

fringes is there abundant shrub growth.

Notable among these shrubs is the long-leaved mahoe (*Melicytus 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.

One characteristic feature of mosses is that the stems are usually numerous and are closely aggregated. This is the result of the protonema producing many closely spaced buds.

The sexual organs are usually produced in separate buds and are often borne on separate plants. They are protected by modified leaves, the perichaetial bracts.

Spermatozoids are liberated from the stalked and sausage shaped antheridium. Each sperm is a very small, slightly coiled body, with two cilia attached to the anterior end. The sperms swim in the rain water which surrounds the moss and are attracted by a chemical that is exuded from the mouth of the archegonium. The egg cell, which is to be found in this long narrow flask shaped archegonium, is fertilised by one of the sperms.

After fertilisation, the egg cell develops into the fruit stalk, known as the seta, on the end of which is the capsule.

The growth of the seta ruptures the outer tissue of the archegonium and the upper part of this tissue is carried upwards on the top of the capsule forming a cap, named the calyptra. The lower part of the seta grows downwards through the archegonium into the moss stem.

Spores are formed in the capsule and are liberated when conditions are suitable. The capsule usually has a lid, called the operculum, which drops off to allow the spores to escape. In most mosses, the capsule mouth is covered with teeth, the peristome. These are hygroscopic, thus allowing the spores to be disseminated in dry weather. In wet weather the teeth swell to completely cover the mouth of the capsule and effectively prevent the dispersion of the spores.

In all there are 175 moss genera known to grow in New Zealand with a little over 500 species and varieties. The Royal Society's Bulletin No. 5, "A Handbook of the New Zealand Mosses" by G.O.K. Sainsbury, provides a description of each of these mosses with many illustrations. Mr K.W. Allison's "Revised Key to the Moss Genera in New Zealand" to be

found in Tuatara, volume 12, November 1964, is a valuable help in the naming of the mosses you may be studying.

Mosses are very particular in the situation in which they grow, many of them choosing only one habitat. Some are restricted to growing on rocks, some on logs, some on wet ground, some on limestone, some on dry clay soil, some on the bark of a tree trunk and some on the bark of tree branches. One species is restricted to growing on tree fern trunks, others grow only in water. It is a help in the identification of a moss if a record is kept of the situation in which the moss was found.

In a later edition of the Journal will be given details of those parts of a moss that must be examined when one is attempting to name it. As mosses are small plants, and as its parts are sometimes very small, the assistance of a good lense will be needed. A microscope, if one is available to you, will be invaluable.

THE NEED TO NOTE

by L.H. Kyle.

On a recent Society trip to the Waipara Gorge, several botanical species were noted, which are known to be of very local occurrence, so local that their virtual extinction is by no means an impossibility. Indeed, near the area which we explored, this same possibility was dramatically demonstrated; on some high flat land above the gorge there had been some spraying for briar, and an intense cloud of spray had drifted over the escarpment and down a long slope of broken limestone. On this slope, all shrubby vegetation had been killed, and this included many bushes of *Sophora prostrata*, and innumerable specimens of *Clematis afoliata*.

As New Zealand becomes more intensely farmed and civilised. it is inevitable that the private sanctuaries of certain local species be increasingly violated, and even destroyed. To some extent this can be hindered