

ment Resident at Albany, and did much to ensure the future prosperity of that town. A little later he was appointed Governor of South Australia, where the young colony was rapidly going from bad to worse. Grey by his fearlessness and energy put that State on a firm foundation. In return for his services he was knighted and spent many years as Governor of New Zealand.

Grey is regarded as a great Empire builder. If you wish to learn more about him, ask your teacher to send you a book from the Correspondence Classes Library.

Grey wrote very glowing accounts of the country he explored, and as a result some settlements were made to the north of Perth, and in the same part that Grey had visited. In the next number of your magazine you will be told something about the settlement at Champion Bay.

## WESTERN AUSTRALIAN TREES.

### No. 1. THE JARRAH.

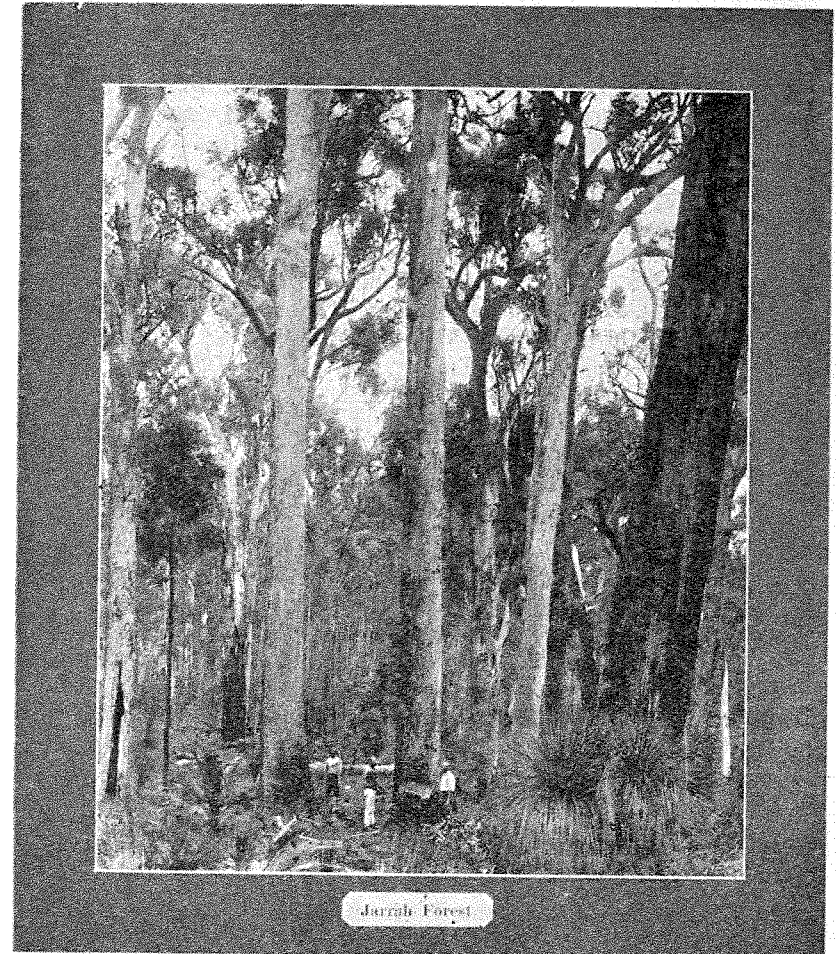
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The Jarrah tree was one of the first timbers utilised by the early settlers in Western Australia. Its durability in the soil and its strength as a building timber impressed our early settlers. They failed to find a native name for the tree, but from its fairly close resemblance to the Mahogany of the Honduras they named it "Mahogany." This name was in common use until the close of the last century, and is familiar to us to-day through the name of Mahogany Creek, a railway siding close to Mundaring. Anyone who is familiar with Mahogany will agree that the timbers are alike, but there is a difference: Jarrah is the harder, its grain is more interlocked, and it is darker in colour. It is also a much heavier timber. About the year 1860 it was decided to give a distinctive name to the principal timber of export, and the native name of Jarrah was selected. This name, however, appears to have been pronounced "Jerrile" and "Yarrah" by the natives of that time. Jarrah soon became famous as a timber, and is now well known among timber traders the world over.

Jarrah is the principal timber tree of Western Australia. Its durability when placed below ground, its strength, grain and fine colour have made it a timber of wide reputation. It will be found in Lloyd's list of shipbuilding woods, and it is renowned for the construction of railway waggons, of bridges, wharves and harbour works. For flooring purposes it is probably unsurpassed, and it is a fine timber for the making of panellings and internal fittings. This timber is also largely employed in England for railway con-

struction work, particularly rolling stock. In the early days of Western Australia Jarrah ships plied between this country and India, and other parts of the globe. For furniture, too, of the heavier kinds this timber is admirably adapted.

The Jarrah tree is found only in the south western part of Australia, and even there its habitat is by no means extensive. It extends from the north of Gingin to the south coast, and is separated



Jarrah Forest

from the coast by a narrow strip of sandy coastal country; eastward it extends as far as Clackline, Narrogin and Mount Barker. To the south of Mount Barker it has pushed its way eastward as far as the Green Range, but here the trees are small. The larger trees are confined to soils containing ironstone gravel, and the principal forest area extends along the crest of the Darling Range, where gravel and ironstone occur freely. In no place does it extend eastward of the line of twenty inches of annual rainfall. It has been stated that a small isolated area occurs south east of Kondinin, but

this is doubtful. Sawmilling was once an important industry in the Mundaring district east of Perth, but this area has been bared of all large trees, and the principal virgin forest areas to-day are to be found southward from the Murray River. These virgin forests are no longer of any great extent, but where they do exist magnificent trees may be seen, some of them attaining a height of 150 feet.

Although the Jarrah tree is instantly recognised by the bushman, much difficulty is experienced by people not well acquainted with it in distinguishing it from the Blackbutt or Marri. These three are all large forest trees with dark rough bark. The Jarrah tree is of the type known as "stringybark," that is, the bark is fibrous and tough. It is pulled off only with difficulty, and comes away in long stringy strips. It is a close bark, dark grey in colour, with narrow winding fissures. The Blackbutt also has a dark grey bark, but is more deeply fissured, and the outer bark is short and friable. It is, therefore, possible to pull it from the tree in short pieces. Neither the Jarrah nor the Blackbutt exude resin from their trunks. The Marri tree exudes a red kino or "gum" hence may easily be recognised. The bark of the Marri (also known as Red Gum) is short and friable like that of the Blackbutt.

Looking upwards to the crowns of these trees we notice a difference in the colour of the foliage. The Marri tree has leaves of a deep shiny green on one side, and of a somewhat pale green on the other. The Jarrah leaf is of a dull green; while the Blackbutt has a distinctly bluish cast in its foliage.

The Marri tree has a wider spread of the branches than the other two trees, and is more massive. The Blackbutt usually has a denser crown than the Jarrah which has upward projecting and lightly foliated branches.

When we come to examine the timbers, moreover, we find that Jarrah is of a deep red; Marri and Blackbutt, however, have yellow timbers, the former being generally distinguished by "gum pockets" or internal reservoirs of resin or kino.

You may remember that in the last issue of "Our Rural Magazine" we discussed the form of the usual type of flower. The *Eucalyptus* has no sepals or petals. The calyx consists of a receptacle which contains the young seed box, and bears on its summit the anthers. The style is a straight projection resembling a stout pin in the centre of the top of the young seed-box. The stamens are protected in the bud by the bud-cap which appears to be petals that have been fused together. When the bud-cap falls off the stamens expand, and this is the flowering stage of the *Eucalyptus*.

If you collect a twig of Jarrah with buds and flowers on it, you will notice that the leaves are not opposite each other, but that they are on opposite sides of the twig and fairly regularly spaced, one alternating with the other. These are spoken of as *alternate* leaves. The leaf-blade is shaped like the head of a lance, but curved to one side and of a leathery texture. It has a midrib and a vein which runs close to the edge of the leaf, continuing all the way round it. This is the *intramarginal* vein, and is found in all *Eucalyptus* leaves. You will also observe a slender twisted leaf-stalk. The twist enables the leaf to hang down vertically. Because of this

position, the hot summer sun does not shine directly on to any side of the leaf. The sun's rays glance off the leaves at an angle, and thus the loss of water through transpiration is very considerably reduced. You will notice that this arrangement of the leaves is fairly common with gum trees and mallees, the only difference being that while some leaves hang down, others stand stiffly upright.

The flowers are arranged in little bunches. Each flower-stalk rises from the top of a longer common stalk, and the flower-stalks with their flowers are arranged like the ribs of an umbrella. This is called an *umbel*. If you think of umbrella when looking at flowers so arranged, you will have no difficulty in remembering the word "umbel." You will notice that the stem of the umbel is usually found in the upper side of the angle formed by the leaf-stalk and the twig. The bud-cap is long and tapers like an elongated cone. Notice the length of this cone compared with the calyx. Notice also that the calyx has quite a long stalk connecting it with the stem of the umbel. We shall speak of the umbrella-stem as the "foot-stalk," and of the ribs of the umbel as "flower-stalks." The stamens of the Jarrah flower are almost white, or yellowish-white, or cream-coloured. The stamens are generally called the flower, but you must remember that the calyx and bud-cap are also parts of the flower, although the plant is not in flower until the bud-cap has fallen off.

After the stamens have fallen off, the calyx and seed box begin to grow in size. The flower has been fertilised and the young seeds are commencing to grow. The seed-box is inside and joined to the calyx; this we call the fruit. You can never see more than the top of the seed-box in the *Eucalyptus*, because it is joined to the calyx except at the top, where it opens in small slits or valves to enable the seeds to fall out. These slits are called valves because, before the seed-box opens they are closed up. If you look at the unripe fruit of the *Eucalyptus*, you will see three, four, or five lines radiating from the middle of the top of the seed-box. The Jarrah fruit when ripe varies in size—the average diameter being half an inch—and is pale brown in colour. It is almost globular in shape except at the top where it has the appearance of having been cut off. You will see this cut-off portion of the fruit quite distinctly in the Jarrah. It forms the top of the calyx or cup, and is represented by a broad rim. Notice particularly that this rim is rather broad and flat, or very slightly raised towards the outer edge. When the seeds are ready to fall you will see the three valves through which the seeds are shed. They are sunk below the level of the circular rim.

The seeds are black, three-cornered in shape, and up to a quarter of an inch in length. Mixed with the seeds are lighter coloured angular bodies which are spoken of as "chaff." They are young seeds which have not been fertilised.

If you examine the margin of the Jarrah leaf you will notice that it is slightly thickened, and resembles a tiny beading round the edge of the leaf. The Jarrah tree is known to botanists as *Eucalyptus marginata* on account of this thickened margin. Many other species of *Eucalyptus*, however, possess a thickened margin, so this character is not peculiar to the Jarrah.

In the next issue of your magazine we shall discuss the Karri tree.