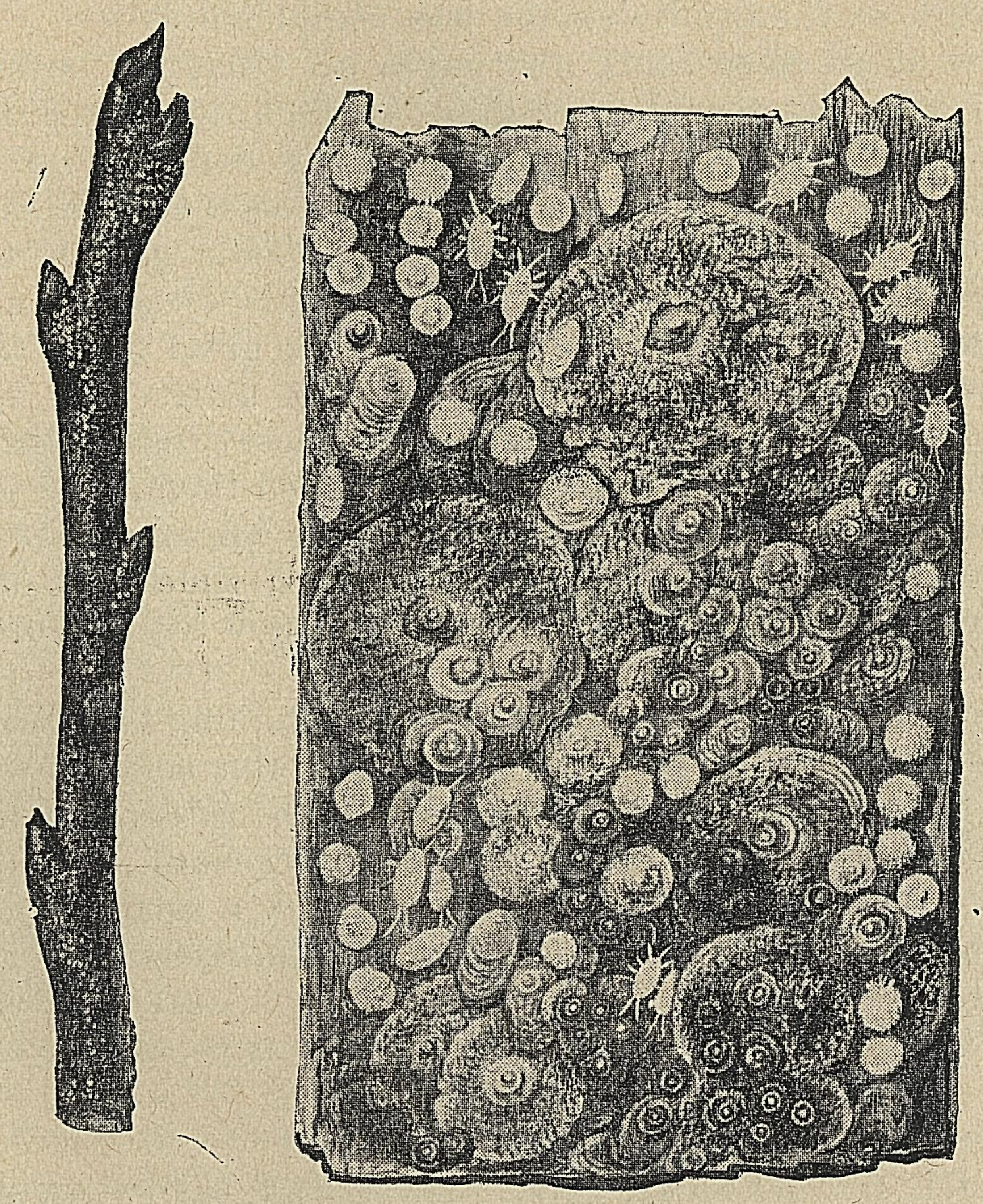
scales. If, on the other hand, the tree is dead, the scales are not so easily detached, and the oiliness is absent from the fact that all the insects are dead and dried up.

The real appearance of the scale cannot be detected by the average eye sight, without the aid of a magnifying glass. If an infested twig is examined with a hand lens, it will be seen that it is coated with shell-like objects, varying in size, shape and color. It resembles very much a stick covered with barnacles. If the examination is made in the summer time, the young, yellowish lice would be seen crawling about and over the scales, as shown in the illustration at figure 7.



a *b*

Figure 7.—Appearance of San Jose Scale on bark; *a*, infested twig, natural size; *b*, bark as it appears under hand lens, showing scales in various stages of development and young larvæ. (After Howard and Marlatt in Bulletin 3, n. s. Div. Ent. Dept. Agr.)

The nature of the attack varies considerably, and depends upon the kind of tree. Peach, in my experience and observations, is the most susceptible of all the fruit trees. It is a very rare occurrence in this state to find an infested peach tree that has withstood the attacks of this insect three years, and the size of the tree up to the age of five or six years has little to do with it. Trees six years old which have made a beautiful growth, succumb readily to this deadly enemy. An excellent illustration of this character can be seen by referring to figures 3 and 4. Where peach trees from four to six years old become encrusted with the scale,

all the upper branches will be completely killed, and new growth will begin from the main trunk near the ground. Trees in this condition with the cluster of sprouts at the base, with leaves very much larger than the normal leaf, present a very characteristic appearance. The dead tops set in a bunch of green foliage, is very striking, and the cause of the condition can be inferred, as far as one can see the tree. In one peach orchard of 2,500 trees five and six years old, 1,300 were in this condition last fall. In another orchard, containing something over 28,000 peach trees, about 8,000 had this peculiar growth. This condition is, no doubt, due to the fact that the root system of larger trees is sufficient to maintain life in the lower part of the trunk, even after the top has been entirely killed. The young growth is usually pitted, and marked by the presence of the insects the first season, and rarely, if ever, lives through the second season. It is therefore, not an uncommon occurrence to find trees in an orchard entirely dead where this growth at the base was conspicuous the year previous.

Young peach trees from two to three years from the bud are not usually affected in this way. When attacked by the scale, they are killed out completely, there not being enough root system to sustain the growth at the base. I never have seen, and have not heard of an instance where a peach tree was killed by this scale in the nursery row. This is what we would expect, as the bud produces a marketable tree by one season's growth, and if the scale has been introduced on the bud, its presence would only be susceptible late in the season. The second and third years, therefore, in the life of a peach tree, if the scale was introduced when budded, are the important ones.

Pear, apple, plum, quince, cherry, apricot and nectarine are not so quickly killed as the peach, but all of them will finally succumb, if the scale is allowed to breed year after year uninterruptedly. Pear, Apple, plum and cherry will usually die the third or fourth year, providing the pest is upon the trees at the time they come from the nursery. I have seen cases where pear and apple have been killed in one year from the nursery, and it is not an infrequent occurrence to find dead pear, apple, plum, cherry, apricot and nectarine in a nursery row, where the scale has been established. The general appearance of badly infested trees is about the same in all cases, the scurfy, grayish or ashy coating being conspicuous.

If a pear tree is moderately infested, the scales are easily detected at the very tip of the new growth. They do not occur so conspicuously on the terminal growth of the apple and plum, as on the previous year's growth. The pest is seen on the leaves usually only on badly infested trees. On peach, it produces a reddish or purplish tinge on the leaf, especially where the insect is attached. There is at times, a yellowish spotting that follows the attack. As a rule, the great majority of the scales are attached to the upper surface of the leaf, and arranged along the mid rib and veins, and are mostly males. Pear and apple leaves are not so conspicuously marked as peach.

I have seen the scale only on the fruit of apple, pear and peach. Where there are only a few insects upon a pear or apple tree, their presence upon the fruit affords the easiest and simplest method of locating the infested