49. *Insect Damage.*—As in past years, significant insect attack has been confined to small local infestations and no abnormal widespread damage has been reported.

At Gwavas Nursery, *Tortix* caused damage to insignis-pine seedlings and it is estimated that the terminal buds were destroyed in 75 per cent. of the trees.

Damage to Douglas fir caused by *Navomorpha lineatum* was again conspicuous in the Rotorua district and is now under investigation.

Sirex caused some concern by emerging from *Pinus* timber in yards and newly constructed buildings. On investigation this was found to be due to the utilization of dead trees.

A hitherto unrecorded bark-beetle, *Phlœosinus cupressi*, was discovered in the Auckland Conservancy beneath the bark of macrocarpa trees. This insect comes from Central California, where it is very destructive to cypress. It is capable of attacking practically all species of *Cupressus*, *Chamaecyparis*, *Cryptomeria*, *Thuya*, *Libocedrus*, and *Retinospora*.

The areas of pine destroyed by the Taupo fires in 1946 were kept under observation in case any insects should breed up sufficiently to cause an epidemic in the adjoining forests, but no damage has eventuated.

The general broad policy of investigating all insects associated with all forest trees was continued and much valuable information was accumulated. In particular, the insects associated with tawa were studied, with special reference to the problem of *Lyctus* attack on tawa timber.

During the inspection of imported timber, instances of termites in Australian hardwoods were detected and dealt with. Besides termites, species of *Lyctus*, *Xylion*, *Coptocercus*, and *Parotellus* were recovered.

A course of instruction was given to train selected officers in the inspection of hardwoods for termites.

50. *Damage by Fungi.*—No serious outbreak of fungous disease was reported, but there was, however, minor damage from damping-off in nurseries; many trees were killed by *Armillaria mellea* in areas at Whakarewarewa State Forest which had been planted with insignis pine following the utilization of eucalypts.

The policy of studying all fungi associated with each species of tree was continued; 65 species of fungi are now being studied with relation to beech species alone. Additional information was obtained with regard to most of our forest trees, both indigenous and exotic; in particular, the black-heart of tawa was studied, and data with regard to fungi causing rots of kauri, insignis pine, and tawa were accumulated.

Other work included the study of galls on redwood, *Taphrina* disease of poplars, and the fungi forming mycorrhiza with trees.

Five sample plots at Erua State Forest were remeasured; these plots were laid off in 1940 to determine the mortality due to *Armillaria*, deer, and other causes. It was found that growth had been satisfactory and deaths negligible.

As usual, physiological diseases accounted for most of the damage to exotics during the year.

Considerable mortality occurred in young pines throughout the pumice country of the Central North Island. Much of this was due to normal suppression, accentuated possibly by unfavourably hot, dry years. In a few instances, however, the mortality rate was much greater than normal, and is giving cause for some concern. These cases were generally associated with thinning and pruning operations, particularly in naturally regenerated stands. *Sirex* and its associated fungus were always present, and exposure seemed to be the main contributing factor. The complicated host—*Sirex*—fungus relationship is worth investigation as the factor or combination of factors which predispose the trees to attack.

The stock cultures of wood-rotting fungi were maintained and 27 new cultures added.