months, followed by a recrudescence of the disease the following summer. The winter recovery this year, however, set in much earlier and was more general than last, indicating perhaps that the disease is on the wane. The effect of artificial manures on yellow-leaf development is being studied, but so far these do not appear to have any marked effect.

The dry-rot of swedes, a fungus disease that is rapidly making the production of satisfactory swede crops in certain parts of New Zealand almost impossible, is being studied, and several sets of field experiments in the Southland District have been instituted. A striking feature of these experiments is the fact that large quantities of rapidly acting manures, such as superphosphate, apparently increase the disease. Swedes that grow slowly, on the other hand, apparently suffer far less than those which grow rapidly. In general, soft and Aberdeen turnips are not seriously affected, and it was thought that perhaps the dry-rot attacking these types of turnips might belong to different species. Inoculation experiments, however, have shown that swede dry-rot is capable of infecting all classes of turnips and swedes. An interesting point which has been discovered is that the disease is also found on the leaves, so that the name "phoma" is not applicable to the causative fungus. In general, dry-rot appears epidemically in crops from about the end of May onwards, but the slow growth of pure cultures and the slowness with which lesions are developed on inoculated material indicates that field infection may take place much earlier in the autumn than is generally thought.

Considerable attention to certain apple-rots has been given, and a new species of Botrytis has been shown to cause rapid rotting of apples, especially from the eye end, together with copious development of small sclerotia. Inoculation with mycelium of this Botrytis always results in a rapid rot being set up, but spores appear to be quite incapable of causing infection, a not unusual condition in certain species of this group.

On the whole, the year was not marked by any very special outbreaks of plant-diseases, and, in general, nearly all the regular garden and crop diseases were later in appearing than usual. This was especially the case with regard to rust and potato-blight.

Economic Entomology.

During a considerable portion of the year Mr. D. Miller, Entomologist, was lent to the Department of Internal Affairs in order to conduct an investigation on mosquitoes in the Auckland Province, and therefore his services have only been partly available.

The work undertaken during the year, apart from advisory and other matters connected with specimens sent in, has been mainly in the direction of careful studies of the life-histories of certain of our most notable injurious insects, such as the grass-grub and allied subterranean insects, the codlin-moth, and the various lepidopterous larvæ generally termed army-worms. The weakness of applied entomology in New Zealand is the fact that very little reliable life-history work has been carried out. In consequence one is apt to rely on work carried out in other countries, and this is often found quite unreliable for our New Zealand conditions.

During the year two insect pests hitherto more or less unknown in New Zealand—namely, the pear-bud mite (*Contarinia piri*) and a species of leaf-hopper belonging to the genus Europasca have been extremely destructive. It is interesting to note that both these pests have been equally injurious both in well-cared-for and more or less neglected orchards. This indicates that the general system of insect-control ordinarily adopted will have to be modified in order to repress them satisfactorily.

Many valuable data with regard to grass-grub have been collected, and with the adoption of certain methods of laying down and management this insect should not cause any great damage on ploughable grass land.

Student Instruction.

A complete course of instruction extending over the year was given to the student assistants in residence on the farm. The main subjects dealt with were agricultural botany, agricultural zoology, and general agronomy.

The system of student-assistant training that was instituted here two years ago, and has now been dropped in the meanwhile, was carried out with the greatest difficulty owing to the lack of permanent teachers. If at any time the training of students up to, say, the educational requirements of the New Zealand University B.Sc. in agriculture is again attempted a full staff of teachers will be absolutely necessary. So far as the Biology Section is concerned, however, it should not be utilized in this direction. The many problems on which it touches are necessarily viewed very largely from the scientific or, at least, the fully trained farmer's standpoint. The dealing of agriculture from a pedagogical or ordinary vocational standpoint is not attempted, and the teaching that it can give is quite unfitted for junior students. This Section could, however, do very useful work in agricultural education in New Zealand by taking into the laboratory from year to year students who had finished their educational training and fitting them for research, using them later as assistants in working out definite agricultural problems. Later on such students should prove valuable in the agricultural-instruction branch of the service, as they would have the requisite knowledge of local practice that is so essential in the carrying-out of agricultural investigation.