appointed in January, 1939, and stationed at Lincoln College to work on this problem. In October, 1939, a senior officer was transferred to this problem also. The work to date may be summarized as follows:—

(a) Field Surveys.

The field surveys have been so far confined to the east coast of the South Island, since it is in the area that *Porina* damage appears to be of greatest importance. Areas which are known to have suffered serious damage exist in the Wairau Valley, in Marlborough; around Culverden and Hawarden, in North Canterbury; throughout the area between the Waimakariri and Rangitata Rivers, in Mid-Canterbury; around Oamaru, in North Otago; in the Hillend area, in South Otago; and in the Balfour and Kaiwera districts, in Southland.

The information available at present indicates that the Hillend area is the one most subject to consistent damage. In most of the areas mentioned above there is a possibility of *Porina* damage in the second or third year after establishment of a new pasture, but in the Hillend area the probability of damage is so great that farmers are said to be reluctant to put down new pastures.

The majority of these areas have a rainfall between 25 in. and 30 in. per annum. The surveys have not so far demonstrated that *Porina* infestation is confined to any particular type of soil, nor that the condition of the pasture at the time of moth flight has any bearing on susceptibility to infestation. No instance has been seen of damage to pasture in its first year, and it appears that where the ground is being worked at the time of egg laying or egg hatching the conditions are unfavourable for the survival of the larvæ. No instance has been seen of damage to crops (other than occasional damage to lucerne stands). It is likely that eggs are laid on cereal crops, but that these are mature and harvested before the *Porina* larvæ are large enough to do any damage.

The principal damage is to improved pastures of rye-grass and clovers, which have in Canterbury a normal life of four years and perhaps double that in areas farther south. In years of equal infestation the damage to the pasture is likely to be accentuated by conditions which are unfavourable for plant growth or by injudicious grazing.

Old pastures which have been reverted largely to brown-top may carry a large *Porina* population without showing any evident damage.

The clovers seem to suffer more severely than other pasture plants from *Porina* defoliation, and the fact that the most severe damage occurs in improved pastures may be related to their high clover content. Grasses such as twitch, cocksfoot, and *Phalaris* appear to be more resistant or to have better powers of recovery than perennial rye-grass.

(b) Light Traps.

A number of light traps were set up in different localities in both North and South Islands with the object of gaining information on the species of *Porina* occurring in different districts and the time over which the flight period of the different moths extended.

The results show that the principal species of economic importance in Canterbury, and probably in Otago and Southland also, is one which has been provisionally identified as *Porina jocosa*. This is a species which has not been recorded from the North Island, where it is possible that *P. cervinata*, which has approximately the same flight period, is the principal economic species.

Porina jocosa commences to fly early in October, but the peak of the moth activity was in the second half of October. The two sexes of the moth were attracted to the lights in approximately equal numbers. In both Canterbury and Southland a second species, *Porina umbraculata*, began to appear in the traps in the beginning of November, and its numbers increased as the numbers of *P. jocosa* decreased. Even at its peak of activity, *P. umbraculata* was present in much smaller numbers than *P. jocosa*, and is considered to be of minor importance.

The systematics of the *Porina* species is somewhat confused, and the material secured from the light traps will be useful in clarifying the position.

(c) Chemical Control.

Any immediate relief from the *Porina* damage can come only by the employment of chemical control measures. For this reason the first requirement is an effective and practicable method of controlling *Porina* larvæ in a field which is known to be infested. As the *Porina* larvæ are surface feeders there is some prospect of success by using poisonous dusts, sprays, or baits, and work is proceeding along these lines. The time of application of such measures may have a great bearing on their efficacy, since it appears possible that there may be very little feeding by *Porina* larvæ in winter and spring. If this were so, the control measures would have to be applied in late summer at a period when it is not easy to distinguish infested from uninfested pastures. Since it is likely that arsenical poisons may prove to be the cheapest and most efficient, attention is being given to the problem of arsenical residues on the pasture in relation to stock poisoning.

(d) Ecology of Porina.

There is at present no information as to the conditions of soil, climate, and farm management which increase the likelihood of *Porina* infestation. An experimental area has been sown down at the Agronomy Division at Lincoln for the purpose of obtaining information on these points. It is possible that an investigation of the oviposition habits and preferences of the moth may provide useful information bearing on control.