

Consideration was also devoted to quarantine measures whereby imported timber would be subjected to such supervision and treatment as would reduce to a minimum the danger of importation of harmful insect species by this means. The putting into operation of a satisfactory quarantine system presents certain practical problems which are still receiving the consideration of the Committee.

During the year the investigations of the life-history of spruce aphid have been completed, and it has been revealed that the defoliation of spruce is caused as much by the presence of another insect, the conifer spinning-mite, which works in close association with the aphid, so that any control measures proposed would require to envisage both of these species of insects.

Owing to the importance of mycological problems to the successful development of forestry, during the year arrangements were completed for the training of a qualified forestry graduate under Dr. Cunningham, Mycologist to the Plant Research Station. Mr. Birch, of the State Forest Service, was selected for this work, and has been engaged upon fundamental mycological studies preparatory to making a survey of the fungous flora occurring in both forestry nurseries and established plantations.

RECONNAISSANCE SOIL SURVEY OF THE CENTRAL NORTH ISLAND TERRITORY.

DISTRIBUTION OF VOLCANIC SHOWERS.

Although the soil survey has been in progress for less than a year, much valuable information has been obtained concerning the widespread distribution of volcanic ash over the whole central territory from Kawhia Harbour to Napier, on the one hand, and from the Bay of Plenty to Wanganui on the other. While much of the volcanic ash has been traced to active eruptions in the Rotorua-Taupo zone, the work which has been done has clearly demonstrated that active eruption of Mounts Egmont, Tongariro, and Ngauruhoe have very materially contributed to the ash coating in particular localities of the territory.

The field-work which has been done by Messrs. Grange and Taylor has shown that volcanic ejectamenta from two centres in the Rotorua-Taupo zone and from Mount Egmont cover very large areas of the North Island and determine to a great extent the characteristic properties of the soils over large areas of country. The Taupo deposit had its origin in the vicinity of Lake Taupo, and in the north-west sector overlies older volcanic deposits from the Rotorua zone. The Taupo deposit is clearly of comparatively recent date, and in the vicinity of Lake Taupo is of considerable thickness. It covers the whole of the territory from Te Kuiti in the west to Napier in the east. During the present year much detailed mapping has been accomplished in order to determine the western boundary (6 in. thick) of this important soil-forming volcanic shower. The boundary has been traced from Mamaku, in the north, and has been found to pass close to Arapuni, and then south through Wharepungua to a point about seven miles east of Te Kuiti. From there the boundary of the Taupo deposit passes through Kopaki, and then runs a few miles west of the Main Trunk Railway to a point seven miles west of Taumarunui. The southern boundary of the Taupo deposit has not been accurately determined, but from the preliminary work carried out by L. I. Grange, it is considered that a line drawn through Rangataua to Moawhango and Petane roughly determines the southern limit of a 6 in. deposit of Taupo ash. The country north of Napier as far as Gisborne and Matawai is known to be covered with Taupo ash. The exact limit of deposition on the eastern side of the Island has not yet been determined.

The older volcanic deposit underlying Taupo in the western sector of the central territory has been traced to a centre in the vicinity of Rotorua. This important soil-forming volcanic deposit has a wide distribution between Arapuni and Kawhia Harbour. Very large tracts of country to the west of a line drawn through Arapuni, Wharepungua, Te Kuiti, and Taumarunui are covered by this older volcanic deposit. It is probable that the Mokau River approximately determines the southern boundary of well-defined deposition. In the Waikato Valley a great deal of the earlier ash coating has been removed or great resortment of ash from different sources has taken place. Owing to the great development of this earlier volcanic deposit in the Mairoa territory, fifteen miles west of Te Kuiti, the name "Mairoa" has been selected in the nomenclature of this soil-forming volcanic shower.

Preliminary field-work has been undertaken concerning the distribution of volcanic ash from Mount Egmont. It has been found that a wide area of country to the east of Mount Egmont, extending from Wanganui almost to the Mokau and Ohura district, is covered by volcanic ash from Mount Egmont. Time has not permitted the mapping of the boundary of the Egmont volcanic showers, but they are known to extend as far east as Raetihi.

The prosecution of the field-work has shown that volcanic ash of a more recent date than the Mairoa deposit covers extensive areas to the north and east of Rotorua.

At least three showers of very distinctive properties cover portions of this territory. These deposits have been called "Mamaku," "Kaharoa," and "Tarawera," respectively. The area covered by the Mamaku shower is situated to the west of Rotorua. This shower appears on the surface of a comparatively small extent of country, the more recent deposits of Taupo and Kaharoa overlying the greater part of the Mamaku shower. The Kaharoa deposit has a comparatively wide distribution, and extends from Rotorua to Tauranga and probably as far east as Matata and Whakatane. The southern boundary of the Kaharoa deposit passes close to Waiotapu and Te Whaiti.

The Tarawera shower, of quite recent origin, overlies the Kaharoa deposit between Tarawera Mountain and Te Teko. In the vicinity of Lake Rotomahana the deposit consists of a greyish mud of fine texture, but farther to the east the deposit is composed largely of basaltic lapilli and has a very open texture.