GARDEN AND ORCHARD.

INSECTS INJURIOUS TO THE APPLE.—

(Concluded.)

Of the Canker Worm, Mr. Saunders says:—

"There are two species of canker-worms which, until late years, have been confounded with each other. One species produces a moth late in autumn, and the other partly in autumn but chiefly in the following spring. There are perceptible differences in their larval and moth characteristics which are sufficient to establish them as distinct, but as their habits are precisely similar we can speak of the two species as one.

"After severe weather, when it might have been expected that almost all insect life would be destroyed, especially anything so delicate in structure as these moths are, they may be met with in the woods flying about in all directions. They seem, in fact, to require a great amount of cold to fully develop them. The females of both species are without wings, the male only possessing powers of flight. The female is very much like the female *Orgyia*, being a spider-like creature, with six long legs, and a large body thickly clothed with scales. She is very unattractive in appearance, while the male is a very beautiful insect indeed. After copulation the female climbs up the tree, and deposits her eggs usually on the twigs. The larvæ are hatched out in the spring, and quite early in the summer attain their growth. Their method of walking is by 'looping' their bodies, viz., by drawing the hinder feet close to the fore feet, again extending the latter, and so on. They are prettily striped with yellow and brown. After attaining its full growth—late in June, or early in July—the insect descends to the earth and forms a chrysalis, which remains undeveloped until the advent of the cold season, when the moth breaks through and escapes to perpetuate its species. This insect has been very troublesome in many parts of the United States, attacking not only the apple tree, but several varieties of shade trees, particularly the elm" *(see Figs. 38, 39, 40 and 41).*

CANKER WORMS.

Fig. 38.

Fig. 39.

Fig. 40.

Fig. 41.

Fig. 38 shows the larva and egg, and *Fig. 39* the moths, male and female, of *vernata*, the spring form; while *Figs. 40* and *41* represent similar stages of the autumn insect.

As to remedies, Mr. Saunders says:—

"Various means have been resorted to to prevent the female from climbing up the trees and depositing her eggs. Strips of tin or zinc have been fastened about the tree, about three inches wide and sloping downwards, like an inverted funnel, so that the insect could not surmount them; also bandages of cotton and other fabrics, daubed with tar, have been used with the same end in view, and by these means the trees have, in many instances, been saved from serious damage. I have not had much opportunity of judging whether the English sparrow has had any effect in reducing the number of these insects, but I am of opinion that it has not."

The beautiful Cecropia Emperor Moth appears during the month of June, and deposits her eggs singly on the apple tree *(see Fig. 42).* The subsequent history of the insect is thus described by Mr. Saunders:—

"These, during the next five or six weeks, hatch into caterpillars, which finally grow to be three or four inches long, and about as thick as a man's finger or a little thicker. They are green in colour, and are covered with warts; those on the top of the anterior segments are large and of a coral red colour, the remainder are yellow, excepting those on the second and hinder segments, which, in common with the smaller ones along the sides, are blue *(see Fig. 43).* Early in the autumn the larva spins its strong silken cocoon, perhaps three inches in length, inside of which it changes to a chrysalis and remains during the winter *(see Fig. 44),* developing the moth the following season, about the beginning of June."

CECROPIA EMPEROR MOTH—*Samia cecropia.*

Fig. 42.

The Cecropia is found also on the European alder as well as on the plum, currant and lilac, although it prefers the apple. Parasites keep it in check, and Mr. Brodie mentions that in 1861 he collected in Whitchurch over a hundred Cecropia cocoons, only three of which were living, the others having been punctured by wood peckers.

The Rascal Leaf Crumpler *(Phycita nebulo)* is described by Mr. Saunders as "constructing a rather dead-looking case, not unlike a horn in shape, in which it passes the winter in the caterpillar state, and from which it makes its exit in spring, using the case as a place of retreat, travelling out in search of food, and returning to it when it has eaten sufficient to satisfy itself" by gnawing the bark of the twigs early in the spring, thus at times seriously injuring the tree's growth. Hand picking appears to be the only artificial remedy.

The Codling Worm *(Carpocapsa pomonella)*—*see Fig. 45*—which makes its attacks directly on the fruit, is perhaps the most serious of the pests infesting the apple. Every apple grower and almost every apple consumer knows something of its ravages. The witnesses in the fruit department of the late inquiry were one and all complainants against this insect, of whose habits Mr. Saunders gives the following description:—

"It is a European importation, and a pest which causes the loss of many thousand dollars' worth of fruit every year. The moth is on the wing quite early in the season, about the time the apple trees are in blossom, and as soon as the fruit is formed, or almost before it is formed, the insect deposits her eggs in the upper end of the apple blossom. These eggs are soon hatched into young larvæ, which penetrate into the growing fruit, and mature there when the fruit is about half grown. At that time we notice a great many apples fall from the trees. These are brought down from the effect of the presence of the larvæ. The irritation set up in the fruit by them, brings on premature ripeness, and consequent falling from the tree. This half-grown fruit is, of course, useless for any purpose, but the fact of its falling to the ground sometimes has a beneficial effect upon the remainder of the crop, which thereupon receives a greater proportion of the juices of the tree, and thus has a better chance of reaching full size before maturity. The larva sometimes leaves the fruit before it falls, and crawls down the tree looking for a sheltered spot in which to spin its cocoon. Sometimes it falls to the earth with the apple, and in that case it generally ascends the trunk of the tree in search of a proper hiding place in which to go into chrysalis. This habit the larva has of seeking for a sheltered place, in which to spend the inactive stage of its existence, has suggested a very useful remedy for counteracting its ravages."

The remedy suggested is as follows:—

"By tying, about the middle of the trunk, a bandage of old cotton cloth, or even paper, a suitable hiding place is presented to the larva, which at once makes use of it by entering in and going into chrysalis there. If the bandage is applied to a tree on which there is a good crop of fruit, and tied in the middle, I have found, as a rule, that there will be as many or even more larvæ above the string than below, showing that a large proportion of them leave the fruit before it drops and crawl down the tree. The insect remains, during the summer months, about ten or twelve days or sometimes a fortnight in the chrysalis state, and the bandages ought to be examined once a week, so as to make sure that none escape. In this way a very large number of pupæ may be collected, and the trees preserved, in a great measure, from the visitation of a second brood, which otherwise would be shortly hatched."

The insect, if allowed to escape from its chry-