

PLANT RESEARCH STATION.

The Plant Research Station is situated at Palmerston North, and is conducted in co-operation with the Department of Agriculture. The Station comprises a number of sections, some of which are concerned more with regular routine matters and others with research interests, and an endeavour is made to ensure a collaboration of effort which will serve the requirements of both Departments. Close association is maintained with the activities of the Wheat Research Institute, the Fruit Research Scheme, and the Dairy Research Institute, there being a number of problems of common interest to all the organizations under investigation.

The following report deals in brief form with those activities of the Station which receive financial assistance from the Department of Scientific and Industrial Research.

The Plant Research Station is directed by Mr. A. H. Cockayne.

BOTANICAL SECTION.

(By Dr. H. H. ALLAN.)

(1) *Identification of Specimens and Advice thereon.*—As in previous years, this work has taken up a considerable portion of the time. Over three thousand specimens have been reported on from the usual sources. A number of new records of naturalized plants have been made, but, fortunately, none have been of major importance as weeds. There has, however, been evidence that a number of serious weeds are steadily increasing their areas—e.g., *Psoralea pinnata*, *Eupatorium glandulosum*, *Carthamus lanatus* (saffron thistle). Since Mr. Zotov's return to duty he has been able to render valuable assistance in this work. It is pleasing again to note the interest taken by Stock Inspectors and Instructors in Agriculture in the weeds of their districts.

(2) *Herbarium.*—The policy of exchange with other institutions has been continued, and much valuable material accumulated. Additions have been made to all the sections, especially to that of introduced plants. Unfortunately, space is so limited that the herbarium is badly congested, and working-conditions for my assistants are far from adequate.

(3) *Library.*—The chief point to record is that the remaining volumes (some one hundred and fifty) of the library of the late Dr. L. Cockayne, so generously given to the Station, are now housed at the Station. There remain a considerable number of important pamphlets still to be received from the Dominion Museum. It is extremely unfortunate that space is so limited that it is impossible to arrange the library so as to be conveniently available to workers. The time is long overdue when the Station should have a properly-fitted-up room devoted to library use alone.

(4) *Field-work.*—During the year a number of excursions have been made as opportunity allowed. The work has been mainly devoted to study of indigenous grassland areas and ecological study on introduced plants. The most important piece of field-work accomplished was a botanical survey of certain areas in the Mackenzie Country, where an outbreak of dermatitis had occurred in sheep. A full report was furnished to the Director, with a list of species found, and recommendations for further investigations on the trouble.

(5) *Publications.*—During the year further articles on weeds and grasses have been contributed to the *New Zealand Journal of Agriculture*. The introductory book on the grasses of New Zealand has been completed and is now in course of publication, while the more detailed studies in the taxonomy of indigenous grasses has been proceeded with. The work on certain genera has reached the stage when publication of the results is possible. Papers of systematic and ecological import have been published or accepted for publication by the Royal Society of New Zealand, the Australian and New Zealand Society for the Advancement of Science, and the National Society of Horticulture of France.

(6) *Taxonomical Investigations.*—As indicated above, the systematic work on grasses and introduced plants has been carried on as in previous years. A good deal of work has also been accomplished on indigenous plants, and a number of other workers in this field have received assistance in their studies. A systematic study of *Pinus radiata*, with a view to elucidating the status of the forms found in New Zealand, has been commenced, as has also investigations of the pollen of this species.

(7) *International Lucerne Test.*—This was referred to in the last annual report, and a report is in preparation on the results of the first year's work. It is too early to draw any definite conclusions at present, but the work will be continued during the coming year.

(8) *Fruit Research.*—As in previous years, Mr. Woodhead has devoted his main efforts to this work. Assistance has also been given on the botanical side to the studies being made on "corky pit" and "mouldy core" in apples. The investigations concerned with fruit are dealt with in the Fruit Research Section of this report.

CHEMICAL SECTION.

(By B. W. DOAK.)

(1) *Marton Mowing Trials.*—Analyses of herbage samples from these have been continued, and a considerable amount of work has been carried out on soil samples from these trials. The study of the movement of phosphate from superphosphate, basic slag, and North African phosphates, each with and without lime applications, has been continued. The results so far are very interesting, but the work needs to be continued for several years to get reliable data.