

masses of eggs, which remain over winter on the trunks and larger branches, and even on buildings and fences near by, may be scraped off and destroyed during the winter. If a few survive this treatment to show themselves as larvæ, spraying with Paris green will kill most of them. The bands of tar brushed on the trunks three or four feet from the ground will prevent the wingless female from ascending the trees to lay her eggs.

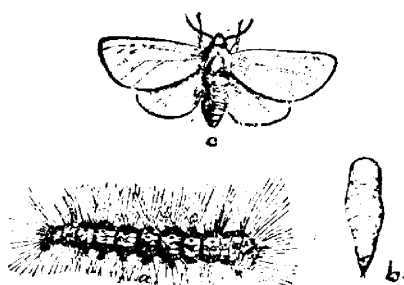


FIG. 1759. FALL WEB-WORM—*a*, caterpillar; *b*, pupa; *c*, moth.

The *Fall Web-worm* (*Hyphantria cunea*) is another serious pest of shade trees. (Fig. 1759.) The moth is either pure white, or white spotted with black, and is a very pretty creature. It lays a cluster of 300 or 400 eggs on the leaves. The caterpillars feed in colonies, and each colony spins a web wherever it feeds. When full grown, the caterpillars leave the web and crawl down the trunk to the ground to spin their cocoons, within which they pass the winter as pupæ. Several methods may be adopted to rid the trees of the pest. The collection of the cocoons, and the spraying with Paris green are both effective, but perhaps, the most effective mode of treatment is to burn the webs and the contained caterpillars. A long pole, to the end of which a swab saturated with coal-oil is fastened, makes a good torch for burning the webs.

The *Bag-worm* (*Thyridopteryx ephemera-formis*), although rare with us on shade trees, is a pest in some cities to the south of us. During the winter silken bags, to which bits

of leaves and sticks are attached, may frequently be found on the twigs of conifers and other trees. These bags contain eggs which hatch in the spring, the little caterpillars emerging from the bags and feeding upon the leaves. They become mature, or full grown in late summer, when the bags, which they have constructed and carried about with them, are fastened securely to branches, or sometimes to fences near by. Within the bags the caterpillars change to pupæ. The male moths soon emerge, but the female moths being wingless and passive, never leave the bags, where they lay large masses of eggs.

The surest remedy for the bag-worm is to pick the bags during the winter and destroy them. If the bags are destroyed no caterpillars can make their appearance unless they come from some outside source.

3. The chief Sap-Suckers are the *Woolly Maple Bark-Louse*, or the *Cottony Maple Scale*, the *Spruce Gall Louse*, and several kinds of armored *Scale-insects*. These all have mouth-parts adapted for sucking the juices of the plants they infest.

The *Cottony Maple Scale* (*Pulvinaria innumerabilis*) is very frequently injurious to maples. (Fig. 1760.) These scales attract attention in the spring by the large cottony masses which envelope them. Within the cottony mass are the eggs, from which in a short time the young lice hatch, and spread over the branches and twigs. They soon settle on suitable spots, and begin feeding by sucking the sap. Full growth is reached about the beginning of September, when winged males appear. The females, how-

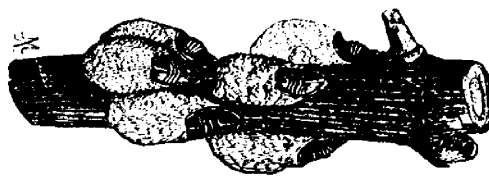


FIG. 1760. COTTONY MAPLE SCALE—Showing the insect lying on a cottony mass which contains eggs.