

plenty of *Microlaena avenacea*, *Hedycarya arborea*, and the stems of *Rhipogonum* here and there. The smaller trees are embraced by *Lygodium*, as, e.g., *Coprosma arborea*. *Dryopteris pennigera* is an abundant constituent. The vivid green of the climbing *Lygodium* contrasts strongly with the brownish-leaved *Coprosma arborea*.

"I descended towards the Wairau River down a very steep slope, where in shallow gullies it was extremely wet. The trees are quite close; trunks meet the eye everywhere. In some places there is no undergrowth of any moment except seedlings, tree-ferns, palms, and *Freycinetia*, but these on the drier slopes do not form a dense growth, and are dotted about rather. Fallen trees are to be occasionally met with, as, e.g., a fallen *Metrosideros robusta* quite covered by *Polypodium diversifolium*. Where the ground is wetter *Freycinetia* forms a close entanglement with more or less *Rhipogonum*."

Looking from a Spur down a Gully on the Eastern Side of Waikohatu Stream.—"A rather indistinguishable mixture of grass-like *Gahnia*; tree-fern stems, and their pale, spreading, and umbrella-like heads of leaves; small and slender *Beilschmiedia tarairi*; together with an occasional grey and reddish columnar trunk of *Agathis australis*; while much of the sky shows through, and there are really no tall trees, the kauri excepted. Within the above are heads of *Freycinetia* rising from the floor and 25 in. to 40 in. tall, the leaves arching, and at the extremities of the stiff, bare stems; while above them are numerous semi-erect leaves of the silver tree-fern, small tarairi-plants, and clumps here and there of *Astelia trinervia* and sparsely branched *Senecio Kirkii*.

"Of the trees, *Beilschmiedia tarairi* is easily dominant. Also *Podocarpus ferrugineus* is present, and an occasional *Dracophyllum latifolium*, its trunk and stems quite naked, and pine-apple-like green clusters of leaves at their apices. On the ground are many dead fronds of ferns, juvenile *Blechnum Frazeri*, and a few seedlings of the usual kind—e.g., *Senecio Kirkii*, *Geniostoma*. In an open space on the floor are *Geniostoma* (abundant), *Melicope simplex*, *Senecio Kirkii*, *Alseuosmia macrophylla*, *Rapanea Urvillei*, *Melicytus ramiflorus*, *Styphelia fasciculata*, a few mosses, and many dead and rotting leaves.

"The forest is distinctly open. The trees are seldom less than 10 ft. apart, and often more, their trunks 1 ft. to 2 ft. in thickness, or sometimes more, and quite straight.

"The grass-like plants growing as tussocks, either touching one another or some distance apart, give a special character, while man-high above them are the silver tree-fern fronds, and above these again, some yards apart, slender young trees of bright-green *Dysoxylum* and pale-green *Geniostoma*, small-leaved *Pittosporum tenuifolium*, and an occasional tall tree-fern, either *Cyathea dealbata* or *C. medullaris*, raising the green fronds high on slender stems towards the forest-roof, the leaves arching horizontally in an umbrella-like fashion.

"The trunks vary in colour, or they may be masked by mosses or lianes and so lose their character. There are kauris here and there, with groundwork of shining grey embellished with red and more or less circular patches and waving lines, or young kauris with much darker bark. As for the moss covering, there is frequently a most beautiful golden-greenish-coloured species, the shoots crowded but hanging downwards with the apices turning upwards, the vivid golden-green contrasting with the reddish-brown dead leaves of the interior of the mantle. This latter is 1½ in. in thickness. The lateral shoots are drawn out into filiform points, which possibly root and thus form new plants.

"Rising from the ground are the extremely slender and stiff dark-coloured stems of *Blechnum Frazeri*, terminating in a crown of dark-green shining leaves, eight to ten in number, which are held semi-erect or at times almost horizontally. Such stems may be 1 ft. or less to 3 ft. tall, and the whole form miniature forests of ferns." (Photo 8.)

Descending a Slope towards a Gully.—"Here, the conditions being slightly more moist, a good deal of a pale-yellow species of *Gottschea* occupies the ground, and shrubs or shrubby growth are more abundant—i.e., the undergrowth becomes thicker, tree-ferns dominate, especially *Cyathea dealbata* and *C. medullaris*, and there is some *Dicksonia squarrosa*."

The tops of the ridges usually have a dense vegetation, while the slopes are of a more open character. For instance, my notes say,—

"We are on the summit of a ridge. Here, in addition to the dominant tarairi, are *Metrosideros robusta* and *Knightia excelsa* (rewarewa). The undergrowth is all entangled together, and consists of *Alseuosmia macrophylla*, young *Beilschmiedia tarairi*, *Geniostoma*, *Melicytus macrophyllus*, *Nothopanax arboreum*, *Dysoxylum spectabile*, silver tree-fern (*Cyathea dealbata*), and supplejack (*Rhipogonum scandens*). Nothing but a close entanglement or network of branches meets the eye, with green leaves scattered through. Near by, the dense undergrowth is formed of *Gahnia xanthocarpa* tussocks, with *Dracophyllum latifolium*, *Alseuosmia macrophylla* and *Coprosma grandifolia* growing out of them, and *Freycinetia* also in abundance."

Many tall palms grow out of the shrubby undergrowth, and they are indeed one of the most characteristic features of the forest. Near the track from the Omaia Hill, not far from the Wai-poua River (see Map), where the soil is especially good, they form almost the sole undergrowth, many hundreds raising their feathery leaves from trunks 12 ft. or more tall and growing so near one another that the leaves form a close covering—a remarkable sight indeed in a forest in the temperate zone. Although abundant enough, lianes and epiphytes do not generally play a very conspicuous part in the forest physiognomy. It is on the irregular trunks of the ratas that they are most abundant. The base of these is frequently covered with great sheets of kidney fern, while on its giant limbs are huge masses of *Astelia Solandri* in surprising abundance. *Blechnum filiforme* completely surrounds the slender stems of young trees, its great pinnate leaves drooping downwards. The smooth stems of the palms are a favourite station for *Polypodium Dictyopteris*, whose roots form thick mats upon the bark. The manganuange (*Lygodium articulatum*) is found only on the more slender stems and trunks; it does not ascend the taller trees. Frequently its wiry stems,