

(b) *The Degree of Parasitism which takes Place in the Field by the Native Angitia—viz., A. lateralis—*in the South Island.—A native species, *Angitia lateralis*, attacks the diamond-back moth in New Zealand. Work carried out by Miss Robertson showed that parasitism by the native species seldom rose above 1 per cent. in the North Island. In order to obtain similar data for the South Island collections of diamond-back moth larvæ and pupæ from field crops have been made, and these are forwarded on to Palmerston North periodically to be dealt with there. Up to the present time these collections have been made only in the vicinity of the College. It is intended to make such collections from various districts throughout Canterbury. Already it is clear that parasitism by the native species of *Angitia* reaches a very much higher degree in the South Island than in the North Island, at least in so far as the College area is concerned. Data of this nature have a direct bearing on any future work in connection with the biological control of the diamond-back moth by an introduced parasite closely related to the native form.

2. *Wheat Bug*.—In November, 1936, the Director of the Wheat Research Institute drew attention to the fact that certain lines of wheat from Otago produced sticky dough during fermentation, and that a similar defect occurred in Europe, due to the attack of certain insects on the grain in the field. It was decided that a thorough investigation of the problem should be undertaken in order to find out if the insects responsible for the damage to wheat in Europe had been accidentally introduced into New Zealand or if some other insects were responsible here.

North Otago was visited during the latter part of December, and a number of farms in the wheat area around Oamaru, Five Forks, Ngapara, Duntroon, Bortons, and Papakaio were thoroughly inspected. The wheat crops were examined and collections of insects made. The nature of the damage to the wheat grains pointed to the fact that sucking-mouthed insects were responsible. Hence special attention was paid to these. Aphids were present in most of the crops examined, but not in sufficient numbers to be responsible for the defects occurring in wheat. It soon became evident that Hemiptera-Heteroptera (bugs) were present in large numbers in all the crops examined. Numbers of bugs were collected from wheat fields, from clover, from shepherd's purse, and other vegetation. The bugs were brought back alive to Lincoln College and sorted out. It was then decided to experiment with the bugs on growing wheat at the College. Insect-proof cages were erected on Jumbuck, Cross 7, and Tuscan wheat on the plots belonging to the Wheat Research Institute, and the insects were introduced into the cages on 22nd December, 1936. Dr. Miller, of the Cawthron Institute, identified the various bugs, and there were four different species represented—viz., *Stenotus binotatus*, *Hudsona anceps*, *Nysius* sp. (probably *Huttoni*) and *Dictyotus caenosus*. The species *Dictyotus caenosus* was relatively scarce in individuals and there was not sufficient live material to include this one in the experiment. With the exception of *Stenotus binotatus*, which is cosmopolitan, all the others are native to New Zealand.

An examination of the cages a month after the experiment was laid down showed that the bugs were still alive and active. The caged wheats were harvested and threshed early in February. When the wheat grains were examined it was found that they were affected in the same manner as the slimy-gluten wheats from Otago of the previous season. The three species of bugs—*Stenotus binotus*, *Hudsona anceps*, and *Nysius* sp. (*Huttoni*)—were each responsible for damage to wheat. From the preliminary nature of the experiment it would be unwise to draw definite conclusions as to the relative importance of the various bugs or to the degree of attack shown by the different types of wheat. It is proposed to go further with this work next wheat season, and in the meantime arrangements are being made to carry out experiments on a larger scale, and also to work out the life histories of the bugs responsible.

3. *Hessian Fly*.—It was intended to carry out a survey of wheat crops this season in order to gain some accurate data in regard to hessian fly damage. This survey had to be confined to a few crops in Canterbury in the immediate vicinity of the College. Every crop examined showed the presence of hessian fly. In most cases the infestation varied from about 0.5 per cent. up to 3 per cent. or 4 per cent. In one instance—viz., on the farm of Mr. Dulieu, Deep Dene, Lake Ellesmere—a crop of College Hunters was damaged to an extent of approximately 25 per cent. The damage varied considerably in different parts of the field. Owing to the fact that the crop was thin, the broken straws were lying flat on the ground and could not be gathered by the binder. For this reason hessian fly damage to a thin crop is much more serious than a similar infestation where the crop is thick.

CAWTHRON INSTITUTE.

At the Cawthron Institute attention has been given to readjustment of the laboratories and the insectaries for the housing of the Division's staff. This involved the reconstruction of the large insectary so as to have two, one of which will be heated and partitioned. Attached to the other is the new quarantine room and workshop. In the quarantine room the cool-store chambers open so that shipments of insects can be kept in strict quarantine once they have been placed in the cool-store.

AGRONOMY DIVISION.

Director: J. W. HADFIELD.

INTRODUCTION.

Headquarters have now been established at Lincoln on land leased from the Canterbury Agricultural College, and offices and laboratories are being erected thereon.

For convenience of organization the work of the Division is divided into three sections, as follows:—

(1) *Crop Ecology and Plant Introduction*.—Initial trials of all material, whether introduced or raised by the Division, are carried out either at Lincoln in the South Island or Palmerston North