

DIFFICULTIES

Lilies are subject to certain disease and insect troubles with which the average lily grower will sooner or later become acquainted. As a rule these troubles will yield to proper control measures and lily culture in general need not be more difficult than the culture of any other plant group. Some species in this genus are an exception to this and it is not unusual to find them thriving in a flower garden.

Without much question, the most serious disease with which the lily grower has to contend is mosaic. Lily mosaic has been recognized in this country for only a relatively short time, possibly a dozen years, but the disease has undoubtedly been present for a very long time and probably has been responsible for many of the little understood vagaries of lily culture that have been reported in the older literature.

Lily mosaic is caused by several viruses. A virus might be defined as a sub-microscopic disease-producing agent which multiplies inside the cells of the plant in association with the protoplasm. They are not strictly living organisms like the fungi or the bacteria, but they do produce characteristic and serious symptoms which often destroy the usefulness of the plants in the garden or kill them outright. Lily mosaic is present only in living plant tissues. It is not present in the soil nor does it persist in dead material. It is, however, present in all of the cells of any affected plant either large or small and a plant once infected can never be freed from it. Fortunately for the lily grower, it is not transmitted from one generation to another through the true seeds. The lily virus is carried from diseased to healthy plants by plant lice (aphids) and possibly some other insects during their natural feeding habits. The insect sucks up the juice of an infected plant and when it subsequently feeds upon a healthy plant the virus is transmitted to the healthy host. There are virus diseases affecting many plants other than lilies, but most of these do not affect lilies directly. An exception to this is the tulip mosaic which can be transmitted to lilies.

The symptoms of mosaic are difficult to describe with accuracy because of variation in the response of various species and the differences in viruses themselves. Such variation may depend upon the species of lily, age of the plant, type of virus or mixture of viruses present in the diseased plant, whether infection occurred during the current season or earlier and the environment under which the plants are growing. The most commonly recognized symptoms are an irregular light and dark green flecking and mottling of the foliage of the infected plant. Such mottling bears no relation to the regular veination of the leaf and is thus distinguished from the regular mottling which occurs in chlorosis or the yellowing which is due to a deficiency of iron or magnesium. Here the pattern is regular, the veins being a darker green. Along with mottling, mosaic diseased leaves may also be badly distorted and twisted. With some species such as *L. formosanum* the flowers themselves may be distorted. *L. tigrinum* and *L. Sargentiae* show a streaked color pattern in the flower buds when infected with tulip virus. With some species the effect of mosaic infection is very pronounced. This is particularly true in *L. auratum* which if it becomes infected in the early stages of seasonal development will