

Totara Forest at Ohau

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THE Ohau bush is a small unfenced remnant of secondary totara forest, north-west of Ohau Railway Station and about $\frac{3}{4}$ mile from the Ohau R. It is about $4\frac{1}{2}$ miles from the sea and lies towards the northern margin of a low terrace that must have formed part of the river's flood plain in the not-very-distant past. Over much of the terrace stones lie at the surface but in the vicinity of the bush a variable depth of fine alluvium (3-12 in.) covers the coarser material. The land is slightly lower here, and rushes indicate a greater supply of moisture in the soil.

The main canopy tree is totara but matai and mapou are not uncommon. Other trees present are titoki, rewarewa, lancewood, kohuhu, mahoe, kaikomako, cabbage tree, ribbonwood, kowhai (*Sophora microphylla*) and the three species of maire. Lianas present are *Meuhlenbeckia australis*, *Parsonsia heterophylla*, *Rubus schmidelioides*, *R. cissoides*, *Tetrapathaea tetrandra* and *Clematis foetida*. The crowns of the canopy plants show the effect of "salt burn", particularly at the western margin of the bush.

The upper understorey plants are mainly small-leaved shrubs, the commonest being *Melicope simplex*, *Meliccytus micranthus*, *Pseudopanax anomalum* and *Coprosma rigida*. Others present are *Paratrophis microphylla*, *Coprosma areolata*, *C. rotundifolia*, *Neomyrtus pedunculata*, *Lophomyrtus bullata*, and *L. obcordata*, together with hybrids between the last two. The only conspicuous epiphyte is *Pyrrosia serpens*.

With sheep and cattle browsing and camping in the bush the ground and lower-understorey vegetation has been severely depleted. The only important shrubs are *Coprosma rhamnoides* and Jerusalem cherry (*Solanum* sp.). Common ground plants are *Pellaea rotundifolia*, *Hydrocotyle moschata*, *H. americana*, *H. elongata*, *Cardamine* sp. and the two adventive nightshades, *Solanum nigrum* and *S. nodiflorum*. The following are also present: *Stellaria parviflora*, *Ranunculus hirtus*, *Oxalis corniculata*, *Arthropodium candidum*, *Pterostylis trullifolia* var. *alobula*, *Echinopogon ovatus*, *Microlaena stipoides*, *Asplenium bulbiferum* and *Pteris tremula*. On the shady southern flank under the shelter of low shrubs the orchids, *Pterostylis banksii*, *P. montana*, *P. graminea* and *Corybas trilobus*, have been found; here they all flower about October, though in the coastal dunes *C. trilobus* flowers in June and July (sometimes as late as August). At one time *Asplenium flabellifolium*, *Doodia media* and *Botrychium australe* were growing on the western margin of the bush but they have now gone. Plants of the mistletoe, *Loranthus micranthus*, used to be common on various shrubs at the edge of the bush, and one

very large specimen grew on a totara; none have been seen lately.

South of the main bush there is an adjoining area, very stony, in which the totara are smaller and do not form a closed canopy. *Coprosma rhamnoides* is abundant here, and there is a good deal of *C. rigida* and *Pseudopanax anomalum*. There is also a patch of *Urtica ferox*, an uncommon plant in this district. Where trees do not predominate there is a poor pasture with manuka, kanuka and saplings of totara scattered through it. A few shrubs of matagouri and *Pomaderris ericifolia* used to be present. In the pasture the following herbs are to be found: *Notodanthonia penicillata*, *Microlaena stipoides*, *Nertera setulosa*, *Dichondra* sp., *Carex breviculmis*, *Microtis unifolia*, *Thelymitra longifolia*, *Cyathodes frazeri*, *Geranium potentilloides*, *Luzula* sp., *Wahlenbergia* sp. and two species of the *Gnaphalium collinum* aggregate. Others recorded in the past include *Botrychium australe*, *Drosera auriculata*, *Orthoceras strictum* and *Chiloglottis cornuta*.

Although the totara forest at Ohau is very similar in structure to that on the Otaki plain (described elsewhere in this issue) it differs significantly in composition. The following trees found at Otaki do not appear to be present at Ohau: karaka, ngaio, akeake, wharangi and milk tree (*Paratrophis banksii*). These are species usually thought of as being coastal, though the first three occur inland, where they are usually associated with young soils and steep slopes. However, the main difference in composition between the Ohau and Otaki forests is seen in the assemblage of small-leaved shrubs. *Coprosma crassifolia*, so conspicuous in the understorey at Otaki, is absent from Ohau; and *Melicactus micranthus*, *Pseudopanax anomalum* and *Coprosma rigida* so conspicuous at Ohau are absent from Otaki. *C. rhamnoides* is abundant at Ohau, but rare at Otaki. As all these shrubs have fleshy fruits, suitable for dispersal by birds, it does not seem that the difference between the two forests can be related primarily to differences in seed supply. The fact that the Ohau terrace is only a few feet above river level, whereas the Otaki plain is 30 ft. or more, suggests that a difference in the moisture available from seepage may be mainly responsible for the difference in composition.

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Alpha Hut trees stand well spaced, often with almost bare trunks except for the small surmounting crowns." In the absence of browsing animals, gaps in a canopy are normally filled in time by one species or another. In the Tararua Ra. at the present time there is very little regeneration of canopy species within the forest, so that every loss to the canopy, whether caused by wind or snow damage, browsing, or disease, leads to further deterioration of the protective cover.