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Western Australia.

FORESTS DEPARTMENT.

GRASS TREE.

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GRASS TREE—KINGIA AUSTRALIS.

Botanically, the Kingia, like the Blackboy, belongs to the family Liliaceae and takes its name from one of the State's pioneers. Apart from structural differences, the Kingia can be distinguished from the Blackboy by reason of its slenderness and by the flowering stalks which stand out from the centre of every plant, like drum sticks, as opposed to the long flowering spike of the Blackboy. It is non-resinous, and the fibrous bases are not cemented together. The Kingia only occasionally branches, and the leaf bases turn up at the junction with the core. The habits of the two plants are otherwise not dissimilar, but the properties of the trees and their commercial possibilities differ widely. The Kingia is scattered over a considerable portion of the South-West, and only one species is known throughout the world. Its range extends from the latitude of Perth, in the north, to the south coast, and is bounded on the east by the Porongorup Ranges. It is usually more abundant in the swampy flats of the west coastal plains around Pinjarra and the low valleys of the Darling Ranges. Nowhere does it extend more than 60 miles from the coast. It has been known to attain a height of 30ft., and the stem often reaches a height of 20ft. The bole has an average diameter of about 10 inches. The stem of the Kingia is made up of three parts, leaf bases, like the blackboy, but non-resinous, a core of short fibred material cemented in a close matrix, surrounded by a hard matted covering of fibrous material, varying in thickness from one to three inches, according to the size of the tree. Usually, the plant is of a greyish colour, unless the outer layer of pressed leaf bases is scorched by bush fires. The leaves of the Kingia are generally green in colour, but in the southern portion of its habitat a variety is encountered with silvery leaves. This latter type is sometimes called *Kingia argentea,* but it is a variety not generally considered worthy of specific rank.

In the core of the Grass Tree Western Australia, it would appear, has a material which, although not rivalling the Balsa wood, of Costa Rica and Jamaica, has many remarkable qualities. Tests show that the core, which consists of an interwoven mass of fibres, the thickness of needles, in a soft matrix, has a density of about 14lbs., roughly the same as cork, while the transverse strength is in the neighbourhood of 700 or 800lbs. to the square inch. On account of the matted nature of the fibres the shearing strength is comparatively high. The wood saws readily, and can be easily planed to a smooth, though perhaps not a polishing surface, and boards three or four inches by one inch thick, up to four feet long, are obtainable. In non-exposed positions the wood is quite rot resistant. Preliminary tests, which were carried out at the late Forests Products Laboratory, Perth, seem to indicate that this material has a higher insulating value than cork, although only of approximately the same density. In the past this core has been considered as a waste product of the fibre industry, but there appear to be quite a number of ways in which it could be used advantageously.

A cheap and efficient ice-box or chest is a very desirable acquisition to every Australian household during the summer months. Plied Kingia core seems to provide a cheap method of construction, obviating the expensive and cumbersome metal-lined space, filled, if at all, in a haphazard and inefficient manner. For insulating large size installations, Kingia core might be used in other forms.

Pieces of core of natural shape, some three or four feet long, have been suggested as life buoys for river work, where long immersion is unlikely. Possessing the advantage of lightness, these buoys could be thrown with accuracy over

short and long distances. They could be grasped easily and placed beneath the armpits. Tests by representatives of the Royal Life Saving Society show that such a log is quite capable of supporting two big men, and does not appreciably lose its buoyancy after one hour's soaking. Painting with some material, such as coal tar pitch, would render the wood practically impervious to moisture.

At the present time the main commercial value of the Kingia lies in the fibrous ring which surrounds the core. Until recently this fibrous ring formed the basis of considerable industry in Western Australia for the manufacture of brooms and brushes. Manufactures from this fibre are not confined to coarse and heavy brooms, used in street scavenging and similar purposes, but under treatment a finer material may be obtained, suitable for higher grade brushes. Brooms of Kingia fibre have been used in Perth and Melbourne for street cleaning, and it has been recognised that the strength, toughness and pliability of the Kingia surpasses that of any other fibre, and renders greater efficiency and longer service.

No extensive use has been found for the somewhat soft leaf bases, but it is probable that these would be suitable for rough insulating packing.

The Grass Tree contains sugar, but not to an extent that would make the extraction a commercial proposition worthy of consideration. Under distillation an alcohol has been obtained. The outer sheathing of the trunk, together with the core, being rich in cellulose, is adapted for the making of paper pulp, more particularly the coarser varieties of paper. During the manufacture of Kingia a large quantity of powdery matrix is formed, and this under examination disclosed the following analysis:—

	per cent.
Moisture	40.6
Proteins	3.1
Fat	0.6
Starch and Sugar	30.0
Wood Fibre	22.9

The attention of manufacturers of brooms and brushes, makers of refrigerating chambers and ice chests, and perfecters of life saving appliances might well be directed towards the Grass Tree of Western Australia, in order that full advantage might be taken of the possibilities for the exploitation of its remarkable properties. It ought to replace imported fibre, and the extent to which it is found in Western Australia is a guarantee that large and regular supplies may be procured.

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