

Mr. Hopewell undertook, for thesis work, a determination of the effect of combining grass and clover in the same sward on the root behaviour of both, but the response appears to be in some other direction than bulk of roots.

The effect of fertilizer placement on the yield of herbage and roots has extended over four seasons. The small amount of labour available was best utilized in conducting replicated pot experiments, the results of which could be confirmed later by field trials. It was found that subsurface fertilizer placement, while showing little if any increase in root weight, gave consistently better herbage yields (especially in the drier part of the year) than the same amount of fertilizer applied as a top-dressing or disced in. These trials were designed to test the respective yields for the first season following seeding down. It is considered very probable that the effect will be much longer lived than this, but this can only be satisfactorily proved by long-term field trials.

The result of root-pruning as effected by heavy harrows has been investigated in view of the statements sometimes made that root-pruning is beneficial to grass growth in that it engenders the formation of new roots. This has been proved to be wrong, and results are now being published.

The capacity of grass plants to replace excised roots has been considered from the point of view of comparable damage being done by subterranean root-eating larvae. Some remarkable figures for root replacement have been obtained, and a paper embodying these is in course of preparation. It is clear that strain has a great influence in the number and rate of root replacement. It is interesting to note that at the conclusion of the trials a persistently high-root-producing cocksfoot plant which was handed over to Mr. Corkill, Grasslands Division, Plant Research Bureau, for use in his breeding-work has proved to be one of his best plants.

The degree of defoliation has a very marked effect on the period over which new roots can be produced and on their numbers.

A sequence of root samples taken from differentially-manured plots which were grazed with sheep has been obtained over a period of five years, and they require statistical analysis.

During the year 1943-44 an explorative trial was commenced to determine the effect of a high water-table on the root development in permanent pasture. The water-table was perched and occupied the top 16 in. to 20 in. of the soil. It had little effect on the root penetration, as the subsoil was comparatively dry and contained sufficient air for satisfactory root growth down to and even below 4 ft. 6 in. More information is needed on the effect of a perched water-table and whether the damaging effect of lack of drainage is due primarily to excess of water interfering with growth or to insufficient soil stability to prevent mechanical injury to both soil and plants by treading. Despite a very wet winter, the health of the roots did not appear to be impaired by the excess of surface water.

Trials were put down also in the 1943-44 season to attempt to determine the role of deep and superficial roots in plant nutrition. This had to be abandoned.

Pot trials to confirm plot trials conducted in 1940-42 were under way, but had to be discontinued.

A comparison of the root systems of red clovers of different origin was being made, but had to be discontinued. It is considered that the root development presents the reason for the longer life of Montgomery.

Work was commenced, but subsequently discontinued, on the effect of buried briquette and granular fertilizer on grassland. It is thought that this may lead to a partial solution of the high incidence of reversion of superphosphate in the soil and also lead to an increase in herbage-production.

DOMINION LABORATORY

Director: Mr. R. L. ANDREW

The Dominion Laboratory is a service laboratory for Government Departments and has again dealt with a very large number of samples covering a very wide range of materials, and members of the staff have been called in on various problems as consultants. A very large proportion of the work arises directly out of war conditions.

GOVERNMENT DEPARTMENTS

The number of samples received at the main laboratory and branches were: Wellington, 10,677; Auckland, 7,089; Christchurch, 7,930; Dunedin, 2,581; total, 28,277.

CUSTOMS

As usual, a variety of samples were examined to afford data for classification for Tariff purposes. Samples of iodized salt, as imported, with few exceptions complied with the new standard of 1 part of iodide in 20,000. These were forwarded at the request of the Department of Health.

POLICE

Numerous samples of wine, beer, and spirits were analysed in connection with illicit sales of alcoholic liquors. Many exhibits were examined for poisons in order to assist in ascertaining cause of death.

Samples of blood and of urine were examined for alcohol. In a number of cases the results indicated that the deceased was under the influence of alcohol at time of death.

A fatality which occurred during welding operations in a confined space was investigated. It was established that the death of one man and the serious illness of another were due to the inhalation of a low concentration of nitrogen peroxide. It is therefore most important that the danger of nitrogen-peroxide poisoning from welding in confined and badly-ventilated spaces either by the electric or oxyacetylene method should be widely known.