Concrete.—Steps have been taken to set up a laboratory for investigating the mechanical properties of concrete and concrete products. The problem of immediate interest is that of air-entraining agents and other proprietary admixtures for concrete, particularly for large structures. Long-term investigations into the durability of concrete made with local aggregates from various parts of New Zealand will also be undertaken.

Moisture Content of Timber in situ.—Progress is being made in determining the minimum rate of air change necessary in the stud space of houses, especially brick veneer houses, with a view to avoiding on the one hand the risk of dry rot, and on the other the probability of excessive cooling of the house interior.

Thermal Insulation of Walls.—A very considerable amount of information has been assembled during the year on heat losses through walls of various types of domestic dwellings *in situ*, as well as from experiments made under controlled conditions in the Laboratory. The results emphasize the importance of improving the insulation in many types of modern wall constructions.

Thermal Insulation of Pumice Shingle.—The use of pumice shingle as a thermal insulating-material, especially in such large scale projects as freezing-works, demands a knowledge of suitable sources of supply of the material and of its insulating properties.

Ventilation of Domestic Houses.—Further work on the natural ventilation of house rooms has been done in a cottage in which special ventilation arrangements have been installed. Ventilation and thermal insulation are the key factors in the control of mould growth on the inner surfaces of domestic dwellings, a problem which is now well understood from the work undertaken.

PLANT DISEASES DIVISION

Toxicity of Wood Preservatives

Biological Evaluation Against Insects.—This season tests were set up to ascertain effects with different timbers on toxicity towards *Anobium*, some 30,000 beetles being used. In collaboration with the Division of Economic Entomology of the Australian Council for Scientific and Industrial Research, Canberra, a method is being developed to measure toxicity of some water-soluble materials to subterranean termites. Test blocks prepared in the laboratory were sent to Canberra for exposure to infestation.

Biological Evaluation Against Fungi.—A test against four fungi was made with the Leutritz soil/block contact method, to test the toxicity of zinc chloride, Tanalith, sodium fluoride, and boric acid.

Field Tests.—Four materials—zinc chloride, Tanalith, sodium fluoride, and boric acid—were used to pressure treat timber employed in construction of a building at Oratia. Loadings were based on results of previous toxicity tests. Attempts will be made annually to infest the building with *Anobium*.

Treatment of Infested Buildings

Test treatments showed that different petroleum solvents possess different toxicities towards *Anobium*. Tests have now been extended to include several other insecticides.

Mass Breeding of Insects

Breeding of sufficient *Anobium* beetles for toxicity tests is being continued. In addition, supplies of *Lyctus* are being bred. Work has been commenced on breeding of *Ambeodontus*, mainly in the direction of ascertaining conditions required by this beetle for egg-laying.

Preservation of Pit Props

An investigation of diffusion treatment of mine props has been made, preparatory to treating a quantity to be installed in a coal-mine, with a view to testing the effectiveness of some water-soluble products as preservatives.