evaluation of efficient strains. The decomposition of cellulose has also been studied with the object of improving the rate of decomposition of the excess organic matter in peat.

Earthworms.—During the year an investigation was begun on earthworms in relation to agriculture. Preliminary ecological studies have yielded information concerning the habits, breeding cycle, and distribution of the species commonly found. The number of worms in the area so far examined vary between 1,800,000 and 4,800,000 per acre, which figures are considerably higher than those reported for overseas permanent pastures. Gross weights of earthworms are estimated to range between 1,000 lb. and 2,600 lb. per acre.

Control of Weeds.—The Station carried out initial trials with weed-killers as a preliminary to general field trials by Instructors in Agriculture. In regard to the control of the hard-to-kill weeds, gorse and blackberry, no real advances can be reported. Ragwort studies indicate that the application of adequate quantities of sodium chlorate to individual plants gives a high percentage of kills, but that in practice the control of this weed in naturally-occurring infestations requires repeated applications of sodium chlorate, hormone-type weed-killers, or arsenicals.

Laboratory Services.—The routine analytical work covering soil, fertilizer, and limestone samples and pasture dry matter and herbage dissection has expanded during the year. During the year 500 samples of soil were received from field officers of the Extension and Horticulture Divisions and a similar number from field trials as well as some 300 from the research plots at the Station. In general, the samples were treated by quick-test methods. Approximately 100 samples of fertilizers were analysed and 162 samples of commercial agricultural lime as well as 121 samples of limestone were tested. The laboratory also made dry-weather determinations on 2,600 herbage samples and carried out 1,000 herbage dissections.

Plant Analysis Section.—Further information on the reliability of sap-test methods for the diagnosis of deficiencies in pasture and annual crops has been collected during the year. A simple technique for the diagnosis of nitrogen deficiency has been found to give good predictions of responses to nitrogenous fertilizers, especially in crops, and methods for phosphate and potash requirements of pasture and crops have proved useful to supplement soil tests.

Fertilizers and Lime

The rationing of phosphatic fertilizers has been continued during the 1948–49 season and the allocations both for top-dressing and annual crops have been the same as for 1947–48. Appeals were dealt with as formerly. Supplies of organic fertilizers have been controlled and priority given for use in market gardens, nurseries, vineyards, and orchards.

Phosphate rock supplies from Nauru and Ocean Islands have been more plentiful, and with supplies from Makatea the importations of rock will be adequate for maximum production of 600,000 tons of superphosphate from works. For the year ended 31st December, 1948, imports of basic slag were approximately 15,000 tons and of North African phosphate 40,000 tons. Recently the International Emergency Food Committee recommended the deallocation of fertilizers, and thus larger supplies of both nitrate of soda and sulphate of ammonia should become available in future.

The use of lime continued to increase during the year. In pre-war years the annual output of lime for agricultural purposes was in the vicinity of 500,000 tons; the output for 1948 was 1,092,139 tons. Lime transport assistance continued on the same basis as the previous year. Approximately one-third of all lime used is now being carted direct from the works to the farm, and an expanding portion is being handled unbagged.