

Experiments on the drying of hops showed that drying could be completed in nine hours at 120°F. The necessity for the drying to be carried out with the least possible delay was demonstrated. Plans for kilns and curing-floors for the Hop Research Station were prepared.

The experimental production of concentrated apple-juice was continued. Trials showed that the keeping-qualities of the threefold concentrate are quite satisfactory if the material is pasteurized in the bottle. Similar work on lemon-juice showed the technical possibility of concentrating it.

A laboratory vacuum evaporator with a capacity of 3 gallons per hour was constructed for the Department of Agriculture for the evaporation of aqueous extracts of pasture grasses.

For the Meteorological Office a low-pressure generator for hydrogen for filling balloons in the tropics was designed.

BUILDING-MATERIALS

Apart from the work on concrete and tiles already mentioned, building-materials investigations were confined largely to paint, of which 571 samples were received for test, and to work on the preservation of timber. Analyses were made of many kinds of paint to determine whether they complied with the appropriate standard specifications. Many samples were subjected to accelerated weathering tests.

Regular inspections were made of the five test fences and the results recorded. An attempt is being made to bring up to date all the data so far collected. Special paints were prepared for use in experiments on the painting of *Pinus radiata* timber.

The second report was prepared on the inspection of paint on State houses in Auckland in which an examination is made of the causes of premature paint failures.

In view of the numerous cases of mould growth occurring on oil paints on exterior woodwork an investigation of possible causes was undertaken in conjunction with the Plant Diseases Division. In order to determine whether the presence of "foots" in linseed-oil influenced the occurrence of mould on paints, both crude and refined linseed-oils were used, but mycological tests have not so far indicated any relationship between oil purity and mould growth.

The timber-preservation work was done entirely in the Auckland laboratory for the Plant Diseases Division, for the State Advances Corporation, and for the New Zealand Forest Service. Nearly 2,000 samples of timber were analysed, determinations being made of boric acid, zinc chloride, sodium fluoride, sodium arsenate, sodium chromate, or dinitrophenol or combinations of these constituents according to the preservative treatment to which the timber had been subjected. Work was commenced on the problem of finding a suitable quick method of determining the concentration of Wolman salts in the solutions in use at timber-treating plants. Samples of creosote were examined for the New Zealand Forest Service and the miscibility of different types of creosote with each other and with fuel oil was investigated.

GENERAL INVESTIGATIONS

Analyses were made of many samples of spraying-materials, including lead arsenates, DDT, Gammexane, Rothane, HETP, TEPP, Spergon, Thiophos, and hydrated lime. Potatoes which had been treated with DDT and with Gammexane were cooked by various methods, and the residual amounts of insecticide determined. It was found that the amounts of insecticide remaining were considerably reduced even when the potatoes were cooked in their skins.