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THE TIMBER TREES

OF THE STATE OF

== São Paulo ==

BRAZIL

REPUBLIC of the UNITED STATES of BRAZIL.
THE STATE of S. PAULO.

*Department of Agriculture, Commerce and
Public Works.*

THE TIMBER TREES

OF THE STATE OF

SÃO PAULO

BRAZIL.

A Descriptive Summary

by

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Engineer to the Public Works Dept. of the State.

Introduction.

In successive Universal Exhibitions it has been recognised that Brazil is the richest country in the world in timber for building and industrial purposes.

In the State of S. Paulo more than 300 varieties of timber for building and industrial purposes have been noted; its higher regions are still covered for the greater part with dense virgin forests.

Its timber-lands and forests stretch from the shores of the Atlantic Ocean to the **Campos do Jordão** in the **Serra da Mantiqueira** which rise to an altitude of 2,100 metres, producing a succession of zones of varying climate, from a tropical warmth to the temperature of the higher lands of Middle Europe.

The State of S. Paulo produces timber so durable that it has been known to form part of structures much more than a century old, and even of as long standing as the colony itself; a duration of 50 years is very common for many species of timber used in work exposed to the weather and to the action of water. This period is quite usual, for instance, in bridge structures, in river works, and even in harbour and coast constructions exposed to the action of salt water.

Its timber is remarkable, too, for its beauty of colouring, from the clear white of the **Malacacheta**, &c., to the jet-black of the **Graúna** and others. In fact all colours are represented, the white **marfim-velho** of the **Pequiá-marfim**, the uniform light-yellow of the **Guatambú**, the red of the **Aroeira** and others, the green of the **Sucupira**, the violet of one of the **Jacarandás**, and the pink of the **Guarabú**; all with grain of most exquisite marking, which greatly enhances their employment for works of art in wood and affording handsome surfaces for polishing.

The **Eucalyptus** has become quite indigenous to the soil, grows rapidly and lends itself well to auto-reproduction. It may be truly regarded as the timber of the State, for it exhibits the same valuable qualities so notable in the *Eucalyptus* of Australia.

The Paulist timber is often very flexible, elastic and resistant, as, for example the **Guatambú, Genipapo, Goiabeira do matto, Guarantã, &c.**, yielding timber specially suitable for the more elastic parts of agricultural carts, and particularly for like parts of machines. Some timber has extraordinary resisting qualities, the **Páo-ferro** withstanding a crushing force of 951 kilograms per square centimetre, the **Jacarandá-tã**, 1,043 kilos. and the **Páo-Brazil** the extraordinary figure of 1,361 kilos. per square centimetre.

The timbers vary greatly in specific weight, from the **Cedro branco** with 370 kilos. per cubic metre to the **Aroeira** with 1,267 kilos.; the ordinary building-timbers average from 800 to 1,000 kilos. per cubic metre.

The following varieties are applicable to ship-building: the **Sucupira, Tapinhoan, Mossotahyba, Pequiá, Oleo pardo, Oleo vermelho, Massaranduba, Eucalyptus, Jacarandá, Guatambú, &c.**

Wood for first-class carriage-building is provided by the **Jacarandá, Cedro vermelho, Oleo, the Canellas preta, imbuia, sassafras, &c., the Araribá, Vinhatico, &c.**, all presenting very handsome surface for polished and decorative work. More than 50 varieties of timber afford suitable material for all kinds of household furniture and appointments, from the **Grumichaba, Araribá, Oleo, Peroba rajada, and miúda, &c.**, for ordinary qualities of work, to the **Jacarandás-tã and violeta, and the Imbujas, Guayuvira, Carvalho nacional, Caxicahen, &c.**, all possessing qualities especially fitting them for work of the highest finish.

This higher-class timber allows of fine polish, gilt and beaded work, is remarkably firm and strong, allowing of the use of parts of small dimensions, and is also of excellent quality for moulding and carving. There are in the homes of Brazilians of rank and wealth many examples of artistic cabinet-work which has long been of traditional note.

The **Araruva, Arco de pipa, Guarantã, &c.**, are suitable for making casks, barrels, vats, &c.

The following supply timber for railway-sleepers of more than 12 years duration: the **Oleo vermelho, Tapinhoan, Aroeira, Gibatão do Norte, Peroba miúda, the Ipês, &c.**

The following trees yield secondary products useful in pharmaceutical and veterinary science, viz: The **Andá-assú, Angico, Angelim, Aroeira, Bicuiba, Cambará, Canella preta, Cangerana, Capechenguy, Copahyba, Eucalyptus, Genipapo, Graúna, Guanandi, the Ipé tabaco** and others, the **Jatobá Oleo vermelho, Páo d'Arco, Pereira, Sucupira, &c., &c.**

For tanning, the leaves, bark, &c. of the following are used,

viz: The **Mague, Angico, Peroba, Guatambú, Peito de pomba, Tapinhoan, Sucupira, Barbatimão, Capechenguy, &c.**

The specific weights of the various varieties are determined in kilogrammes per cubic metre, and the co-efficients of resistance to crushing and flexion, or bending, are given in kilogrammes per square centimetre.

The botanical classification has been made by the eminent Brazilian botanist, Barboza Rodrigues and other capable scientists, so insuring accuracy.

All the information supplied concerning the various uses and applications was carefully compiled by the Author of this Summary.

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Acacia.

Acacia polyphilla D C. **Order:** Leguminosae.

Fine wood affording a surface which can be polished. May be used for furniture, decorative purposes, &c., and for interiors of buildings. Is found in S. Paulo and in neighbouring localities. Specific gravity: 750 kilograms per cubic metre.

Açoita-Cavallo.

VARIETIES: Açoita-cavallo.

” ” **branco.**

SYNONYMS: Soita-cavallo. Salta-cavallo. Açouta-cavallo. Ivatingy.

CLASSIFICATION: *Luehea paniculata* Mart. **Family:** Tiliaceae.

Order: Columniferae.

DESCRIPTION OF THE TIMBER: Trunks 10 to 12 metres long with diameter of 0.80 to 1 metre. Colour whitish, or hoary, with darker patches. Stubborn fibrous texture.

No alburnum. Easy to carve.

SPECIFIC GRAVITY: From 640 to 850 kilograms.

USES: Building-interiors. Panelling. Framework. Scantlings. Soles of boots, clogs, wooden vessels and spoons.

Branches very flexible.

The bark is used for tanning and is of medicinal value, for arthritic tumours, diarrhoea and leucorrhoea.

HABITAT: Abounds in the North of the State to the boundaries of the State of Rio; is met with, nevertheless, in nearly every part of the State.

OBSERVATIONS: Its wood is of second-rate quality, the **Açoita-cavallo branco** being even more inferior.

The tree attains a large size, widely branching and leafy, affording grateful shade to cattle in the pastures.

Very flexible branches.

Large, oval, bright green leaves; woody fruit, long, divided into five cavities.

Flowers in February and March.

A forest scene.

Aderno.

VARIETIES: Aderno verdadeiro.

„ vermelho.

SYNONYMS: Aderno verdadeiro or preto.

CLASSIFICATION: Astronium commune **Jacq.**

Fam. Anacardiaceae. **Order:** Sapindinae.

DESCRIPTION: Trunks from 8 to 10 metres long, and from 60 to 80 cms. in diameter.

Light red colour, with whitish patches, which almost disappear on polishing. In the **Aderno verdadeiro** the colour is darker and the patches are brown.

Very regular and light fibres. Hard to carve.

SPECIFIC GRAVITY: **Aderno vermelho:** From 870 to 1,050 kilograms.

Aderno vermelho: From 820 to 900 kgs.

RESISTANCE: To crushing force: 700 kilogs.; to bending 638 kilograms.

USES: Exterior woodwork, dry situations. Stakes, bridges, cabinet-work, turning, polished work.

Sleepers of second-rate quality. Both kinds have the same uses.

HABITAT: To boundaries of the State of Rio, Sierra del **Mar.**

OBSERVATIONS: Of large growth.

Fine appearance.

Timber rare.

Alecrim.

CLASSIFICATION: Pithecolobium sp. **Order:** Leguminosae.

DESCRIPTION: Trunks from 4 to 5 metres long and with a diameter of from 20 to 30 centimetres.

Colour dark-red, almost black.

Fibres straight, light in colour and very resistant.

Thick layer of sap-wood or alburnum in proportion to its diameter.

Very hard to cut.

SPECIFIC GRAVITY: From 940 to 1,000 kilogs.

USES: Exterior woodwork, damp localities. Cabinet-work, axle-trees; polished work, affording a very beautiful surface. Rods. Balusters. Axles and spokes of wheels.

The sap-wood also can be used for interior wood-work.

HABITAT: West of the State, rare in other localities.

OBSERVATIONS: Tree of flourishing growth, much branched and leafy.

Bark rough and thin.

Leaves small, hoary or whitish and very similar to the garden **Alecrim**.

Flowers small, white and in clusters.

Fruit large, copious and fine.

Almesca.

Styrax glabratum **Spr.** **Family:** *Styracaceae*. **Order:** *Diospyrinae*.

Tree of ordinary growth. Wood of inferior quality used for interior wood-work, frame-work and boxes. It has a sp. gr. of 950 to 1,000 kilogs. per cubic metre.

Is met with in the North of the State and in the valley of the **Parahyba**.

Amendoeira.

Amendoeira brava (Hardy *Amendoeira*). Wood of inferior quality used for interior wood-work, frame-work and boxes. Sp. gr. 700 to 800 kilogs.

Is found in all parts of the State.

Amendoim.

SYNONYM: *Oleo branco*.

CLASSIFICATION: *Pterogyne nitens* **Tul.**

Order: *Leguminosae*.

DESCRIPTION: Trunks from 6 to 8 metres long and 60 centimetres diameter.

Colour uniform whitish or hoary.

Fibres or grain, fine golden yellow. Leaves lengthwise with the stem.

No alburnum or sap-wood.

SPECIFIC GRAVITY:

USES: Flooring. Carts and carriages. Dry situations, first-rate quality.

HABITAT: A plant of small growth, very branching and little foliage. Branches erect and much subdivided towards base.

Leaves small, smooth and opposite. Flowers white, small and perpendicular, in groups. Fruit small and abundant similar to **amendoim**.

Clearing a Virgin Forest.

Amarellinho.

CLASSIFICATION: Symplocos sp. **Family:** Symplocaceae.

DESCRIPTION: Trunks from 10 to 12 metres long with diameter from 0.80 to 1 metre.

Colour, bright yellow, very even colouring. Fine and regular grain. Hard to cut.

USES: Exterior wood-work. Flooring. Dry situations. Cabinet-work. Turning. Naval constructions. Hard to cut.

HABITAT: Valley of the **Ribeira**.

OBSERVATIONS: In Cananea it is called the **Amarellinho** or **Canella Paula Teixeira**; has a texture of second-rate quality, used only for interior-work.

Andá-Assú.

SYNONYMS: Andá-guassú. Inda-guassú. Purga de gentio. Côco de purga. Fructa de Arara.

CLASSIFICATION: Joannesia princeps **Vell.**

Family: Euphorbiaceae. **Order:** Tricoccae.

DESCRIPTION: Trunks from 4 to 6 metres long and 40 to 60 centimetres diameter.

Colour white, with slightly golden patches. Grain much intercrossed forming a very loose texture.

No sap-wood.

Easily carved.

SPECIFIC GRAVITY: From 480 to 600 kgs.

USES: Interior wood-work. Frame-work. Floats. Canoes. Packing-cases. It is of third-rate quality.

The fruit is purgative both for men and animals, and stupifies fish causing them to come to the surface.

HABITAT: Is common throughout the State.

OBSERVATIONS: Tree of ordinary growth, twisted, branching and with thick tufted foliage. Large palmlike compound leaves at the ends of the branches.

Fruit divided into two capsules with oily almond-like seeds.

On the Southern Coast this tree has a much smaller development.

Angelim.

VARIETIES: Angelim amargoso.

„ côco.

Angelim doce.

„ **pedra.**

„ **rosa.**

SYNONYMS: **Angelim** or Mangalô.

„ amargoso or aracui.

„ côco or urarema.

CLASSIFICATION: **Angelim:** Vouacapoua sp. **Aubl.**

Order: Leguminosae.

DESCRIPTION: All the varieties of **Angelim** have trunks from 8 to 10 metres long and 0.60 to 1 metre in diameter.

Colours vary from bright yellow to dark red.

This description is departed from in some respects, especially in the **Angelim pedra.**

SPECIFIC GRAVITY: **Angelim amargoso.** From 700 to 954 kgs.

Angelim côco: From 780 to 850 kilogs.

„ **doce:** From 800 to 1,000 kilogs.

„ **pedra:** From 980 to 1,052 kilogs.

„ **rosa:** From 670 to 1,000 kilogs.

RESISTANCE: **Angelim amargoso:** To crushing 1,007 kilogs.

„ **côco:** To crushing: 626 kilogs.

„ **pedra:** „ „ 648 „

„ **rosa:** „ „ 670 „

to bending: 570 kilogs.

USES: Exterior wood-work. Bridges. Posts, damp situations. Carts, casks, barrels. Naval constructions. Is not fitted for flooring nor where thin planking is required.

Not suitable where subjected to much flexion or bending.

Angelim côco and **pedra** make sleepers of first-rate quality, but does not hold nails well.

The **Angelim amargoso** is a vermifuge and drastic medicinally.

The bark of **Angelim côco** is a vermifuge, but is poisonous if used in too large doses.

HABITAT: Sierra del **Mar.** Rare in the rest of the State.

OBSERVATIONS: **Angelim amargoso:** Tree of strong growth, tufted foliage. Glossy leaves.

Fruit large, long and always green. Leaves red, slightly aromatic.

Angelim doce: Tree of ordinary growth. Flowers hanging, with dark red calices. Fruit oval, with a single seed ripening to a golden yellow colour.

Angelim pedra: Tree of large growth. Rayed flowers with five points or teeth.

The fruit is white with a red seed.

Angico.

Angelim rosa: Tree of ordinary growth. Flowers reddish, rather irregular. Fruits very broad with three edible seeds.

Angico.

VARIETIES: Angico.

„ côco.

„ escuro.

SYNONYMS: Angico or Curupay.

CLASSIFICATION: Angico: *Piptademia rigida* Benth.

Order: Leguminosae.

DESCRIPTION: Trunks from 6 to 7 metres in height, and from 60 to 80 cms. diameter.

Colour from yellow to dark-brown with bright patches.

Coarse and crossed or netted grain.

Hard to cut.

SPECIFIC GRAVITY: Angico: From 907 to 1,070 kilogs.

Angico côco: From 770 to 890 kilogs.

RESISTANCE: Angico: To crushing 755 kilogs.

USES: Bridges, posts, work exposed to changing and extreme temperatures, dry situations, first-rate quality.

Flooring, panelling, interior wood-work. Sleepers of second-rate quality. The bark is used for tanning. Produces a gum of medicinal value.

In the North of the State, in the valley of the **Parahyba**, there is much **Angico** but of inferior quality, applicable only for interior work and boxes or cases.

OBSERVATIONS: Tree of large growth, branching with little foliage, branches thin and subdivided. Leaflets small and compound leaves, palm-like.

Flowers white, small, very numerous and odorless. Fruit small and flat with small seeds.

Araçá.

VARIETIES: Araçá.

Araçagy.

Araçapyranga.

Araçarana de concha.

Araçarana branca.

Araçatuba.

CLASSIFICATION: The **Araçá** and its varieties are all of the genus *Psidium*. **Family:** Myrtaceae. **Order:** Myrtiflorae.

DESCRIPTION: Trunks from 4 to 6 meters long, with 30 to

60 cms. diameter. Colour, dark-yellow to dark-brown. Grain very regular and compact. No sap-wood or alburnum.

Hard to cut.

SPECIFIC GRAVITY: **Araçá:** From 997 to 1,071 kilogs.

Araçapyranga: From 1,000 to 1,100 kilogs.

RESISTANCE: **Araçá:** To crushing: 735 kilogs.; to bending 865 kilogs.

USES: **Araçá:** Exterior work, beams, bridges, damp situations, second-rate quality. Coarse flooring. Turning. Polished work.

Araçagy: Only applicable to interiors, not fitted for flooring.

Araçapyranga: The same uses as **Araçá**, to which it is superior being of first-rate quality.

Araçarana: Is of inferior quality in both varieties.

Araçatuba: Is of inferior quality and is only applicable to interior work.

HABITAT: Around S. Paulo, Sierra del **Mar**, is however found in other parts of the State.

OBSERVATIONS: The **Araçás** are trees having little foliage, branching upward and straight, the bark dark-brown in colour but fine, except the **Araçatuba** which branches more and has a greenish rough bark.

The **Araçarana branco** is met with on the south-lying coast.

Arapassú.

Handsome timber for turning, polishing, furniture, &c. Of first-rate quality for interior work. Is found in the valley of the **Ribeira**.

Arapóca.

SYNONYMS: Guatayapóca. Páo-amarelo. Arapóca-amarella.

CLASSIFICATION: *Raputia magnifica* **Engl.** **Family:** Rutaceae.

Order: Gruinales.

DESCRIPTION: Trunks from 6 to 8 metres long with 40 to 80 cms. diameter.

Colour, very even light yellow. Whitish grain, fine and not very marked.

Small amount of sap-wood. Hard to cut.

SPECIFIC GRAVITY: From 720 to 1,210 kilogs.

USES: Exterior work. Bridges, posts. Beams, damp localities. Cabinet-work. First-class carriages and coaches. Turning, etc. Sleepers of second-rate quality lasting 9 years.

HABITAT: Franca, Batataes, etc.

OBSERVATIONS: Tree of ordinary growth. Leathery leaves of various forms. The fruit is a tough capsule of five chambers or vessels with five depressions.

Araribá.

VARIETIES: Araribá amarelo.

„ branco.

„ rosa.

„ vermelho.

SYNONYMS: Araribá amarelo or Grande.

„ vermelho or Carijó.

CLASSIFICATION: Araribá amarelo: Centrolobium.

„ branco: Centrolobium.

„ rosa: Centrolobium robustum Benth.

Araribá vermelho: Centrolobium tomentosum Benth.

Order: Leguminosae.

DESCRIPTION: Trunks from 8 to 10 metres long, with 0.80 to 1 metre diameter.

Colour, yellow, with reddish veins and surface varied by bright tones. Grain fine and netted.

Small layer of sap-wood. Easy working with the knife.

SPECIFIC GRAVITY: Araribá amarelo: From 700 to 872 kgs.

„ branco: 650 to 780 kilogs.

„ rosa: 705 to 920 kilogs.

„ vermelho: 700 to 1,000 kilogs.

RESISTANCE: Araribá amarelo: To crushing 307 kilogs.; to bending: 1,322 kilogs.

Araribá rosa: To crushing: 718 kilogs.; to bending: 972 kilogs.

Araribá vermelho: To crushing: 538 kilogs.

USES: Beams, posts. Exterior work.

Naval construction. Barrels. The Araribá amarelo is superior to the Araribá vermelho. The Araribá branco is of inferior quality to the others. The Araribá amarelo supplies flooring boards of remarkable flexibility. The root of the Araribá yields a red dye. The Araribá rosa may be put to the same uses as the Araribá amarelo and makes a sleeper of first-rate quality, lasting 11 years.

HABITAT: Is common throughout the State.

OBSERVATIONS: Trees of large growth, very branching and

leafy, noted for their beauty in the landscape. On the coast two varieties only have been noted up to the present: the **Araribá amarelo** or **grande**.

Araribá vermelho, **carijó** or **pequeno**.

Araruva.

VARIETIES: **Araruva branca**.

„ **vermelha**.

SYNONYMS: **Araruva vermelha** or **amarella**.

DESCRIPTION: Trunks from 4 to 5 metres long with diameter of 40 to 60 centimetres.

Colour, yellow or bright reddish with patches.

Some planks from the bole are not evenly dense.

Grain very regular and well-marked.

Easy to work with the knife.

SPECIFIC GRAVITY: **Araruva branca:** From 700 to 820 kgs.

„ **vermelha:** From 750 to 950 kgs.

RESISTANCE: **Araruva vermelha:** To crushing: 402 kilogs.; to bending: 1,217 kilogs.

USES: Barrels. Interior work. Boxes. Flooring and panelling.

The **Araruva branca** is much inferior to the **Araruva vermelha**; it cannot be employed for building, only for large baskets.

HABITAT: Valley of the **Tieté** and of **Piracicaba**.

OBSERVATIONS: A tree with sparse branching and little top. Smooth and fine bark. Large round leaves with coarse and plainly-seen veining. This timber is not of standard quality.

Araxixá.

Wood of white colour, easy to cut, and suitable for boxes, panelling, matches, etc. Tree of medium height, upright trunk, high branching head. Edible fruit, raw or cooked as chestnuts.

Arco de Pípa.

CLASSIFICATION: *Erythroxylum pulchrum* **St. Hil.** **Family:** Erythroxylaceae. **Order:** Gruinales.

DESCRIPTION OF TIMBER: Very compact. Hard to cut.

SPECIFIC GRAVITY: From 1,071 to 1,072 kilogs.

RESISTANCE: To crushing: 538 kilogs.

Araruva.

USES: Barrels. Carts. Bridges. Beams. Sleepers of first-rate quality.

This wood is noted for its flexibility.

HABITAT: North of the State and in the valley of the **Tieté**.

A rare wood.

Aroeira.

VARIETIES: **Aroeira.**

„ **do campo.**

„ **preta.**

„ **do sertão.**

SYNONYMS: **Aroeira** **preta** or **Orindeuva** (Q. V.)

CLASSIFICATION: **Aroeira:** *Schinus terebinthifolius* **Raddi.**

„ **do campo:** *Schinus anthartribua* **F.**

All. Family: *Anacardiaceae*. **Order:** *Sapindinae*.

SPECIFIC GRAVITY: From 1,050 to 1,267 kilogs. All the varieties of **Aroeira** have this same sp. gr.

RESISTANCE: **Aroeira:** To crushing: 1,005 kilogs.

Aroeira do sertão: To crushing: 1,095 kilogs.

DESCRIPTION: Trunks from 6 to 8 metres long, with diameter from 40 to 50 centimetres.

Colour from dark-yellow to red with darker patches, forming a kind of pattern or design.

Grain fine and closely marked forming a compact wood.

Layer of alburnum, or sap-wood, also applicable to wood-work.

Very hard to cut.

USES: Bridges, posts, beams, damp situations. This timber is justly considered to be the best in S. Paulo for exterior wood-work and damp situations. Cabinet-work, axle-trees. Forms handsome surface for polishing. The bark of the **Aroeira** and its varieties is used for tanning leather, for preparing a dye for textile fabrics and for its medicinal properties used in cases of rheumatism.

The **Aroeiras** yield an oil which is used for ulcerated wounds, and a distillate from their leaves and fruit is an extract of diuretic value. The dye of the **Aroeira** is firm in textures which come in contact with salt water, such as hair, string and rope, ribbon, etc.

HABITAT: The valleys of the **Mogy-Guassú** and **Tieté**, but is found in nearly every part of the State.

OBSERVATIONS: The tree is small and has a twisted and gnarled growth. It yields a fine powder very irritating to the skin.

Stakes and posts made of **Aroeira** have usually a duration of 50 years.

Balsíno.

Timber used for carts and waggon, joinery, exterior wood-work, etc. Of second-rate quality. Tree of small growth to be met with on the Sierra del **Mar**. Sp. gr from 930 to 1,010 kilogs.

Barbatimão.

SYNONYMS: Casca de virgindade.

CLASSIFICATION: Stryphnodendron Barbatimão **Mart. Order:** Leguminosae.

DESCRIPTION: Trunks from 3 to 4 metres long with 40 to 50 centimetres diameter.

Fibres much interlacing.

SPECIFIC GRAVITY: From 1,045 to 1,304 kilogs.

RESISTANCE: To crushing: 1,105 kilogs.

USES: Cabinet-work, turning. Exterior work. Damp situations. Is not suitable for flooring nor for broad planking.

The bark is astringent and is used for tanning. The bark and leaves are used as a tonic, also for malignant wounds or sores and diarrhoea, both for men and animals.

HABITAT: North of the State, valleys of the **Tieté** and **Rio Pardo**, being found, however, in almost every part of the State.

OBSERVATIONS: Twisted and gnarled growth, very few leaves, small palmate. White flowers in dense spikes.

The fruit is small with coarse red seeds.

Bíco de Pato.

SYNONYMS: Guaximbé. Bico de papagaio.

CLASSIFICATION: Machaerium sp. **Order:** Leguminosae.

DESCRIPTION: Trunks of 8 to 10 metres in length with 50 to 60 centimetres diameter.

Whitish colour with branching patches.

Grain very fine and interlaced. Large layer of sap-wood.

Hard to cut.

SPECIFIC GRAVITY: From 900 to 1,000 kilogs.

USES: Bridges, beams. Exterior work. Damp localities, first-rate quality.

The bark is used for tanning.

HABITAT: Valley of the **Tieté** and certain parts of the North of the State.

Aroeira.

OBSERVATIONS: Tree of large development, very branching and good foliage. Erect. Bark fine and rough. Leaves large and very uniform in size. Flat spines, large in newer branches. Fruit small, hooked like the bill of a bird.

In the valley of the **Mogy-Guassú** the timber grown is of inferior quality.

Bicuiba.

VARIETIES: **Bicuiba assú.**

„ **mirim.**

CLASSIFICATION: *Myristica Bicuhyba* Schott.

Family: Myristiceae. **Order:** Polycarpicae.

DESCRIPTION: Trunks from 8 to 10 metres long and 60 to 80 centimetres diameter. Colour white, which rapidly becomes red on exposure to the air.

Easy to cut.

SPECIFIC GRAVITY: From 680 to 800 kilogs.

USES: Beams, joists, rafters, flooring. Interior work, first-rate quality. Yields medicinal oil used for rheumatism and dyspepsia.

HABITAT: North of the State and the valley of the **Tieté.**

On the Southern shores it is of inferior quality.

OBSERVATIONS: A lofty tree, large head, rounded like the pine, very branching and leafy. Broad leaves. Flowers unisexual. The fruit contains a single seed yielding the medicinal oil.

The **Bicuiba mirim** is inferior to the **Bicuiba assú.**

Biry.

Wood of inferior quality, used for interior work and for boxes. Grows very rapidly and can be felled in 6 years. Makes very good fire-wood.

Is found in Campinas and neighbouring country.

Bocuva.

DESCRIPTION: Trunks from 8 to 10 metres long with 0.60 to 1 metre diameter. Colour dark-yellow with reddish patches.

Coarse grain, straight, in layers; presenting divers colours in regular transverse bands.

Layer of sap-wood. Soft under the knife.

SPECIFIC GRAVITY: From 820 to 910 kilogs.

USES: Panelling. Scantlings. Interior work. Warps very much.

HABITAT: Valley of the **Ribeira, Sierra del Mar** and in the North of the State.

OBSERVATIONS: Upright in growth, much branched, little foliage. Dark round leaves. Broad black fruits with yellow veining and very oily. This fruit, even without drying, will burn giving out a very good light.

Bracuhy.

VARIETIES: Bracuhy amarello.

„ de pedra.

„ vermelho.

SYNONYMS: Baracuhy. Garacuhy. Gracuhy. Guaracuhy.

DESCRIPTION: Trunks from 10 to 12 metres long and 60 to 80 centimetres diameter.

Colour from bright yellow to dark-red. Grain small, compact and straight, except in the **Bracuhy de pedra**, which has coarse grain, irregular and netted with faults and knots in the interior.

Thick layer of alburnum. Hard to cut.

SPECIFIC GRAVITY: Bracuhy amarello: From 920 to 1,010 kgs.

„ de pedra: From 780 to 850 kgs.

„ vermelho: From 800 to 920 kgs.

USES: Beams, bridges and exterior work. Dry situations. Is not suitable for making broad planks. The **Bracuhy de pedra** is superior to the other varieties.

HABITAT: Is common in the State, abounding in the valley of the **Parahyba**.

OBSERVATIONS: The various varieties of the **Bracuhys das Marinhas** are very superior to those of the interior mountain-lands, the timber of the **Marinhas** (coast) being of first-rate quality for any kind of wood-work.

They are trees of large and vigorous growth, with thick branches.

Grey bark, thin and fine.

Cabreúva.

VARIETIES: Cabreúva amarella.

„ vermelha.

SYNONYMS: Cabriúva. Caboré. Oleo de Cabórehyba. Cabreúva amarella or parda.

CLASSIFICATION: Myrocarpus fastigiatus F. All. Order: Leguminosae.

Cabreúva.

DESCRIPTION: Trunks from 10 to 12 metres long with diameter from 0.80 to 1 metre. Colour yellow and dark-brown or red with bright patches in the direction of the grain. The timber is straight, but there is a tendency to show unequally distributed faults or cracks longitudinally with the trunk.

Small layer of sap-wood or alburnum.

Hard to cut.

SPECIFIC GRAVITY: **Cabreúva amarella:** From 960 to 1,020 kgs.

„ **vermelha:** From 980 to 1,050 kgs.

RESISTANCE: To crushing: 759 kilogs.; to flexion: 1,356 kgs.

USES: Naval constructions. Cabinet-work. Carriages **de luxe** and carts. Beams, bridges, strong, thick flooring. Parts exposed to the weather. Carpenters' tools.

The **Cabreúva vermelha** is superior to the **Cabreúva amarella** or **parda**. Both yield an oil medicinally valuable in rheumatism, and the bark yields medicaments used for certain lung complaints.

HABITAT: West of the State; it is, however, found in other localities.

OBSERVATIONS: This tree is remarkable as overtopping all the other trees of the forest. A high tree, few branches, thick and strong at the base springing often from the lower part of the bole. Bark coarse and rough. Few faults, or cracks. Flowers small and white at the ends of the branches. Fruit broad, small and with a single seed in the centre.

Cacunda.

VARIETIES: **Cacunda.**

„ **de espinho.**

DESCRIPTION: Colour bright yellow with darker patches. Grain fine and regular. Easily carved.

SPECIFIC GRAVITY: From 612 to 807 kilogs.

USES: Furniture, turning. Scantlings. The **Cacunda de espinho** is used for exterior work.

The root-wood of the **Cacunda** offers a beautiful surface for polishing, with handsome wave-marks and patches.

HABITAT: **Sierra del Mar** and the valley of the **Ribeira.**

OBSERVATIONS: A rare timber.

Café Bravo.

Guarea sp. **Family:** Meliaceae.

This is a small tree; its leaves are small and like those of the true coffee plant; flowers white and small, with yellow points or spots: fruit, round small and red. Smooth bark. Fruit ripens in August. Trunks from 3 to 4 metres high, with a diameter of 30 to 40 cms. The wood is suitable for interior work only, being of second-rate quality. Its leaves are used medicinally against snakebites.

Caixeta.

VARIETIES: **Caixeta branca.**

„ **vermelha.**

SYNONYMS: Caxeta. Páo Parahyba. Malacacheta. **Cacheta vermelha** or Tayavevuia.

CLASSIFICATION: Tabebuia leucoxylla **D C.** **Family:** Bignoniaceae. **Order:** Passiflorinae.

DESCRIPTION: Trunks from 8 to 10 metres long with 80 cms diameter.

Colour, uniformly white or slightly reddish with conspicuous veins. Coarse, straight grain.

Easily carved.

SPECIFIC GRAVITY: **Caixeta branca:** 400 to 510 kilogs.

„ **vermelha:** 460 to 560 kilogs.

USES: Boxes, panelling. Interior wood-work. Does not crack nor warp in the sun. The **Caixeta vermelha** is superior to the other variety.

HABITAT: Is common throughout the State.

OBSERVATIONS: This is a tree of erect and large growth with few branches. There is found in the valley of the Ribeira a tree, called the **Araxixa**, branching, with high top, and producing a nut with 4 cavities containing edible fruit when cooked. Its trunk is from 6 to 8 metres high, with a white wood like the **Choupo** and is used for making matches.

The **Caixetas** of the coast regions are superior to those growing in other parts.

Cambará.

VARIETIES: **Cambarã.**

„ **poca.**

Caixêta.

CLASSIFICATION: *Vanillosmopsis erythropappa*. **Schultz Bip.**

Family: Compositae. **Order:** Aggregatae.

DESCRIPTION: Trunks from 5 to 6 metres long with 40 to 50 centimetres diameter.

Colour, white or light-brown, with conspicuous veins. Grain fine and straight with small cracks running longitudinally.

Hard to cut.

SPECIFIC GRAVITY: From 890 to 950 kilogs.

RESISTANCE: To crushing 472 kilogs.

USES: Ship-building. Canoes. Bridges, posts. Dry situations.

HABITAT: Common throughout the State.

OBSERVATIONS: Tree of small growth, with regular-shaped top.

The **Cambará poca** is of inferior quality.

Cambuhy.

VARIETIES: Cambuhy.

„ **vermelho.**

SYNONYMS: Cabuhy.

Cambuhy vermelho or *C. Pitanga*.

CLASSIFICATION: *Eugenia* sp. **Family:** Myrtaceae. **Order:** Myrtiflorae.

DESCRIPTION: Trunks 6 metres long with 60 cms. diameter.

SPECIFIC GRAVITY: **Cambuhy.** From 670 to 770 kgs.

RESISTANCE: **Cambuhy vermelho:** To crushing: 580 kgs.

USES: First-class cabinet-work. Bridges. Exterior work. Dry situations.

The **Cambuhy vermelho** is superior to the other variety and makes sleepers of first-rate quality, lasting 10 years.

HABITAT: Valley of the **Mogy-Guassú** and in other districts of the State, with more or less vigorous growth.

OBSERVATIONS: Tree of small growth and branching freely. Rather erect. Leaves small, light in colour, smooth and glossy with very fine venation. Bark smooth and light in colour.

Candeia.

VARIETIES: **Candeia graúda.**

„ **mirim.**

SYNONYMS: Pão candeia. Acende candeia.

CLASSIFICATION: *Lychnophora* sp. **Mart.** **Family.** Compositae.

DESCRIPTION: Trunks from 3 to 5 metres long and 40 cms. diameter.

The **Candeia graúda** is white in colour with slightly red patches.

The **Candeia mirim** is red with yellow patches. Both have fine grain, compact and straight.

Hard to carve.

SPECIFIC GRAVITY: **Candeia graúda:** From 1,100 to 1,214 kilograms.

Candeia mirim: From 850 to 960 kilogs.

USES: Bridges, posts. Damp situations. Turned articles. Butts of guns. Fine surface for polishing. Lasts longer when exposed to the weather and covered with its bark. The bark is employed in tanning, imparting to the leather a bright red colour. The branches and twigs will burn in the green State, giving out a bright flame.

HABITAT: It is found in nearly all parts of the State, abounding in the valleys of the **Alto Parahyba** and the **Mogy-Guassú**.

OBSERVATIONS: A small tree, much branching and twisted. Leaves lanceolate, small, of yellow colour on the back and dark green surface.

Canella.

VARIETIES: **Canella açafraão.**

- „ **amarella.**
- „ **batalha.**
- „ **branca.**
- „ **capitão-mór.**

Canellinha.

Canella cedro.

- „ **imbuia clara.**
- „ **imbuia escura.**
- „ **limão.**
- „ **marçanahyba.**
- „ **mandióca.**
- „ **parda.**
- „ **pimenta.**
- „ **prego.**
- „ **preta.**
- „ **puante.**
- „ **ruiva.**
- „ **santa.**
- „ **sassafras amarella.**

Canella.

Canella sassafráz parda.

„ **sassafráz preta.**

„ **sebo.**

„ **veado.**

SYNONYMS: Canella açafirão or **C. vermelha.**

„ **batalha** or **C. bastarda.**

Canellinha or **C. legitima.**

„ **embuia** or **Folha larga.**

„ **marçanahyba** or **Tapanhúma.**

„ **puante** or **Cenellão.**

CLASSIFICATION: Canella batalha: *Nectandra robusta*?

Canella branca: *Nectandra leucothyrsus* **Meiss.**

„ **capitão-mór:** *Nectandra myriantha* **Meiss.**

Canellinha: *Nectandra linhearua* **Meiss?**

Canella marçanahyba: *Cassia marçanahyba* **F. All?**

Order: Leguminosae.

„ **parda:** *Nectandra amara* **Mart.**

„ **preta:** *Nectandra mollis* **Meiss.**

„ **puante:** *Nectandra* sp.

„ **sassafráz:** *Ocotea pretiosa* **Benth.**

„ **veado:** *Actilostemon lanceolatum* **Sald.**

Family: Euphorbiaceae. **Order:** Tricoccae.

All the **Canellas** belong to the **Family:** Lauraceae, **Order:** Polycarpicae, except the **veado** and **marçanahyba.**

There is great difficulty in classifying the plants commonly called **canellas.**

DESCRIPTION: Canella açafirão: Colour yellow or reddish with slight white veining. Irregular grain in distinct layers. Trunks from 8 to 10 metres long and 0.80 to 1 metre diameter.

Hard to carve.

Canella amarela: Colour dark-yellow, with golden shades. Grain very straight and regular. Trunks from 8 to 10 metres long and from 0.80 to 1.20 metres in diameter.

Easily carved.

Canella batalha: Colour, white satin, with handsome surface for polishing. Trunks of 12 metres long with 1.20 metres diameter.

Very easily carved.

Canella branca: Colour, white or slightly yellow. Grain very regular and coarse. Trunks from 7 to 8 metres long with 70 centimetres diameter.

Easily carved.

Canella capitão-mór: Colour, light-brown patch of golden

colour. Grain coarse. Trunks from 6 to 8 metres long with 60 to 80 centimetres diameter.

Hard to cut.

Canellinha: Dark, almost black in colour. Grain very regular presenting at times some knots. Trunks from 2 to 5 metres long with 40 to 60 centimetres diameter. Very hard to cut.

Canella imbuia: Colours varying from dark-yellow to the almost black colour of the **Imbuia escura**. Grain coarse and very regular. Trunks from 8 to 10 metres long with 60 to 80 centimetres diameter.

Easily cut.

Canella limão: Colour light-yellow with satin shades. Trunks from 6 to 8 metres long and 40 to 60 cms. in diameter. Easy to cut.

Canella marçanahyba: Colour dark-brown with various lighter shades. Grain very irregular. Trunks from 6 to 8 metres long with diameter of 60 to 70 cms. Hard to cut.

Canella parda: Colour dark-brown with lighter patches of golden and reddish tint. Grain very regular and rather obscure. Trunks from 8 to 10 metres long and 0.80 to 1 metre in diameter.

Hard to cut.

Canella pimenta: Colour from light-brown to dark-brown, veins lighter, yellowish shades. Grain very regular and straight.

Hard to cut.

Canella prego: Colour dark-yellow with patches of light-yellow and black veins. Grain very netted, coarse and disposed in regular layers. Trunks from 8 to 10 metres long and 0.80 to 1 metre diameter.

Hard to cut.

Canella preta: Colour glossy black. When cut, dark-brown with black veins. Irregular grain. Trunks from 8 to 10 metres long and 60 to 80 cms. diameter.

Hard to cut.

Canella puante: Colour brown with light patches. Grain coarse and straight. Trunks from 8 to 10 metres long and 0.60 to 1 metre diameter.

Hard to cut.

Canella sassafras: Colour from light-brown to a very dark-brown, with darker patches and golden shades. Grain very fine and in regular layers. Trunks from 6 to 8 metres long and 60 centimetres diameter.

Batalha.

Easy to cut.

Canella veadó: Colour white, uniform.

Easy to cut.

SPECIFIC GRAVITY:

Canella açafirão:	From 675 to 701 kilogs.
„ amarella:	„ 670 to 744 „
„ batalha:	„ 697 to 758 „
„ branca:	„ 610 to 720 „
„ capitão-mór:	„ 710 to 735 „
Canellinha:	„ 680 to 780 „
Canella cedro:	„ 520 to 640 „
„ limão:	„ 711 to 985 „
„ mandioca:	„ 780 to 845 „
„ marçanahyba:	„ 628 to 903 „
„ parda:	„ 609 to 963 „
„ pimenta:	„ 712 to 790 „
„ prego:	„ 790 to 928 „
„ preta:	„ 702 to 912 „
„ puante:	„ 880 to 920 „
„ santa:	„ 597 to 738 „
„ sassafras:	„ 868 to 1,082 kgs.
„ veado:	„ 827 to 1,000 kgs.

RESISTANCE: Canella açafirão:	To bending: 665 kilogs.
„ amarella:	To crushing: 582 kilogs.
„ batalha:	To crushing: 380 kgs.; to bending: 741 kilogs.
„ branca:	To crushing: 324 kgs.; to bending: 747 kilogs.
„ capitão-mór:	To crushing: 402 kgs.
Canellinha:	To crushing: 296 kgs.; to bending: 675 kilogs.
Canella limão:	To crushing: 405 kgs.
„ marçanahyba:	To crushing: 405 kgs.
„ parda:	To crushing: 758 kgs.; to flexion: 1,079 kgs.
„ preta:	To crushing: 538 kgs.; to bending: 462 kilogs.
„ santa:	To crushing: 472 kgs.; to bending: 792 kilogs.
„ sassafras:	To crushing: 772 kgs.

USES: Canella açafirão: Furniture. Mouldings. Interior-work. First-rate quality. Very beautiful wood for varnishing.

Canella amarella: Exterior work, damp situations. Second-rate quality. Sleepers of second-rate quality.

Canella batalha: Interior work. Cabinet-making. Fine surface for polishing. Very suitable for making vessels which do not impart odour nor colour to their contents.

Canella branca: Boxes, etc. Interior work. Is of inferior quality.

Canella capitão-mór: Exterior work. Damp situations. Bridges, posts. Flooring. Makes sleepers of first-rate quality, lasting 11 years.

Canellinha: Bridges, posts, damp situations. Not much used because of shrinkage. Sleepers of first-rate quality, lasting 10 years.

Canella cedro: Interior work. Flooring. First-rate quality.

Canella imbuia: Ship-building. First-class furniture. Mouldings. Scantlings. Bridges, posts. Is of first-rate quality. All the varieties are used for the same purposes.

Canella limão: The same uses as the **Canella capitão-mór**, but inferior to this. It has medicinal value for lung complaints.

Canella marçanahyba: Furniture. Flooring. Interior work. First-rate quality.

Canella parda: Interior work. Pavement-wood. Flooring. Ship-building. Exterior work, dry situations. Sleepers of first-rate quality, lasting 11 years.

Canella pimenta: The same uses as **Canella limão**.

Canella prego: Exterior work. Damp situations. Sleepers of first-rate quality, with duration of 9 years.

Canella preta: Is used in all kinds of building construction. For work in damp situations it is of first-rate quality. Sleepers last for 12 years. The leaf yields an aromatic oil which acts as a diuretic upon the body.

Canella puante: Is put to the same uses as the **Canella pimenta**.

Canella santa: Inferior wood-work.

Canella sassafras: The same uses as the **Canella parda**, but rather more suitable for mouldings, furniture, etc.

The root and bark are used medicinally for rheumatism and stomach troubles.

Canella sebo: Is of inferior quality.

Canella veado: Similar to the **Canella santa**, handsome surface for polishing.

HABITAT: The **Canellas** are found in every part of the State, abounding in the cooler regions.

The **Canella imbuia** is found only in the valley of the **Ribeira** up to the boundaries of the State of Paraná.

Canellão.

These trees vary much in size from the **Canella batalha**, a leafy tree growing to a height of more than 25 metres, to the **Canella veadó**, gnarled and twisted, of small growth and with a milky sap.

Almost all the **Canellas** are put to some industrial application, the most noteworthy being the *Nectandra amara* **Mart.**, the *Nectandra mollis* **Meiss.**, and the *Ocotea pretiosa*.

In certain district the **Canella santa** is regarded as a treasury of medicinal substances suitable for every ailment.

The most beautiful **Canellas** are found in the valley of the **Ribeira**, the **Canella imbuia**, the **sassafráz** and **veadó** being especially worthy of mention; in addition to these are the **brinco**, **canheirão**, **nhonhô-sãra**, **nhô-mirim**, **Yago-vira** and **gato** which are improperly named **Canellas**.

Only able students of plant classification are able to distinguish clearly the numerous plants which are popularly classed under the common name of **Canellas**.

Cangerana.

VARIETIES: **Cangerana amarella.**

„ **vermelha.**

SYNONYMS: Cajarana. Pão de Santo.

CLASSIFICATION: *Cabralea Cangerana* **Sald.** **Family:** Meliceae.

DESCRIPTION: Trunks from 8 to 10 metres long with 0.60 to 1.20 metre diameter. Colour dark-yellow or red. The wood has a strong odour. Grain fine and straight.

Easily cut.

SPECIFIC GRAVITY: **Cangerana amarella:** 590 to 700 kgs.

„ **vermelha:** 693 to 824 kgs.

RESISTANCE: **Cangerana vermelha:** To crushing: 546 kgs.

USES: Carved work. Furniture, cabinet-work, turning, ship-building, canoes, wood-pavement and flooring. Bridges and damp situations. Is of first-class quality. Sleepers of first-rate quality. Cross-grain working. The bark and leaves are used for tanning. The **Cangerana vermelha** is superior to the **Cangerana amarella**. Both may be used for the same purposes as the **cedro**.

HABITAT: Is common throughout the State.

OBSERVATIONS: Tree of large growth, leafy and branched. Greyish bark. Leaves small and tough, not glossy, and disposed in palm-like manner. Flowers greenish and covered with fine odorous hairs. Mussel-shaped fruit, rather rough on the surface and edible.

Canna-Frista.

SYNONYM: Canna-fistula.

CLASSIFICATION: Cassia ferruginea **Schrad.**

Order: Leguminosae.

DESCRIPTION: Trunks from 8 to 10 metres long and from 60 to 80 cms. diameter. Colour light-red, with darker patches. Coarse grains, in spite of which fact the timber is compact and arranged in regular layers. Very hard to cut.

SPECIFIC GRAVITY: From 1,190 to 1,240 kgs.

USES: Exterior-work. Bridges, beams. Is of first-class quality. Is not suitable for flooring and joints on account of shrinking. Very beautiful surface for polishing.

The bark is used for tanning, imparting a light colour to the leather.

The alburnum is also applicable to building work.

HABITAT: Sierra del **Mar**. The valleys of the **Mogy-Guassú** and **Tieté**.

OBSERVATIONS: A tree of large growth, very branching and leafy. Leaves small and wide. The fruit contains very small seeds.

It is regarded as patron of the wilds.

Canudo.

SYNONYMS: Pão canudo. Canudeiro.

CLASSIFICATION: Carpotroche brasiliensis **Endl.**

Family: Flacourtiaceae.

DESCRIPTION: Trunks from 4 to 5 metres in length and 25 to 30 cms. in diameter.

Colour dark-brown with black patches.

A large cavity is formed throughout the centre of the trunk.

Very hard to cut.

USES: Bridges and posts; dry situations. It cannot be used for other purposes on account of the central hollow.

The bark is used for tanning, and has medicinal properties acting as an antifebrile.

HABITAT: In the valley of the **Alto Parahyba** and Sierra del **Mar**.

OBSERVATIONS: A low tree short branches. On the higher branches the leaves are of a bright green colour on the back and brown on the front, or upper surface. Flowers brown, small and in clusters. The fruit is a brown capsule.

Capechenguy.

CLASSIFICATION: *Croton floribundus* Spr.

Family: Euphorbiaceae. **Order:** Tricoccae.

DESCRIPTION: Trunks from 4 metres in length with 40 to 50 centimetres diameter. Colour, white or yellow. Grain inconspicuous irregular and with small resistance.

SPECIFIC GRAVITY: 765 kgs.

USES: Interior work. Skirting-boards, etc. The central portion or "heart" wood may be employed in bridges and in dry situations. The leaves have medicinal properties, cathartic.

The bark is used for tanning. The fruit is a tonic.

HABITAT: Is common throughout the State.

OBSERVATIONS: This is a small tree, twisting and gnarled in growth. Leaves large, broad and rough. Bast, red and fibrous.

Carne de vacca.

VARIETIES: Carne de vacca amarella.

" " " vermelha.

SYNONYM: Carvalho nacional. Q. V.

CLASSIFICATION: *Rhopala* sp. **Family:** Proteaceae.

DESCRIPTION: Trunks from 4 to 6 metres in length and 50 to 60 cms. in diameter. Colour white and yellowish becoming dark red toward the bark.

Grain very irregular and coarse giving the wood a mosaic appearance. A layer of sap-wood. Easy to carve.

SPECIFIC GRAVITY: From 858 to 1,124 kgs.

USES: Furniture, cabinet-work, and turning. Interior work.

HABITAT: Valleys of the Parahyba and Mogy-Guassú; rare in other regions.

OBSERVATIONS: Tree of small growth, regular leaves, tough and notched.

Bark reddish.

Carvalho Nacional.

Rhopala brasiliensis Kl. **Family:** Proteaceae.

Handsome wood, reddish, varying from yellow to almost black. The trunk not very compact. Is employed for cabinet-work and for turning, lending itself admirably to rebating. It has a sp. gr. from 674 to 780 kgs. Is only met with in dry soils. There are three varieties found in the coast-

region, (las Marinhas) the **amarillo**, the **escuro**, and the **encarnado**. The co-efficient of resistance to crushing of the **Carvalho nacional** is 332 kgs., and to bending 695 kgs.

Cataguá.

VARIETIES: Cataguá branco. Cataguá rajado.

CLASSIFICATION: *Metrodorea pubescens* St. Hil.

Family: Rutaceae. **Order:** Gruinales.

DESCRIPTION: Colour, uniformly white, with reddish veins. Trunks from 6 to 8 metres in length and 40 to 60 cms. in diameter.

SPECIFIC GRAVITY: From 1,050 to 1,120 kgs.

USES: Interior work. Wood used exclusively for dwelling-houses. Is not suitable for flooring on account of shrinkage. No sap-wood. The varieties are equal in quality.

HABITAT: Mogy-mirim and its neighbourhood.

Grows upon the plain.

Catiguá.

VARIETIES: Catiguá graúdo. Catiguá miudo.

CLASSIFICATION: *Trichilia Catiguá* A. Juss.

Family: Meliaceae.

DESCRIPTION: Trunks from 4 to 5 metres in length and 50 to 60 cms. in diameter.

Colour light yellow or reddish with white patches. Grain very coarse and netted. A large layer of alburnum or sap-wood. Easily carved.

SPECIFIC GRAVITY: From 612 to 720 kgs.

USES: General exterior work, carpentering or timbering, posts. Dry situations. Makes sleepers of second-class quality.

HABITAT: North of the State; rare in other regions.

OBSERVATIONS: Tree of large growth. The **catiguá miudo** is much superior in quality to the **graúdo**.

Catucahem.

VARIETIES: Catucahem graúdo. Catucahem miudo.

SYNONYMS: Catucanhem. Caxicahem. Sobro.

CLASSIFICATION: *Rhopala glabrata* Kl. **Family:** Protaceae.

DESCRIPTION: Trunks from 6 to 8 metres in length and 40 to 60 cms. in diameter.

Colour light-yellow or reddish with white patches. Grain coarse and tangled. A layer of sap-wood. Easily carved.

SPECIFIC GRAVITY: From 964 to 1,124 kgs.

RESISTANCE: To crushing: 472 kgs.; to bending: 1,382 kgs.

USES: Furniture, cabinet-work, turning, etc. Handsome surface for polishing. Sleepers of second-rate quality.

Bark astringent.

HABITAT: North of the State. **Marinhas.**

OBSERVATIONS: A tree of normal growth with cylindrical branches. Leaves regular, tough and denticulated or toothed.

Bark rough and yellow. Flowers white and small.

Caviúna.

VARIETIES: Caviúna amarella.

„ preta.

„ roxa.

SYNONYMS: Cabiúna. Cabeúna.

CLASSIFICATION: Machaerium sp.

Order: Leguminosae.

DESCRIPTION: Trunks from 10 to 12 metres in length and 0.60 to 1 metre in diameter.

Colour light-brown with yellow or black veins, or black with glossy black veins. Grain very regular and fine, and symmetrically arranged.

Large layer of alburnum.

Hard to cut.

SPECIFIC GRAVITY: Caviúna preta: From 835 to 880 kgs.

Caviúna roxa: From 850 to 960 kgs.

USES: Bridges, coarse flooring. Posts, damp situations. Carpenters' tools. It is of first-class quality. Cabinet-work. A noted wood for furniture.

Very hard to cut.

HABITAT: Is met with in all parts of the State, being most common in the West.

OBSERVATIONS: Tree of large growth, branching freely, but with little foliage.

Form usually twisted. Leaves small and broad.

The wood of the **caviúna** on exposure to the atmosphere becomes darker and darker in colour until it is dense black.

Cazuarina.

A fine tree, of the **Family:** Casuarinaceae, having a large growth, branching freely, with smooth bark and flowers very small and almost invisible. The timber is of a light-brown colour with very regular veins and patches, presenting a handsome surface for polishing. Is used for making furniture, decorative wood-work, etc., and for interiors.

It is a handsome plant used in ornamental gardening and for parks, and is very similar to the cypress. It grows in the valley of the **Tieté** from **Mogy das Cruzes** beyond **Itú**.

Cedro.

VARIETIES: **Cedro amarello.**

„ **branco.**

„ **vermelho.**

SYNONYMS: **Cedro branco** or **caopiúva.**

„ **vermelho** or **C. batata.**

CLASSIFICATION: **Cedro amarello:** *Cedrela fissilis* **Vell.**

„ **branco:** *Cedrela brasiliensis* **Vell.**

„ **vermelho:** *Cedrela odorata* **Jus.**

Family: *Meliaceae.*

DESCRIPTION: Trunks from 10 to 12 metres in length and 0.80 to 1.20 metres in diameter. Colour from whitish-yellow to light-red with wavy lighter patches. Grain direct, fine and tractable. Layer of alburnum. Very easily carved.

SPECIFIC GRAVITY: **Cedro branco:** From 380 to 582 kgs.

Cedro vermelho: From 515 to 723 kgs.

RESISTANCE: **Cedro branco:** To crushing: 260 kgs.; to bending: 582 kgs.

Cedro vermelho: To crushing: 467 kgs.

USES: **Cedro amarello:** Cases and work of an inferior quality. Picture-frames. Carving.

Cedro branco: The same uses as the **Cedro amarello** to which it is wholly inferior. Yields a dye for leather.

Cedro vermelho: Furniture. Frame-work. Scantlings. Veneers and ship-building. Wood-carving. Is the best wood for launches, boats, etc. The bark is astringent and is an emetic.

HABITAT: Is common throughout the State.

OBSERVATIONS: A tree of rapid growth, easy to cultivate for the twigs take root on planting.

Cedar.

It is of large growth, erect, branching and with a large top.

Large palmate leaves, which fall in the winter. Fruit large, full and of oval shape.

The bark is veiny, coarse and rugged. The tree reaches its full growth and may be felled in less than 15 years.

Ceregeira.

Myrcianthes edulis **Berg.** **Order:** Leguminosae.

Wood suitable for cabinet-work and turning; very elastic. Handsome surface for polishing. Specific gravity: 620 kgs.

A rare wood.

Chibatão.

VARIETIES: Chibatão pedra. Chibatão vidrado.

SYNONYMS: Gibatão. Ubatão.

CLASSIFICATION: *Astronium gracile* **Eng.**

Family: Anacardiaceae. **Order:** Sapindinae.

DESCRIPTION: Trunks from 6 to 8 metres in length and 60 to 80 cms. in diameter.

Colour light-yellow with reddish patches. Coarse grain.

Layer of alburnum. Hard to cut.

SPECIFIC GRAVITY: From 927 to 1,022 kgs.

RESISTANCE: To crushing: 582 kgs.

USES: Exterior work, beams, bridges, posts. Damp situations. Work subject to flexion. Sleepers of first-rate quality, lasting 12 years.

Both varieties are put to the same uses.

HABITAT: Is found throughout the State.

OBSERVATIONS: The **Chibatão** of the West and of the **Marinhas** is inferior to that growing in the valley of the **Parahyba**; this may be attributed to the soil in which they grow. A very spreading tree, with not much head and large cavities in the trunk passing through it from one side to the other. Is subject to the shrinking of the radiating fibres.

Cangonha.

Villaresia mucronata **R. et P.**

Family: Olacinaceae.

Wood of inferior quality, used only for interior work,

frame-work and boxes. Sp. gr.. 830 kgs. Is met with in the North of the State.

Copahyba.

VARIETIES: *Copahyba parda*. *Copahyba vermelha*.

SYNONYMS: Pão de Oleo. Oleo de Copahyba. Copahy. Copahúva. Oleo de Copahúva.

CLASSIFICATION: *Copaifera Langsdorffii* Desf.

Order: Leguminosae.

DESCRIPTION: Trunks from 8 to 10 metres in length and 60 to 80 cms. in diameter.

Colour light-red, uniform. Grain coarse and straight. Easily carved.

SPECIFIC GRAVITY: *Copahyba parda*: From 840 to 1,078 kgs.

Copahyba vermelha: From 790 to 875 kgs.

RESISTANCE: *Copahyba vermelha*: To crushing: 888 kgs.

USES: Cabinet-work, carriages, turning. Ship-building, masts of ships. Yields a medicinal resin. The bark is used for tanning. The two varieties are of equal value.

HABITAT: General throughout the State.

OBSERVATIONS: A tree of ordinary growth. Flowers small, in clusters. Compound leaves.

Flowers in summer.

Corana.

Coirana. Coerana. Goerana.

Timber white, compact, with straight grain. Used only for interior work and ordinary furniture. The plants are as small as the olive and yield a fine red dye used for writing-ink.

CLASSIFICATION: *Solanum auriculatum* Ait.

Family: Solanaceae. **Order:** Personatae.

Eucalyptus.

The **Eucalyptus** is a native of Australia and the adjacent islands. It was first botanically described by **Baron von Müller** who proclaimed its worth and introduced it into the United States about the middle of last century.

According to **von Müller** the first **Eucalyptus** brought to Europe was planted in the Botanical Garden of Naples in the early part of last century. It soon become perfectly acclimatised in the South of Europe and its growth spread

through the South of France to Spain where it grew profusely forming extensive plantations.

In Portugal, however, the **Eucalyptus** is little grown.

It was introduced into North Africa, in Algeria, in 1854, being planted upon a large scale: in groves and avenues, isolated and in groups, throughout the whole of the country, so that, as **Planchon** says, "A stranger ignorant of the origin of the **Eucalyptus** would suppose that it was indigenous there".

The railway companies also planted it along their lines using its timber as sleepers and for building purposes.

The first plantations of **Eucalyptus** were made in Asia in 1854. In India Mr. **Polk**, in 1884, remarks upon the "**Eucalyptus globulus**". He says "It may be said that the growth of this species is an unqualified success"

In North America, owing chiefly to the continued studies of Messrs. **Polk** and **Bowen**, American Consuls, the **Eucalyptus** was introduced some years after it became known in France.

It was made known in California by Mr. **Walker** in 1856, and from there its growth extended through Arizona, Texas, New Mexico, etc. The Americans now use the **Eucalyptus** on a large scale and are in process of growing forests of the plant; it is certain, therefore, that in a few years they will become large cultivators for the production of its essential oil.

In South America the **Eucalyptus** is not yet sufficiently regarded as it should be, as one of the most valuable of plants.

In 1870, it was planted in Rio de Janeiro where it soon showed perfect acclimatisation and adaptability, notably in the Garden of the town of Barra Mansa. There is at the present time, in the plantation of Sr. **Pereira da Fonseca**, 15,000 plants of various kinds.

In S. Paulo, Dr. **Luiz Pereira Barreta** may be considered as the scientific introducer of the antiseptic oil of **Eucalyptus**, and the Paulista Railway Co. has planted, in its **Botanical Garden** in Jundiahy, 600,000 plants of 58 varieties.

It is now quite a popular plant in the State, having become the timber of commerce in **Mogy das Cruzes** and in the Capital.

Here in S. Paulo, the **Eucalyptus** is increasing rapidly,

several varieties being grown, and planted in suitable ground, they may be cut down in 10 to 12 years.

As propagation is made by seeds, the varieties grown here are remarkably exempt from the ravages of the insects inimical to the growth of the **Eucalyptus**.

The trunk of the **Eucalyptus** varies much in its manner of growth, sometimes it is straight as the mast of a vessel and at others contorted and twisted. In nearly all varieties the trunk tapers gradually from below upwards, rendering it suitable for use as masts, high posts, etc.

The bark, too, varies greatly, even in the same tree, changing its aspect with its age.

The colour of the trunk of the **Eucalyptus** varies from white to dark brown or gray, and its grain from fine, straight and regular to the most interwoven texture. Generally it is not easily cut.

The timber is put to innumerable uses for all kinds of civil and naval construction as well as for many industrial purposes, and it is rare that the quality of wood is inferior.

All varieties of **Eucalyptus** have perennial foliage which is of advantage to the horticultural value of the plant. The foliage and shape of the tree vary greatly, now dense and affording cool shade, now sparse and suitable for situations where plenty of sunlight is necessary.

The uses of the **Eucalyptus** are much more numerous and of varying kind than those of any other kind of tree.

Rapid in growth it serves for the planting of groves and woods and for ornamentation of park, estate or garden.

The surrounding air is purified, it supplies bees with nectar, it beautifies the landscape, its wood is abundantly serviceable, as fuel its heating power is superior to coke, it has valuable medicinal properties, its bark may be used for tanning, etc., etc.

The oil distilled from the leaves and young shoots of the **Eucalyptus** is used in the manufacture of soap, and for medicines, yielding a return to the producer of 1.6 to 1.8 per cent.

There are at present grown, or may be grown, in São Paulo the following varieties upon which the following information may be given:

Eucalyptus amygdalina: A fine tree, smooth bark, tortuous growth, few shoots. A pronounced odour of peppermint. Will support low temperatures, but suffers much in a hot or dry climate. Attains a height of 40 metres with a diameter of 1.50 metre.

The wood is not of first-class quality and is suitable for frame-work, boxes, etc.

Yields the liquid **eucalyptol**, transparent and camphorated. Is good for purifying the air and to dry the earth.

Specific gravity: 850 kgs.

Eucalyptus botryoides: Damp situations, little subject to frost.

Eucalyptus citriodora: Tree of regular growth with a height of 16 to 18 metres, and 80 cms. in diameter. Erect growth. Not very leafy. Needs warm, damp soil, and resists badly a low temperature. Hairy bark with a pronounced odour of lemon. Is very suitable for planting in groves and woods. Produces a very flexible wood of handsome appearance.

Is of first-rate quality for building, both of naval and civil kinds.

Eucalyptus coriacea: Suited for planting on hilly and stony soil.

Eucalyptus calophylla: For warm and moist situations.

Eucalyptus cornuta: Tree of 20 to 25 metres in height, branching, with spreading top. Will bear high temperatures, but suffers much from frost. Is much used in the making of carpenters' tools and agricultural implements, etc. Wood very flexible. Needs a warm, moist soil. Both bark and leaves are rich in tannin.

Eucalyptus corymbosa: Needs warm and damp soil. The leaves produce **latex** which is used for making gum.

Eucalyptus corynocalyx: Of great height and growth, attaining a height of 30 metres with 1.50 to 1.80 metres in diameter. Is not very exacting as to the ground in which it is planted, developing well in all temperatures, excepting that it suffers under frost.

The trunk is used for bridges and posts. Damp situations. Ship-building. Yields **citronellon** and **genariol** a volatile liquid.

Eucalyptus creba: A fine tree of agreeable aspect. Trunk fine and erect. Is the most picturesque of all the Eucalyptus trees. Has a very flexible wood and is regarded as the best for all kinds of building both civil and naval.

Specific gravity: From 1,050 to 1,120 kgs.

Needs a temperate and humid soil and suffers from frost.

Eucalyptus diversicolor: Tree of large size, branching and

with spreading top. Produces a timber for both civil and naval constructions. Carts, first-class carriages, etc. Has a very rapid growth and needs a temperate climate and humid soil, suffering in frost. Is very suitable for planting in forest for production of wood for fuel. The wood does not lend itself well to exterior work in situations exposed to rough and changeable weather.

Eucalyptus fissilis: Recommended by Sr. **Pereira Fonseca.**

Eucalyptus globulus: This is one of the most useful trees in the world. It attains a height of 35 to 40 metres and 1 to 1.2 metre in diameter. Needs temperate and damp soil with little exposure to frost. Has rapid growth and sends out shoots when felled. The bark and leaves are very rich in tannin. Yields **cincol.** Gives a wood suitable for all kinds of naval and civil construction and produces very good wood for fuel. It has an average specific gravity of 1,058 kgs.

Eucalyptus leucosylum: Has the same uses as the **Eucalyptus globulus** and is not subject to injury from frost. Not so large a growth as **E. globulus.**

Eucalyptus marginata: A tree of regular growth, but very exacting as regards the soil, it will only grow well in hot and damp climates. The wood is suitable for exterior work and damp situations. Contains an acid principle and yields much resin.

Eucalyptus microtheca: This tree has not a fine appearance, it is small, only attaining a height of 15 metres at most, with a diameter of 60 cms. Hot and dry situations but suffers little from frost although it may be severe. Produces a dark-brown or red wood, good for bridges, posts and damp situations.

The roots of this **Eucalyptus** always contain a large quantity of water which may be used for drinking.

Eucalyptus robusta: A tree of regular growth and of fine aspect. Needs temperate and damp situations which are little subject to frost. The wood is not suitable for important work, but it is of first-rate quality for damp situations. Yields **kino** and other resins. Is absolutely exempt from insects.

Eucalyptus rostrata: Is of very rapid growth. Varies much in height and appearance. It is considered by **Baron von Müller** as the most valuable variety and is highly commended by **Pereira da Fonseca.** Needs a temperate, humid climate little subject to frost. It may be cut for firewood at intervals of seven years, fully reproducing itself after twice cutting. The wood is red, which colour gradually fades. Is extraordinarily resistant against damp, and according to **von Müller** is one of the most durable timbers in the world. Very hard to carve.

Yields **kino** and other resins. Is used for desiccation and ornamentation.

Eucalyptus syderoxylon: An erect tree, not very leafy, branches long and high. The wood is used for exterior work, posts, bridges, and damp situations. It is used very much for drying the soil and yields large quantities of nectar for the bees. Has a rapid growth. Mr. **James** advises the planting of this tree along lines of railway. Has a mean specific gravity of 1,157 kilogs.

Eucalyptus tereticornis: Tree of regular growth, having few branches and little foliage. Needs a temperate and damp soil, little subject to frost.

Wood of reddish colour, used for interior work. It is the variety of *Eucalyptus* which yields best return in the timber market.

Eucalyptus viminalis: A tree of gigantic proportions and rapid growth, attaining a height of 30 metres and a diameter of 1.5 metre. The wood is suitable for ship-building and for all kinds of interior work. Needs a temperate, damp situation, little exposed to frost.

In addition to the above-varieties, **Pereira da Fonseca** recommends the following: **Euc. fissilis**, **Euc. gomocephala**, **Euc. longifolia**, **Euc. resinifera**, and **Euc. rudis**, which succeed admirably well in Rio de Janeiro.

Faveiro.

VARIETIES: **Faveiro amarelo.** **Faveiro vermelho.**

SYNONYMS: **Faveiro amarelo** or **Faveiro do Campo**; **Faveiro vermelho** or **Faveiro do Matto.**

CLASSIFICATION: *Pterodon pubescens* **Benth.**

Order: Leguminosae.

DESCRIPTION: **Faveiro amarelo:** Trunks from 4 to 5 metres in length and 30 to 40 cms. in diameter.

Colour whitish yellow, grain coarse and straight. Hard to cut.

Faveiro vermelho: Trunks from 6 to 8 metres in length with 40 to 50 cms. in diameter.

Colour reddish. Grain coarse and straight. Hard to cut.

SPECIFIC GRAVITY: **Faveiro amarelo:** From 948 to 1,089 kgs.

RESISTANCE: **Faveiro amarelo:** To crushing: 658 kgs.; to flexion: 1,209 kgs.

USES: Bridges, posts, damp situations. Sleepers of first-class quality. Is not of great adaptability because of shrinking.

The **Faveiro amarello** is superior to the **Faveiro vermelho**, but both are put to the same uses.

HABITAT: West of the State.

OBSERVATIONS: Tall, coarse trees, erect, not branching much and with little foliage. Fine, smooth whitish or brown bark. Leaves regular, isolated, rough and of a dark green colour. Large flowers of a dark ashen gray and very pretty. The fruit is a kind of twisted acorn. Flowers in winter.

Garapa Amarella.

SYNONYMS: Garapriapunha. Grapeapunha.

CLASSIFICATION: Apuleia praecox **Mart.**

Order: Leguminosae.

DESCRIPTION: Trunks from 8 to 10 metres in length and 60 to 80 cms. in diameter. Colour light yellow, very uniform.

Hard to cut.

SPECIFIC GRAVITY: From 773 to 927 kgs.

RESISTANCE: To crushing: 860 kgs.; to bending: 608 kgs.

USES: Ship-building, cabinet-work, bridges, pontoons. Work exposed to weather. Is of first-rate quality. Sleepers of first quality, lasting 11 years.

HABITAT: North of the State and Sierra del **Mar.**

OBSERVATIONS: An erect tree, branching little and not much foliage. Isolated leaves, large coarse and soft. Flowers crimson and large. Fruit green, large and round.

Genípapo.

CLASSIFICATION: Genipa americana **Lin.**

Family: Rubiaceae. **Order:** Rubinae.

DESCRIPTION: Colour, very uniformly light yellow. Straight and very compact leaves. Small layer of alburnum. Easy to cut, smooth.

SPECIFIC GRAVITY: From 670 to 850 kgs.

RESISTANCE: To crushing: 860 kgs.; to flexion: 1,520 kgs.

USES: Ship-building, carts, first-class carriages. Fencing sticks. Agricultural and industrial implements and tools. The wood is of great flexibility and elasticity. The fruit when green is medicinal against syphilis. The new leaves produce a black dye.

HABITAT: North of the State. Valley of the **Mogy-Guassú.**

OBSERVATIONS: Very tall tree, leafy and freely branching. Bark ashen grey or brown. Leaves large, glistening and

Faveiro.

opposite. Large yellow flowers, forming tubes. The fruit is round with a diameter of 15 cms. arranged in circles, very good for preserves.

Goiabeira do Matto.

A tree of ordinary growth. Is used for bridges and exterior work in damp situations. Leaves lanceolate and smooth. Bark yellow and smooth. Branches thick and bearing few leaves. Its resistance to crushing is 560 kgs. Is common throughout the State.

Gonçalo Alves.

SYNONYM: Guarabú rajado.

CLASSIFICATION: *Astronium fraxinifolium* Schott.

Family: Anacardiaceae. **Order:** Sapindinae.

DESCRIPTION: Trunks from 8 to 10 metres in length and 0.60 to 1 metre in diameter.

Colour light-brown with very regular black patches appearing longitudinally. Grain fine and straight. Hard to cut.

SPECIFIC GRAVITY: From 855 to 1,049 kgs.

RESISTANCE: To crushing: 618 kgs.

USES: First-class cabinet-work. Wood-carving. Turning. Interior work, bridges, beams, pontoons. Is of first-rate quality. Sleepers of first-class quality, lasting 10 years.

Yields a medicinal resin.

HABITAT: North of the State. Sierra del Mar.

OBSERVATIONS: High and broad-topped. Erect. Smooth, resinous bark of rusty appearance.

Graúna.

VARIETIES: *Graúna parda*. *Graúna preta*.

SYNONYMS: Braúna. Baraúna. Perovaúina. Maria preta. Garaúna.

CLASSIFICATION: *Melanoxylum Brauna* Schott.

Order: Leguminosae.

DESCRIPTION: Trunks from 8 to 10 metres in length and 60 to 80 cms. in diameter.

Colour dark-brown or black, with longitudinal light patches. Grain coarse, straight and tinged with red.

Layer of alburnum or sap-wood. Very hard to carve.

SPECIFIC GRAVITY: Graúna parda: From 843 to 1,060 kgs.

Graúna preta: From 943 to 1,124 kgs.

USES: Bridges, posts and damp situations. Coarse flooring, cabinet-work, carts. Both varieties give sleepers of first-class quality, lasting 11 years. A dye is obtained from this plant which is good for dyeing textile fabrics. Bark astringent.

HABITAT: North of the State, Sierra del **Mar**.

OBSERVATIONS: A tree of large growth with spreading top. Leaves compound, leaflets small and very glossy, distributed in palm-like fashion. Flowers yellow and in boxlike covers. Fruit large with cavities containing the seeds, and depressions between the cavities.

Grossahy.

VARIETIES: Grossahy. Grossahy azeite.

SYNONYMS: Groçahy. Goroçahy. Guaraçahy.

CLASSIFICATION: *Moldenhauera floribunda* **Schrad.**

Order: Leguminosae.

DESCRIPTION: Trunks from 8 to 10 metres in length and 50 to 60 cms. in diameter.

Colour light-reddish, with indistinct patches. Grain coarse and straight. Hard to cut.

SPECIFIC GRAVITY: Grossahy: From 712 to 865 kgs.; **Grossahy azeite:** From 723 to 1,099 kgs.

RESISTANCE: Grossahy: To crushing: 516 kgs.; **Grossahy azeite:** To crushing: 582 kgs.

USES: Ship-building, exterior work, beams, bridges, posts. Damp situations.

The **Grossahy azeite** is superior to the other variety, making sleepers of first-rate quality, lasting 12 years.

HABITAT: Sierra del **Mar**.

OBSERVATIONS: Both varieties have medicinal properties.

Grumichaba.

VARIETIES: Grumichaba branca. Grumichaba vermelha.

SYNONYMS: Grumichaba. Grumixáva.

CLASSIFICATION: *Eugenia brasiliensis* **Lin.**

Family: Myrtaceae. **Order:** Myrtiflorae.

DESCRIPTION: White or yellowish, with reddish patches. Grain fine and contorted.

Hard to carve.

SPECIFIC GRAVITY: *Grumichaba branca*: From 600 to 720 kgs.;
Grumichaba vermelha: From 673 to 719 kgs.
RESISTANCE: *Grumichaba vermelha*: To crushing: 327 kgs.;
to bending: 890 kgs.
USES: Ordinary furniture. Frame-work, boxes, etc. The *Grumichaba vermelha* is superior to the *Grumichaba branca*.
HABITAT: Is common throughout the State.
OBSERVATIONS: Warps very much. Tree of normal growth, with few branches and little foliage.

Guabiróba.

Campomanesia sp. var. **Family:** Myrtaceae. **Order:** Myrtiflorae.

A tree of small growth, branching much and with good foliage, bark fine and smooth. Leaves broad, flowers white aromatic and solitary. Fruit yellow, small and edible, producing a very rigid wood of great elasticity. Sp. gr. from 674 to 817 kgs. and resistance to crushing of 611 kgs. Is used for carpenters' tools, cabinet-work, carts, etc.

Is common throughout the State.

Guacá.

Lucuma sp. **Family:** Sapotaceae. **Order:** Diospyrinae.

There are two varieties the **branco** and the **vermelho**. Fine trees growing erect, high and with large heads. Bark white and smooth. Leaves broad and light in colour. Fruit large, odorous, soft and edible. Is used for interior work. oars for boats, masts, etc. Is very light and resistant.

Abounds in the **Marinhas**.

Guajissara.

SYNONYM: Bugre.

CLASSIFICATION: *Albizzia Lebbeck* **Benth.**

Order: Leguminosae.

DESCRIPTION: Trunks from 10 to 12 metres in length and 0.80 to 1 metre in diameter.

Colour dark with light irregular patches. Grain very coarse, irregular, with many cracks and knots. Very hard to cut.

SPECIFIC GRAVITY: From 1,060 to 1,140 kgs.

USES: Bridges, beams. Coarse wood-work, is not suitable for

many constructions on account of shrinkage. For damp situations of first-class quality. Yields a caustic resin, and in springtime a liquid pleasant to drink.

HABITAT: Sierra de la **Mantiqueira** and in the West.

OBSERVATIONS: Where this tree grows it may be taken as an indication that the land is good for cultivation. Of erect growth, with few branches and little foliage. Bark thick, rough and fissured. Leaves small, whitish and palmate. Large flowers, yellow, perfumed and in sheaths. Fruit a small pod, rounded and twisted.

Gua-Mirim.

There are two varieties: the **Gua-mirim-ferro** and the **Gua-mirim-guassú**. Trees of small growth with trunks of 4 metres long and 40 cms. in diameter. Sp. gr. The **Gua-mirim-ferro** from 720 to 842 kgs. and the **Gua-mirim-guassú** from 670 to 803 kgs. The wood is much used for gardeners' frames, hurdles and fencing, damp situations, in small pieces, lasting only a short time if used large. The **Gua-mirim-ferro** makes sleepers of second quality, lasting for 6 years. Grows in the neighbourhood of the Capital and in the Valley of the **Ribeira**.

There is another variety of **Gua-mirim**, the **Gua-mirim-lanceta** which is used only for fire-wood and may be felled every 5 years, in which time it will grow to fit size again.

Guanandi.

VARIETIES: **Guanandi amarello.**

„ **cedro.**
„ **piolho.**
„ **vermelho.**

SYNONYMS: Inglez jacaréubá. Landim.

CLASSIFICATION: *Calophyllum brasiliensis* **Camb.**

Family: *Guttiferae*. **Order:** *Cistiflorae*.

DESCRIPTION: Trunks from 6 to 8 metres in length with 60 to 80 cms. diameter.

Colour reddish, very uniform. Grain fine and straight. Hard to cut.

There are small differences in colour and veining between the various varieties except the **Guanandi cedro** which has the same appearance.

SPECIFIC GRAVITY: Guanandi ferro: From 720 to 810 kgs.;

Guanandi vermelho: From 635 to 802 kgs.

RESISTANCE: Guanandi vermelho: To crushing: 441 kgs.

USES: Ship-building, masts. Exterior work. Second quality. The **Guanandi amarelo** is the best of all the varieties; the **Guanandi cedro** is used for the same purposes as the **Cedro vermelho** but is a little the inferior. The **Guanandi piolho** is of inferior quality and is suitable only for interior work.

These trees yield a resin useful to the veterinary surgeon.

A layer of albumen.

HABITAT: Valley of the **Parahyba** and the **Marinhas**.

OBSERVATIONS: Trees with large tops, branching freely and with good foliage. Bark brown, coarse and rugged. Flowers white and small. Fruit an oily capsule. The young trees yield the Landim balsam, used in cases of ulceration and for wounds of long standing.

Guapéva.

Lucuma laurifolia **A. D. C. Family:** Sapotaceae. **Order:** Diospyrinae.

Wood of reddish colour, dark grain netted and rough. Hard to carve. Sp. gr. a mean of 758 kgs. and the resistance to crushing is 468 kgs. It is used for interior work in dry situations and cannot be used to advantage for work which suffers by shrinkage of its parts. Grows in the valley of the **Mogy-Guassú**.

Guaperúvú.

A tree of large growth, very erect, branches straight and long, leaflets very small and its leaves large. Bark light-brown and very smooth. It is the *Schizolobium excelsum* **Vog.** **Order:** Leguminosae. Has a specific gravity of 330 to 380 kgs. Its trunk is from 10 to 12 metres in length with a diameter of 0.60 to 1 metre. Is used for marine canoes. Interior work. Framework. Boxes. The bark is used for tanning.

The **Guaperúvú** in the **Marinhas** is much superior in quality to those of the rest of the State.

Guarabú.

VARIETIES: Guarabú branco. Guarabú preto.

SYNONYMS: Amarante. Pao roxo. Barabú. Guarabú rajado or Ellon grypho.

CLASSIFICATION: Peltogyne confertiflora Benth.

Order: Leguminosae.

DESCRIPTION: Trunks from 8 to 10 metres in length with 60 to 80 cms. diameter.

Colour light crimson or dark crimson, uniform. Grain straight and fine. Hard to carve.

SPECIFIC GRAVITY: Guarabú branco: From 855 to 1,017 kgs.; Guarabú preto: From 1,000 to 1,052 kgs.

RESISTANCE: Guarabú branco: To crushing: 618 kgs.; Guarabú preto: To crushing: 685 kgs.

USES: Ship-building. Spokes and hubs of cart-wheels. Work requiring high resistance. Exterior work, damp situations. The Guarabú branco is superior to the Guarabú preto. Sleepers of second-class quality. Yields an odorous resin used medicinally and having the same uses as turpentine, producing also a red dye used for textile fabrics.

Both varieties are put to the same uses.

HABITAT: Marinhas.

OBSERVATIONS: Trees of large growth.

Guaranhem.

SYNONYMS: Buranhem. Guaranhé. Pão doce. Yamiraen.

CLASSIFICATION: Chrysophyllum Buranhem Ried.

Family: Sapotaceae. **Order:** Diospyrinae.

DESCRIPTION: Compact. Hard to carve. Colour varies much.

SPECIFIC GRAVITY: From 869 to 939 kgs.

RESISTANCE: To crushing: 612 kgs.; to bending: 612 kgs.

USES: For various kinds of carriages and carts, spokes, etc. Wood-work where flexibility is required. Interior work. Bark astringent and medicinal, useful in cases of haemorrhage and for leucorrhoea. Roots contain pectic acid.

HABITAT: Sierra do Mar, rare in other parts.

OBSERVATIONS: Tree of large growth, bark smooth and dark-red, with sweetish taste but astringent. Longitudinal cracks. Fruit small and like olives.

Guarità.

Guarantá.

SYNONYM: Pão duro.

CLASSIFICATION: *Esenbeckia leiocarpa* Engl.

Family: Rutaceae. **Order:** Gruinales.

DESCRIPTION: Trunks from 4 to 6 metres in length and 40 to 50 cms. in diameter. Colour uniformly yellow, with coarse grain, golden and brilliant.

Large layer of alburnum or sap-wood.

Hard to cut.

SPECIFIC GRAVITY: From 968 to 1,098 kgs.

RESISTANCE: To crushing: 672 kgs.; to bending: 1,640 kgs.

USES: Bridges, etc., damp situations. Should always be used in small lengths.

HABITAT: Valley of the Tieté and of the Alto Parahyba.

OBSERVATIONS: Small tree, erect and slim. Leaves large and round.

Guarítá.

VARIETIES: Guarítá roxo. Guarítá vermelho.

DESCRIPTION: Trunks from 8 to 10 metres in length and 50 to 60 cms. in diameter. Colour light red or slightly crimson with pronounced black patches.

Grain fine and straight. Very often forming small cavities.

Layer of alburnum. Hard to carve.

SPECIFIC GRAVITY: Guarítá roxo: From 936 to 1,007 kgs.;

Guarítá vermelho: From 880 to 990 kgs.

RESISTANCE: Guarítá vermelho: To crushing: 681 kgs.; to bending: 1,371 kgs.

USES: Cabinet-work. Turning. Exterior work, damp situations.

Is a handsome wood for polishing.

HABITAT: West and South of the State, being rare in other parts.

OBSERVATIONS: A tree of large growth.

Guatambú.

VARIETIES: Guatambú amarello. Guatambú vermelho.

CLASSIFICATION: *Aspidosperma macrocarpum* Mart.

Family: Apocynaceae. **Order:** Contortae.

DESCRIPTION: Trunks of 10 metres in length and 80 cms. in diameter. Colour light-yellow or red, with lighter patches. Grain straight and fine. Small layer of alburnum. Easy to carve.

SPECIFIC GRAVITY: **Guatambú amarelo:** From 750 to 796 kilogs.; **Guatambú vermelho:** From 815 to 900 kgs.

RESISTANCE: **Guatambú amarelo:** To crushing: 529 kgs.; to bending: 1,428 kgs.

Guatambú vermelho: To crushing: 421 kgs.; to bending: 798 kgs.

USES: Ship-building, dwellings, etc. Chairs. Polished work. Makes very flexible flooring. The wood of the branches is used for agricultural implements and walking-sticks. The **Guatambú vermelho** is superior to the **Guatambú amarelo** and makes a sleeper of third-class quality, lasting 5 years.

HABITAT: **Sierra del Mar.** Valley of the **Tieté.** Is met with in all parts of the State.

OBSERVATIONS: Tree of large growth, erect with few branches. Leaves large and broad. Fruit large with cavities. Bark smooth.

Guayaruva.

Cecropia concolor **W. Family:** Euphorbiaceae. **Order:** Tricoccae.

A tree of erect growth, branching but with little foliage. Bark smooth like that of the **Goiabeira.** Interior work, wooden bowls for water. Wood white to yellow, very uniform. Grain fine and straight. Flowers white, isolated and small.

Guayuvira.

DESCRIPTION: Trunks from 6 to 8 metres in length and 60 to 80 cms. in diameter.

Colour black with patches. Grain fine. Large layer of alburnum, of dark yellow colour, making handsome markings in the wood.

Very hard to cut.

SPECIFIC GRAVITY: From 1,045 to 1,145 kgs.

USES: Carriages. Chairs and other furniture. Turning, wooden parts of tools. Work exposed to weathering. Beautiful surface for polishing.

HABITAT: Valley of the **Mogy-Guassú** and of the **Tieté**, being rarely found in other parts of the State.

OBSERVATIONS: A high tree, branching freely and with large top, the branches growing from near the root. Leaves of

Guayuvira.

light brown colour, small and isolated. Fruit small, with downy green hairs.

Bark fine and smooth.

Wood very flexible.

Imbira.

Bombax (var. sp.). **Family:** Bombaceae. **Order:** Sterculiaceae. Pão imbira. Imbirinha.

Wood of inferior quality, suitable for interior work, etc.

Sp. gr. 510 kgs.

Is found in all parts of the State.

Imbírussú.

Bombax cyathophorum K. Schum. **Family:** Bombaceae. **Order:** Sterculiaceae.

Wood of inferior quality, used for making boxes. Has a sp. gr. of 410 kgs.

Is met with in all parts of the State.

Ingá.

Inga edulis Mart. **Order:** Leguminosae.

Ingá ferradura.

Wood of inferior quality. Suitable for interior work and boxes, etc.

Has a sp. gr. of 790 kgs.

Is common throughout the State.

Ipé.

VARIETIES: Ipé amarello.

„ cascudo.

„ do campo.

„ jabotiá.

„ rôxo.

„ tabaco.

„ una.

SYNONYMS: Ipé rôxo or preto.

„ jabotiá or falhas rôxas.

CLASSIFICATION: Ipé amarello: *Tecoma ochracea* Cham.

„ do campo: *Tecoma araliacea* P. D C.

„ tabaco: *Tecoma pedicellata* Bur. et Sch.

Ipé una: *Tecoma* sp. F. All.

„ **rôxo:** *Tecoma impetiginosa* Mart.

All of the **Family:** Bignoniaceae. **Order:** Personatae.

DESCRIPTION: The **Ipé amarello**, **Ipé rôxo** and **Ipé tabaco** have trunks from 6 to 8 metres in length and 60 to 80 cms. in diameter. The others are smaller. The **Ipé amarello**, **Ipé cascudo**, and the **Ipé do campo** are of a light yellow or whitish colour, with very small and regular grain.

The other varieties have a dark colour, patchy and with coarse and netted grain with cracks in the trunk.

All hard to carve.

SPECIFIC GRAVITY: **Ipé amarello:** From 816 to 880 kgs.

„ **cascudo:** From 805 to 870 kgs.

„ **do campo:** From 819 to 997 kgs.

„ **tabaco:** From 992 to 1,099 kgs.

„ **una:** From 785 to 1,046 kgs.

RESISTANCE: **Ipé amarello:** To crushing: 802 kgs.

„ **do campo:** To bending: 1,063 kgs.

„ **rôxo:** To crushing: 728 kgs.

„ **tabaco:** To crushing: 885 kgs.

To flexion: 1,834 kgs.

„ **una:** To crushing: 728 kgs.

USES: All the varieties of **Ipé** are used for carts, barrels, casks, bridges and posts. Damp situations. Exterior work.

The **Ipé tabaco** makes a sleeper of first-class quality and duration of 11 years.

The **Ipé una**, sleepers of second quality, lasting 9 years.

The **Ipé tabaco** has bast which is used to make cigarette-papers and is of medicinal value against **angina**.

All the **Ipés** have astringent bark and are medicinal against syphilis and syphilitic ulcers.

HABITAT: Throughout the State.

OBSERVATIONS: In the North of the State this tree predominates with all its varieties together with the **Piuva**.

They are trees of small growth, with few branches but long, leaves large, and flowers very abundant, totally covering the trees.

Jacarandá.

VARIETIES: **Jacaranda branco.**

„ **cabiúna.**

„ **preto.**

„ **rosa.**

Ipê.

Jacaranda rôxo.

Jacarandasinho.

Jacarandá tâ.

„ **tã amarello.**

„ **violeta.**

SYNONYMS: Jacarandá cabiúna or Jacarandá pitanga.

CLASSIFICATION: **Jacarandá:** *Platypodium elegans* **Vog.**

„ **preto:** *Machaerium legale* **Benth.**

„ **rôxo:** *Machaerium firmum* **Benth.**

„ **tã:** *Machaerium Allemanii* **Benth.**

„ **violeta:** *Mach. violaceum* **Vog.**

Order: Leguminosae.

DESCRIPTION: Trunks from 6 to 8 metres in length with 60 to 80 cms. diameter.

Jacarandá branco: Colour light-brown with yellowish patches. Grain fine and straight. Hard to carve.

Jacarandá preto: Colour black and glossy with brown patches. Grain very fine. Hard to cut.

Jacarandá rôxo: Very dark rose colour, with black veins. Grain very fine. Hard to cut.

Jacarandá tâ: Colour brown, light and dark, with black veins. Grain fine and straight. Hard to carve.

Jacarandá violeta: Colour dark-yellow to light-brown, with crimson veins and patches. Grain very fine. Hard to cut.

All the **Jacarandás** have a thick layer of alburnum of good quality and suitable for working.

SPECIFIC GRAVITY: **Jacarandá branco:** From 705 to 820 kgs.

„ **cabiúna:** From 815 to 919 kgs.

„ **preto:** From 818 to 961 kgs.

„ **tã:** From 994 to 1,234 kgs.

„ **tã amarello:** From 810 to 890 kgs.

„ **rosa:** From 843 to 1,196 kgs.

„ **rôxo:** From 923 to 1,123 kgs.

„ **violeta:** From 1,046 to 1,299 kgs.

RESISTANCE: **Jacarandá cabiúna:** To crushing: 791 kgs.

„ **preto:** To crushing: 425 kgs.

To bending: 1,171 kgs.

„ **rosa:** To crushing: 777 kgs.

„ **tã:** To crushing: 1,043 kgs.

„ **violeta:** To crushing: 1,073 kgs.

USES: Very valuable wood, suitable for first-class cabinet-making.

It is of first-rate quality for exterior work, bridges and beams. Damp situations. Ship-building.

The **Jacarandá rosa** as sleepers will last 12 years. The **cabiúna rôxo** and **tã** last 11 years.

The **Jacarandá branco** and the **Jacarandasinho** are inferior to the others.

Jacaré.

Piptadenia communis **Benth.**

Order: Leguminosae.

A tree of normal growth, having few branches and little foliage. Leaflets small, palm-like compound leaves. Fruit small with coarse pod, covered with teeth, like those of the animal, the Jacaré, on the new branches, disappearing on the older ones, Sp. gr. from 910 to 1,025 kilogs. Wood white in colour, compact: grain fine and easy to carve. Used for interior-work, flooring and carving. The bark is used for tanning.

Jaguatirão.

Tibouchina mutabilis **Cogn.**

Family: Melastomaceae. **Order:** Myrtiflorae.

Timber of inferior quality, suitable for interior work only, boxes and flooring.

Specific Gravity: 660 kgs.

Is met with in the North, rarely in other parts of the State.

Jantar.

A tree of erect growth, branching freely with good foliage, leaves large and round, bark thin and cracked. Wood of red colour with grain coarse and conspicuous. Large layer of alburnum forming a small vein in the trunk.

Specific gravity: From 1,120 to 1,210 kgs. Is used for bridges and posts. Damp situations. Exterior work, is of first-class quality. Is found in the valley of the **Mogy-Guassú** and of the **Tieté**.

Jatahy.

VARIETIES: Jatahy.

„ **péba.**

„ **vermelho.**

Jacarandá.

SYNONYMS: Gitahy. Jitahy. Oleo de Jatahy or Jatoba (q. v.)

CLASSIFICATION: Hymenaea stignocarpa **Mart.**

Order: Leguminosae.

DESCRIPTION: Trunks from 8 to 10 metres in length with 60 to 80 cms. diameter.

Colour red with yellow patches. Grain fine and netted.

Hard to carve.

SPECIFIC GRAVITY Jatahy: From 860 to 902 kgs.

„ **péba:** From 837 to 900 kgs.

„ **vermelho:** From 850 to 937 kgs.

RESISTANCE: Jatahy: To crushing: 560 kgs.; to bending: 1,315 kgs.

Jatahy péba: To bending: 550 kgs.

USES: Bridges and posts. Dry situations. Flooring and rafters
Interior work. Has medicinal properties.

HABITAT: North of the State. Valley of the **Tieté**. Is rarely met with in other parts of the State.

Jatobá.

VARIETIES: Jatobá. **Jatobá rôxo.**

SYNONYM: Oleo de Jatahy.

CLASSIFICATION: Hymenaea stilbocarpa **Hayne.**

Order: Leguminosae.

DESCRIPTION: Trunks from 6 to 8 metres in length and 60 to 80 cms. in diameter.

Colour light-red or brown, very uniform. Grain coarse and in distinct layers, forming symmetrical markings on transverse section.

Layer of alburnum. Hard to carve.

SPECIFIC GRAVITY: Jatobá: From 944 to 1,027 kgs.. **Jatoba rôxo:** From 826 to 908 kgs.

RESISTANCE: Jatobá: To crushing: 841 kgs.; to flexion: 1,325 kilogs.

Jatobá rôxo: To crushing: 841 kgs.

USES: Cabinet-work. Carriages. Axle-trees and wheels. Exterior work. Damp situations.

Both make sleepers of 11 years duration. Bark astringent. Yields a medicinal oil and the resin, which burns like kerosine, is used in making varnish.

HABITAT: Throughout the State.

OBSERVATIONS: A tree of normal growth with spreading top. The fruit is large, containing 5 seeds.

Jequitibá.

VARIETIES: *Jequitibá amarello.*

„ *branco.*

„ *vermelho.*

SYNONYMS: *Jequitibá vermelho* or *rosa.*

CLASSIFICATION: *Couratarii estrellensis* **Raddi.** **Family:** Myrtaceae. **Order:** Myrtiflorae.

DESCRIPTION: Trunks from 10 to 12 metres in length and 1 to 1.20 metre in diameter. Layer of alburnum. Easily carved.

Jequitibá amarello: Colour yellow, very uniform, grain fine and straight.

Jequitibá branco: Colour white, grain fine and straight.

Jequitibá vermelho: Colour red, very uniform, grain fine and straight.

SPECIFIC GRAVITY: *Jequitibá branco:* From 616 to 691 kgs.

Jequitibá vermelho: From 641 to 699 kilogs.

RESISTANCE: *Jequitibá branco:* To crushing: 396 kgs.; To flexion: 938 kgs.; *Jequitibá vermelho:* To crushing: 750 kgs.; to flexion: 375 kgs.

USES: Flooring. Scantlings. Boxes. The *Jequitibá vermelho* is superior to the others and is used for carving. The bark is astringent and medicinal.

HABITAT: Is common throughout the State.

OBSERVATIONS: This is the largest tree of S. Paulo and one of the largest in the world. There are some with a diameter of more than 2 metres. Is remarkable for the beauty of its form. Flowers small and white or pink. Fruit long and cylindrical in shape.

Jissára.

Euterpe oleracea **Mart.** **Family:** Palmaceae. **Order:** Spadiciflorae.

Jussara or *Gissara.* This is a cocoa-palm of large growth and very leafy, and is used for supporting-structures. It is of first-rate quality for such purposes. Is common throughout the State.

Larangeira do Matto.

Esenbeckia febrifuga **Juss.** **Family:** Rutaceae. **Order:** Gruinales.

A tree similar in its leaves and newer branches to the

Jequitibá.

Jequitibá.

ordinary orange. Its wood is white in colour, grain fine and conspicuous.. Easy to carve. Is used for cabinet-work, turning, wooden spoons and vessels. It has a sp. gr. of 785 to 1,010 kgs. Presents a handsome surface for polishing. Is found in abundance in the valley of the **Alto Parahyba**

Leiteiro.

Páo de leite. *Sapium biglandulosum* Müll. Arg. Family: Euphorbiaceae. **Order:** Tricoccae. A small tree of upright growth with few branches. Leaves broad, fleshy and large. Bark smooth and thick. Is used for roofing-beams and rafters, etc. Interior work. Sp. gr. 1,222 kgs. Is found in all parts of the State.

Louro.

VARIETIES: Louro amarello.

„ cheiroso.

„ pardo.

SYNONYMS: Louro pardo or Vinheiro.

CLASSIFICATION: There are various representatives of the families Cordiaceae and Lauraceae.

DESCRIPTION: Trunks of 8 metres in length and 60 to 80 cms. in diameter. Colour light-yellow with darker patches. Grain very fine and meshed. Easy to carve.

SPECIFIC GRAVITY: Louro amarello: From 521 to 923 kgs.

Louro cheiroso: From 590 to 901 kgs. Louro pardo: From 855 to 853 kgs.

RESISTANCE: Louro amarello: To crushing: 681 kgs Louro pardo: To crushing: 422 kgs.; to flexion: 704 kgs.

USES: Ship-building. Canoes. Oars. Cabinet-work and turning. Interior work. First-class furniture.

HABITAT: Is found in nearly all parts of the State.

OBSERVATIONS: A tree of large growth. In Iguape is found another variety called the Louro preto, which I have not yet studied.

Louveira.

CLASSIFICATION: *Cyclolobium* sp. **Order:** Leguminosae.

DESCRIPTION: Trunks from 8 to 10 metres in length and 60 cms. in diameter. Colour, a uniform light-red, grain coarse

and netted, presenting beautiful markings on the worked surface.

SPECIFIC GRAVITY: From 980 to 1,057 kgs.

USES: High-class cabinet-work. Exterior work and supporting-structures, first quality.

HABITAT: Valley of the **Mogy-Guassú**, and is rare in the Sierra de la **Mantiqueira**.

Mamíca de Porca.

Zanthoxylum rhoifolium Lam. **Family:** Rutaceae. **Ord.:** Gruinales.

Wood of inferior quality, used for interior work and flooring. Sp. gr.: 705 kgs. Is found in the North of the State and in the **Marinhas**.

Mandíoqueira.

Didymopanax sp. **Family:** Araliaceae. **Order:** Umbelliflorae.

This is a tree of large growth with trunks of 6 to 8 metres long, and 60 to 80 cms. in diameter with varying colours in the longitudinal and transverse fibres. Grain coarse and straight. Sp. gr. from 710 to 780 kgs.

Is very suitable for making match-boxes.

Is also employed for flooring.

Massaranduba.

VARIETIES: *Massaranduba amarella*.

„ *de leite*.

„ *vermelha*.

SYNONYMS: *Maçaranduba*. *Aprauá*. *Chauá*.

CLASSIFICATION: *Mimosopus clata* Allem. **Family:** Sapotaceae. **Order:** Diospyrinae.

SPECIFIC GRAVITY: *Massaranduba amarella*: From 700 to 789 kgs. *Massaranduba de leite*: From 902 to 971 kgs. *Massaranduba vermelha*: From 1,002 to 1,079 kgs.

RESISTANCE: *Mass. de leite*: To crushing: 506 kgs.; to flexion: 865 kgs.

USES: *Mass. amarella*: Supporting-structures, beams and work exposed to the weather. Dry situations.

Mass. de leite: Supporting-structures, beams and work exposed to the weather. Damp situations. Ship-building. Is the best timber in the State for use in positions exposed to the action of salt water. Bark rich in tanning. Yields a gum

Mandioqueira.

of inferior quality, and a resin which is used as glue for wood-work. It makes a sleeper of first-rate quality, lasting 11 years.

Mass. vermelha: Has the same uses as the **Mass. amarella.**

HABITAT: Is common throughout the State.

OBSERVATIONS: A tree of free growth and with a large top. Secretes a milky juice in every part of the bark.

Leaves at the ends of the branches, in clusters. Flowers white, greenish. The fruit is of three colours: white, greenish and yellow. On the southern part of the coast these are the only trees upon the swamps.

Milho Cosido.

CLASSIFICATION: *Licania incana* Aubl. **Family:** Rosaceae. **Ord.:** Rosiflorae.

DESCRIPTION: Trunks from 6 to 8 metres in length and 50 to 60 cms. in diameter. Colour yellow. The trunk has small cracks running in a longitudinal direction. Grain straight, fine and compact. Hard to carve.

SPECIFIC GRAVITY: From 823 to 971 kgs.

RESISTANCE: To crushing: 714 kgs.

USES: Cabinet-work. Interior work. Flooring, scaffolding.

HABITAT: Sierra del Mar.

OBSERVATION: A rare timber.

Monjoleiro Preto.

Pithecolobium sp. **Order:** Leguminosae.

Guarucaia. A tree of small growth, trunk twisted. Bark dark-coloured and thin. Leaflets small, with inconspicuous veins. The fruit is a broad pod, with six seeds. Is employed in scaffoldings, fencing, posts, in damp situations, of first-rate quality.

Is met with in the valley of the **Mogy-Guassú** and of the **Parahyba.**

Mossotahyba.

VARIETIES: **Mossotahyba parda.**

„ **preta.**

„ **vermelha.**

SYNONYMS: *Mocitahyba.* *Mussutahyba.* *Maçutahyba.*

CLASSIFICATION: *Zollernia ilicifolia* **Vog.**

DESCRIPTION: Trunks from 10 to 12 metres in length and 60 to 80 cms. in diameter.

Layer of alburnum. Hard to cut.

SPECIFIC GRAVITY: **Moss. parda:** From 813 to 1,265 kgs.

Moss. preta: From 1,000 to 1,048 kgs. **Moss. vermelha:** From 1,117 to 1,418 kgs.

RESISTANCE: **Moss. vermelha:** To crushing: 1,057 kgs.; to bending: 874 kgs.

USES: Cabinet-work. Beams. Scaffolding, posts, and damp situations. Sleepers of third-rate quality, lasting six years.

HABITAT: Sierra del **Mar.** Valley of the **Ribeira.**

OBSERVATIONS: A tall tree with spreading top, branching freely and with good foliage. Bark, thick, ribbed and black. The branches burn even while green.

Nhanduparana.

A timber suitable for ordinary purposes. Colour white or red. Grain fine, straight and compact. Very resistant. Interior work, furniture, polished work. Has the same uses as the **Guatambú amarello.**

Specific gravity: 680 kgs.

Grows in the North of the State.

A tall tree, branching freely and with good foliage. Bark thin, rough and red. Leaves small.

Oity.

SYNONYMS: Aiti. Guayti.

CLASSIFICATION: *Moquilea tomentosa* **Benth.**

Family: Rosaceae. **Order:** Rosiflorae.

DESCRIPTION: Trunks from 8 to 10 metres in length and 60 to 80 cms. in diameter.

SPECIFIC GRAVITY: From 652 to 792 kgs.

RESISTANCE: To crushing: 536 kgs.

USES: In situations exposed to the action of water. Ship-building. Damp situations. Sleepers of first-rate quality, lasting eleven years.

HABITAT: Sierra del **Mar.** North of the State.

Oleo pardo.

CLASSIFICATION: *Myrocarpus frondosus* **F. Allem.**

Oleo de Copauva.

Order: Leguminosae.

DESCRIPTION: Trunks from 6 to 8 metres in length and 60 to 80 cms. in diameter.

Colour light-brown, with dark and yellowish patches. Grain fine and straight, forming pleasing tracery in cross section. Rather hard to carve.

SPECIFIC GRAVITY: From 730 to 992 kgs.

RESISTANCE: To crushing: 670 kgs.; to bending: 716 kgs.

USES: Articles *de luxe*. Cabinet-work. Turning. Carriage-building. Interior work, first quality. Ship-building. Sleepers of first-rate quality, lasting eleven years. Presents a handsome surface for polishing.

HABITAT: North of the State. Sierra del **Mar**.

OBSERVATIONS: The timber of the **Oleo pardo** is one of the most handsome in the world. The wood-work of old churches obtained from the **Oleo pardo** is renowned for its fine qualities.

Oleo Vermelho.

SYNONYM: Bálsamo.

CLASSIFICATION: Myrocarpus Erythoxylum **F. All.?**

Order: Leguminosae.

DESCRIPTION: Trunks from 8 to 10 metres in length and 60 to 80 cms. in diameter.

Colour light-red, with darker patches. Grain fine, straight and disposed in layers, forming handsome markings in cross section.

Layer of alburnum. Hard to cut.

SPECIFIC GRAVITY: From 777 to 1,064 kgs.

RESISTANCE: To crushing: 868 kgs.; to bending: 790 kgs.

USES: Articles *de luxe*. Cabinet-work, turning, furniture, carriages. Scaffolding, beams, flooring. Damp situations. Has a good polishing surface. Yields a medicinal resin. Sleepers of first-rate quality, lasting twelve years.

HABITAT: Valley of the **Parahyba**. Sierra del **Mar**.

OBSERVATIONS: The same may be said of this tree as was stated of the **Oleo pardo**.

Orindeúva.

SYNONYMS: Aroeira preta. Urundeúva.

CLASSIFICATION: Astronium Urundeuva **Engl.**

Family: Anacardiaceae. **Order:** Sapindinae.

DESCRIPTION: Trunks from 6 to 8 metres in length and 40

to 60 cms. in diameter. Colour light or dark brown, with varying colours on the surface. Grain very coarse and netted. Layer of alburnum. Hard to cut.

SPECIFIC GRAVITY: From 1,055 to 1,278 kgs.

RESISTANCE: To crushing: 661 kgs.; to flexion: 1,170 kgs.

USES: Scaffolding, posts. Damp situations. Is the best timber of S. Paulo for work exposed to the action of water. It is not suitable for use in small dimensions on account of shrinking. The bark has medicinal properties and is used also for tanning. Beautiful surface for polishing.

HABITAT: Valley of the **Mogy-Guassú** and in the western part of the State. **Sierra del Mar.**

OBSERVATIONS: In **Mogy-Guassú** and in **Ubatuba**, districts differing entirely in the quality of soil, climate and altitude, one may meet with huts or humble dwellings constructed of the timber of the **Orindeúva** more than a century ago and the wood is still in perfect condition.

Páo Brazil.

VARIETIES: **Páo Brazil claro.**

” ” **escuro.**

SYNONYMS: Ibirapitanga. Páo Pernambuco. Páo rosado.

CLASSIFICATION: *Caesalpina echinata* **Lamck.**

Order: Leguminosae.

DESCRIPTION: Trunks from 6 to 8 metres in length and 60 to 80 cms. in diameter.

Colour bright red, with dark patches. Grain fine and netted. Layer of alburnum. Hard to carve.

SPECIFIC GRAVITY: **Páo Brazil claro:** From 891 to 981 kgs.

Páo Brazil escuro: From 1,029 to 1,340 kgs.

RESISTANCE: **Páo Brazil claro:** To crushing: 714 kgs. **Páo Brazil escuro:** To crushing: 648 kgs.

USES: Ship-building. Cabinet-work **de luxe.** Turning. Has good polishing surface. Produces **Braziliana**, a dye. It is astringent and strengthening.

HABITAT: **Sierra del Mar.** Grows as far as the boundary of the State of Rio de Janeiro.

OBSERVATIONS: The coast-lands of Brazil are so rich in trees of this species that the name given to the timber, **Brazil**, i. e. the colour of fire, spread through the whole of the enormous territory discovered by Pedro Alvares Cabral, in 1500. Even at the present time there is an abundance of the species in the **Sierras.**

It is a tree of normal growth, branching freely and with good foliage. Bark of an ashen colour and spongy. Leaves oval and in two wing-like halves.

Flowers odorous, red and yellow in clusters.

The fruit is a legume or pod.

The tree is of slow growth.

Páo d'Arco.

SYNONYM: Cavantan.

CLASSIFICATION: Bignoniaceae and other botanical families.

DESCRIPTION: Trunks from 8 to 10 metres in length and 60 to 80 cms. in diameter. Colour brown or pinkish, with veinings and patches of yellowish tint.

Grain straight. Hard to carve.

SPECIFIC GRAVITY: From 700 to 850 kgs.

RESISTANCE: To crushing: 758 kgs.

USES: Carts. Axles and spokes of wheels. Exterior work, posts, etc. Damp situations. Sleepers of second-rate quality.

The bark is medicinal against ulcers.

HABITAT: Sierra del **Mar**. Rare in other districts.

OBSERVATIONS: A very high tree. Bark very hard. Leaves glossy, broad and compound. The fruit is a pod with two cavities. At times the tree appears entirely covered with flowers which hide the leaves.

Páo-Ferro.

SYNONYMS: Ytú. Quiripyranga.

CLASSIFICATION: Apuleia ferrea **Mart.**

Order: Leguminosae.

DESCRIPTION: Trunks from 10 to 12 metres in length and 60 to 80 cms. in diameter.

Colour almost black with thin yellowish patches. Grain very fine and netted. Layer of sap-wood or alburnum, useful in building.

Hard to cut.

SPECIFIC GRAVITY: From 1,086 to 1,270 kgs.

RESISTANCE: To crushing: 951 kgs.; to flexion: 1,442 kgs.

USES: Scaffolding, posts, beams, damp situations, first-rate quality.

Best used of large dimensions on account of tendency to shrink a little. The bark is medicinal for piles and rheumatism.

HABITAT: Sierra del **Mar**. Valley of the **Ribeira**.

OBSERVATIONS: A high tree, of pyramidal shape. Very branching and leafy. Leaves green, oval and acutely dentated. Flowers pink, very small and clustered. The fruit is a brown pod, rounded and edible.

Páo Rosa.

SYNONYMS: Páo cravo. Sebastião de Arruda.

CLASSIFICATION: *Physocalymma floridum* Pohl. **Family:** Lythraceae. **Order:** Myrtiflorae.

DESCRIPTION: Trunks from 5 to 6 metres in length and 40 to 50 cms. in diameter.

Colour yellow with longitudinal red veins.

Grain very regular. Hard to cut.

SPECIFIC GRAVITY: From 736 to 1,031 kgs.

USES: Cabinet-work **de luxe**. Turning. Scaffolding, beams, exterior work, damp situations, first quality. Yields a red dye.

HABITAT: North of the State. Sierra del Mar.

OBSERVATIONS: A tree of ordinary growth. Flowers red with scales at the base. Leaves oval with five sharp prolongations. Fruit round.

Páo Setím.

CLASSIFICATION: *Aspidosperma eburneum* F. Allem. **Family:** Apocynaceae. **Order:** Contortae.

DESCRIPTION: Trunks from 6 to 8 metres in length and 80 cms. in diameter. Colour light-yellow, very uniform. Grain straight and very fine. Easily carved.

SPECIFIC GRAVITY: From 698 to 764 kgs.

RESISTANCE: To crushing: 714 kgs.

USES: Cabinet-work **de luxe**. Turning. Mouldings. Inlaid work. Is a very handsome wood for all articles **de luxe**.

HABITAT: North of the State. Valley of the Piracicaba.

OBSERVATIONS: A rare wood.

Passariúva.

This tree grows in the valleys of the Parahyba and Tieté. It is suitable for interior work only. It has a layer of alburnum, its sp. gr. is 622 to 695 kgs., its resistance to crushing is 370 kgs., and to flexion, 794 kgs.

Marfim.

Passuaré.

There are three varieties: the **preto**, **rôxo** and the **vermelho**, the only one suitable for building construction being the **preto**, which is of third-rate quality for interior work, flooring, etc. These varieties are met with in abundance in the valley of the **Parahyba** and **Sierra del Mar**. The bark of the **Passuaré rôxo** is spinous.

Peíto de Pomba.

A handsome wood for cabinet-work, turning and for polished work. Very resistant. Colour uniformly white.

Especially serviceable for work subject to violent strain. The bark is used for tanning. Its habitat is the valley of **Mogy-Guassú** and in nearly all the West of the State.

Pequiá Bravo.

SYNONYMS: Pequi. Piquiá.

CLASSIFICATION: Caryocar brasiliense **St. Hill.**

Family: Caryocaraceae.

DESCRIPTION: Trunks from 6 to 8 metres in length and 60 to 80 cms. in diameter. Colour light satin-yellow, very uniform. Grain very fine and straight. Easily carved.

SPECIFIC GRAVITY: From 785 to 836 kgs.

RESISTANCE: To crushing: 621 kgs..

USES: Ship-building. Oars. Cabinet-work. Turning. Presents a good surface for polishing. Scaffolding. Damp situations. Sleepers of first quality.

The bark is used to make black ink.

HABITAT: In the North and West of the State. **Sierra del Mar.**

OBSERVATIONS: Tree of large growth but very twisted and crooked; leaves oval. Flowers pink and abundant. Fruit oval, fleshy and divided into six cavities. Is purgative.

Pequiá Marfim.

SYNONYMS: Páo liso. Páo marfim.

CLASSIFICATION: Balfourodendron Riedelianum **Engl.**

Family: Rutaceae. **Order:** Gruinales.

DESCRIPTION: Trunks from 6 to 8 metres in length and 60 cms. in diameter. Colour yellow with very faint veins and

patches giving to the wood an ivory appearance. When it is quite dry the wood becomes very similar to old ivory.

Grain fine, straight and inconspicuous.

Hard to cut.

SPECIFIC GRAVITY: From 868 to 1,148 kgs.

Pereira.

VARIETIES: *Pereira amarella*. *Pereira vermelha*.

SYNONYMS: Páo pente. Páo pereira. Camará de bilro.

CLASSIFICATION: *Platycamus Regnellii* **Benth.** **Order:** Leguminosae.

DESCRIPTION: Trunks from 8 to 10 metres in length and 0.80 to 1 metre in diameter. Colour yellow or bright red, very uniform. Grain coarse and disposed symmetrically in transverse section.

Layer of alburnum. Hard to cut.

SPECIFIC GRAVITY: *Pereira amarella*: From 745 to 790 kgs.

Pereira vermelha: From 816 to 904 kgs.

USES: Scaffolding, beams and exterior work. Damp situations. first-rate quality. Casks, barrels. Coarse flooring. Bark febrifuge. Produces "*Pereirina*".

HABITAT: Valley of the *Mogy-Guassú*.

OBSERVATIONS: A tree of normal growth, contorted branches, covered with downy hairs of brown colour. Bark coarse, very furrowed and of a whitish colour.

Leaves pink or yellowish. Branches without odour. Fruits few, oval, fleshy and of an ashen gray colour.

Peroba.

VARIETIES: *Peroba graúda amarella*.

"	"	parda.
"	"	preta.
"	"	rosa.
"	"	vermelha.
"		do campo.
"		miuda.
"		póca.
"		rajada.
"		reversa.
"		tremida.

Perobinha.

Peroba.

SYNONYMS: **Peroba graúda** or **Peroba-Assú.**
„ **póca** or **Peroba branca.**
„ **miuda** or **Peroba mirim.**

CLASSIFICATION: **Aspidosperma Polyneuron Müll. Arg. Peroba graúda:** **Aspidosperma Peroba F. All? Peroba do campo:** **Aspidosperma . Peroba póca:** **Leucomelium sp. Perobinha:** **Electrolobium elegans.?**

Order: Leguminosae.

The **Perobas** named above are of the **Family:** **Apocynaceae,** **Order:** **Contortae,** except the **Perobinha.** }

DESCRIPTION: Peroba graúda: Trunks from 12 to 15 metres in length and 0.80 to 1.20 metre in diameter. Colours very various, indicated by their names, with veins and patches of darker colour, the **Peroba preta** having very conspicuous black veins. Grain coarse. Layer of alburnum. Hard to cut.

Peroba miuda: Trunks from 10 to 12 metres in length and 60 to 80 cms. in diameter. Colour red, with darker patches. Grain finè and very netted. Layer of alburnum. Hard to cut.

Peroba do campo: Trunks from 6 to 8 metres in length and 60 to 80 cms. in diameter. Colour yellow or reddish, uniform. Grain fine and straight. Hard to cut.

Peroba póca: Trunks from 8 to 10 metres in length and 60 cms. in diameter. Colour white, grain coarse and straight. Layer of alburnum. Easily carved.

Peroba rajada: Trunks from 10 to 12 metres in length and 60 to 80 cms. in diameter. Colour light-red with large black patches. These patches form most beautiful markings. Grain fine and netted. Hard to carve.

Peroba reversa: Trunks from 8 to 10 metres long and 80 cms. in diameter. Colour yellow or brown with dark veinings. Grain fine, dark, very meshed, forming knots and twisting in various directions. Very hard to cut.

Peroba tremida: Trunks from 6 to 8 metres in length and 60 to 80 cms. in diameter. Colour yellow with lighter patches, almost golden in colour. Grain coarse and undulating. Hard to cut.

Perobinha: Trunks from 6 to 7 metres in length and 40 to 60 cms. in diameter. Colour light-yellow with reddish patches. Grain fine and straight. Very hard to carve.

SPECIFIC GRAVITY: Peroba graúda amarella: From 724 to 770 kgs. **Peroba graúda parda:** From 756 to 886 kgs. **Peroba graúda rosa:** From 837 to 943 kgs. **Peroba graúda vermelha:** 780 to 986 kgs. **Peroba miuda:** From 750 to

833 kgs. **Peroba póca**: From 680 to 739 kgs. **Peroba rajada**: 690 to 788 kgs. **Peroba reversa**: From 773 to 1,018 kgs. **Peroba tremida**: From 765 to 825 kgs.

RESISTANCE: Peroba graúda amarella: To crushing: 668 kgs.; to flexion: 617 kgs.

Peroba graúda parda: To crushing: 607 kgs. **Peroba graúda rosa**: To crushing: 804 kgs.; to flexion: 616 kgs.

Peroba mirim: To crushing: 739 kilogs.; to flexion: 744 kgs.

USES: Peroba graúda amarella: Interior work. This is of inferior quality compared with the others.

Peroba graúda parda: Interior work, flooring. It is superior to the **Peroba graúda amarella**, but inferior to the others. Cabinet-work. Carriage-building.

Peroba graúda preta: Cabinet work, turning. Good surface for polishing. Handsome surface with capricious designs or markings. Interior work. Boards for flooring.

Peroba graúda rosa: Scaffolding, posts, dry situations. Boards. General carpentry. Sleepers of first quality, lasting eleven years.

Peroba graúda vermelha: The same uses as the **Peroba graúda rosa**.

Peroba do campo: Exterior work. Dry situations. General interior work.

Peroba miúda: Interior work. Exterior work, damp situations. Is suitable only in pieces of large size. Sleepers of first quality.

Peroba rajada: The same uses as the **Peroba miúda**, presenting handsome surface for polishing.

Peroba reversa: Exterior work, damp situations, first-rate quality. Not suitable for small work on account of shrinking.

Peroba tremida: Surface beautifully marked, with undulating grain, fine wood for polished work. Furniture, cabinet-work, turning.

Perobinha: Scaffolding, beams, first-rate quality. Flowers medicinal against syphilis. All the **Perobas** have bark rich in tannin, used for leather-tanning and currying, giving to the leather a beautiful yellow colour.

HABITAT: Common throughout the State.

OBSERVATIONS: The timber of the **Perobas** represents an enormous wealth to the State of S. Paulo. It is used in all kinds of building construction, both civil and naval, and is in great abundance. The slender trees, with their sparse

Group of Perobas.

Group of Perobas.

foliage and wrinkled bark, stand out in the landscape clearly marked by their majestic appearance.

Pindahyba.

Xylopia emarginata Mart. **Family:** Anonaceae. **Order:** Polycarpicae. Pindahyva. Pindahuba. There are two varieties, the **Pindahyba** and the **Pindahyba preta**. This is a tree of great height, with horizontal branches, lanceolate leaves and large white flowers. The timber is used for interior work, boxes, etc. The bast is used for making ropes. Is found in all parts of the State.

Pinho.

Araucaria brasiliana Lam. **Family:** Pinaceae. **Order:** Coniferae.

These are large and beautiful trees, growing in the wild uncultivated parts of the State, and are found almost throughout the **Campos do Jordão**, over an area of more than 30,000 hectares, and altitudes of 2,200 metres above the level of the sea; they form the chief vegetation of the **Campos da Bocaina**, reaching the same altitude, and flourish up to an altitude of 400 metres in the **Campos de Itapetininga**. They produce timber, tar and turpentine. Their bark is very rich in potash.

The quality of the timber is equal to that of the Swiss pine and is superior to the pine of America.

There are two varieties of the **Pinho**, the **branco** and the **vermelho**, the **branco** suitable for boxes, boarding, etc. only, while the **vermelho** is of very good quality and may be used for general interior work, flooring, frame-work, beams and rafters. At altitudes between 400 and 2,200 metres the pine reaches full development in 20 years with a height of 30 metres and 1.50 metre diameter.

Pinho Bravo.

Of the two varieties, the **branco** and the **vermelho**, the **vermelho** only may be used to advantage for fencing, posts, rafters, and beams. They are small trees with little foliage and crooked growth.

Piúna.

SYNONYM: Peúna.

CLASSIFICATION: **Family:** Myrtaceae. **Order:** Myrtiflorae.

DESCRIPTION: Trunks from 4 to 5 metres in length and 40 to 50 cms. in diameter. Colour white, very uniform, grain straight. Easy to carve.

USES: Beams, bridges, posts, damp situations. Sleepers of first-class quality, lasting eleven years.

HABITAT: North of the State. Valley of the **Tieté**.

OBSERVATIONS: A crooked tree. Slender and branching freely. Coarse, regular, oval and smooth leaves. Fruit black and round. Bark thin, smooth and with lighter patches.

Piúva.

SYNONYM: Peúva.

CLASSIFICATION: *Bignonia longiflora* **Vell.** **Family:** Bignoniaceae. **Order:** Personatae.

DESCRIPTION: Trunks from 8 to 10 metres in length and 60 to 80 cms. in diameter.

Colour dark brown with darker patches. Grain coarse and in regular layers. Large layer of alburnum. Very hard to cut.

SPECIFIC GRAVITY: From 956 to 1,046 kgs.

USES: Scaffolding. Beams. Posts, exterior work, damp situations, second-rate quality. Sleepers of second class. The bark has medicinal properties, being anti-diuretic and cathartic.

HABITAT: North of the State, but is also met with in other regions.

OBSERVATIONS: A very high tree with many branches and good foliage. Leaves yellow, very large and numerous.

In the North of the State several **Ipés** are called Piúva.

Quaresma.

Tibouchina mutabilis **Cogn.**

Family: Melastomaceae. **Order:** Myrtiflorae.

Timber of an inferior quality, suitable for interior work and boxes. Grows very rapidly. Sp. gr. 985 kgs. Is met with in the North of the State.

Quina.

Erythroxylum var. sp. **Family:** Erythroxylaceae. **Order:** Gruinales. Quina brava. A high tree. Timber of inferior quality, used for interior work and boxes. Sp. gr. 790 kgs. Grows in the North of the State.

Raposeira.

Raposeira graúda and Raposeira miúda. Timber of inferior quality, used for interior work. Sp. gr. 770 kgs.

Found in the North of the State and **Marinhas**.

Roxinho.

A high and very spreading tree, producing a handsome timber of dark pink colour, used for exterior work, bridges and posts. Damp situations. A wood suitable for furniture and cabinet-work **de luxe**.

Is met with in the valley of the **Ribeira**.

Saguaragy.

SYNONYM: Sobragy.

CLASSIFICATION: Colubrina rufa **Reiss.** **Family:** Rhamnaceae. **Order:** Frangulinae.

DESCRIPTION: Trunks from 8 to 10 metres in length and 60 to 80 cms. in diameter. Colour yellow or light-red, with very pronounced red patches. Grain straight and fine. Large layer of alburnum. Hard to cut.

SPECIFIC GRAVITY: From 843 to 1,000 kgs.

RESISTANCE: To crushing: 812 kgs.

USES: Ship-building. Carriage-building. Cabinet-work. Bridges, posts, exterior work, damp situations, first-rate quality. Sleepers of first quality, lasting twelve years.

HABITAT: Common throughout the State.

OBSERVATIONS: A tree of upright growth, few branches and little foliage. Bark smooth and thin. Leaves thin, small and compound. Flowers yellow, large and in racemes. Fruit round and very small.

Sapucaia.

VARIETIES: Sapucaia branca. Sapucaia vermelha.

CLASSIFICATION: *Lecythis* sp. **Family:** Lecythidaceae.

DESCRIPTION: Trunks from 10 to 12 metres in length and 0.80 to 1 metre in diameter.

Colour white or brown with very conspicuous patches and veins of a red tint. Grain straight coarse and very distinct. Hard to cut.

SPECIFIC GRAVITY: **Sapucaia branca:** From 827 to 1,026 kgs.

Sapucaia vermelha: From 956 to 1,077 kgs.

RESISTANCE: **Sapucaia branca:** To crushing: 658 kgs. **Sapucaia vermelha:** To crushing: 729 kgs.

USES: Ship-building. Fencing-timber. Scaffold-poles, posts, damp situations. Cabinet-work and carriages.

The bast is used for making ropes and tow for calking. Both varieties are put to the same uses. The plant yields a dye used by textile manufacturers.

HABITAT: Sierra del Mar.

OBSERVATIONS: A tall tree. Bark coarse and furrowed. Leaves lanceolate and large. Flowers in small clusters, white and pink. Fruit round and large, coriaceous, and opening in the upper part, lid-fashion.

Sapuva.

Sapuva. Sapuva-assú. Sapuva-mirim. *Platymisium* sp.

Order: Leguminosae. Timber used for general building purposes of third-rate quality. Interior work. Sp. gr. 600 kgs. A high tree, smooth bark. Fruit a pod. Flowers very small. Is met with in the North of the State.

Sucupira.

VARIETIES: **Sucupira-assú.** **Sucupira-mirim.**

SYNONYMS: Sicupira. Sibipira.

Sucupira-mirim or **Sucupira d'agua.**

CLASSIFICATION: *Bowdichia virgiloides* H. B. et K. **Order:** Leguminosae.

DESCRIPTION: Trunks from 8 to 10 metres in length and 60 to 80 cms. in diameter. Colour uniformly brown.

The **Sucupira-assú** has coarse grain and in layers. Hard to cut.

The **Sucupira-mirim** has very fine grain, hard and irregular. Is very hard to carve.

SPECIFIC GRAVITY: **Sucupira-assú:** From 944 to 990 kgs. **Sucupira-mirim:** From 863 to 1,064 kgs.

RESISTANCE: **Sucupira-assú:** To crushing: 824 kgs. **Sucupira-mirim:** To crushing: 930 kgs.

USES: Ship-building. Cabinet-work. Turning. Scaffolding. Posts and work exposed to the weather. Flooring.

The **Sucupira-assú** is inferior to the **Sucupira-mirim** but is of very good quality.

The **Sucupira-mirim** is a very flexible timber and has a large quantity of water in the stem. Makes sleepers of first-class quality, lasting eleven years.

Both have bark with tonic and anti-rheumatic properties. Their seeds are roasted and ground in the same manner as coffee and act as excitants to the lymphatic system.

HABITAT: Sierra del **Mar**. Valley of the **Parahyba** and other parts of the State.

OBSERVATIONS: High, branching and leafy trees. Branches very uneven in length and form, as also the leaves whose forms are very diverse.

Bark spotted, very furrowed, coarse and irregular.

Tajuba.

SYNONYMS: Tatajubá. Tajiba. Taúba.

CLASSIFICATION: *Maclura affinis*. **Miq.** **Family:** Artocarpaceae.

Order: Urticinae.

SPECIFIC GRAVITY: From 971 to 1,019 kgs.

RESISTANCE: To crushing: 968 kgs.

USES: Cabinet-work. Flooring. Interior work and scaffolding, posts. Dry situations. Gives a yellow dye.

HABITAT: South of the State. **Mogy-mirim.**

Tambory.

SYNONYMS: Chimbó. Ximbó. Tamboril. Tambor. Orelha de negro.

CLASSIFICATION: *Enterolobium Timbouva* **Mart.**

Order: Leguminosae.

DESCRIPTION: Trunks from 10 to 12 metres in length and 1.20 to 1.50 metres in diameter.

Colour of very uniform brown. Grain fine and straight.

Very easy to carve. Layer of alburnum.

SPECIFIC GRAVITY: From 373 to 531 kgs.

RESISTANCE: To flexion: 531 kgs.

USES: Boarding for floors and scantlings. Skirting-boards. The planks keep their colour well. Serves the same purposes

as the timber of the **Cedro vermelho**. Yields a poisonous resin found in the bark and roots.

HABITAT: West of the State.

OBSERVATIONS: A tree of large growth, very leafy. Branches thick and much sub-divided. Bark thin and smooth and of a brownish colour. Compound leaves with very small leaflets of light colour on the back. White flowers in clusters. The fruit is a twisted pod, black and shaped like an ear, containing very small seeds.

Tapiá.

Alcornea Iricurana **Cas.** **Family:** Euphorbiaceae. Timber of inferior quality, used for interior work and boxes. Trunks from 4 to 5 metres in length and 30 to 40 cms. in diameter. Sp. gr. 680 kgs. Is met with in the **Marinhas** and in the North of the State.

Tapínhoan.

CLASSIFICATION: Silva Navalium **F. All.** **Family:** Lauraceae.

Order: Polycarpicae.

DESCRIPTION: Trunks from 6 to 8 metres in length and 60 to 80 cms. in diameter.

Colour brown with yellow patches. Grain minute and rather netted. Layer of alburnum. Hard to cut.

SPECIFIC GRAVITY: From 864 to 996 kgs.

RESISTANCE: To crushing: 698 kgs.; to flexion: 492 kgs.

USES: Ship-building. Scaffolding, beams. Boarding. Exterior work, damp situations, first quality, lasting twelve years. Bark astringent.

HABITAT: Is general throughout the State.

Taruman.

VARIETIES: Taruman pardo. Taruman vermelho.

SYNONYMS: Taruman pardo or Taruman do Norte. Taruman vermelho or Taruman amarello, or Grataúba.

CLASSIFICATION: Vitex montevidensis **Cham.** **Family:** Verbenaceae. **Order:** Tubiflorae.

DESCRIPTION: Trunks from 6 to 8 metres in length and 60 to 80 cms. in diameter.

Hard to cut.

SPECIFIC GRAVITY: From 688 to 805 kgs.

Tambory (attaining a circumference of 10 metres).

RESISTANCE: To crushing: 599 kgs.

USES: Exterior work, damp situations. Bridges, posts, etc. Carriage-building. Furniture. Sleepers of first-rate quality, lasting 10 years. The fruit yields a medicinal oil against arthritic, or joint complaints, and the roots are used for the preparation of a remedy for syphilis.

The **Taruman vermelho** is much inferior to the **Taruman amarello**.

HABITAT: The valley of the **Parahyba**. Sierra del **Mar**.

OBSERVATIONS: A tree of small growth, with good foliage and branching freely. Leaves broad, round and very rough. Fruit small, black and edible.

Tatú.

VARIETIES: **Tatú pequeno**. **Tatú graúdo**.

CLASSIFICATION: *Eugenia axillaris* Vell. **Family:** Myrtaceae.
Order: Myrtiflorae.

DESCRIPTION: Trunks from 8 to 10 metres in length and 60 to 80 cms. in diameter.

Colour dark-yellow with darker veins and patches. A small layer of alburnum. Grain fine. Easily carved.

SPECIFIC GRAVITY: **Tatú pequeno:** From 989 to 1,100 kgs.
Tatú graúdo: From 810 to 960 kgs.

RESISTANCE: **Tatú pequeno:** to crushing: 449 kgs.

USES: **Tatú pequeno:** Exterior work. Work exposed to the action of salt water. Is not suitable for use of small dimensions on account of shrinking.

Tatú graúdo: Interior work. Not suitable where shrinkage is to be avoided.

HABITAT: **Marinhas**.

OBSERVATIONS: A tree of small growth and with twisted and gnarled branches. Leaves small and lanceolate, of a dark colour. Bark coarse, brown and rugged.

The **Tatú graúdo** often has small holes in the wood which is not the case with the **Tatú pequeno**.

Tayúva.

SYNONYM: *Amoreira*.

CLASSIFICATION: *Chlorophora tinctoria* (Lin.) Gaudich.

Family: Moraceae. **Order:** Urticinae.

DESCRIPTION: Trunks from 4 to 5 metres in length and 50 to 60 cms. in diameter. Colour dark-yellow, very uniform. Grain fine and netted. Large layer of alburnum. Hard to cut.

SPECIFIC GRAVITY: From 860 to 957 kgs.

RESISTANCE: To bending: 1,468 kgs.

USES: Cabinet-work. Turning. Carved work. Bridges, beams, damp situations. Produces a very caustic resin of medicinal value.

HABITAT: Common throughout the State.

OBSERVATIONS: A tree of crooked growth, few branches and leafy. Leaves large, oval and coarse. Bark thin and smooth, spotted and bearing spines. The fruit is a green pod.

Ubatinga.

SYNONYMS: Batinga. Vatinga.

CLASSIFICATION: *Eugenia* sp. **Family:** Myrtaceae. **Order:** Myrtiflorae.

DESCRIPTION: Trunks from 8 to 10 metres in length and 60 to 80 cms. in diameter.

SPECIFIC GRAVITY: From 880 to 1,054 kgs.

RESISTANCE: To crushing: 859 kgs.

USES: Interior work. Canoes. Oars. Sleepers of third-rate quality, lasting five years. Very resistant to flexion.

HABITAT: In the valleys of the **Parahyba** and **Tieté**.

OBSERVATIONS: A tree of normal growth. Stems slender, branching little. Bark thin and tinted. Leaves large and long.

Urucurana.

VARIETIES: Urucurana. **Urucurana mirim.**

SYNONYMS: Urucurana mirim or Urucurana de prégo. Urucurana or Urucurana de leite.

CLASSIFICATION: *Hyeronima alchorneoides* **F. All.**
Family: Euphorbiaceae. **Order:** Tricoccae.

DESCRIPTION: **Urucurana mirim:** Trunks from 10 to 12 metres in length and 1 metre in diameter. Colour light-yellow very uniform, or pinkish with patches. Grain coarse, straight with light shades. Large layer of alburnum. Easily carved.

SPECIFIC GRAVITY: **Urucurana:** From 707 to 1,034 kgs. **Urucurana mirim:** From 849 to 939 kgs.

RESISTANCE: **Urucurana:** To crushing: 851 kgs.

USES: Carts. Carriages. Cabinet-work. Bridges, beams, posts, damp situations. Work exposed to the action of salt water

A saw-mill of the "Gavião Peixoto" Colony.

The **Urucurana de leite** is superior to the **Urucurana mirim** and supplies a sleeper of first-rate quality, lasting twelve years. Produces a pink dye and a medicinal resin.

HABITAT: Sierra del **Mar**. Valley of the **Parahyba**.

OBSERVATIONS: Trees of large growth. Fine aspect. Leaves regular, red and round. Bark rough and red in colour. Fruits, small black and edible.

Vassourinha.

Dodonaea viscosa **Lin.** **Family:** Sapindaceae. **Order:** Sapindinae.

A tree of small growth producing a wood of dark-brown colour, with black veins and markings, grain very even and straight. Is employed for boarding for floors, etc., and for interior work, making good thin planks. Is often confused with the **Vinhatico**. Is met with in the valley of the **Parahyba**.

Vinhatico.

VARIETIES: **Vinhatico.**

„ **de algodão.**

„ **de boi.**

„ **do campo.**

SYNONYMS: **Vinhatico algodão** or **Vinhatico orelha de macaco.**

Vinhatico de boi or **Vinhatico testa de boi.**

CLASSIFICATION: *Enterolobium ellipticum* **Benth.**

Order: Leguminosae.

DESCRIPTION: Trunks from 6 to 8 metres in length and 80 cms. in diameter. Colour dark-yellow or brown with tones of bright-yellow. Grain fine and regular. Layer of alburnum. Easily carved.

SPECIFIC GRAVITY: **Vinhatico:** From 482 to 705 kgs.

Vinhatico do algodão: From 460 to 567 kgs.

Vinhatico de boi: From 595 to 757 kgs.

RESISTANCE: **Vinhatico:** To crushing: 570 kgs.

USES: Ship-building. Ordinary furniture and furniture **de luxe**. Turning. Scantlings. Flooring.

The **Vinhatico algodão** and the **Vinhatico testa de boi** present most handsome surfaces for polishing.

HABITAT: Is common throughout the State.

OBSERVATIONS: A tree freely branching and with spreading, high top. Bark white. Leaves long.

NOTES.

Sierra de Mantiqueira: A range of mountains which separates a part of the State of S. Paulo from the State of Minas Geraes. The summit of the range forms extensive and undulating plains, especially suitable for stock-farming, particularly for sheep; there are pinewoods (*araucaria brasiliensis*) and tracts of land admirably fitted for cultivation of the vine, wheat and other plants of Southern Europe.

Campos de Jordão: A plain in the Sierra de Mantiqueira 2,000 metres above the level of the sea. It has a magnificent climate equal to that of Madeira and the S. of Europe generally. A sanatorium has been built here for the treatment of tuberculosis.

Virgin forests: Forests which have never been felled by man.

Heart-Wood: The interior wood of the trunk next to the alburnum; this is usually the only part applicable to constructive purposes, but there are some trees in which the alburnum is equal in quality with the heart-wood.

Alburnum, or Sap-Wood: Is that part of the stem which lies between the heart-wood and the bark, bast, etc. It is light in colour (hence its name), carries the root-sap upwards and consists of a variable number of the last-formed annual rings of wood. It is generally of poor quality, only on special occasions is it applicable to constructive purposes.

Specific Gravity: The mean specific gravity is calculated in kilogrammes per cubic metre; for timber of sp. gr. over 900 kgs. this varies 10 %, and for those of lower sp. gr. the variation is 15 %.

North: That part of the State which extends from the Capital, the city of São Paulo, to the boundaries of the State of Rio de Janeiro in the direction East of that State and of the Atlantic Ocean to the State of Minas, in a northerly and southerly direction.

It is the geographical East of the State.

Serro do Mar: The range of mountains which follows the coastline of the State of São Paulo forming the border of the central plain which constitutes the main part of the Paulist

S. Paulo. Tree-trunks.

country, with a height varying from 300 to 800 metres above the level of the sea.

West: This part of the State is noted for its great production of coffee which reaches the extraordinary average of 72,000 tons per year. The district is served by the Paulista, Mogyana, Araraquara, Ituana and North-West Railways, in connection with which are many branch railways belonging to the large proprietors of coffee-plantations.

It is the geographical North of the State.

Valley of the Mogy: A large river which flows through the West of the State in a direction from East to West. It is navigable for the greater part of its course and is much used for carriage by the Paulist and Sorocabana districts.

Valley of the Ribeira: A large river formed by the waters of the rivers Iguape, Juquiá, San Lorenzo and others of the South of the State between the Sierra del Mar and the Atlantic Ocean. This is a very fertile region and is still covered by immense forests.

The Ribeira and its tributaries are used by the Sul-Paulista Navigation Company which is interested in the formation of a line of railway from the Capital to the Ribeira district.

Valley of the Tieté: A river which flows through the whole of the State, rising in the Sierra del Mar and having on its banks fifteen important towns in addition to the Capital.

It is navigated for the greater part by the boats of the Sorocabana and Ituana Company.

Valley of the Piracicaba: A river flowing through the western part of the State. It has some large waterfalls which are used for the production of motor force for several paper and textile works and for electric lighting. It is a river noted for the beauty of its banks.

Marinha: The region lying between the Sierra del Mar and the Atlantic Ocean forming the littoral or shore-lands.

GLOSSARY : containing most of the untranslated Portuguese words in the text.

açafrão	saffron	larangeira	orange-tree
alecrim	rosemary	leite	milk
algodão	cotton	limão	lemon
alto -a	high	louro	laurel
amarelo -a	yellow	macaco	monkey
amargoso-a	bitter	mandioca	manioc
amendoeira	almond-tree	mangue	mangrove
arco	arc, bow	mar	sea
azeite	oily	marfim	ivory
batalho -a	battle	matto -a	wood, forest
boi	ox	milho	maize
branco -a	white	miudo -a	slender, thin, small
bravo -a	wild	norte	north
brinco -a	sporting	oleo	oil
café	coffee	onça	jaguar, ounce
campo	field	orelha	ear
canella	cinnamon	pão	bread, food
canellinha	little cinnamon	papagaio	parrot
canudo	pipe, tube	pardo -a	gray, brown, dark
capitão-mór	great chief	pedro -a	rocky, stony
carne de vacca	cow-beef	peito	heart, breast
carvalho	oak	pente	comb
cascudo -a	thick-rinded, thick bark	pequeno -a	little, small
cavallo	horse	pereiro	pear-tree
cedro	cedar	pimento -a	coloured
cheiroso	odorant	pinho	pine
chibatão	rod, switch	piolho -a	lousy
clara	light in colour, bright	pipa	lilac tree
côco	cocoa	poco -a	little
cosido -a	clinging	pombo	dove, pigeon
cravo -a	pink	prego -a	drooping
doce	sweet	preto -a	black
escuro -a	dark	puante	stinking
espinho -a	thorny	purga	purge
ferro	iron	quina	bark
gato -a	cat	rajado -a	rayed, striped
goiabeira	guava-tree	reverso -a	opposed, contrary
grande	large, great	ribeira	stream, river
gráudo -a	grainy, fibrous	rigido -a	stiff, rigid
jacarandá	violet-wood	rosado -a	rosy, pink
jacaré	crocodile	roso -a	rose, pink
		roxo -a	violet
		ruivo -a	reddish, russet

santo -a	holy	vassourinha	small broom
sassafras	saxifrage	veado -a	stag
sebo -a	tallow, suet	velho -a	old, ancient
sertão	prairie	verdadeiro -a	true
setim	satin	vermelho -a	red
sierra	mountain-range	vidrado -a	glassy, vitreous
sul	south	vinhatico	Brazilian yellow- wood
tabaco	tobacco	violetto -a	violet
testa	head	virgem	virgin
tremido -a	trembling

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