

develop crook neck a few days after infection. In this species the growing point bends sharply downward within a few days after infection. The leaves become yellow and drop off and in the space of two weeks the plant will have died.

The difficult feature in the mosaic situation is that some species, particularly the *L. regale* hybrids, \times *L. testaceum* and the Dauricum-Elegans-Umbellatum groups mask the symptoms so that it is very difficult to determine whether or not they have mosaic. In general, mosaic symptoms are more easily detected during cool weather periods of the early growing season, particularly just as the plants have come through the ground and are beginning to elongate. At this time the lily grower who is trying to keep his plantings free from mosaic will examine the plants carefully for signs of mottling and breaking of the leaves and destroy the diseased plants.

Control.—The difficulty of detecting mosaic in all of its forms makes it practically impossible to rogue a partially infected planting so that all diseased plants are moved. The observant gardener can take out the most obviously diseased plants and with some species such as *L. auratum*, *canadense*, *superbum* and some others, can probably detect all infected plants. In infected mixed plantings, however, there are likely to be some symptomless carriers, "typhoid Marys," if you please, which remain after the careful roguing job is completed. Nevertheless removal of obviously diseased plants is distinctly worth while in the garden if there remain a considerable proportion of plants that are apparently healthy. The spread of mosaic is usually between adjacent plants and removing a diseased plant from a group of healthy ones may at least delay the infection of the others. Control of the aphid carriers of the viruses under outdoor conditions is never more than partially successful since enough carriers always remain to spread the disease. In localities where aphid infection is serious, it is worth while to control this insect as much as possible, but such control cannot be relied on as a sure method to prevent mosaic spread.

As a practical garden problem, mosaic can be handled according to a number of different methods. In a fairly large garden it is often possible to handle different areas in different ways. Such areas should be isolated from each other as far as possible by hedges, walls or shrubbery. Under some conditions the aphids carrying the virus may travel for a considerable distance especially with the wind. Ordinarily, however, the spread is likely to be among plants which are closely associated. These separate garden plots can be developed according to any one of several different plans. One of these would be to avoid mosaic altogether and plant only those bulbs known to be free from virus. This is a difficult thing to do unless all bulbs come from seedlings which have been grown in isolation. Bringing in any bulb from the commercial sources is likely to introduce mosaic into an otherwise clean planting. This can be effectively prevented if only species are brought in which show symptoms that can be recognized, as for example *L. auratum*, *formosanum*, and *canadense*. Diseased plants can be removed as soon as they show above ground. In such isolation gardens the utmost care should be used not to bring in either diseased lilies or broken tulips.

Another plan which may be followed with some success is to compromise with mosaic and be prepared to accept the limitations and inconveniences which