

method of treating old elm trees has been very successful, notably in Northampton, Mass., where a tree planted by Jonathan Edwards 150 years ago has been preserved by the use of over 100 barrels of cement. Another method is suggested for use in hollow maple trees. In the city named, the cavity is filled by driving in pieces of wood before tinning over. Both plugging and cementing may be used at times to advantage in the same tree. Many valuable orchard trees could be treated in the manner indicated, and the usefulness of old trees much prolonged.

REMEDY FOR CUTWORMS.

Probably all our readers are familiar with the work of cutworms, those destructive insects that cause so much injury in garden and field. In spring, as soon as seedlings appear above the ground, or hotbed plants are set out, many are eaten off at the surface of the ground by dull-colored, greasy caterpillars, from half an inch to an inch and a half in length, which come out at night and devour almost all kinds of vegetation, cutting it off as described above, and often dragging part beneath the surface, where the worms lie hid during the day. Cutworms are the caterpillars of active, dull-colored moths, belonging to the Noctuidæ or Owllet moths, of which there are upwards of four hundred kinds in North America. The eggs from which cutworms hatch are laid by some species in the autumn and by others in the spring or summer. The ravages of those hatched in the autumn are seldom noticed then, on account of the abundant vegetation at those seasons. In spring not only are the caterpillars much larger, but as the land is then clear of weeds and other vegetation, they have nothing to eat but seedlings, in devouring which they work great havoc. When full-fed they burrow into the ground a few inches and turn to brown chrysalids.

Injuries by cutworms in most seasons may be expected to cease by the end of June, but different species vary in the time they stop feeding. Some of the early-maturing species, such as the Black Army Worm, which frequently strips clover and pea fields early in the spring, stops feeding for a time, and it is safe in many instances to apply no remedy whatever, the crop recovering from whatever injury may be done by them. Certain other species mature so late that it would be unsafe to even resow the land without special treatment to destroy the worms.

Among the most important species of cutworms, Dr. Jas. Fletcher, Dominion Entomologist and Botanist, mentions as specially deserving of study the Black Army Worm, mentioned above; the Red-backed Cutworm (probably the widest spread and most regularly-recurring species we have); the Dark-sided Cutworm (a common species, particularly troublesome to onions and young garden vegetables); the Spotted Cutworm (sometimes harmful to turnips, tomatoes, and, rarely, to peas and oats, as late as the end of July), and the Clover Cutworm, which has on one or two occasions occurred in excessive numbers and destroyed whole fields of peas, turnips and beets in August.

REMEDIES.

Remedies for cutworms we quote from Dr. Fletcher's bulletin, "Insects Injurious to Grain and Fodder Crops, Root Crops and Vegetables." By way of comment we take the liberty of remarking that the first measure prescribed, namely, burning all stems and haulms in the fall, is rather hard on the humus supply, though undoubtedly efficacious in combating the cutworm pest. Probably it would suffice, in most cases, simply to fall-plow early, burying the material instead of burning it. Dr. Fletcher's recommendations are enumerated as follows:

Remedies.—(1) Clean Farming.—The keeping down of all weeds and the burning up of all haulms, stems of reaped crops and refuse, as early as possible in the autumn after crops are reaped, will destroy many eggs and prevent the deposition of others by presenting no suitable place for the moths to lay their eggs. The eggs are laid in autumn or spring, and such places are chosen by the moths as where there will be an abundance of food for the young caterpillars on hatching.

(2) Traps.—Large numbers may be destroyed by placing between the rows of an infested crop, or at short distances apart on infested land, bundles of any succulent weed or other vegetation which has been previously poisoned by dipping it, after tying in bundles, into a strong mixture of Paris green, 1 oz. in a pail of water. The cutworms eat the poisoned plants, then bury themselves and die. In hot, dry weather these bundles should be put out after sundown, and a shingle may be placed on each to keep it from fading.

(3) Banding and Wrapping.—(a) It will be found to well repay the trouble and expense to place a band of tin around each cabbage or other plant at the time of setting out. These may very easily be made by taking pieces of tin 6 inches long and 2½ wide and bending them around a spade or broom handle so as to form short tubes. In placing them around a plant the two ends can be sprung apart to admit the plant, and then the tube should be pressed about 1½ in. into the ground. I have found this a useful means of disposing of empty tomato and other cans. To prepare these easily, they need only be thrown into a bonfire, when the tops and bottoms fall off and the sides become unsoldered. The central piece of tin can then be cut down the center with a pair of shears and forms two tubes.

(b) Wrapping a piece of paper round the stems of

plants when setting them out will also save a great many.

Hand-picking or digging out the cutworm whenever a plant is seen to be cut off should, of course, always be practiced.

(4) Poisoned Bran Mash.—The most remarkably effective remedy against cutworms is the poisoned bran mash which has lately come into such wide use. This is made by mixing half a pound of Paris green with fifty pounds of slightly-moistened bran. In making this, it is best first to dampen some of the bran slightly with water containing a little sugar. After mixing thoroughly, add the Paris green by dusting it on the surface and stirring all the time. We have found that when Paris green is added to perfectly dry bran, owing to its weight, it will sink at once to the bottom when stirred, in the same way that it does in water. Half a pound of Paris green is enough to poison fifty pounds of bran, although double this amount may be used. If the mixture is too wet, more dry bran should be stirred in until the mixture will crumble easily and run through the fingers without adhering.

When required for garden use, all that is necessary is to sprinkle a little of the poisoned mixture by hand around such plants as are liable to attack. When crops are planted in drills or in rows, a convenient way is to make the mixture rather dry and then distribute it by means of a Planet Jr., or other wheel seeder. In field practice, among such close growing crops as standing grain, which are sometimes injured by the Red-backed Cutworm, the poisoned bran remedy is also serviceable. The mixture can be distributed by means of a paddle or shingle, and can be thrown easily to a distance of twenty feet. When distributed in this way, there is much less danger of chickens and birds picking it up than if it is placed in lumps.

STRAWBERRY TRANSPORTATION, MARKETS AND PROFITS.

In "The Farmer's Advocate" of May 9th we quoted from an address by W. F. W. Fisher, a successful commercial strawberry-grower, of Burlington, Ont., some practical points on planting. Below will be found a discussion of markets and marketing, taken from the same address.

The strawberry is more cosmopolitan in its adaptation to soil, climate and conditions, as well as palates, than any other known fruit. It grows and flourishes in the sunny south; it is found smiling its welcome in the early spring, and in its season tempting the appetite of the dweller on the prairie of the far North, and at practically all points between it is possible to produce this fruit. Apart from its intrinsic merit, probably one of the joys with which the strawberry is received is due to the fact that it is the harbinger of the season of fresh fruits, extending throughout the year, until its own season comes again.

The importation of strawberries from the United States, it was feared by many, would result in weakening the appetite of consumers and lowering the price of the home-grown article. The history of demand and average prices for the past two years shows a contrary effect, and, with the increase of importations and the trebling of the acreage under home-grown berries, the demand and price have kept full pace.

To get the berries picked carefully, regularly and promptly, is the knotty part of the problem. Provision should be made a season in advance for a supply of pickers, and these require a good deal of tact in managing. Picking is done by piece-work, at the generally uniform rate of one cent per box. A premium of some kind might be given all pickers who by skill and neatness bring in their berries in the most attractive and saleable condition.

Marketing is the next feature in order, and on the services rendered, rather than on the prices charged by the transportation companies, depends the success or failure, to a greater or less degree, of all our efforts up to this stage. When the crates are thrown three or four feet by a stupid, careless expressman, and landed in one of the old-fashioned ovens which are still designated express cars, or when the trains run into market three or four hours late, the result is quite different to that obtained when they are reasonably well handled, deposited in a well-ventilated car, and delivered at its destination on schedule time.

The distribution of the crop is one of the most important factors, and the ordinary grower would do well to confine shipments on commission to the larger centers, and allow buyers at local points to supply smaller markets. If all the mouths in the Dominion are given access to a full allowance of strawberries, we need fear no glut in future markets.

Having covered the ground from planting to marketing, Mr. Fisher concludes:

We have outlined a system involving a great deal of labor, care and expense. What result? If the average grower expect from such a system, say 7,500 quarts per acre, the average price at 6¢ per qt. at railway station, we get thus the sum of \$450.00 as the gross receipts per acre. From this deduct the following charges: Plants, \$25; cultivation, \$25; fertilizer, \$35; rent, \$15; picking, \$75; packages, \$75; packing

and delivering, \$25; a total of \$275, leaving a net profit of \$175—a sum which every intensive cultivator may confidently expect to exceed, and which compares favorably with other branches of fruit-growing."

HORTICULTURAL PROGRESS.

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

Fourteenth annual report of the Professor of Horticulture, Ontario Agricultural College, Guelph, 1906.

The fourteenth annual report of H. L. Hutt, Professor of Horticulture, is included in the thirty-second annual report of the Ontario Agricultural College, 1906, recently published.

VARIETIES AND HARDINESS.

There are 71 acres included in the Horticultural Department, divided into 42 acres of lawn and grounds, 23 acres of orchards and fruit plantations, and 6 acres of vegetable garden. There are 8,000 square feet of glass houses, and about the same amount of glass as cold frames in the spring.

Variety tests are conducted with all the principal fruits which will succeed at Guelph.

The orchards were set out ten years ago, hence the trees are now bearing considerable fruit. Records are kept of each individual tree in the orchard, in regard to hardiness, vigor, season's growth, time of bearing, date and amount of bloom, amount of crop, and kind and quality of the fruit. Apples do better than most other tree fruits at Guelph, although a large number of trees of the tenderer varieties were killed in the winter of 1903-4. Pears have been more or less of a failure. Only a few trees remain of 150 planted ten years ago. Of the survivors, Flemish Beauty, Clapp's Favorite, Manning's, Elizabeth, Lincoln, Ritson and Bessemianka bore light crops in 1906. Plums have suffered, also. Of the European varieties, Glass appears to be one of the hardiest. Other European plums which fruited in 1906 were: Coe's Golden, Grand Duke, Imperial Gage, Monarch and Reine Claude. The American varieties, while quite hardy at Guelph, are much inferior there to the European.

COVER CROPS.

Special attention has been paid to cover crops in the Horticultural Department during the past four years, and a number of plants have been tested to determine which were the best. These included hairy vetch, crimson clover, alfalfa, rye, Dwarf Essex rape, red clover, mammoth clover, hairy vetch and mammoth clover mixed; alfalfa and red clover mixed; grass peas, crimson clover, horse beans and Prussian blue peas, mixed.

Of the crops tested, the most satisfactory were: Alfalfa sown at the rate of 30 pounds per acre, and red and mammoth clover, each sown at the rate of 20 pounds per acre; rye at 1½ bushels per acre, and hairy vetch at 35 pounds per acre. Crimson clover is not hardy enough at Guelph to be recommended, but might be added to the list for Southern Ontario.

Of strawberries, the following early varieties are recommended: Splendid, Warfield and Haverland. Midseason: Williams, Ruby, Clyde and Parson's Beauty. Late: Buster.

Considerable work is now being done in plant-breeding by the Horticultural Department. Seedling strawberries and raspberries are being grown, and the best kept for further test. Work was done in crossing raspberries, Herbert and Cuthbert being pollenized by Falstaff, the object being to get a hardy and productive variety of better quality than either Herbert or Cuthbert. The Columbian raspberry was successfully crossed with the Strawberry raspberry. Work was begun in improving the native choke cherry (*Prunus Virginiana*), several hundred pits of a specially good type being sown to begin the work.

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Report of the Professor of Entomology and Zoology, Prof. C. J. S. Bethune.

There were some experiments conducted in the Entomological Department that are of interest to horticulturists. Several remedies for oyster-shell bark-louse were tried, and the best results are said to have been obtained from the use of the lime-sulphur-and-salt wash, although it is reported that quicklime, 1½ pounds to 1 gallon of water, proved very effective applied as a winter wash, and equalled the results obtained by the lime-salt-and-sulphur wash. The value of lime in ridding trees of oyster-shell bark-louse was discovered at the Central Experimental Farm, Ottawa, in 1900, and has been found one of the most effective remedies.

ROOT MAGGOTS.

Experiments in preventing root maggots resulted in the best results being obtained from Pyrethrum and flour. This application was applied dry. Pyrethrum or insect powder was mixed with four times its weight of flour, and then kept in a tightly closed tin for twenty-four hours. After this time had expired, it was taken and