

reserve food in the rhizome becomes so great that ultimately the supply becomes depleted and no more fronds appear above ground. If the frond is allowed to get out of the curl stage it becomes tough and stringy and less palatable to stock. Again, just as soon as it uncurls it begins manufacturing plant-food, which goes to maintain the food-supply, and hence the vitality of the underground rhizome (Fig. 24).

In order to deal satisfactorily with the bracken-fern in the curl stage some food other than the fern must be provided, else the stock rapidly go back in condition. The fairly long dormant period of bracken-fern during winter usually makes it possible to get grass well established on the fern-burn before the young fronds begin to appear, which is usually in October or late September. Bracken-fern control therefore appears to resolve itself into an attack on the plant along two lines: (1) Crushing by stock in the early spring and summer, while the fern is in the curl stage, and (2) the production of pasture plants on the bracken-fern area during its dormant period—March to October—in order that this stocking may be satisfactorily carried out.

WATER-FERN.

Water-fern requires a good deal of moisture and shade in order to thrive. It is troublesome mostly around stumps and logs, or on higher-altitude farms where the rainfall is heavy. It does best in somewhat loose soil containing plenty of humus in the form of leaf-mould or rotten logs. The rhizome is well below ground, being on the average 2 in. to 3 in. deep. It is stout, but not so well supplied with reserve food as is bracken-fern. The young fronds are fairly numerous, large and fleshy, and grow for the most part in winter and spring. Frost, however, injures the growth in the winter. If stock can get in among water-fern they can be very damaging with their feet, owing to the big, fleshy, curled fronds being readily broken off. Moreover, from the fact that the rhizome does not contain the same reserve food as in bracken-fern, the plant is much more readily crushed out than is bracken. Stock also eat the herbage to a small extent even when the frond is expanded. On water-fern areas it is difficult to get a burn, so that pasture plants are introduced with greater difficulty. Water-fern scarcely ever comes out into the open, and usually as soon as the logs are removed and when the land has become more consolidated by stock water-fern ceases to trouble. On certain farms in the country under consideration, however, water-fern is still spreading considerably, forming large clumps.

MANUKA.

Manuka, once it becomes well established, cannot be controlled by stock alone and the slash-hook must be employed to fell this scrub-growth. This is a costly business, but there is apparently no alternative. To burn standing manuka that is bearing seed is worse than useless. Manuka once cut will not grow out afresh from the cut stumps (though any small branches left low down on the stump will grow), and were it not for the fact that this plant seeds so profusely its control would be comparatively easy. The seed habit may be termed almost a mania with manuka: one plant in a single season