

*Bentonite Clays.*—A method was found of improving natural bentonite clays in New Zealand by leaching with common salt solution. This may allow the use of deposits that were formerly considered to be of low quality.

*Colour of Soils.*—Soil colours have been measured by a photo-electric reflectometer method. Colour is a useful criterion in classifying soils. The method has not previously been used on soils.

*Chlorosis of Orchard Trees in Central Otago.*—A number of soils have been analysed for soluble salts, alkalinity, and free lime, and tree branches have been injected with trace elements. It appears that soluble salts and alkalinity are playing an important part in chlorosis of trees.

*Liming of Southland Soils.*—Some farmers in Southland consider that liming is overdone to the extent of affecting the health of lambs. Tests showed that liming had not been sufficient to make the soils alkaline, but on a number of farms adequate lime had been applied and lower rates could now be used. Under Southland conditions a substantial quantity of the lime applied is lost each year from the topsoil. Analyses indicated that on some farms potash could be added to the top-dressing.

*"Fused Needle" in Pine-trees.*—"Fused needle" occurs in pine-trees in the Athenree district. The content of hydrochloric-soluble phosphate in the soil is comparable to that in Queensland soils where a similar disease occurs and is remedied by the application of phosphate.

*Soil Corrosion.*—Asbestos-cement test pipes buried in gum-land soil corroded on the outside owing to soil water that was high in carbon-dioxide.

Metal pipes are being buried in the main kinds of soil in New Zealand to measure corrosion at two-yearly intervals.

#### SOIL BIOTICS

*Trace Element Survey.*—Pot trials on four soil types on the older coastal sands of North Auckland show that copper is deficient in all types, manganese in one, and zinc in two types. The indicator plants—rye-grass and white clover—gave a marked response following their application.

About 60 per cent. of the soil types in North Auckland have been assayed for available copper. Many of the strongly-leached soils are low in this element. The survey is being done in collaboration with the Animal Research Division of the Department of Agriculture.

*Boron Uptake by Pasture Plants.*—Pasture growing in pots was reduced in boron content when the pH of the soil was raised to 6.5 by liming.

*Earthworm Survey.*—The survey of species of worms in the North Island is almost completed.

*Protozoa Survey.*—A preliminary survey of Protozoa in New Zealand soils has disclosed that there are several widely-distributed species that may be of great significance in soil-fertility studies, and many species with a narrower distribution found only in certain soil types.

#### SOIL PHYSICS

*Agricultural Soil Physics.*—Physical measurements on a Canterbury wheat-farm showed that continuous cropping to wheat resulted in serious deterioration in soil structure. This was accompanied by a marked decline in yield. No appreciable improvement in soil structure was evidenced after one year under a grass cover.