

twining round and round themselves, form masses several feet in depth. The cable-like woody stems of *Metrosideros florida* depend near the trunk which they have originally climbed, and the shrub-like growth of it and *M. scandens* on the trunk or amongst the branches is a distinct feature where it occurs.

4. THE RIMU-TAWA-TOWAI ASSOCIATION.

(a.) General.

This association might also be denominated the upland forest, as it occupies the highest ground of the Waipoua Reserve, and is continuous with the general plant covering of the table-land. It varies considerably in its constitution in different parts: in some places the rimu is dominant, and a true forest of that tree results, but in other places the towai or tawa, one or both, are the leading trees, while the rimu may be absent or present in a smaller quantity. But so far as the associated plants go, the two sub-associations are almost identical, while the whole merges gradually on the west into the tarairi-kauri forest.

(b.) The Rimu Sub-association.

The following are my notes written after some days' examination of the eastern part of the Waipoua Reserve:—

“So far as the Waipoua Forest is concerned, the rimu is confined to a comparatively narrow belt between the Waipoua River and its north branch on the west and the Opanake-Kaihu Road on the east. From without the forest the rimu-trees are easily distinguished by the yellow-green colour of their small heads of foliage. The individual trees are sometimes dotted about rather distantly, and at other times in fair-sized groups. The towai (*Weinmannia sylvicola*) is also somewhat of the same colour as the rimu, but the pendant final shoots of this latter render the difference conspicuous, to say nothing of its more lofty stature. Here and there a dark-green rata (*Metrosideros robusta*) shows up conspicuously, while occasionally it may be seen perched high on some rimu, which will eventually be strangled.

“Within the forest the graceful willow-like foliage of the tawa (*Beilschmiedia tawa*) renders it distinct from any other tree. The forest-roof is quite uneven, though this is not noticeable at a distant view. As for the rimus, they stand up somewhat above the other trees, each also being distinguishable from its nearest neighbour, although their boughs may intermingle.

“Where the forest has been burnt it is easy to note the frequency of any special tree, and observations showed that the rimus varied from about twenty-five to forty-five to the acre. Besides the rimu, the tawa (*Beilschmiedia tawa*), the towai (*Weinmannia sylvicola*), the miro (*Podocarpus ferrugineus*), and an occasional totara (*P. totara*) are present, the first two in considerable numbers usually, and at times dominant. The larger trees vary from 50 ft. to even 100 ft. in height in the case of tall examples of the rimu. The undergrowth here, as in other parts of the forest, varies much in its density, but is frequently close, and consists of a mixture of small trees and shrubs, of which the most important are *Coprosma grandifolia*, *Senecio Kirkii*, *Izberba breaioides*, *Griselinia littoralis*, *Weinmannia sylvicola*, *Nothopanax Edgerleyi*, *Schefflera digitata*. With these young trees and shrubs is an abundance of the tree-ferns *Dicksonia squarrosa* and *Hemitelia Smithii*, while *Dicksonia lanata*, growing in close colonies, is also common, and these various ferns give a characteristic stamp everywhere. In short, the undergrowth of young trees and ferns would be a forest in itself were the tall trees removed, as may be well seen where, in the burnt portion on the Marlborough Settlement, the undergrowth has escaped and progress now is extremely difficult. The small trees, &c., are usually of somewhat open growth, but not of the liane-like, long-stemmed, little-branched form so common in the kauri-tarairi association. In certain places the tree-ferns form colonies, and in such their closeness of growth does not permit a floor vegetation.”

The floor of the forest was at the time of my visit excessively wet, and this, judging both from the rainfall of the district and the vegetation, must be a fairly normal condition. On it luxuriate mosses, hepaticas—of which a species of *Gottschea* dominates—and filmy ferns, while, as a striking testimony to the constant dampness of the ground, *Blechnum nigrum* is plentiful in the wettest places, associated with *Trichomanes elongatum*. The trees are covered completely with mosses and hepaticas on their lower parts, while every log and raised root has its mantle of filmy ferns, the kidney fern being especially abundant.

Here are a few notes taken within the forest:—

“The ground here is covered with filmy ferns, including *Trichomanes reniforme*, *Hymenophyllum demissum*, and *H. ferrugineum* in abundance, this latter very noticeable through its tawny-coloured fronds. The tall trees are *Weinmannia sylvicola*, *Dacrydium cupressinum*, and *Beilschmiedia tawa*. The ground is uneven owing to the great number of roots spreading over it. The shrubs are *Coprosma grandifolia* and *Schefflera digitata*. Near the creek are many square yards of ground covered with *Blechnum nigrum* and *Trichomanes elongatum*, the fronds of this latter covered abundantly with epiphytic mosses. The tree-fern stems are draped with *Hymenophyllum ferrugineum*.”

On dryer ground my notes mention *Blechnum Frazeri* in abundance, *Blechnum discolor*, *Beilschmiedia tawa* as the leading tree, an abundance of *Senecio Kirkii*, an example of *Dicksonia squarrosa* green with mosses and liverworts, and growing on it various seedlings of *Nothopanax Edgerleyi*, *Weinmannia sylvicola*, and *Metrosideros scandens*.

Although lianes are common enough, they are not in such abundance as to greatly affect the physiognomy, though where *Freycinetia* drapes the trees here and there it is of course noticeable. Epiphytic asteliads, too, are present, but they are not much in evidence.

A number of other plants are present in the rimu forest, but of special interest are those which are not common. These, as far as noted, are *Knightia excelsa*, *Fuchsia excorticata*, *Aristotelia racemosa*, *Rhapalostylis sapida*, *Cyathea dealbata*, *Olearia Cunninghamii*, *Geniostoma ligustrifolium*, *Myrtus bullata*.