

Trees Of Mumbai (bombay)

R.R. Fernandez



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**(Botanical Keys and Illustrations as
Aids for Identification)**

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Published by:
Scientific Publishers
5A, New Pali Road, P.O. Box 91
Jodhpur 342 001, India
E-mail: info@scientificpub.com
Website: www.scientificpub.com

Print : 2019

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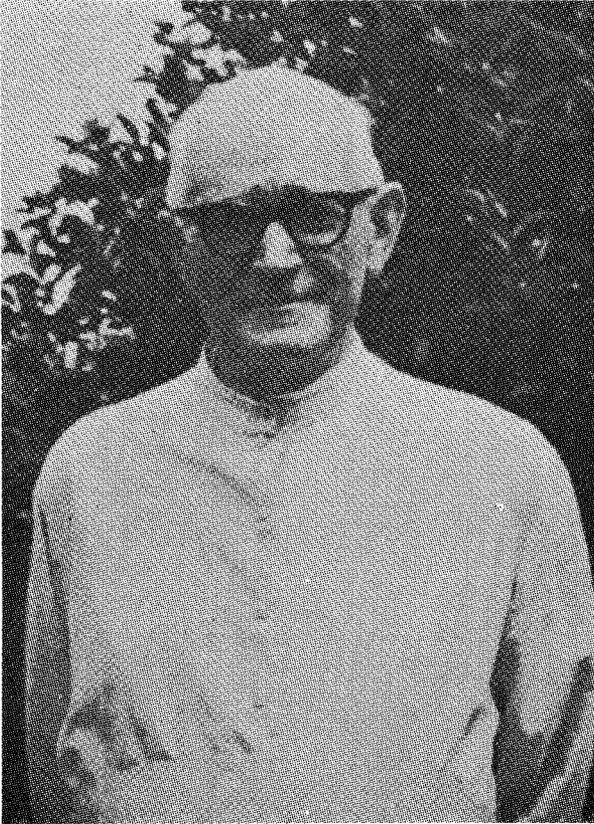
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ISBN: 978-81-7233-206-8 (Hardbound)
ISBN: 978-93-87893-37-5 (E-book)

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Printed in India

*Dedicated to the Memory
of*



*Fr. H. Santapau
(cf. Introduction)*

EXPLANATORY INTRODUCTION

Aesthetic value of trees for an urban settlement is widely recognised. They are rightly suggested as lungs for a city. A conscientious citizen could look for several other benefits from trees around him and should get involved in the upkeep and conservation of trees. Knowing the trees by their names could be an initial step in this direction and is basic to environmental education.

Hence this book is aimed at serving the educated public and one and all who are inclined to Natural History studies to ascertain the names of trees in their neighbourhood and beyond in the city of Mumbai.

Location : The geographical position of the area dealt with is 18°53' N - 19°3' N by 72° 48' E - 72° 52' E.

Climate : The city is within the Tropical Zone and the climate is greatly influenced by the sea, which surrounds it on 3 sides. The temperature itself is about the most moderate in India. The hottest months being April and May, with October a close second; coolest is January. Maximum temperature is 33.7°C and minimum is 18.44°C (average for 10 years).

Rainfall : It comes fully under the influence of monsoon rains. The average annual rainfall for the last 10 years is 193cm. Rainy season lasts roughly from middle of June to end of September preceded often by a few severe thunder storms towards the end of May. Occasionally some showers are received in the winter months. Rarely gales are also encountered and one with a velocity of 162 km. per hour has been recorded for November 22, 1948.

Humidity : Relative Humidity of Mumbai is usually very high. During monsoon it is usually between 95% and 100%. During drier seasons it goes down to about 60%. It is more over highest in the early hours of morning, decreasing to a minimum at about 3 p.m., and thereafter going up gradually to a maximum early morning.

Sunshine : Total number of hours of sunshine for a year is approximately 2,839 (average for 25 years). July is the month with shortest period of sunshine and the maximum corresponding to May.

NOMENCLATURE

Every individual tree (hybrid excepted), belong to a species. Internationally they are recognised by their scientific names which are in Latin or in Latinized form. Name of a species is set in 2 words (binomial)-the first word indicates the genus (*vide infra*); the second (specific epithet),

indicates the particular species to which the taxon belongs. Further the name of a species is a binary combination with both the words used as substantives or the latter in adjectival form. Hybrids are indicated by the sign x (sexual hybrid), or + (asexual hybrid) before the generic name or before the specific epithet as the case may be. For indication of a name to be accurate and complete the name of the Botanist who holds the authority for naming it is to be appended (author citation) : however it is not expressed in verbal communications.

Based on their relative similarities, species are grouped into genera (singular genus). The latter are written with an initial capital and which may be compared with our surnames or family names. Similarly the genera are variously grouped into "families" which bear distinctive ending - *ceae* in their names. Abbreviating generic name to the first letter is in vogue.

The use of binary nomenclature for names below the rank of species is not admissible; it is however permissible to reduce them down to ternary combinations. Their ranks are to be indicated by placing appropriate abbreviation before the epithet : as *ssp.* (for sub-species) e.g., *Acacia nilotica ssp. indica* (name for babul tree); *var.* (for variety) e.g., *Erythrina variegata var. orientalis* (for pangara tree). Cultivars (abbreviated *cv.*) are the varieties known in cultivation; they have to be one or more worded fancy names and each of the words written with an initial capital e.g., *Lagerstroemia indica cv. Petite Snow*. Author citation (*vide supra*), is not applicable to cultivars.

A given taxon bears only one name that had to be valid and legitimate in terms of botanical terminology and hence has precedence over all other associated names, the latter remaining rejected as synonyms.

STATUS OF THE FLORA

The great many types of plants now seen in Mumbai owe their existence to gardening, roadsides or avenue planting and such other horticultural activities. A large majority of trees themselves are exotics and hence this book is presented in the form of Botanical Manual. It should enable one not only to find out the names but also to remember the trees by their respective names and to develop deep appreciation of their similarities, interrelationship and a taxonomic characters they possess. It should serve as a reference work to meet the requirements of taxonomic studies and it aims to be of special service to city planners and administrators.

Trees indigenous to Mumbai include :*Albizia lebbek**Garuga pinnata**Mallotus philippensis**Salmalia malabarica**Spondias pinnata**Sterculia urens* and*Trewia polycarpa*

These are surviving as relics of the original vegetation which in the terminology of Champion (Indian For. Rec. N.S. 1, 1936) might be designated as Deciduous Monsoon Forests that clothed the original islands making up the present city. Similarly *Avicennia* spp., *Sonneratia caseolairs* and *Pandanus odorifer* clearly belong to Mangrove Forests that once thrived as compact protective barriers all round the coast and banks of Creeks.

The exotics are known to be introductions done mainly through the activities of Agri-Horticultural Society of Western India (established in 1830 at nearby Pune) and are of known horticultural and other economic importance. They have come from all the warmer regions of the World. A maximum variety of these are maintained in the Victoria Gardens (renamed at present as Jijamata Bhosle Udyan), which was established in 1862.

PLAN FOLLOWED

Keys have been provided to find out the names of the trees. For practical reasons keys to genera, species and to their lower ranks have been drawn separately. Use of technical terms has been to a minimum and these have been explained in the Glossary (*vide infra*).

In the Enumeration the order of Families is about the same as that of Cooke in his flora, the comprehensive reference work available for Mumbai (*vide infra*). For convenience genera are listed alphabetically under their families. However, species and taxa of lower ranks are dealt with as they appear in their respective keys.

Taxonomic and other information has been provided under the following heads :

a. Reference

b. Local names

c. Flowering and fruiting (where fruits have a special value), season

- d. *Origin, distribution, occurrence*
- e. *Illustrations and*
- f. *Remarks*

Fuller taxonomic details such as Nomenclature, Botanical description, Citation of Herbarium Specimens and Localities of Cultivation in Mumbai are contained in my Ph.D., thesis submitted through St. Xavier's College, to the Bombay University.

SPECIAL ABBREVIATIONS

Benthall.	....	The Trees of Calcutta and its neighbourhood by A.P. Benthall, Calcutta, 1946.
Blatter.	....	The Palms of British India and Ceylon by E. Blatter, Oxford, 1926.
-do- <i>et al.</i>	....	Some Beautiful Indian Trees by E. Blatter and W.S. Millard; 2nd ed. by W. Stearn, London. 1977.
Cooke.	....	The Flora of the Presidency of Bombay by Th. Cooke, London, 1901 - 1908.
Talbot.	....	Forest Flora of the Bombay Presidency and Sind by W.A. Talbot, 2 vols. Poona. 1909 and 1911.
Wight Ic.	....	Icones Plantarum Indiae Orientalis . . . by R. Wight Madras. 1838 - 53.
-do- Ill.	....	Illustrations ... by R. Wight, 2 vols. Madras, 1840 and 1850.

This book is gratefully dedicated to the sacred memory of Rev. Fr. H. Santapau, S.J., with whom I was actively associated from 1950. The present work was undertaken at his suggestion.

GLOSSARY

- Acicular* : needle-shaped
- Actinomorphic* : symmetrical or regular (cf. Zygomorphic)
- Acuminate* : gradually tapering into a beak
- *adelphous* (suffix) : stamens in bundles
- Adnate* : attached
- Androgynous* : staminate and pistillate flowers in the same bunch
- Amplexicaul* : stem-clasping
- Androphore* : stalk or column bearing stamens
- Annular* : ring-like
- Anthesis* : blossoming state
- Apicula* : abrupt short tip
- Arista* : blunt short awn.
- Armed* : provided with spines or thorns
- Articulate* : jointed
- Attenuate* : narrowed, tapered
- Auricle* : ear-shaped appendage
- Axil* : inner angle of leaf with stem
- Axillary* : situated in axil (*vide supra*)
- Berry* : normally pulpy fleshy fruit with scattered seeds
- Bilabiate* : 2-lipped
- Binate* : paired
- Bipinnatisect* : twice segmented
- Bracteole* : secondary bracts
- Calycine* : resembling (analogous to) calyx in texture and colour
- Calyptra* : operculum
- Campanulate* : bell-shaped
- Capillary* : hair-like
- Capsule* : dry dehiscent fruit
- Carpel* : constituent part of ovary containing ovules
- Catkin* : spike of unisexual crowded flowers usually held drooping
- Caudate* : with tail-like tip
- Cauline* : aerially borne on stem (cf. radical)
- Celled* : having cavity or chamber
- Circinate* : spirally coiled
- Claw* : narrowed basal part especially applied to petals

Glossary

- Concrete* : embodied in the mass and not distinct from it
- Cone* : referring to fruits of conifers
- Connective* : a tissue joining anther lobes
- Contorted* : overlapping one over other in regular sequence
- Corona* : appendages of corolla or androecium
- Crenate* : with blunt rounded teeth
- Cuneate* : wedge-shaped
- Cusp* : sharp, rigid tip
- Decompound* : several times divided
- Decussate* : opposite in a pair and at right angles to the pair below or above it
- Deltoid* : triangular
- Diadelphous* : in 2 bundles
- Disc or Disk* : fleshy growth (often glandular or nectar-secreting), of receptacle at the base of floral parts.
- Distichous* : arranged in 2 vertical rows
- Drupe* : indehiscent fruit with a flesh around centrally held hard seed- or seeds-containing stony part
- Ellipsoidal* : elliptic (vide infra) solid body
- Elliptic* : broadest at middle and tapering to both ends
- Emarginate* : notched at the end or tip
- Endocarp* : innermost distinctive layer of such fruits as drupes
- Endosperm* : extra-embryonic tissue in the seed
- Ensiform* : sword-shaped
- Entire* : even, without grooves (e.g. in fruits), or cuts (e.g. leaf margins)
- Epi-* (prefix) : adnate to neighbouring floral parts
- Epicalyx* : outgrowths of calyx
- Epicarp* : distinctive skin of fruit
- Epigynous* : inferior
- Erose* : torn-edged
- Etaerio* : bunch of fruitlets developed from a single flower
- Exalbuminous* : devoid of endosperm
- Exserted* : protruding out
- Exstipulate* : devoid of stipule/s
- Extrorse* : facing outwards (cf. introrse)
- Fastigiate* : with many branches all clustered and standing erect
- Fertile* : applied to pollen bearing anther; opposite of sterile

- fid* (suffix) : to indicate cleft
- Filament* : stalk of stamen
- foliate* (suffix) : leaflets palmately set
- Follicle* : 1-carpellary fruitlet or fruit, dehiscent by a single suture.
- Follicular* : follicle type (*vide supra*)
- Gamo-* (prefix) : united
- Glaucous* : covered with bluish-grey or whitish bloom
- Gynoeceum* : pistil of flower
- Head* : dense flower bunch usually globose
- Hoary* : densely covered with minute hairs giving whitish appearance
- Hypanthium* : hollow flower receptacle
- Hypogynous* : inserted on the floral receptacle relatively below ovary (cf. superior)
- Imparipinnate* : with an odd leaflet at the end (eg. paripinnate)
- Indehiscent* : never splitting open, unlike in dehiscent fruits, for seed dispersal
- Induplicate* : folded leaf with margins turned upwards (inwards)
- Inferior* : ovary is inferior when situated below one or more of other floral parts
- Inflexed* : bent inwards
- Infundibuliform* : funnel-shaped
- Internode* : the part between 2 adjacent nodes of stem or branches
- Introrse* : facing inwards towards centre of the flower (cf. extrorse)
- Leaf blade* : upper flat part of leaf as distinct from the petiole but generally spoken as leaf
- Leaflets* : constituent parts of compound leaf
- Legume* : pod developed from mono-carpellary pistil and dehiscent along the 2 sutures.
- Lobes* : parts of a regularly notched object
- Lodicules* : inconspicuous perianth of bamboos and other grasses
- Megasporophyll* : female sporophyll
- Microsporophyll* : male sporophyll
- Monadelphous* : (referring to stamens) connate in a single bundle
- Monandrous* : flowers having 1 stamen
- Monoecious* : flowers either staminate or pistillate but borne on the same individual
- Muricate* : covered with short protuberances
- Ob-* : used as prefix, indicates shape in the reverse direction

- Ochrea*, or *Ocrea* : stipular sheath around a node
- Operculum* : hemispherical to conical perianth
- Opposite* : leaves set one opposite the other at nodes
- Parietal* : attachment to the wall (skin) of 1-celled, 2 or more carpellary ovary
- Paripinnate* : pinnate leaf with an even number of leaflets
- Peltate* : petiole or stalk attached at the middle as in the shield
- Penninerved* : with leaf veins running pinnately from mid-vein
- Perigynous* : when the ovary is neither held above or sunk below other floral parts which themselves arising at about half way level
- Phyllode* : petiole specially modified into leaf-blade
- Pinna* : leaflet of compound leaf
- Pinnatisect* : pinnately segmented
- Placentation* : attachment of ovules
- Pistillode* : non functional pistil
- Polygamous* : when a plant produces both bisexual and unisexual flowers
- Pyriform* : pear-shaped
- Rachis* : leaflets-bearing stalk of compound leaf
- Radical* : leaves arising from base
- Receptacle* : a distinctive tissue holding floral parts or a fleshy axis holding flowers themselves
- Reduplicate* : revolute (*vide infra*)
- Revolute* : folded or curved back
- Rostrate* : beaked with slender tip
- Rotate* : wheel-shaped; said of corolla with short tube and with lobes spreading at right angles
- Ruminant* : seed-coat spreading into endosperm
- Salvar-shaped* : corolla with a long even tube
- Samara* : winged fruit or fruitlet
- Scales* : flaps of tissue often leafy such as bud scales or woody as scales of cone
- Simple* : unlobed entire leaf or unbranched stem
- Spadix* : spathaceous spike-type inflorescence
- Spathaceous* : accompanied by spathe
- Spathe* : boat shaped large bract set to hold entire inflorescence
- Spikelet* : a type of spike evolved through reduction and elimination of floral and extrafloral parts
- Spinulose* : bearing rigid spine-like outgrowths

- Sporangium* : spore pocket
Sporophyll : spore-carrying fertile leaf
Staminode : nonproductive stamen devoid of pollen/anther
Sterile : nonproductive
Stipitate : stalked
Stipules : leaf outgrowths borne as appendages at the nodes
Stipulate : having stipules
Subcapitate : knob-like
Subulate : awl-shaped
Sulcate : grooved
Superior : ovary arising directly from the receptacle and is innermost to or above the attachment of other floral parts. See also hypogynous.
Symmetrical : regular with radial symmetry (flowers); when both sides similar (leaves). See also Actinomorphic
Syncarpium : fleshy fruit derived from inflorescence as a whole
Syncarpous : of 2 or more carpels fused together
Synconus : syncarpium-type fruit applied to figs
Synonym : botanical name (binomial) which remains superseded or rejected
Syzocarpic : separating into carpels or 1-seeded parts at dehiscence
Tepals : perianth parts or lobes
Terminal : at the tip
Terete : cylindrical or nearly so, being round in cross-section
Tomentose : densely hairy
Triquetrous : with 3 grooved edges
Turbinate : top-like
Umbilicus : tissue by which a seed attached to fruit
Unarmed : without thorns or spines
Urceolate : urn-shaped
Valvate : not overlapping (meeting at the edges without overlapping)
Veins : capillary strands, visible notably in leaves
Versatile : anther held in the middle by filament
Vesicles : juicy-turgid pustules
Villous : covered with straight hairs
Whorled : 3 or more leaves set symmetrically around a node
Zygomorphic : flowers exhibiting identical halves along only on plane (cf. Actinomorphic)

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