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SCALE INSECTS ON SHADE TREES and SHRUBS  
and REMEDIES FOR THEM.

**Appearance and Habits.**- Scale insects are so called because of the scale that covers or constitutes the back of most of them. This scale may be horny, leathery, waxy, cottony, or mealy and just as various in size, shape, and color. There are many species of scale insects and, according to the consistency of the scale, they are roughly divided into armored (horny) scales, soft (leathery) scales, cottony scales, mealybugs, etc. Except for a few days after hatching, when they are naked, these insects are nearly always covered by the scale characteristic of the species to which they belong. The number of generations annually, date of hatching, and other life history habits vary with the species, season, and location. They are all plant feeders, some confining themselves to a single species of plant while others occur on a great variety of plants. They occur on roots, main stems, branches, and twigs; some of them occur also on the leaves and fruit in summer. They feed on sap which, by means of their slender, flexible, needle-like beaks, they suck up from within the plant tissues. They are, therefore, classified as sucking insects. Some of them produce more or less honeydew which attracts ants, bees, wasps, etc., which eat it but do not harm the plants. Old honeydew frequently gives the affected plants a sooty appearance.

**Natural control.**- Like other insects, most scale insects are usually kept in check by a variety of natural agencies, especially parasitic and predacious insects. Under such conditions they do no permanent serious harm and require no remedial treatment. Quite often, however, some species become so numerous as to be very injurious and make early treatment imperative if the value or life of the affected plant is to be saved.

**Remedies.**- (See accompanying brief on Scale Insect Remedies.)

Being sucking insects, scale insects can not be killed by means of stomach poisons. They are controlled mostly by being covered at the proper season with a liquid substance which, without injuring the plant, kills the insect by either clogging its breathing pores or penetrating to its vitals, or both. The aim must be, therefore, to cover every individual insect that needs to be killed. The covering is effected by means of a spraying device which may be a tin atomizer, a bucket, knapsack, or barrel sprayer, or a power spraying machine, depending on the extent of spraying contemplated.

Winter spraying, done when the buds are dormant, is preferable for scale insects because (1) there is then no delicate foliage to injure and none to conceal insects or to use up spray; (2) dead and superfluous portions of the plant may and should then be removed, still further reducing the area to be sprayed and exposing the insects; (3) plants are then dormant and can withstand stronger sprays without injury.

Summer spraying, when imperative, is most effectively done when the young are at the height of hatching, i. e., crawling about in numbers.

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