

Nowhere have I seen this fundamental truth so well illustrated as in Stewart Island. There cut the forest to the ground, burn its last remnant to ashes, and in a very few years, notwithstanding the presence of cattle, it will reappear! This would not be altogether good news were the land suitable for farming, but in a spot whose chief wealth is its forest scenery, the knowledge that the scars wrought by the sawmillers and fires of the past will some day be quite obliterated is very pleasant knowledge indeed. Nor is it, as in most parts of New Zealand, merely certain members of the forest undergrowth which reappear, but that plant of all plants that can usually least tolerate exposure, thanks to the absence of excessive sunshine and to the frequent rain, the rimu, appears again in the rejuvenating forest in its thousands (see Photo No. 22).

The sequence of regeneration is not the same everywhere. In some places the wineberry (*Aristotelia racemosa*), the commonest "fire-weed" of New Zealand, is quite wanting, the hupiro (*Coprosma foetidissima*) being dominant. On the road to Kaipipi Bay by the bush track an area is traversed which has been first "milled" and then burned twenty years ago or more.* At the present time there is a very thick growth of young trees and shrubs 12–15 ft. tall, all growing into one another. *Weinmannia racemosa* is dominant, and *Coprosma foetidissima* is almost equally abundant, the yellow-green of the former contrasting with the much paler green of the latter. There are many young trees of the rimu (*Dacrydium cupressinum*) of fastigate habit, and with weeping long shoots, some 10 ft. tall or more. The juvenile lancewood, *Pseudopanax crassifolium*, is very plentiful, its straight stiff stem piercing the general mass of foliage, and finally bringing the adult leafy head into the light. Other common constituents are: *Nothopanax simplex*, *Griselinia littoralis*, *Coprosma lucida*, and, as undergrowth, *C. rhamnoides* and *Gahnia procera*. There is an occasional southern rata (*Metrosideros lucida*), miro (*Podocarpus ferrugineus*), and *Nothopanax Colensoi* mixed with the taller plants, and a few small tree-ferns (*Dicksonia squarrosa*). On the floor are *Nertera depressa*, *Lycopodium volubile*, and some small *Gaultheria antipoda*. *Aristotelia racemosa* was not noted at all!

Regeneration is not everywhere as just described; proximity to the shore, the degree of shelter, nature of the ground, manner and extent of destruction—all these and other matters have to be taken into consideration. My notes only enable me to deal very superficially with this important question.

Frequently *Carpodetus serratus* is an important constituent. Lianes are more abundant than in the virgin forest, particularly *Rubus schmidelioides* and *Metrosideros hypericifolia*.

If the forest is removed in the neighbourhood of the shore, the ground is rapidly occupied by *Senecio rotundifolius*, the seeds of which germinate readily, and thousands of seedlings appear everywhere. Without a close examination it would be thought there were little but the *Senecio* in the new growth, but it contains many of the ordinary forest plants—e.g., *Carpodetus serratus*, *Aristotelia racemosa*, *Myrtus pedunculata*, *Coprosma foetidissima*, *Weinmannia racemosa*, *Dacrydium cupressinum*, *Rubus schmidelioides*, *Suttonia divaricata*, *Metrosideros hypericifolia*, and various ferns, especially *Blechnum capense* and *Dicksonia squarrosa*. Such a combination as the above would eventually result in the eradication of the coastal *Senecio* and the reinstatement of a rimu-kamahi association.

Where the subalpine manuka association has been burned, as in places on Mount Anglem, which occurred at the cutting of the track six years ago, the original association of close-growing *Leptospermum scoparium*, and in much smaller quantity *Dracophyllum longifolium*, *Olearia Colensoi*, *Dacrydium cupressinum*, *Nothopanax simplex*, *Gahnia procera*, and *Gleichenia circinata*, is being replaced by the following: *Leptospermum scoparium*, 2 ft. tall; a little *Phormium Cookianum* and *Dracophyllum longifolium*; abundance of *Gleichenia*, *Olearia Colensoi* (some about 7 in. tall), and *Gahnia procera*; here and there is *Cassinia Vauvilliersii*, *Coprosma foetidissima*, and an occasional *Dacrydium cupressinum*, also a little *Gleichenia Cunninghamii*. In many places the ground is carpeted with *Lycopodium ramulosum*, and the green tufts of the *Gahnia* are everywhere.

There have been several extensive fires in the neighbourhood of Port Pegasus, especially in the now open country between the Frazer Peaks and Smith's Lookout. This district was originally covered, in large part, with manuka scrub and a low mixed forest, a remnant of which consists of the following: *Dracophyllum longifolium* (dominant), *Griselinia littoralis*, *Nothopanax Colensoi*, *Coprosma lucida*, *C. Colensoi*, *C. rhamnoides*, *C. propinqua*, *Nothopanax simplex*, and *Podocarpus Hallii*. Probably there would also be in many parts much *Dacrydium intermedium*. The original forest and scrub are now for the most part gone, but the new growths are altogether indigenous plants; scrub much the same as the original, but far denser and of various heights, according to the age of each burning, is everywhere (see Photo No. 39), except for certain open ground occupied by subalpine herbaceous plants and prostrate shrubs, as already described, some of which is a new formation and some probably the original covering before the time of fires.

2. HEATH.

(a.) General.

By the term "heath" I refer to that formation where usually shrubs or low trees of the manuka (*Leptospermum scoparium*) make, along with other shrubs, a special plant society. The heath of Stewart Island occurs principally on the open ground at about sea-level in the Freshwater River and Rakiahua Valleys, on low-lying ground near Port Pegasus, and on the ancient dunes inland from Mason Bay, where there is an assemblage of plants very different from those of dunes either ancient or recent in any other part of the New Zealand botanical region.

* The final burning which actually prepared the ground for new growth may have been much more recent.