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Brief Information on
SCALE INSECTS ON SHADE TREES and HARDY ORNAMENTALS
and REMEDIES EMPLOYED AGAINST 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), **soft** (leathery), **cottony** scales, **mealy bugs**, etc. Except for a few days after hatching, when they are naked, these insects are always covered by the scale characteristic of the species to which they belong. The number of generations annually, date of hatching and other life 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 the main stem, branches and twigs; some of them also on the leaves and fruit in summer. They feed on sap which, by means of the needle-like beaks, they suck up from within the plant tissues and are, therefore, classified as **sucking insects**. Some of them produce more or less honey dew which attracts ants, bees, wasps etc., which eat it but do not harm the plants. This honey dew frequently results in a sooty appearance of the affected plants.

Natural control.- With very few exceptions, scale insects are usually kept in check by a variety of natural agencies, especially parasitic and predaceous insects. As a rule, therefore, they do no permanent, serious harm and require no remedial treatment. Occasionally, however, some species are apt to become so numerous as to be very injurious. Treatment then is warranted, if otherwise practicable.

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

Being **sucking insects**, scale insects cannot 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, therefore, be to **cover every individual insect**. The covering is affected 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.

1 **Winter Spraying**, done when the buds are dormant, is **preferable** 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 (crawling about in numbers).

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