

If the date of this last migration may be taken as 1350 A.D. and that kumara was then introduced into New Zealand, cultivation round the lake and in a few favoured sites away from it, as for example Paengaroa at the head of the Mohaka, had been going on for 300 years or more before the arrival of the first Europeans (Ward, 1956). In the higher country hunting techniques would have likewise affected forest margins.

Established routes ran along the boundaries of the area, and the present-day roads, the Napier-Taupo, Inland Patea, and Desert Roads follow the general line of these. There was also a route from the Mohaka River which followed the Oamaru-Ngaruroro-Taruarau boundary before cutting across the Ngamatea Plateau to the Rangitikei River. Flakes of obsidian have been picked up at several points on this route. Several routes also ran from east to west across the upper basin of the Moawhango, and another traditional cross-country route followed the Tauranga-Taupo valley.

Merino sheep were introduced round Lake Taupo by the Grace family in 1856, but were killed out, partly by wild dogs, during the Maori wars. Alfred Cox took up a lease south of the Napier-Taupo road in 1867-70, and the Birch brothers brought the first sheep to the Inland Patea in 1868.

The first written information comes from visits by Bidwill to Taupo in 1839 and by the missionary-botanist Colenso in 1847. The surveyors, Percy Smith and Cussens, traversed the country in the 1870's and 1880's. Alexander McKay's report on the geology of the Kaimanawa Ranges appeared in 1901. In 1911 B. C. Aston made two botanical visits to the Upper Moawhango and the Wai-pakihi Valley, but a comprehensive botanical survey only began in 1931 and has continued intermittently (because of the comparative remoteness of the area) up to the present.

FIRE

The general occurrence of charred timber buried under the latest ash shower indicates that it fell at a considerable temperature within at least a 30-mile radius of the vent. Charred timber also occurs occasionally towards the margin of the shower.

This and the patchwork patterns of forest and tussock outside the central area suggest that peripheral fires may have followed the eruption.

Maori occupation was accompanied by the use of fire to encourage the spread of bracken, whose rhizome was a staple food, and with the introduction of kumara and later of the European potato a system of shifting cultivation of forest clearings was extensive at lower levels. The margin of beech forest at higher altitudes was also affected by the practice of burning the adjacent tussock in the hunting of kiore (*Rattus exulans*).

Bidwill (1952) describes the process of forest burning in some detail round Taupo, and his estimates of a lakeside population of 5,000 gives an indication of the scale on which it was carried out. His description (p. 66) of the decrease in vigour of fern after repeated burning, its ultimate replacement by an open tussock association, and of the abandonment of potato cultivation after the third year is precise. He quotes Chapman as considering that all the scrubland round Taupo had resulted from burning, but disagrees on the ground that as potatoes had only been introduced 50 years previously the period was too short.

The introduction of the potato would have accelerated the rate of forest clearing, and to this extent Bidwill's criticism is justified. Firth (1959) makes the following illuminating comment (p. 488):

"The results of the introduction of the potato bring out with clarity the manner in which new culture items affected the economic life and even the