

Preserving Eggs.

One of the most effective methods of preserving eggs in a perfectly fresh condition is to place them, the very day they are laid, in lime water prepared as follows: Place quicklime in a large pan or tub, two pounds of lime for every gallon of water; stir frequently for twenty-four hours, then allow the lime to settle, and pour off the clear liquid into jars; also stir in a handful of salt. Gather in eggs every day, and place them gently in the lime water. When the jar is full, every egg being covered with the liquid, seal up air-tight and store away in a cool place. The jars should not be disturbed till the eggs are wanted for use. If an egg happens to be cracked in putting into the jar or afterwards, it is liable to taint the whole lot, rendering them unfit for use. To this we would add, get the eggs from hens with which no male bird has been running, so that they will not be fertilized, then follow the plan given, and the eggs will come out at the end of six or eight months as fresh as the day they were laid.

Whitewash the Poultry House.

Farm and Fireside suggests a quick mode of whitewashing a poultry house. On a platform upon the roof of the poultry house stands a barrel containing the wash, made as follows: First slake the lime; add a quantity of water and strain it, placing the thin liquid in the barrel. A gill of carbolic acid added to the whitewash will improve its purifying properties. About one and a half inches above the bottom of the barrel insert a hose with sprayer attached. By having a tap in the sprayer the walls and ceiling can be whitewashed much easier and quicker and more perfectly in the cracks than if a whitewash brush were used. Ordinary fruit-tree sprayers answer the same purpose.

ENTOMOLOGY.

Entomological Convention.

The 34th annual meeting of the Ontario Entomological Society was held in London, Ont., on October 21st and 22nd inst., with a fair representation of its members present. Among gentlemen from a distance who contributed to the programme were: Prof. J. Hoyes Panton, of the Ontario Agricultural College; Dr. Bethune, Port Hope; Rev. Thos. W. Fyles, South Quebec; H. H. Lyman, Montreal; and J. D. Evans, Trenton. The chair was occupied by President John Dearnness, I. P. S., who presented an estimable address, in which he referred to the past year's work as being characterized by energy, progress, and success. The two aims of the Society were devotion to science and their desire to disseminate its good to their fellows. With regard to local insect ravages during the past season, reference was made to the destruction of large areas of crops, sown on inverted sod, by the cut worm larvæ from the moths (*Hadina arctica*) which were so numerous in the August of 1895. The question of fungi was dwelt upon at considerable length, a number of species being illustrated upon the blackboard. Touching reference was made to the late J. M. Denton, as the present was the first meeting at which he had not been present since the inception of the Society. It was suggested in the address that the Society issue a bulletin to be used in public schools, containing cuts of a few typical injurious and beneficial insects and their life-history, for object lessons to the pupils. The idea is a commendable one.

Insectivorous Mammals.—Mr. Robt. Elliott, of Plover Mills, read a very instructive and interesting paper upon insectivorous mammals found in Ontario. Bats were referred to as destroying myriads of nocturnal insects. It was interesting to learn that there are upwards of 400 varieties of bats in existence. Moles and shrews keep up a constant search for terrestrial insects, while earthworms form a considerable bulk of their food. Shrews found in Ontario closely resemble mice, but follow an entirely different mode of livelihood. They feed on mice and insects, May beetles being largely consumed by them. Raccoons and skunks, although omnivorous, destroy great quantities of mice and insects, such as grasshoppers. Skunks are regarded in some hop-growing countries as being almost essential to the industry, because of their destruction of grubs that infest the roots of the hop plants.

Agricultural Science in Public Schools was elaborated upon by Prof. J. H. Panton. By means of a chart a simple and practical method of presenting the subject of entomology in the schools was given. The chart bore headings of what may be used as topics for popular and instructive lectures, to be given to the pupils on, say, the last hour of every Friday. The biting and sucking mouthed insects constitute the whole lot, and should be treated with poisons such as Paris green or kerosene emulsion, according to their means of feeding. The beneficial and injurious varieties should be distinguished, and their life-history understood. Technical names should be avoided until the pupils desire to know them. The teaching in the schools should be in the shape of talks, and introduced without extra expense. The pupils themselves could collect, and in a few years every rural school would have a good collection of the common insects. In speaking of natural enemies to insects, the Professor referred to birds as being among the foremost. The advantage of having a

case of say 40 or 50 of the commonest and best kinds stuffed and in a case in every school would show what sorts to protect particularly. Parasites and insecticides, as well as barriers and poisoned baits, were referred to as remedies which should be taught within these school lectures. This paper was highly complemented by members of the Society.

In this regard it might be mentioned that President Dearnness has already been endeavoring to have the schools within his inspectorship collect specimens and study the life-history of insects found in the neighborhood. As a result of his efforts, collections of army worms, in all their stages, and other insect enemies were prepared by teachers and pupils and exhibited by them at the last Western Fair.

Prof. Panton suggested that this Society use its influence in inducing agricultural societies to offer prizes at county shows to schools making the best entomological exhibit.

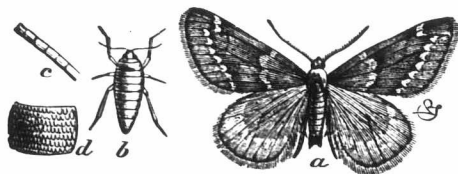
Importance of a Knowledge of Entomology to Agriculturists and Fruit Growers was the subject of a paper read by Rev. T. W. Fyles, of South Quebec. Of the 25,000 species of insects known in N. America only 8,000 are pests. In order to successfully combat an insect foe, one should understand its life-history. Having that understanding, one knows how, when and where to spray to best advantage, and also how to make the most of our insect friends.

Two Pernicious Worms.—Prof. Panton read an exhaustive paper upon the description, life-history, and distribution of the army worm and tussock moth, each of which have attracted much attention in Ontario within the last season. Both of them have already been elaborated upon in the ADVOCATE. By the use of a map the Professor indicated the distribution of the army worm by counties, which information he gathered from some 450 replies to circular letters sent out from the College. It showed that so far as he could learn some 39 counties had suffered more or less severely during the past season. Oats, wheat, barley, and corn were the crops mostly destroyed. Clovers, peas, beans, turnips, potatoes, mangels, carrots, and other vegetables and fruits are not touched by it so long as grasslike crops can be found. His remarks on the tussock moth, which caused so much havoc to the Toronto shade trees, were much in common with what we have already published. Other papers were read by Dr. Bethune, H. H. Lyman, Mr. J. Law, and reports of the various sections of the Society were presented.

Officers Elected: President, John Dearnness, London; Vice-President, H. H. Lyman, Montreal; Secretary, W. E. Saunders, London; Treasurer, J. A. Balkwill, London. Directors—Dr. James Fletcher, Ottawa; Dr. Bethune, Port Hope; Arthur Gibson, Toronto; A. H. Kilman, Ridgeway; C. G. Anderson, London; Prof. Panton, Guelph. Librarian and Curator, J. A. Moffat, London. Auditors—Prof. Bowman and R. W. Rennie, London. Editor of the "Entomologist," Dr. Bethune, Port Hope. Editing Committee—Dr. Fletcher; Rev. T. W. Fyles, South Quebec; H. H. Lyman, Montreal; and James White, Snelgrove. Delegate to the Royal Society of Canada, J. D. Evans, Toronto. Committee on Field Days—Messrs. Wolverton, Hotson, Spencer, Balkwill, Rennie, Elliott, Bowman, Anderson, and Saunders, London.

Injurious Insects.

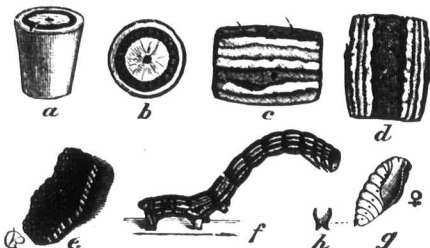
(BY J. FLETCHER, LL. D., F. R. S. C., F. L. S.)
CANKER WORMS.



About the first week in November, or at any rate not till after the frosty nights of October have reminded us that winter is at hand, the first specimens of the canker worm moths appear. In taking a walk through the woods during that delightful but too short season which we fondly call "Indian summer," the fragile male moths may be seen fluttering among the leafless trees looking for their wingless but active mates. In none of our native insects is there such a difference between the two sexes as with the moths of the canker worms. The males are possessed of large, delicate wings, with which their light bodies are borne easily from place to place when searching for the females. The females, on the other hand, are entirely destitute of wings, and as they run hurriedly up the trunks of trees, look much more like spiders than moths.

There are two species of canker worms found in our orchards, which are named respectively, from the time of the appearance of the moths, spring canker worm and autumn canker worm. Of the former the moths appear chiefly in the spring, and the females lay oval, pearly-white eggs in irregular masses, pushing them by means of an extensible ovipositor into cracks or beneath flakes of bark. On the other hand, the autumn canker worm moths appear late in autumn—throughout November, when the weather is mild till as late as the middle of December. The eggs of this species are entirely different from those of the spring species,

for they are brown in color, flattened on the top (a and b), and laid all close together in clusters (c). These clusters of about one hundred eggs are placed by the female in some exposed place, on the outside of the bark of a tree, on a fence, or any other convenient object. There seems to be no effort to conceal them; their inconspicuous color being their only protection. The young caterpillars appear when the trees are leafing out in spring, and are hard to detect unless looked for very closely. In almost all cases their presence in an orchard is only brought to the notice of the fruit-grower by injuries already committed, and this



frequently not until it is too late to prevent serious loss in the year's crop. These two kinds of canker worms are very much alike in general appearance in all stages of their development. The caterpillars belong to that class called "loopers" or "geometers" from their manner of walking. The fore part of the body is pushed forward and the surface of some object laid hold of with the front feet; the rest of the body is then brought close up to the same point and the body again extended. "Measuring worms" and "inch worms" are other names given to these caterpillars for the same reason. They will be at once recognized from the good figure given at f. When full-grown they are about an inch in length, and are green or brownish in color. The moths of both kinds are also very similar, the females being gray, wingless, spiderlike creatures, while the males, as shown at a, have delicate, gauzy, gray wings. There are slight differences in the markings and structure, by which a specialist can distinguish the two species; but these differences are of no importance here, because the habits of both at the time they injure crops are alike, and the remedies for both are the same.

Remedy.—There are none of the many remedies that have been suggested which can compare for efficacy with spraying early in spring, when the young caterpillars first appear, with Paris green or some other arsenical poison, in the proportion of one pound Paris green, one pound quicklime, and two hundred gallons of water. If this spraying be done immediately after the flowers have fallen from the trees, not only will canker worms and many other leaf-eating insects be destroyed, but the great enemy of the apple crop, the codling moth, will also be to a large measure controlled. There are circumstances, however, sometimes, which render spraying a difficult operation, if it is to be done thoroughly. In some parts of Canada the apple trees are old and very high, or they are planted so close together that it is difficult to get among them to do the work as thoroughly as is necessary. Under these circumstances, some of the old-fashioned methods of banding the trees are very useful. These bands are of two forms: either mechanical contrivances, by which the female moths are prevented from crawling up the trees to lay their eggs, or bands of paper tacked around the trunk, upon which some adhesive material is painted in which the moths get entangled and are thus destroyed. For this purpose, printer's ink reduced with fish oil (in the proportion of twenty pounds printer's ink to four gallons of fish oil) is largely used in the Maritime Provinces. A mixture which also has given good satisfaction in Ontario is that suggested by Mr. O. F. Springer, of Burlington, Ontario: For autumn application, or early spring when the weather is cold, a mixture of castor oil, two pounds; resin, three pounds (for warmer weather the resin may be increased to four pounds). The oil and resin should be heated slowly and no more than to thoroughly dissolve the resin; stir frequently to thoroughly mix. This mixture may be applied directly to the trees with a paint brush, and will not injure the tree in any way. It should be applied warm in a band about three inches wide. To economize the material, the rough bark should be scraped off the trees. Castor oil is the best of the non-drying oils to use for this purpose, because it does not injure the trees. The work of banding, Mr. Springer says, is not so great as might be supposed at first. An active man can go over 250 trees in ten hours. Should the mixture get too cold to spread readily, it may be easily and quickly brought to the proper temperature by using a portable oil stove. The band may need renewing once or twice, but the second application does not need nearly as much labor or material as the first.

Thorough work in fighting canker worms bears lasting results for many years. The female moths, being unable to fly, cannot travel very far from the place they emerge from the chrysalis. It therefore pays a farmer who finds his trees infested to use every effort to do the work thoroughly, spraying early in spring and also banding in autumn; keeping always in remembrance that the bands will not take care of themselves entirely, but will require a little attention to keep them sticky and to destroy the eggs when laid below the sticky bands. Renewing the bands in spring prevents the caterpillars from crawling up the trees.