

Composts.—Analyses for municipal bodies have been made of composts and advice given that has helped in securing a useful product.

Soil Phosphates.—Other workers have shown experimentally that phosphate "labelled" with radioactive phosphorus added to a soil loses a part of the radioactive element to some native soil phosphate. Experiments are in progress in the Soil Bureau aimed at reducing this interaction to a minimum and estimating its extent.

Soil Corrosion.—Tests on the soils surrounding steel plates buried for twelve years correlated 75 per cent. with the actual corrosion obtained. A number of tests have been prepared for firms and local authorities on corrosion hazards of proposed pipe-lines.

Soil Biochemistry.—Peach-trees showing manganese deficiency due to overliming have been top-dressed with sulphur. Dressings of 2 lb. to 4 lb. per tree have in fifteen weeks increased acidity to an extent suitable for tree growth (pH 7.5 to pH 6.5 in the top 8 in. of the soil).

SOIL PHYSICS

Soil Mechanics

Earth Dams.—Testing of foundations and embankment soils for proposed earth dams were carried out at Whakamaru (Upper Waikato River), Lake Pukaki, Roxburgh Gorge, and Lake Wanaka. Points of interest are that at Whakamaru the soil to be used for the dam had excessive moisture as it occurs *in situ*. The foundation soil of the Lake Wanaka proposed dam is a silt of narrow particle size which has too high a water content for satisfactory stability. The possibility of improving its properties by electrical or vacuum drainage is being investigated.

Foundation Surveys.—Foundation surveys were made for a phosphate-rock store at Westfield, Auckland, for extensions to the new hospital at New Plymouth, and on an existing porcelain-firing kiln where settlement was due to soil shrinkage.

Agricultural Soil Physics

Physical measurements were made of Canterbury wheat soils under continuous cropping in comparison with those soils under normal rotation. The only significant difference found was that the former contained less aggregates.

SOIL BIOTICS

Biological Assay

A map has been prepared showing the copper content of North Auckland soils as determined by the *Aspergillus* method. In the survey of the Pinaki suite copper is low throughout, whereas in the heavier soils of the Onu suite copper is satisfactory in the immature stage and low in the strongly leached (gum land) stages. The brown loams and brown granular clays derived from volcanic rocks have a high copper content in the young and immature stages, but are on the low side in the most leached (ironstone) stages.

The Onu suite of soils of North Auckland were tested in pots with indicator plants, and all were shown to be deficient in boron. The least leached of the soils required 20 lb., and the most required 30 lb., to rectify it.

Soils of Motutapu Island gave a response to phosphate, but unhealthy growth appeared later and was remedied by the addition of a nitrogenous manure.

A trial of compost in pots demonstrated that the compost gave a response equal to its available nitrogen content.

A survey is being made of the worm population of North Auckland soils. Several new species of native worms have been found in virgin soils; the two common species in cultivated soils have been introduced from Europe. A greater density of population of earthworms was found in soils carrying good pasture than those with poor pastures, and this was independent of soil type.