

(Moawhango). This lies well outside the pattern of silver beech distribution and its relationship is obscure.

Red beech appears in several localities, but its distribution is irregular. Over-mature trees dominate much of the Te Rei Bush on the limestone scarp north of Moawhango Village and red beech occurs again in the bush at West Lawn. There is also mature red beech in the Tikitiki Bush, together with 110 year old regeneration (Fig. 3). In addition there are a few trees beside the Inland Patea Road on the descent to the Taruarau, two or three trees are reported in forest on the eastern slopes of Tawaki Tohunga and a solitary hybrid of the *Nothofagus x blairii* form has been collected on the Stowman Range in regenerating forest. The tendency for mountain-beech forest to supplant former red-beech forest after fire probably applies to this case.

A feature of especial interest in the Tikitiki Bush is a small bog forest perhaps an acre in extent containing a few trees of *Libocedrus* and *Dacrydium colensoi*, with seedlings of both in evidence. This is an outlier of the South-western Kaimanawa forest, and with *Libocedrus* in a few stations south of the Inland Patea Road (Otupae and Pukeokahu) is evidence of a former link between the western Ruahine and South-western Kaimanawa forests.

In an east-west belt along the 60in isohyet across the whole of the area the death of a considerable proportion of trees in mountain-beech forest is conspicuous (Fig. 8). This was first noticed behind the Golden Hills Hut in December, 1946, and was then, in conjunction with the death of a variety of shrubs on the drier pumice terraces, taken to be a consequence of the drought in the beginning of that year. Recently-dead trees were abundant in the Tikitiki Bush early in 1949, and have been observed at West Lawn and off the Desert Road at the head of the Mangoio Stream. Examination of dense regeneration here where the canopy had been opened shows that it is even-aged from 1947. The dead trees are most abundant on easy slopes and flats, their death appearing to be connected with the depth of pumice. Identical patterns appear in the bush at West Lawn, with the exception that in one area at least the regeneration ante-dates the drought.

SOUTH-WESTERN KAIMANAWA

TUSsock AND SCRUBLAND

Red tussock is generally dominant as in the Southern Kaimanawa, but *Festuca* is abundant while *Celmisia spectabilis* is less prominent. On steeper faces a community dominated by *Phormium colensoi* with deciduous *Coriaria sarmentosa* and stunted *Leptospermum scoparium* is characteristic. This might be thought to be recently induced, but is frequently shown on early maps, and in fact the abundance of dead *Phormium* hummocks in what is now tussock show that its area has been reduced by burning and browsing.

Contiguous to it on more level ground upstanding isolated trees of *Griselinia littoralis*, *Hoheria sexstylosa*, *Pseudopanax crassifolium* and a *Pittosporum* (intermediate between *P. tenuifolium* and *P. colensoi*) indicate also a recent reduction of forest.

SOUTH-WESTERN KAIMANAWA FOREST (Fig. 12).

The pattern of open tussock country with scattered islands of forest continues from the Southern Kaimanawa across the tertiary scarps which lie between Moawhango Village and Waiouru. The forest composition, however, changes sharply, *Libocedrus* becoming the principal dominant, *Podocarpus hallii* dominant in limited areas and beech species playing a limited role on forest margins, but often absent.