

specimens of king fern (*Marattia fraxinea*), and that most rare and beautiful native maidenhair (*Adiantum formosum*), now found in the wild state only in the vicinity of Palmerston North.

In addition to natives, the property contains many interesting foreigners. The most exciting of these is *Puya alpestris*. This very remarkable plant is a member of the pine-apple family (Bromeliaceae) and is a very recent horticultural find. Its large flowers are an unusual colour of vivid green, set off by brilliant orange stamens. This is the first specimen of this plant to be grown in the Southern hemisphere, and its flowering season will be awaited by nature lovers with great interest.

At the conclusion of a most interesting afternoon, Mr. and Mrs. Goodfellow catered for body as well as mind by providing a very pleasant afternoon tea on the sunporch.

The excursion concluded with a very hearty vote of thanks to Mr. Goodfellow.

Professor Lancaster has very kindly forwarded to us a comprehensive summary of his lecture, "Local Plant Communities" delivered to a meeting of the Botanical Society held on Wednesday August 18th at 8 p.m.

This summary should prove particularly helpful to the many members who for various reasons were unable to hear this instructive address.

PLANT COMMUNITIES NEAR AUCKLAND

Within easy reach of Auckland many different types of plant communities are to be found. Some of these are mature or climax communities while others represent stages in a succession leading to a relatively stable climax. Thus many of the shrub-lands will, if left to Nature, be gradually replaced by forest. In the small space available it will be possible to deal with only a few of the more important types and those communities selected must necessarily receive very superficial treatment.

1. Sand-Dune Vegetation: Only plants able to endure strong salt-laden winds, powerful insolation and a very porous unstable sandy substratum are able to exist on dunes.

Among plants found on dunes such as those at Muriwai and other coastal regions are *Spinifex hirsutus* (silvery sand grass), *Desmoschoenus spiralis* (a sand-binding sedge), *Calystegia soldanella* (shore convolvulus), *Coprosma acerosa* and *Plagianthus divaricatus*. The grass and the sedge referred to play an important part in fixing dunes and preventing them from invading valuable pasture land. As the dunes become more stable owing to the effects of the sand-binders mentioned, various other plants appear. Among these the toe-toe (*Arundo conspicua*), the Cabbage tree and Teatree deserve mention.

2. Mixed Subtropical Rain Forest: Much of the forest in the Waitakere Ranges is of this type. It is luxuriant, almost impenetrable in places, composed of a great variety of species, many of them, e.g. the tree ferns, the nikau palm, Kohekohe, rata, puriri, hinau, kawakawa etc., being plants whose ancestors invaded the New Zealand region from the tropics in the distant past. This forest from both the vegetational and the floristic points of view is closely allied to tropical rain forests. It is rich in climbing plants and epiphytes and these, together with the wealth of ferns, the prevalence of nikau palms give this forest a character quite unlike forests in most temperate regions of the world. The species are so numerous that lists of even the more common ones would be lengthy. Some tall-tree species, e.g. rata, rimu, kahikatea, totara etc., constitute the forest roof, while the next layer is formed by smaller trees, e.g. hinau, kohekohe, mangeao, putaweta, turepo (milk-tree). Next comes a shrub layer containing such plants as hangehange, native honey-suckle (*Alseuosmia*), *Coprosmas* etc.

The ground tier is composed of many species of ferns and various herbaceous seed plants.

Among the climbers the kiekie, the several species of climbing rata (*metrosideros*), the passionflower (*tetrapathaea*), the kaiku (*parsonsia*), are notable. An interesting fact is that New Zealand appears to be the only country which has developed climbing species of *Metrosideros*. Epiphytes occur on the branches or in the forks of most of the large trees. Among these are seven species of orchids, *Pittosporum cornifolium*, *Griselinia lucida* (puka), *Collospermum hastatum*, and species of *Astelia*. Many ferns e.g. *Asplenium adiantioides*, *Asplenium flaccidum* and various filmy ferns occur as epiphytes.

3. Kauri Forest: A special type of subtropical rain forest dominated by Kauri once covered considerable areas in the Waitakere Ranges and other regions near Auckland. Much of this has now been removed but typical examples can still be seen in various reserved areas.

All transitional stages between mixed rain forest and forest completely dominated by kauri occur, Kauri itself is of tropical origin and yields one of the best of the world's timbers. In typical cases the kauri is the main dominant species but it is often associated with rimu, rata, and other large trees forming the uppermost tier. Characteristic plants of the lower tiers are the tall sedge (*Gahnia xanthocarpa*), the spiderwood (*Dracophyllum latifolium*), mairehau (*Phebalium nudum*) and *Astelia trinervia* (Kauri "grass"). Common climbers are the mangemange fern (*Hygodium articulatum*) and the kie-kie (*Freycinetra bauksii*).

4. Another special type of rain forest dominated by a single species is the Kahikatea swamp forest. The tall, mast-like trunks of the white pine or Kahikatea (*Podocarpus dacrydioides*) are the most striking feature. The variety of species is less than in the mixed rain forest. The pukatea (*Laurelia novae-zelandiae*) and maire-tawake (*Eugenia maire*) are usually present, both of these being species which favour a wet soil. Smith's Bush at Takapuna belongs to this type but is really a rather poor example of this noble plant community the dominants of which, in richer soils in other parts of the North Island and in Westland, may reach a height of over 150 feet, the Kahikatea being the tallest of New Zealand plants.

5. Gumfield Shrubland: Many thousands of acres of country in the Auckland Peninsula carry vegetation of this type. The soil for the most part is of a clayey, acid, bleached type, white, yellow or reddish in colour. The operations of gumdiggers, who have dug over very large areas for fossil kauri resin, and the clearing burning and grazing for which settlers have been responsible have altered the aspect and floristic composition of this community very extensively.

Relatively little gumfield vegetation now remains in its primitive condition. The dominant plant is usually Manuka, which sometimes becomes a small tree, but which may be dwarfed to a few inches at which height it may often be found flowering and fruiting.

The ericoid shrubs, *Cyathodes accrosa* and *Lencopogon fasciculatus* (both called *mingimingi*) are common as is also the daisy shrub, *Olearia furfuracea* and the Kumerahou or gundiggers' soap plant, *Pomadirris elliptica*. A notable feature is the unusually high proportion of monocoty ledonons species among which various sedges (species of *Gahnia*, *Schoenus*, *Lepidosperma*, *Cladium* etc.) the turutu (*Dranella intermedia*) and the dwarf Cordy line (*C. pumilio*) are worthy of note.

The pteridophytes are represented by the ferns *Gleichenia circinata*, *G. Microphylla* and *Lindsaya linearis* and the lycopods by *Lycopodium densum* and *L. volubile*. In some places also occurs *Phylloglossum drummondii* a tiny tuberous lycopod which appears above ground in late autumn and, having shed its spores by October dies down to its tuber which carries it over the dry summer period.

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BOOK NEWS

"The Botany of Auckland" by Prof. Arnold Wall and Lucy M. Cranwell (Whitcombe & Tombs 2/6). Members will be glad to know that this excellent little handbook has been re-published with new and interesting matter added. Although so closely packed with information it is extremely light and can be slipped readily into pocket or carry-all.

Miss Cranwell has certainly had her hands full lately, as she has been assisting in the production of that important little military work, "Food is where you find it," described as "A Guide to Emergency Goods in the Western Pacific." Though primarily intended for castaways, this little book contains a great deal that is of interest to the general botanist and nature lover.

Part I (Botanical), is by Miss Cranwell and Captain Green, U.S.M.C.R.; Part II (on Sea Creatures) is by Mr. A.W.B. Powell.

The book is well illustrated. It is published by the Auckland Institute and Museum and costs 2/-.