

H. tetragona and *H. venustula* with abundant hybrids. Fresh gullying of the pumice surface was also conspicuous. Within ten years mixed scrub in which *Hebe* was no longer dominant and hybrids infrequent was approaching a closed community. (A similar succession has been observed in the Central Kaweka Range on Venison Top between 1930 and 1952, also following a fire above the timber line.) The composition of the scrub on Maungarahi otherwise has no characteristic distinguishing it from the subalpine scrub elsewhere in the Kaimanawa Ranges (List 10, cf. also Lists 8 and 9).

WAIOTAPURITIA TUSOCK (Fig. 2). This valley is essentially a northern prolongation of the Inland Patea tussock. Red tussock, except where it has been thinned by burning, forms a dense cover on the valley floor and the lower terraces, which are frequently boggy, sparser red tussock giving way to low *Poa* tussock on the higher, often extremely arid terraces. There is a striking scrub-forest community along the stream banks composed of glaucous-green *Phyllocladus alpinus*, bright-green *Hebe parviflora* var. *arborea* (the round-headed form that is abundant in the central North Island ranges) and dark-green *Dacrydium bidwillii*, which grows here in the unusual form of a 10–12ft multitrunked tree. Large bushes of *Coprosma propinqua* and *C. parviflora* with interlaced *Aristotelia fruticosa* and the locally abundant *Pittosporum anomalum* are associated undershrubs, together with *Dracophyllum subulatum* and occasional *Leptospermum scoparium*. The latter is not plentiful near the valley floor, but where burns have run up the higher slopes may dominate an induced scrub formation.

It should be put on record that on a recent visit the flats of this valley which are several hundred yards wide showed evidence of having been covered by a recent flood, probably the exceptional flood of February, 1958. Though no serious scouring was seen here or downstream in the main Ngaruroro Valley, the flats in the adjacent Tauranga-Taupo are reported to have been buried under a deposit of logs and pumice wash.

CENTRAL KAIMANAWA

FOREST. Most of the forested area of the Central Kaimanawa is separated from the forest of the Northern Kaimanawa by a belt of tussock which follows the scarp across the heads of the Rangitikei and Mangamaire Valleys and continues into the Ngaruroro Valley.

Along the western face forest is continuous from the Waimarino boundary along the slopes of the Umukarikari Range into the lower Waipakihi Valley, but the high and extensive Middle Range almost completely separates this from the forest of the Rangitikei Valley. This forest has distinct characteristics, as has that of the lower Waipakihi, so that it is convenient to subdivide the Central Kaimanawa forests according to the three river systems:

1. Tongariro (Upper Waikato) Forest.
2. Waipakihi Forest.
3. Rangitikei Forest.

(1) TONGARIRO FOREST. The Waimarino boundary marks the complete replacement of silver by mountain beech. The altitudinal forest belts are here well defined, a podocarp/hardwood belt below 3,000ft, a red beech belt above this to 3,800ft, and mountain beech to the timberline at 4,400ft.

In the podocarp belt *Podocarpus spicatus* is the commonest species with a certain amount of *P. ferrugineus* and *P. totara*, but *Dacrydium cupressinum* is comparatively rare. There has been a considerable amount of selective logging of *Podocarpus spicatus* in the Waiotaka and Whiti-kau valleys. *Gymnelaea*