

scales, from fifteen to thirty under each scale; they are oval in form and of a red colour. The larvæ hatch early in May, and are also red. When first hatched the young females move briskly about until they have selected suitable locations for a permanent abode, when they attach themselves thereto and remain fixed. The males are less active, and often attach themselves to the leaves in the immediate neighbourhood of the parent scales. This insect produces at least two broods in a year, perhaps more, and is found throughout the United States from New York to Florida.

THE WHITE PINE SAW-FLY—*Lophyrus Abbotii*.

This species belongs to the family of saw-flies, a class of insects which are said to have greatly injured whole forests of pine in Germany. This American saw-fly is

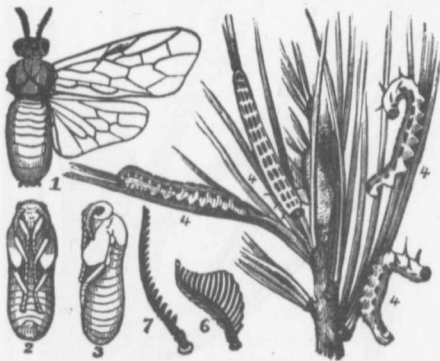


Fig. 27.

abundant in Indiana, Illinois, and Missouri, and is generally distributed elsewhere through the Northern and Western States and Canada. Fig. 27 represents the insect in its several stages. The larva is from eight-tenths of an inch to an inch in length, of a dingy white colour, with a black head, and several longitudinal rows of black spots along the body, and is found most numerous in the autumn. When full fed they enclose themselves in oval cocoons, which are sometimes spun up among the leaves on the tree, but more frequently among the fallen leaves and other debris on the ground. Within the cocoons the larvæ remain unchanged until the following spring, when the pupa

is formed, from which the flies issue in about two weeks. The male measures, when its wings are spread, about half an inch the female two-thirds of an inch across. The body of the male is black excepting the under side and tip of the abdomen, which are yellowish. The female is of a honey-yellow colour, with the head and thorax a little darker, the thorax with the abdomen being slightly marked with black. The wings are transparent, with black veins. The larvæ feed in flocks, and seldom leave a twig or branch until they have completely stripped it. When approaching full growth they consume a large quantity of food, and strip a tree of its leaves with wonderful rapidity. When disturbed they have the habit of throwing back the head and ninder part of the body, and if the tree or branch is violently shaken many of them will fall to the ground. A large proportion of these larvæ are destroyed by a parasitic fly.

THE PINE-BORING PYRALID—*Nephoteryx Zimmermani*.

In the months of June and July branches of the white pine often show that they are suffering from the attacks of an insect by the pitch which exudes; the wounds usually occur below the insertion of the smaller branches near the top of the terminal shoots. On cutting into the affected part, the injury is found to be caused by a small larva which, when full grown, is nearly three-quarters of an inch long. The head is shiny-brown, with black mandibles, the body blackish-green, naked, with a few black dots on each segment, from each of which arises a single rather stout hair. The larva devours the inner side of the bark, and making furrows in the wood, causes the exudation which, when excessive and continuous, especially in the case of young trees, sometimes proves fatal. In July the larva spins a thin, whitish, papery cocoon in the mass of exuding pitch, which seems to act as a protection to both larva and chrysalis. The chrysalis is smooth, and of a blackish-brown colour, and produces the moth in from ten to fourteen days. The moth, when its wings are expanded, measures an inch or more across. It is of a blackish-grey shaded with reddish, the hind wings are pale yellowish-white, and the abdomen greenish ringed with dull white. The species is probably single-