

duck eggs are sprinkled around it. Pieces of Prions and regurgitated remnants lie about the brownish, grassy indent. The nest is generally formed on *Azorella* that is broad and flat. This extraordinary grass, that has one close ally only (South America), grows in convex-like nodes. On portions, that appear as if decapitated, the young are kept tolerably dry.

The *Azorella* grows in a wavy formation, having its stems 2 to 3 feet high, and so innumerable and compact that I have walked for hundreds of yards along the top of the dense perennial growth without sinking an inch into it. It is green only at the tips, and because the light cannot penetrate beneath the surface of its massed tips there is no need of chlorophyl below. The stems branch freely, and, like a person being in a dense crowd of people, not one stem is allowed to droop. The Skuas seem to know that moisture does not lie in *Azorella*, and use it in the interests of their offspring. A young bird about to leave its nest, and nearly as large as the parents, is half down and half feathers. While endeavouring to hide itself it lays the head and neck upon the ground, and when approached the head rotates till the chin is uppermost. It may turn round even further and open its mouth, with a frightened look and a fearing call. The young birds nearly always stalk about the grass with their heads down and neck drawn inwards. The most common notes are four in number, the fourth much prolonged, all high and plaintive.

Many details in the field history of this species have been recorded, information on which may be gathered from the *Ibis*, January, 1900; "Phil. Trans.," vol. clxviii. (1879); "Miscell. Coll. Smithsonian Institution," vol. xiii. (1877), &c.

A TRIP TO THE RICHMOND RIVER DISTRICT.

PART I.—GENERAL AND BOTANICAL—*continued*.

BY A. CAMPBELL, JUN.

(*Read before the Field Naturalists' Club of Victoria, 9th July, 1900.*)

ANOTHER very common plant is the large aroid, *Colocasia macrorrhiza*, Schott., commonly called Cunjevoi, which flourishes on the leaf-covered ground. Many of the plants are of such an age that their succulent stems extend along the surface for 6 feet or more, and so luxuriantly do they grow that it is no uncommon thing to see a leaf whose blade is 5 feet in length. This plant has a small greenish arum-like flower with a very heavy perfume. The masses of these pretty plants are broken here and there by the brown forms of decaying logs, on which are fantastic shapes of fungi. The mycelium, or roots, of one species of fungus give out a phosphorescent light, which has a very weird appearance.

Going along a track after dark you may see a patchy line of bluish lights marking the position of a log. It has been said that a person could read by the aid of the light emitted, but that is incorrect. The largest individual patch I saw was about 6 square inches in area.

A ground orchid is occasionally met with—a species of *Calanthe*—the corrugated leaves of which are about a foot in length. One plant will contain six or eight crowns, each bearing a flower-stalk 3 feet in height. As far as I could calculate the spike is flowering for fully three months of the year, commencing in November and lasting till the end of January. Being an indefinite inflorescence, the flowers on the base are finished long before the highest ones are out. The individual flowers are 2 inches in length, of a whitish colour, and odourless.

Yet another plant worthy of notice is the Walking-Stick Palm, *Baculeria monostachya*. It looks very pretty, with its small red fruit hanging gracefully in streams. The palm rarely grows more than 10 feet high, but its thin, flexible stem is of an extremely tough nature.

Terrestrial ferns are not common, but these scrubs are the home of epiphytal ferns and orchids. On every teak tree are found plants of *Platycerium alcinorne*, Elk's-horn Fern, and *P. grande*, Stag-horn Fern, and the new comer can only stand and gaze in amazement at the beautiful clumps of these ferns, some no less than 12 and 15 feet in circumference, growing like giant excrescences on the branches of the trees. And what a sight it must be in the springtime to see those lovely tree orchids, *Dendrobiums*, when the gorgeous flowers stream forth and fill the whole air with fragrance! Who would believe the Rock Lily of Sydney and the tree orchid of the "Big Scrub" to be identical? No doubt the tropical existence makes the difference. The flower-stalk in one instance will, perhaps, measure 9 inches, while in the "Big Scrub" 2 and 3 feet is no uncommon length; for I could see in the now withered stalks the evidences of their former glory. The teak trees appear to be the most favoured, for though the Bird's-nest Fern, *Asplenium nidus*, is frequently on other trees, the *Platyceriums* and the *Dendrobiums* prefer the teak. The tree orchids are sometimes seen growing in clumps among the Stag-horns, but they usually occupy positions of their own, and thrust their tubers up like so many fingers towards the light. There are two species, *D. speciosum* and *D. hilli*, the latter being the rarer. It has pure white flowers, otherwise the two kinds are similar. Another species of orchid has tubers of a long thin nature, about the length and thickness of a lead pencil. Still another variety common on all trees is very small, and bears three or four dull yellow bell-shaped flowers on a stalk.

Now to deal with some giants of the vegetable kingdom. The

teak tree will take first place for size and magnificence, without taking into consideration its beautiful burden of epiphytal plants. It grows to a great height, and its trunk is often a solid 6 feet, furnishing excellent timber for building purposes. The house at which I was staying was built entirely of teak, sawn and dressed within 200 yards of the spot. Another very serviceable tree is the Mountain Ash, the wood of which is useful for fencing. Palisade fences are in some places built to keep back the native vermin in the scrubs. The small Wallaby, or "Paddymelon," is the principal nuisance. The Buoyong is a handsome tree, and a very remarkable one from the way in which the butt is fissured and ridged. The roots appear to leave the ground some yards away and run up to meet the trunk, forming narrow but solid partitions. Thus a tree that is 4 feet thick at 12 feet from the ground would spread over a surface of perhaps 6 yards in diameter. In clearing, the settlers surmount this by erecting a platform about 10 feet up, and from there proceed to cut the tree through. The platform is simply a plank, with one end resting in a niche cut in the tree, the other end being supported by two forked saplings. The Buoyong, together with the teak and ash, is very subject to the ravages of white ants: the giant semicircular, dark-brown coloured nests of these little insects are like great exudations on the tree. The ants' nests are also plentiful on the charred stumps left in the clearings.

The "Big Scrub" was once the home of the Red Cedar, but thousands of trees have been removed, and now not a single specimen above a foot in diameter could be found. The beautiful red timber is well known to all. The tree also is beautiful, with its straight smooth stem and broad finger-like leaves. In spring the young leaves, thrown forth from the tips of the branches, are of a rich purple colour, and I am told that one plan used by the cedar-getters to discover the whereabouts of the cedars was to watch for this colour amidst the sea of vegetation. Then tracks had to be cut from one to another, to allow of teams entering to draw away the logs. These tracks are still seen penetrating the scrub in all directions. Many other trees besides those already mentioned constitute the "Big Scrub." There are the Native Tamarind, the Fig tree, the Bean, the Beefwood, the Yellow Cedar, and the Stinging Trees. The last-mentioned are worthy of note because of their peculiar properties. There are two varieties, one growing to some size, the other being of the nature of a shrub. The large heart-shaped leaves of the former are covered with minute hair-like spines, which give them a light colour and a downy appearance; the smaller species has smaller leaves, with serrated edges. The sting inflicted is very severe. If a hand or arm is badly stung the limb will swell and remain benumbed for a long time after. More than once I fell

foul of these spiteful trees, but experience, however, soon taught me to keep a look-out for them. A good remedy was to apply cold water, which eased the burning pain and checked the swelling.

A truly parasitical plant is the Fig tree, *Ficus australis*. Although a specimen may assume gigantic proportions and tower above its fellows, yet it has done so at the expense of some other tree. Figs in all stages of their existence are seen in the scrubs. The seed is carried by birds, and may be deposited in a hollow, or in a "calabash," or clump of Stag-horns. Finding sufficient nourishment, it germinates and thrives. The roots make their way downwards, enveloping the tree trunk with fibres until they reach the ground. These roots afterwards become as iron bands, and effectually strangle the host tree, which in time rots out, leaving the skeleton frame-work of thickening roots as a trunk to the Fig tree. The final stage is reached when the trunk has grown solid, and the branches tower above and o'erspread the other trees as a gigantic umbrella, bearing tons upon tons of purplish-black fruit, upon which the Fruit Pigeons and other frugivorous birds feed. The Fig tree grown in the open affords excellent shade; similarly does the Bean tree, which is also remarkable for the long pods of enormous beans it bears. The Native Pine is found on the outskirts only of the scrub, growing on an exposed ridge or hillside.

The native animals of the "Big Scrub" are not numerous. They are, briefly, the Dingo, Paddymelon, Bandicoot, Flying Fox, and Ant-eater (*Echidna*). The small Wallaby (I do not know why it is called "Paddymelon") troops out in dozens towards evening to feast and fatten on the farmers' crops.

Of lizards there are two kinds, the Iguana and a long jet black species frequenting the rotting logs in the scrub. Snakes are not uncommon; the poisonous species are the Black and the small "Bandy-bandy." The Carpet and Tree Snakes are non-poisonous. One day I came across a Carpet Snake about 8 feet long lying prone and immovable. It had evidently just taken in a week's provisions in the shape of a "Paddymelon," judging by the thickness of its abdominal region. If ever a snake was gorged that one was; but for darting out its tongue now and again there was not a movement. This species is especially fond of pilfering in the poultry yards, making raids during the hours of darkness. The Tree Snakes, of which there are two species, the brown and the green, are termed Whip Snakes by the local people on account of their long, thin, tapering bodies. They create great alarm sometimes by coming about the houses, or into the roof of a barn, for instance, where they can easily procure their food, which consists solely of Tree Frogs. These green tree-climbing frogs are indeed a nuisance, and are found every-

where. During the daytime they shelter in the spouts or under the eaves of a house, then at evening it is amusing to see them coming out. After sitting on the edge of the roof for some minutes they take a leap and land on the ground with a thump, which varies in sound according to the size of the frog. On a wet night, especially, they make a hideous noise. Some take up prominent positions on stones, others cling to the side of the house or a tank, or perchance sit on your window sill, and while you are endeavouring to sleep pour forth their chorus. The frog on the window sill and the one around the corner will deliver a duet perhaps, the rest chiming in, their individual voices ranging from a deep croak to a piping treble. At the house where I was staying the youngest member of the family possessed a waddy, or "frog-stick" as he called it, with which he would sally forth occasionally and silence the most noisy frogs. If rain falls during the daytime frogs in their hiding places immediately begin to croak; in the scrub some are heard high up in the trees. But a stranger is not long in the scrubs before he is made acquainted with the leeches and ticks which infest the moist leaf-covered floor of the forest. These are two impedimenta of the first degree. The tick has been known to cause death with domestic cats, dogs, and poultry, while as a consequence of their abundance the native animals and reptiles suffer.

ON THE CRUSTACEAN, *PHREATOICUS AUSTRALIS*, FROM TASMANIA.

BY O. A. SAYCE.

(Read before the Field Naturalists' Club of Victoria, 10th Sept., 1900.)

I LATELY received from Professor Baldwin Spencer a few Crustacea collected by him from Lake Petrach, a small freshwater mountain lake situated near the centre of Tasmania, and, on examination of the specimens I found, in association with two new species of Amphipods, a few specimens of *Phreatoicus australis*.

Before comparing it with the original species from Mt. Kosciusko, I should like to call the attention of my fellow-members to the family to which it belongs, and to enumerate the species and their distribution as at present known.

The Phreatoicidæ is a very small but important family of Crustaceans, of somewhat shrimp-like form, found only in Australasia, where their habitat is either in subterranean or surface fresh waters, or in burrows in forest country. They belong to the extensive order Isopoda, but in structural features are widely separated from other existing members of that group, and exhibit more than any others affinity with the order



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