora			

Dindiga	...	Anogeissus latifolia	
Jalari	...	Shorea Talura	
Hunnal	...	Terminalia paniculata	
Some	...	Soymida fabrifuga	... The bastard Red Cedar.
Banni	...	Acacia ferruginea	
Karijali	...	Acacia arabica	
Bilijali	...	Acacia leucophloea	
Padarapachali	...	Dalbergia paniculata	
Tubre	...	Diospyros Tupru	
Yeje	...	Premna tomentosa	
Kodlimuruka	...	Acacia Spp	
Yelachi	...	Zizyphus Jujuba	

Small bamboos are found in a few of these forests. These forests are generally surrounded by numerous thickly populated villages. There is generally heavy demand for firewood and grazing.

(b) *Inferior type*.—This is confined chiefly to the northern portion of Chitaldrug and Tumkur Districts. It extends through Davangere, Jagalur, Molakalmuru, Challakere, Hiriya, Sira, Pavagada and Maddagiri Taluks. It is a dry arid forest tract, with very low rainfall, 15 to 20 inches. The growth is very poor. The characteristic tree growth is Kamara (*Hardwickia binata*) with a little Kaggali (the Cutch tree) and other inferior and scanty growth and Bode grass not yet identified for its under-growth.

Shrubs and bushes.

Among shrubs and useful bushes are:—

- | | | | | |
|-------------------------|-----|--------------------|-----|------------|
| (1) Calotropis gigantea | ... | Giant swallow wort | ... | Yekka |
| (2) Cassia auriculata | ... | Tanner's bark | ... | Thangadi |
| (3) Cassia Fistula | ... | Indian laburnum | ... | Kakke |
| (4) Jatropha Curcas | ... | Physic nut | ... | Maraharalu |

Sandal.

(a) *Its distribution*.—The sandal tree (*Santalum Album*, Vern: *gandha*, *Srigandha*) a tree the habitat or natural home of which is Mysore and which grows only to a limited extent in the bordering tracts of Madras and Coorg, is found throughout the State but very unequally distributed in different parts. It is never met with in

the evergreen belt but is most abundant in the semi-moist belt, in the Taluks bordering on the Cauvery and in those lying along the chain of hills which runs from Kankanhalli up to Maddagiri. In the Chitaldrug and Kolar Districts, it occurs to a limited extent, chiefly scattered in village lands and hedge-rows and in special plantations and forests introduced by the Forest Department.

(b) *Its growth.*—The tree attains its greatest bulk and height in taluks with a moderately heavy rainfall. The bark and sapwood have no fragrance, but the heartwood and roots are highly scented and rich in oil. The girth of a mature tree varies, the average being about 30", while trees of girths up to 6 feet are occasionally found. Heights up to 40' have been measured, though the average height is not more than 25'. The tree is considered to be mature when about 60 years of age. The older the tree, the greater the proportion of heartwood. The bark becoming deeply wrinkled, is red underneath, and frequently bursts, disclosing in old specimens the absence of all sapwood. In colour and marking, four varieties of the wood are distinguished:—*bili*, white; *kempu*, red; *naga*, cobra; and *navilu*, peacock. The names indicate the supposed resemblance of the marks, which are really "caused by the death of adventitious buds." The heartwood is hard and heavy, weighing about 61 lbs. per cubic foot.

(c) *Its Propagation.*—Efforts for the propagation of sandal by planting did not meet with much success some years ago, owing to the delicate nature of the young plant and its exposure to the ravages of hares and deer. More recently, the *lantana* shrub, which grows with the rankness of a weed, has been found to be an effectual nurse for the seedlings coming up naturally in abundance. Sandal sown up has given fairly good results.

(d) *Spike disease.*—This serious disease of sandal was first reported from Coorg, near the Coorg-Mysore

boundary in 1898. Since that time, it has spread across Mysore District to the Eastern border and has made its appearance in the neighbouring Districts of Madras Presidency. It has also spread into Hassan and Bangalore Districts. It has been estimated that the annual losses from this disease amount to between Rs. 5 and 6 lakhs.

A considerable amount of scientific investigation of this disease has been carried out, more especially by the Mysore Agricultural Department, and the Forest Officers in Mysore, Madras and Coorg have studied it extensively in the field. Although the disease has been communicated to healthy trees by graft experiments, the causes of the disease have not yet been found out. The work of investigation is being organized and the appointment of a special scientific officer to aid in this work has been sanctioned by Government.

A reward of Rs. 10,000 has also been offered by the Government to any one who discovers the cause of the spike disease and suggests an effective, cheap and easily applicable remedy for the eradication of this disease.

II. Horticulture, Etc.

General.

The climate of Mysore is very favourable to horticulture. With judicious treatment, plants of all climates may be successfully grown at Bangalore. Horticulture has made great progress, as may be judged from a visit to the Palace Gardens in Mysore and Bangalore maintained by His Highness the Maharaja, the public gardens maintained by the State at Bangalore, Mysore, Seringapatam and the Nandi Hills and the horticultural activity displayed by the public.

The Lal-Bagh.

The Lal-Bagh is the oldest and most important of the public gardens. It contains a fine collection of plants

and trees rarely seen in India in such large specimens. The collection is being periodically replanted or added to according to natural orders and with regard to geographical distribution.

Indian fruits and a large variety of English fruits are Fruit tree grown in the vicinity of Bangalore. The following are the more important fruit trees grown in the gardens:—

Anacardium occidentale	...	Cashew-nut	...	Geru
Anona reticulata	...	Bullock's heart	...	Ramphal
Anona squamosa	...	Custard apple	...	Sitaphal
Artocarpus integrifolia	...	Jack	...	Halasinamara
Averrhoa carambola	...	Carambola	...	Kamarak
Carica papaya	...	Papay	...	Perangi
Citrus aurantium	...	Orange	...	Kittale
Citrus decumana	...	Punelo	...	Sakote
Citrus medica	...	Citron	...	Madala
Citrus medica var acida	...	Lime	...	Nimbe
Citrus medica var limetta	...	Sweet lime	...	Gaja nimbe
Citrus medica var limonum	...	Lemon	...	Herile
Cocos nucifera	...	Cocoanut palm	...	Tenginamara
Eriobotrya japonica	...	Loquat	...	Lakote
Eugenia jambos	...	Rose apple	...	Pannerale
Ficus carica	...	Fig	...	Anjura
Mangifera indica	...	Mango	...	Mavinamara
Musa sapientum	...	Plantain	...	Bale
Phyllanthus distichus	...	Star-gooseberry	...	Kiri nelli
Phyllanthus emblica	...	Emblie myrobalan	...	Nelli
Psidium guyava	...	Guava	...	Shepe
Punica granatum	...	Pomegranate	...	Dalimbe
Pyrus malus	...	Apple	...	Sevu
Vitis vinifera	...	Vine	...	Drakshi
Zizyphus jujuba (Bhere)	...	Bere	...	Elachi
Eugenia malaccensis	...	Malay Rose apple	...	Sime pannerale
Nephelium Litchi	...	Litchi	...	Kannuguddehannu
Pyrus communis	...	Pear	...	Perukai
Rubus lasiocarpa	...	Raspberry	...	Rajabari
Achras sapota	...	Sapodilla	...	Sapodilla
Anona muricata	...	Soursop Peaches	...	Mulluduranji

Washington Navel orange, introduced from Australia, is becoming a favourite in gardens. The best oranges are those imported. Of mangoes, there are many varieties. Plantains are plentiful and some varieties are esteemed for their sweetness and flavour.

Vegetables

There is a large number of gardens in Bangalore and Mysore which supply the market with a rich assortment of both English and Indian vegetables. The chief among them are beans, soybeans, tomatoes, cabbages, cauliflower, knol-khol, pumpkins, gourds, cow-gram, moringa fruit, brinjals, country greens, sweet potatoes, radish and chow-chow. The potato and the onion are grown on a large commercial scale. Leaves of vegetables and roots fit for *curries* are also grown.

Grasses.

Of grasses indigenous to Mysore, the following are fit for stacking:—

- | | |
|--|-------------------------------------|
| (1) Garike (<i>Cynodon dactylon</i>) | (6) Phara or Mani |
| (2) Ganjalu garike (<i>Andropogon Bladbii</i>) | (7) Uppala, |
| (3) Hanchi (<i>Aristida caerulescens</i>) | (8) Sunti (<i>Panicum repens</i>) |
| (4) Karda (<i>Andropogon pertusus</i>) | (9) Node |
| (5) Dharbhe (<i>Eragrostis cynesuroides</i>) | (10) Solali |
| | (11) Marahullu |

The following are not good for stacking, as they grow mixed together:—gondyada or chenlagam, bhimam, bidiru-yele, yenuamatti, bili-hullu, timmattakam, nari-bala, akki-hullu, hire.

There are also certain plants or herbs which are of great use to cattle; the best of these is called *purtanipuli* which has seeds like burrs, with a thick jointed sappy stem. It grows along the ground, and is very good for milch cattle.

Imported
fodders.

Among the imported fodders, lucerne (*medicago sativa*) Guinea grass (*Panicum jumentorum*) and Rhodes grass (*chloris virgata*) are largely cultivated.

III. Crops.

Classification
of the
principal
crops.

The principal crops raised in the State may be classified briefly as follows:—

- (a) Wet, or those that are dependent for their

growth on irrigation, in addition to timely rainfall,
viz :—

Oryza sativa	...	...	Paddy	...	...	Bhatta, nellu
Saccharum officinarum	...	...	Sugar-cane	...	..	Kabbu
Triticum Sativum	...	...	Wheat	...	...	Godhi

(b) Dry, or those which do not require irrigation generally but are dependent entirely on seasonal showers of rain, viz :—

Elousine Corocana	...	...	Ragi	...	...	Ragi
Sorghum vulgare	...	...	Great millet	...	...	Jola
Cajanus Indicus	...	...	Pigeon Pea, Dhal	...	...	Togari
Cicer Arietinum	...	...	Bengal gram, Chick pea.	...	...	Kadale
Dolichos biflorus	...	...	Horse gram	...	...	Hurali
Dolichos lab lab	...	...	Cow gram	...	...	Avare
Phaseolus Mungo	...	...	Green gram	...	...	Hesaru
Phaseolus Mungavar	...	...	Black gram	...	...	Uddu
Phaseolus radiatus	...	...		
Sesamum indicum	...	...	Sesame, gingelly	...	...	Wollellu, Achellu
Ricinus communis	...	...	Castor	...	...	Haralu
Gossypium Herbaceum	...	...	Cotton	...	...	Arale
Nicotiana Tabacum	...	...	Tobacco	...	...	Hogesoppu

(c) Garden crops, or those which require a moist situation and an adequate supply of water :—

Areca catechu	...	...	Arecanut	...	...	Adike
Musa Sapientum	...	...	Plantain	...	...	Bale
Cocos Mucifera	...	...	Cocoanut	...	...	Tenginakayi
Elettaria cardamomum	...	...	Cardamom	...	...	Yelakki
Arachis hypogaea	...	...	Groundnut	...	...	Kallekayi, nela kadale
Capsicum annum	...	...	Chilly	...	...	Mensinakayi
Allium Cepa	...	...	Onion	...	...	Nirulli
Allium Sativum	...	...	Garlic	...	...	Bellulli
Carum copticum	...	...	Bishop's weed	...	...	Oma
Carthamus Tinctorium	...	...	Safflower	...	...	Kusumba
Coriandrum Sativum	...	...	Coriander	...	...	Kottambari
Curcuma Longa	...	...	Turmeric	...	...	Arisina
Trigonella Foenum graecum	...	...	Fenugreek	...	...	Mentya
Zingiber officinale	...	...	Ginger	...	...	Sunti
Cuminum cyminum	...	...	Cummin seed	...	...	Jirige
Piper beetle	...	...	Betel vine	...	...	Viledale

Mulberry (*Morus indica*) is cultivated both in garden lands and dry lands. Coffee (*Coffea Arabica*—Bundu kapi) is a miscellaneous crop grown in the Malnād regions of the Kadur and Hāssān Districts.

In the *Season and Crop Report*, the crops are classified as:—

- | | |
|---|---|
| <p>(a) Foodgrains comprising rice, ragi, wheat, millet, pulses,</p> <p>(b) oil-seeds, comprising mustard and rape and gingelly,</p> <p>(c) condiments and spices,</p> <p>(d) sugar-cane,</p> <p>(e) fibres including cotton and jute,</p> | <p>(f) dyes,</p> <p>(g) drugs and narcotics comprising coffee, tobacco, etc.,</p> <p>(h) fodder crops,</p> <p>(i) orchards and garden produce and</p> <p>(j) miscellaneous.</p> |
|---|---|

Industrial and Commercial crops.

The principal industrial and commercial crops grown on a fairly large scale in the State are sugar-cane, coffee, cotton, cocoanut, arecanut, mulberry and oil-seeds.

IV. Avenue Trees and Topes (Arboriculture).

Avenue trees.

Along the public roads, avenue trees have been planted. The trees have been numbered, and vacancies are filled up and additions made annually.

Topes.

Almost every village and many of the wealthy raiyats have topes or groves in which trees valued for their timber, fuel, shade or fruits are grown.

BIBLIOGRAPHY.

B. L. RICE.—Mysore Gazetteer, 1897.

Commercial Guide to the Forest Economic Products of Mysore, 1917.

G. H. KRUMBIEGEL, F.R.H.S.—Mysore, its Horticulture and Gardens in "Mysore" in the "Ruling Chiefs of India" series.

J. CAMERON.—Forest Trees of Mysore and Coorg.

Annual Administration Reports on the Working of the Government Gardens and Parks.

Annual Administration Reports on the Working of the Agricultural Department.

Mysore Season and Crop Reports.
