

BOTANY SECTION.

H. H. ALLAN, Systematic Botanist.

Routine work was continued on the lines of previous years. The work of identifying and reporting on specimens as usual occupied a great deal of time, full advantage of this service being taken by all sections of the community indicated in previous reports. Well over three thousand specimens were dealt with. A number of new records of introduced plants were made, the more important of these being dealt with in articles in the *Journal of Agriculture* in the series "Notes on recently observed Exotic Weeds." A paper bringing our knowledge of introduced species up to date and correcting errors of former accounts by various workers was published in the *Transactions of the Royal Society*. Work on the indigenous plants was continued, and a paper dealing with some of the results was published in the *Transactions*, while other papers were contributed to British and American scientific journals. The book on the grasses of New Zealand reached the page-proof stage, and Mr. Zotov has submitted for publication a paper dealing with certain results of his research into the leaf-anatomy of our grasses.

Further botanical examination was made of areas in the Mackenzie Country affected by facial dermatitis, particular attention being paid to the following stations: Lake Tekapo, Lilybank, and Mr. Burnett's property adjacent to the southern end of the lake. On all these areas species of *Hypericum* were noted, sometimes in quantity. It was planned to give assistance on the botanical side to experiments to be carried out by the Live-stock Division on the properties of Messrs. Burnett and Murray. In company with Dr. Hopkirk, I also visited affected areas in Poverty Bay, where a similar disease is being investigated. *Hypericum* is not a noticeable member of the plant cover of these areas, but a considerable growth of clovers and bur-clovers was observed. These plants have elsewhere been suspected of contributing to such outbreaks, and it appears desirable to have feeding tests carried out with these as well as with the *Hypericums*. An illustrated article dealing with the various species of *Hypericum* found in New Zealand was prepared for the *Journal*.

Mr. Zotov made a three weeks' study of the grasslands of the South Island, and continued this at his own expense during his vacation. Much valuable information and herbarium material were obtained, and we are now in a position to conclude our detailed revision of the grasses of New Zealand. Other minor excursions were made, resulting in considerable accessions to the herbarium. Contributions were also received from a number of European institutions, and a specially valuable set of specimens of marine algae was presented by Mr. R. M. Laing. In accordance with a request from the Director sets of specimens are being forwarded as opportunity allows to the herbarium of the Royal Botanic Gardens at Kew. These will serve to bring up to date the collection of New Zealand plants there, especially of species described by local botanists subsequent to the floras of Hooker.

Preliminary observations were made in the neighbourhood of Te Awamutu, under the guidance of Mr. Melrose, of ragwort-infested areas. Special attention was paid to the area at Teranu-moa and the Barton Estate. The period of the visit was not suited for extended investigations on the spread of the weed by seed, but preliminary experiments were carried out. These would suggest that though wind-carriage is a factor it is not the most important one. It would appear that seed is in general not carried far by wind and spread by this means is comparatively slow. Of more importance is carriage by stock. It is proposed to make more detailed studies next season.

A commencement was made, at the request of the Division of Horticulture, with anemone and ranunculus bulbs. The object is to secure a better grade of bulbs than has hitherto been available from New Zealand-grown plants. From the areas planted a supply of bulbs and seeds has been obtained for experimental purposes.

The section of the fruit-research work entrusted to this Section has occupied the full time of Mr. Woodhead, and his report is attached.

STOCK AND SCION INVESTIGATIONS.

Mr. C. E. Woodhead supplies the following subreport:—

STOCK TRIALS.

Apple Stocks.—Growth records of the trial blocks of apple-trees on several East Malling stocks and the Northern Spy stock, which were established at the Plant Research Station and throughout the country nearly three years ago, indicate that, with one exception, the East Malling stocks are up to the present time superior in vigour to the Northern Spy. Taking the average of all the trials, the order on the basis of growth is as follows, the East Malling stocks being indicated by the letter "M":—

1st.	2nd.	3rd.	4th.
M. XV.	M. I.	M. XII.	N. Spy.
		M. XIII.	M. XVI.

Obviously, until the trees reach the bearing stage rootstock influence can only be studied from the aspect of vigour. Other equally important factors such as influence on cropping and on the quality and colour of the fruit will be investigated when the trees commence to crop.

It is worthy of note that the non-immunity of the East Malling stocks to woolly aphis attack does not appear to have affected their superiority in vigour over the Northern Spy, all immune stock.

An additional stock trial block of approximately an acre has been planted at the Plant Research Station with 119 trees received from the nursery of the Research Orchard, Nelson. These consist of the varieties Cox's Orange, Delicious, Jonathan, and Sturmer, on Northern Spy and from East Malling stocks.

Stone-fruit Stocks: (a) Peach.—Progress reports on the trials of three East Malling plum stocks—viz., Common Mussel, Brompton, and Black Damas C., budded to "Lee's Seedling" peach, reveal very little difference between trees on the three stocks, although those on Brompton are a little more vigorous. It was noted that the plum stock had a dwarfing effect on the peach scion.

(b) Cherry and Plum.—To furnish material for trials, some two hundred stocks of six East Malling selected types of the Maynard Cherry have been budded to the fruiting variety Black St. Margaret. A similar number of plum stocks, representing five East Malling selections have been budded to two fruiting varieties of plums—viz., Grand Duke and Monarch.

NEW APPLE STOCKS.

Clone races of new apple stocks are being established. These include several promising stocks discovered during the stock survey of Dominion orchards conducted in 1931.