

Citrus Pests: (6) Scale Insects.

(II) Unshielded Scales.

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IN this group the insect is not a soft-bodied creature shielded by a scale which is separate from the insect. On the other hand, the scale seen is actually the hardened and thickened back of the insect itself, perhaps ornamented with a waxy covering, as in the white-wax scale. The Olive Scale (*Saissetia oleae* Bern.) is typical of the unshielded scales (see Fig. 1).

Life-history.

In New Zealand the females of the species on citrus all produce eggs which subsequently hatch into "crawlers," very similar in appearance to those of the shielded scales. As the adult female lays the eggs the soft parts of her body shrink so that the lower surface ultimately comes to rest against the upper interior surface of the scale. The space made by this shrinkage is occupied by the eggs, so that should an old adult female scale be taken from its host it will be seen to be little more than a hollow shell containing either eggs or egg envelopes from which the "crawlers" have emerged.

After wandering on the food plant for a time the "crawlers" settle down and begin feeding. In some cases feeding-places selected by the "crawlers" become the permanent abode of the scale, while in others the insects may migrate later in life. Once the "crawlers" have settled the upper surface of the body becomes hardened and thickened and remains so, at least in the case of females, throughout life.

The female insects during growth cast their skins or moult twice, but they differ from the shielded scales in that the legs and antennæ are not lost but always remain, although often in a comparatively reduced form. In the case of the males, which usually moult three times before reaching maturity, the first nymphal stage is similar to that of the female, but in the second stage the male forms a cocoon, which is usually a partly depressed, thin, glassy, or waxy covering. Beneath this covering the male moults twice more, and ultimately emerges as a two-winged insect, similar in appearance to the males of the shielded scales.

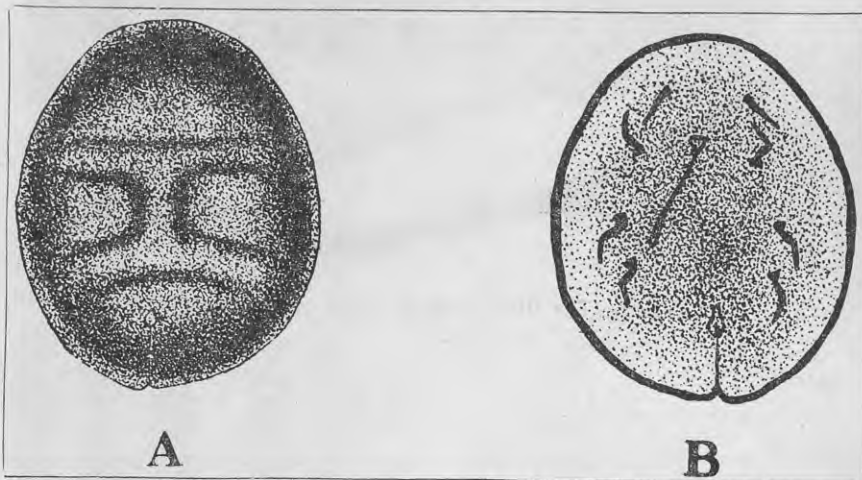


Fig. 1.—The Olive Scale—typical of the unshielded scales. A: Dorsal surface of scale insect. B: Ventral surface of scale insect.

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The Olive Scale.

The Olive Scale (*Saissetia oleae* Bern.) is convex and about 3 mm. long when full grown. The colour of the adult scale is very dark brown or almost black, the younger stages, however, are usually distinctly brown. The surface is roughened, and a characteristic feature is the presence of a raised H-shaped marking on the scale, this feature being present in both immature and mature scales (Fig. 1).

Life-history and Habits.

In New Zealand this species may be found in all stages during the winter. A large number of eggs is produced by each female, the number having been estimated at over fifteen hundred. It is commonly considered that there is only one generation each year and that the scale takes about three months to reach maturity. The egg-laying period commences about five weeks after maturity and proceeds for about six weeks. Observations in the Auckland district show that the young forms of this insect are abundant in October.

The Olive Scale infests the more woody parts of citrus—viz., the twigs, small branches and leaves, especially along the mid-ribs. The more succulent parts, such as the fruit, are apparently not so suitable as feeding-grounds.

The scale exudes copious supplies of honey-dew, on which the black sooty fungus grows. Consequently, infested trees usually show a more or less sooty coating on the woody parts, and where the scale is plentiful fruit and foliage is rendered unsightly.

Hosts and Distribution.

Recorded food plants include citrus, oleander, rose, guava, pear, palms, apple, apricot, plum, grape-vine, wisteria, peppertree, holly, laurel, camellia. It is also said to infest various native trees.

The scale has a world-wide range, having been recorded from North and South America, Italy, Australia, Algeria, Assam, South Africa, China, Eritrea, France, Philippines, Tunisia, Spain, French North Africa, Tunis, Morocco, Finland, Transcaucasia, Porto Rico, Bermuda.