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trays contain water covered with coal oil, and as they are dragged along the field, the locusts hop into the trays and are thus caught. Such a measure is frequently used, especially in the United States for catching locusts. Locusts are subject to the attack of many parasitic enemies, especially parasitic flies, and these frequently keep them in control.

CUTWORMS.

We have another class of insects which are responsible for a great deal of damage; These are the cutworms. The injuries due to cutworms may vary according to the species of cutworm. For example, some cutworms feed above the ground and others below it, and it is extremely important in dealing with a particular attack to know what kind of cutworm is inflicting it. We frequently have inquiries from people who say that a certain cutworm is attacking a crop, but when you do not know what species of cutworm it is, it is often extremely difficult to advise what remedial measures they should apply. The cutworms are the worms or caterpillars of moths of nocturnal habits. They are frequently called the 'owlet moths.' These deposit their eggs on the plants attacked or on weeds and other vegetation and from these eggs the young cutworms emerge. They were the original inhabitants of the wild and unbroken land, and they turn their habits to other crops. They are insects which have very wide feeding habits. Some of these cutworms do not confine their attention to particular species of plants like certain insects are accustomed to do, but they are extremely wide feeders. They attack crops such as vegetables or cereals, grasses, roots, and almost any kind of vegetation. The life histories of these worms vary, of course, according to climatic conditions. Some spend the winter in the egg state, some in the worm stage, some in the pupa stage and some as moths; and there are some species that spend the winter both as pupæ and moths. But most of them spend the winter in the cutworm stage, usually about two-thirds grown and underneath the soil or under rubbish. The species which is most injurious in this country, in fact over the whole of America, is what is known as the variegated cutworm (*Peridroma saucia* Hub.). This species when it is very abundant, may adopt the habit of a certain species of cutworm known as the army worm which travels *en masse* like an army, and destroys everything before it. In Canada it usually spends the winter in the larval stage although it has been found in the pupa stage.

Another species you have is the red-backed cutworm (*Paragrotis ochrogaster* Gn.) The remedy for surface or feeding cutworms is a simple one. It is made by poisoning such a substance as bran of which these cutworms are very fond. Mix half a pound of Paris green with 50 pounds of slightly moistened bran adding half a pound of sugar to each gallon of water used. The mixture must be made so that it will crumble between the fingers. This mixture is sprinkled in front of the cutworms if they are travelling, or about the crop; the cutworms will turn their attention to it rather than to the crop and will thus be poisoned.

Another method which is frequently employed in the case of cutworms attacking crops is to spray a small patch of clover with an arsenical poison such as can be made by adding a pound of paris green to about one hundred and fifty gallons of water. By spraying the clover with such an arsenical poison and then cutting it and placing heaps of the poisoned vegetation in different places where there are cutworms, they feed on it and by so doing are destroyed. These remedies are extremely useful and serviceable in attacking cutworms.

In the case of cutworms attacking small crops you can destroy them by means of an arsenical spray such as lead arsenate. If this is used in combination with the Bordeaux mixture, in the case of potatoes for example, the Bordeaux mixture acts as a fungicide which prevents fungal diseases, so that by combining an arsenical poison with a fungicide a solution is obtained which is destructive to animal pests and will control vegetable diseases. I shall append to my evidence the most serviceable formula for making this Bordeaux mixture and also for making the arsenical mixture.