

and L. Cockayne could produce floras of New Zealand, it now takes a team of trained botanists, much assistance and co-operation and many years of work to produce a Flora covering the mass of facts provided by scientific study and research.

However, for the layman, there are excellent handbooks provided by National Parks Boards, there are books by early botanists and recent publications by eminent botanists today, are readily available.

SOME MEMORIES OF BUSH RAMBLES IN THE NORTH ISLAND

by C.J. Callaghan

At Moreere Hot Springs (on the Gisborne road from Wairoa, H.B.) is a reserve in which two trees can be seen at their best. The kohekohe (*Dysoxylum spectabile*) has there the shelter and the shade to develop its leaf beauty. The large pinnate leaves are in three or four pairs, with a larger terminal one over six inches. They are of a rich glossy green, a delight to gaze at. In season the white cupped flowers hanging on the trunk and later, the clusters of orange berries give further pleasure. To add to the sub-tropical effect, the nikau (*Rhopalostylis sapida*) is abundant and equally lush in its growth. The gracefully spreading palm growth is its chief asset; but the straight smooth bole, pale green and picturesquely ringed with the scars of fallen branches, the long swelling sheaths of branches clasping the upper trunk and the clusters of red fruits hanging below them, add to its attraction.

Beside Lake Waikaremoana is another outstanding tree - the tawari (*Ixerba brexioides*). Its beauty is in its leaves - narrow, thick, glossy and toothed and slightly folded - and its clusters of white starry blossom. This tree is flat-topped, so that in thick bush on level ground, its show

of flowers could only be seen from above. But along the side of the many ridges and above old road cuttings the whole side of the tree can be seen in blossom in November - December.

Now two giants. For massive size of trunk, the northern rata (*Metrosideros robusta*) is impressive. It rivals the kauri (*Agathis australis*) in girth, though the outline of its trunk is irregular and may be partially hollow - but not through decay. No one can stand before one of the mighty kauris in Waipoua without being awe-struck. As a miracle of age-long growth, the kauri is supreme; its smooth symmetrical bole, bare of branches and tapering only slightly for most of its 100 feet or so, imprint it deeply on the memory. We gaze, knowing that the sight puts a spell on us that no other tree in this land can lift.

But when we stand before the vast, tortuous and writhing bulk of a rata, ten feet or so, across, there is more than what meets the eye to amaze us. Our mind adds wonders from what we have been told and have seen. On hills above the Hutt Valley, on the lower slopes of Egmont, around Waikaremoana, beside the Manawatu Gorge, the writer has traced the stages of the fantastic life story of this tree. A lover of light, it must have it from the beginning. In maturity, it towers up above the forest canopy around - and its earliest leaves grew from the midst of that canopy. The tiny wind-borne seed may settle anywhere; but all the giant ratas sprang to life high in the forks of a branching tree. There the seedling found its first sustenance in a layer of dust and decayed bark and leaves. From its high perch it sent down an aerial root. Once this root reached the ground the sap flowed upwards - it was now a minute tree trunk. Sometimes on a rimu or a pukakea only this can be seen - and one wonders whether it is a rata liane that went up or a tree root that came down. Elsewhere one sees tentacle shoots sent out at intervals, encircling the host tree and grafted back into the stem, to hold it fast. Again one sees these tentacles, now grown thick, no longer holding the rata to the host, but clasping the doomed tree to the stout rata trunk, slowly strangling it. Meanwhile other shoots have branched out below to take hold on the ground around the base

of the host. When these fill out and join, the dying or dead host tree is encircled - and the hollow sometimes found within the rata trunk is explained. When one reflects that this rata (called ironwood, from its hard timber) is very slow in growth, one realises that behind the vast mature rata, there lies a centuries-old drama that makes one gasp.

Fine examples of over-mature rata trees can be seen by a visitor to Wanganui in the Forest and Bird reserve of Bushy Park (leaving the main road ten miles north at Kai Iwi). One has merely to walk along easy bush tracks.

In the Waitakere reserve (Auckland), I was aware of a pleasant scent before I came to the shrub whose flowers produced it. It was the well-named *Alseuosmia* ("perfume of the grove") a member of the honeysuckle family. This large species (*karapapa* - *A. macrophylla*) has crimson or cream hanging flowers shaped like a trumpet, followed in winter by red oblong berries. The thick fleshy leaves, up to five inches in shade, are handsome. It became at once a favourite of mine. It is well worth cultivation, where it can be protected from frost.

Another shrub I admire is *Rhabdodhamnus solandri* (*waiuatua*). It is a twiggy shrub (Poole gives it this name) and its habit of growth improves in cultivation. Its round, pale green toothed leaves are attractive, and its trumpet-shaped flowers (I prefer the orange-red-variety, to the yellow) are produced at all seasons. It is a pity it is frost-tender, as a fairly open situation suits it.

Finally let me tell you of a living museum packed with forest giants. It is Ball's Clearing, preserved by a lucky chance in an area where milling was carried on for fifty years. It is forty-three miles west from Napier, at Puketitiri. The reserve is on level ground, with well-defined tracks. Once inside, you are surrounded by cathedral-like clusters of pillars supporting a lofty roof of foliage. The podocarps predominate, with *rimu*, *pukatea*, and *beech*, at the east edge. The remarkable thing, which gives a clear vista of giant trunks wherever you turn, is the absence of middle-layer trees and tall shrubs in much of this 90-acre reserve. Only at the

fringes is there abundant shrub growth.

Notable among these shrubs is the long-leaved mahoe (*Meliccytus lanceolatus*). This hardy shrub, with its handsome, long, bright green and toothed leaves and its fast growth is worthy of cultivation. Its abundant blue-black berries (as on the common mahoe) are attractive - but it is dioecious. This plant is found throughout New Zealand, except in Northland.

AN INTRODUCTION TO MOSSES

by John Thompson

Almost everywhere one goes one sees mosses. They are to be found in the cracks of footpaths, on concrete paths, on walls, in lawns, on rocks, on the surface of the hills and mountains, in the bush and even in water. We take them for granted and pass them by. In these articles I hope to encourage you to stop and look more closely at these lowly but fascinating plants.

As a first step in the appreciation of mosses, we must learn how a moss grows and how it perpetuates its species. The life history of a moss is indeed of considerable interest.

When a moss spore is released from its capsule and falls on to a suitable wet surface, it germinates and covers the surface with a branching filament called the protonema. The underground portion of the protonema, which is colourless, absorbs water and salts from the soil. On the green exposed portion of the protonema buds are formed. From the base of these buds rhizoids grow downwards and function as roots. The buds grow into the mature moss plant, the gametophore. At this stage the plant consists of a stem around which are affixed a number of sessile leaves, and basal rhizoids. The rhizoids often are continued up the stem.
