

gain. He does not agree with the idea that pullets are always the best layers. One three-year-old hen at the College laid 56 eggs during January and February. A hen five years old laid remarkably well during these months. He recommended retaining the known good layers even until four or five years old.

GOOD TO THE LAZY HENS.

Editor "The Farmer's Advocate":

I saw in "The Farmer's Advocate" of March 14th an article on a young woman's method of feeding for winter eggs. My hens, like hers, have done so well through the winter, I thought I would give you an old woman's method of feeding for eggs. I have 29 Barred Rock hens. Half of them are two years old, and the others are pullets. I feed in the morning, between nine and ten o'clock, 2½ quarts of wheat, oats and barley mixed. In an hour I give a pot of warm skim milk, and often buttermilk. I let them out every day till four o'clock, and then I fed corn on the cob—just what they would clean up nicely. Very often I changed to corn in the morning and mixed grain at night. They had no meat or greens, except, when not too cold, a few apples. I did not throw the grain around in litter, but put it in little heaps, so as to give the lazy hen an equal chance with the rest. The only grit they had was the ashes sifted out of the coal; they are very fond of that. I fed a few warm mashies about the last of March. As they were eating their eggs, I took some barley chop and scalded it with strong vinegar. Two or three times is sufficient to stop them; I have tried it, and it never failed yet. My hens commenced to lay about the first of January; they all got down to business about the same time. I have sold, up till the last day of March, 63 dozens of eggs. I kept account only of those I sold, as I did not think of writing it up, or would have kept account of those I used. I am getting now from 16 to 18 eggs a day, and the hens are as chirky as if they had not worked hard all winter. Like Single Stick, I think cleanliness and regularity in feeding very important to obtain good results. Norfolk Co., Ont. MRS. CHAS. WARD.

SOLD NEARLY A DOLLAR'S WORTH OF EGGS PER HEN IN FOUR MONTHS.

Editor "The Farmer's Advocate":

I see in your valuable paper from time to time the record of hens laying in the winter. I have 45 pure-bred Barred Rock hens and pullets. They started laying in December, when we sold 174 eggs for \$4.77; January, 474 eggs for \$11.72; February, 504 eggs for \$11.92; March, 708 eggs for \$15.55, making a total of 1,860 eggs sold for \$43.96. This does not include what eggs we used in a family of six. I did not take any extra care of my hens; I only fed hard grain, wheat, corn and oats, and gave them all the coal ashes from the house. Hastings Co., Ont. G. M. CAMPBELL.

GARDEN & ORCHARD.

HORTICULTURAL PROGRESS.

Prepared for "The Farmer's Advocate" by W. T. Macoun, Horticulturist, Central Experimental Farm, Ottawa.

THE CABBAGE MAGGOT AND OTHER INSECTS.

The Cabbage Maggot and Other Injurious Insects of 1906, by F. L. Washburn, State Entomologist, Agricultural Experiment Station, St. Anthony Park, Minn.; Bulletin No. 100.

The cabbage maggot is one of the most troublesome insects which the horticulturist has to combat, and the results of any experiments to determine the most practical way of controlling it are eagerly sought for by vegetable-growers where this insect is found. In 1906 over twenty different experiments were conducted by the Entomological Division of the Minnesota Agricultural Experiment Station, the experimenters evidently trying everything that had been recommended by others, and some devices of their own as well.

The most practical and satisfactory remedy appears to have been white hellebore and water. "The roots of 44 cabbage plants were dipped June 23rd in a mixture of hellebore 1 part, and hot water 2 parts. This was allowed to cool before plants were treated, and they were immersed deep enough to also coat the lower part of the stems. They were immediately planted, and made an excellent showing. On October 1st every plant was standing." This does not seem a very practical method, as plants have usually a bulb of earth about the roots when being planted. In the Interim Report of the Department of Agricultural Farms, published in 1906, by J. B. Fletcher, Entomologist and Botanist, the use of hellebore as follows is recommended: "Watering around the roots after uncovering with an infusion of pyrethrum or white hellebore, 1 ounce in a gallon of water, at the time of transplanting, and again a week later."

Sawdust and glue also gave good results.

Minnesota. The experimenters believe this is the first time that this has been tried. "Sawdust was mixed with glue in the proportion of one-half pound of the former to 1 quart of the latter. The glue was not at all thick, but must represent at least 2 pounds of hard glue in 1 gallon of water, and the mixture had about the consistency of chicken feed, though rather more sloppy. It was applied warm with the hands above the base of the plant, but well up on the stem, the diameter of the mass where it came in contact with the ground being about four inches. One quart was sufficient for fifteen plants. The stuff quickly hardened, and though it softened somewhat during the summer rains, it did not disintegrate after the rain. It was applied to twelve plants on June 5th, and was still in good condition on June 22nd. The plants so treated made an excellent showing. A man can treat six to eight plants per minute. This treatment would be hardly practicable on a large acreage."

Carbolic emulsion, which has been recommended for the cabbage maggot, was not found very satisfactory. If the emulsion is in contact with the maggots long enough it will kill them, but when once the maggots are in the stalks it is difficult to reach them. "Young maggots lived in the laboratory for two hours and twenty minutes immersed in carbolic emulsion (1 part to 30 of water), and adult maggots required three hours and forty minutes." The carbolic emulsion also injures very young plants.

Some of the other remedies tried were, milk of lime, disturbing the eggs by stirring, scraping eggs away from plant, sand and kerosene, acetate of lead, moth balls, trap crops, tar-paper disks. None of these were found as satisfactory as hellebore and water.

An interesting and useful observation was that the maggots were much less troublesome in open or rising ground than where the wind was checked by woods. "The number of maggots increased in direct proportion as the protecting woods were approached. The noticeable fact about the positions of the patches is that the flies took the cabbages (they much prefer cauliflowers) which were more sheltered, in preference to going farther into the wind and getting the cauliflowers."

The planting of radishes and turnips amongst cabbage plants lessened the attack on the latter, as the insects destroyed the radishes and turnips first.

An interesting account is given of the life-history of the cabbage maggot, of which the following notes are worth remembering: "The eggs are laid by a small fly, which deposits them in a crevice between the soil and the plant near the ground during the month of May, and, if flying, may lay them as soon as the plants are set. The eggs are deposited in such a way that they are not visible when laid. The largest number of eggs found about one cabbage plant was ten, and about a cauliflower plant twenty-two. The maggots hatch from three to five days after the eggs are laid, and live for about three weeks, after which they pupate, and the second brood of flies emerge in from thirteen to fifteen days."

Some experiments in the use of hydrocyanic acid gas are recorded. It was found that from 29 seconds to 4 minutes elapse between the dropping of the charge and the first giving off of the gas, the time depending on the heat of the liquid and the thickness of the paper bags with the charge. "One can depend upon at least 20 seconds when double sacks are used."

It was proved that no fumes which are fatal rise from the jar before they are visible.

Another bulletin which appeared about the same time, bears the title, "The Cabbage and Onion Maggot"—Bulletin 200, New Jersey Agricultural Experiment Station, by John B. Smith and Edgar L. Dickerson. The life-history of the cabbage and onion maggots are described, and experiments enumerated for their control. The experiments were with tarred paper cards, carbolic acid and lime, kerosene and sand, powdered tobacco, powdered white hellebore, dry lime, bran and glue, carbon bisulphide, carbolic-acid emulsion, hellebore decoction, hand method, oil mixtures. From the results of the experiments tried, it is recommended to use ground for onions where there have been no maggots the previous year, or land that is clean or has had nothing left on it to enable the insects to be carried over the winter. Plant as late as possible to avoid the insects, which come out early, and must lay their eggs almost at once. Fertilize the plants with a quick-acting fertilizer, to give the plants a good start. One that is recommended is made in the proportion of nitrate of soda 700 pounds, acid phosphate 1,000 pounds, muriate of potash 300 pounds. When feasible, plant a trap crop earlier than the main crop for the insects to lay their eggs upon, and when these become infested, remove and destroy the plants. Protect the cabbage and cauliflower plants with the tarred paper disks or bran and glue. The most successful of the materials used in the experiments in combating the onion maggot was carbolic acid and lime. A mixture of crude carbolic acid and lime was applied once a week. The application, made with

a sprinkling can or spray nozzle, was very thorough, so that the material formed a crust on the ground around the plants, and the odor of the acid was perceptible for several days after. Slake the lime to a thin cream, use three pints to a gallon of water, and to this add one table spoonful of crude carbolic acid. Apply along the rows as already mentioned, getting it well around the plants, so that the surface will be coated to the plants. It forms a covering through which the young maggots are not able to penetrate to reach their food. The young plants seem to find no difficulty in growing through the lime coating. Apply immediately after the plants are set and appear above ground, and make the first two applications five days apart, the later ones not more than a week, and continue for a month, at least. Dipping plants in dry or wet hellebore is recommended, also.

GRANTS TO ENCOURAGE CO-OPERATIVE POWER SPRAYING.

The Minister of Agriculture for Ontario has, for the past two years, had under consideration plans for further assisting the fruit-growers of the Province. Spraying has now become, in producing a superior grade of fruit, the most important operation of the year, and, while widely practiced in certain sections, has not yet been given the attention that it requires in the apple sections. The advent of the power sprayer is of such recent date that the advantages it gives, especially in the spraying of apple orchards, is not yet appreciated.

For many years the Department of Agriculture has been advocating more and better spraying. Demonstrations in the use of hand and power outfits, and the preparation and application of the most effective mixtures, have been given throughout the Province, with satisfactory results. It is now felt that such information has been sufficiently diffused, and another step forward is proposed.

The Provincial Fruit-growers' Association has, within the past three years, assisted in organizing a large number of fruit-growing associations. One of the aims of these associations has been the co-operative spraying of orchards of their members, and it is now proposed to assist these and kindred organizations in such spraying work. With this aim in view, the Minister of Agriculture has asked the Legislature for a grant of \$6,000, to be devoted to the assistance of fruit-growers in the purchase and operation of power spraying outfits. Many associations already own and are operating such machines, and these will receive the same aid as those organizing during 1907. The conditions under which the grants are available have been made as simple as possible, with the hope that a decided stimulus will be given to the proper spraying of orchards during this and coming seasons. Following are the regulations covering the payment of the grants:

A grant of \$50 will be made to any five or more farmers who unite to form a fruit-growers' association, for the purchase and operation of a power spraying outfit during the season of 1907. These associations need not be incorporated to qualify for this grant, though incorporation of co-operative associations is advisable.

Co-operative fruit-growing associations owning and operating two or more power sprayers will be eligible to draw a grant for each machine operated.

The number of such associations receiving assistance during the present year shall not exceed one hundred.

At least 25 acres of fruit trees must be thoroughly sprayed during the proper season with each outfit.

A reasonable proportion of such spraying must be done on the farms or orchards of each of the parties forming the association.

Such associations, before receiving any portion of the grant, shall satisfy an inspector of the Department of Agriculture that the above conditions have been complied with, and shall make such reports as shall satisfy the Minister of Agriculture.

Associations desirous of participating in this grant must apply to the Department not later than the first day of May.

ETHER AS A PLANT STIMULANT.

In reply to a letter of inquiry from "The Farmer's Advocate," anent a newspaper clipping, in which Prof. John Craig, of Cornell University, Ithaca, N. Y., was said to have obtained remarkable results in forcing plant growth by the use of ether, Prof. Craig says: "It is true that we have been experimenting with ether as a stimulant to plant growth for the past two years, and it is also true that we have secured some interesting results. It is not true that we have made any claims for this as an original idea, because the method has been employed in Europe in the forcing of lilacs for some time, but we have no records of its being used for the forcing of a great many other plants which we have experimented with."