growth of the summer before, and place over a black surface (a small square of window glass over a piece of black paper answers admirably) and turn over several scales with a pin or knife point, and examine their contents with a hand lens. You will find small round oval bodies, the eggs, either in the scale or out on the surface of the glass. Note their color. Where is the body of the insect that laid these eggs, and secreted this shell, and lived under it? It died soon after laying its eggs, but its remains are often found at the small end of the shell, close to the eggs. Are the eggs found under all the fresh looking scales of this size? The eggs of the older scales hatched last spring. Of what sex are these insects? The shells of the male insect are smaller (see Fig. 1, e) and you have probably not found them on these twigs. Look for them? In what stage of their life cycle do these insects pass the winter? How are they distributed from place to place?

II. The Oyster-shell Scale.

The Oyster-shell Scale was introduced into America about 125 years ago, and is now found in all parts where the apple is grown. It flourishes upon a variety of trees and shrubs, but the hawthorn, red-osier dogwood and the apple are its favorites.

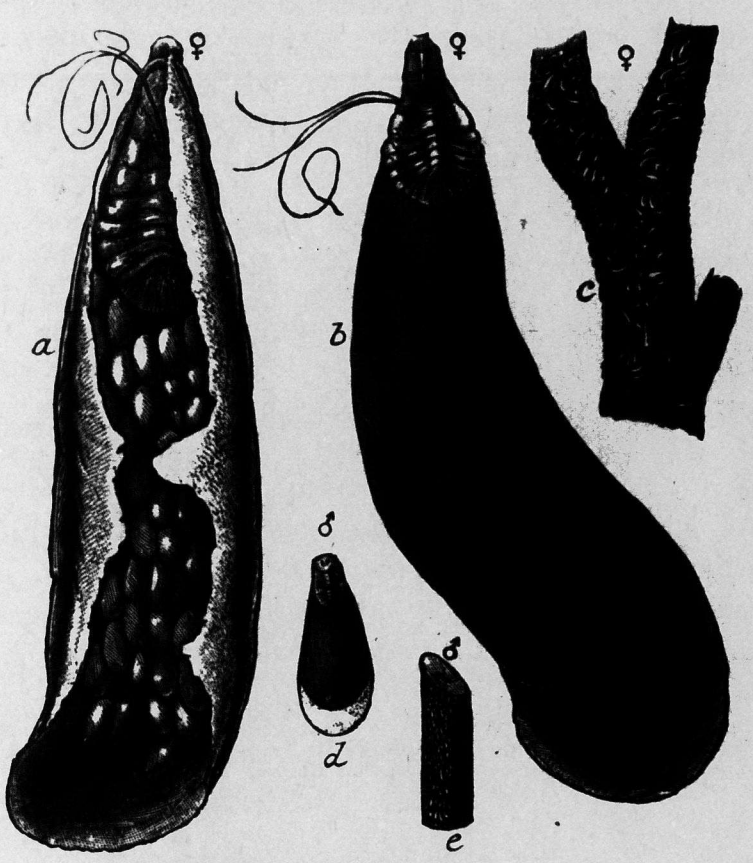

Fig. 1. Oyster-shell Scale. a, female, from beneath, showing eggs protected by scale, x 24; b, female, from above, x 24; c, female scale on branch, natural size; d, male scale, x12; e, male scales on twig, natural size.

The adult female scale, which is the only stage noticed by fruit growers, is about one-eighth of an inch long and scarcely one-third as broad. It is of a characteristic oyster-shell form, tapering towards one end, and is brownish in color, though varying somewhat on different colored bark.

The male scales are in shape like diminutive females, and are rarely seen.

The Oyster-shell Scale passes the winter in the egg stage. The eggs are glossy white, and number from 20 to 100 under each scale. The hatching depends upon the temperature and takes nearly a week, about the first of June, about the time the petals have fallen. During the last of May or the first of June place infested twigs in glasses of water in the school, and watch for the young as they hatch. They appear to the unaided eye as minute specks, slowly crawling in swarms over the twig. Examine them with a hand lens and note the antennæ, and the three pairs of legs, and other characteristics of their insect nature. This makes a good exercise for spring nature study, and affords a good opportunity for reviewing their life history.

The young as they hatch from the eggs are white or cream-colored, and are called larvæ. They spend a few hours, or a day at most, in wandering over the bark, and then settle down, and each inserts its long hair-like sucking tube, proboscis, through the bark, and feeds on the sap of the tree. Life is now easy, and they soon cover their backs with brownish waxy coats, which enlarge as they grow and at last become the familiar brown scales of the adults. The female insects never move after they once settle down; the males on the contrary, when full grown, back out of their shells as tiny two-winged little creatures.

The eggs are fertilized early in July, while the female is yet growing. She reaches her full development in August, and her body is so distended with eggs at that time that it occupies the whole of the cavity beneath the shell. She then begins to lay her eggs, and as the process continues her body gets smaller and smaller,