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HYBRIDIZATION IN THE GENUS VIOLA.

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(Continued from page 150).

As, however, the cleistogamous flowers are developed comparatively late in the season, their failure to produce normal seed can be utilized as a means of determining the hybrid nature of critical forms only by those students who have the opportunity of studying the violets after the showy petaliferous flowers have wholly or mostly disappeared, i.e., at a time when the amateur botanist generally considers the violet season a matter of the past.

Early in the season, before the capsules of the cleistogamous flowers are beginning to ripen, the hybrid nature of suspected plants can be most satisfactorily ascertained through an examination of the pollen of their showy, petaliferous flowers, as it is not only the sexual cells of the cleistogamous flowers which are affected by hybridization, but also those of the petaliferous ones. In other words, the whole sexual apparatus of a hybrid plant, including both male and female organs, is conspicuously deteriorated and incapable of normal functions.

The stamens of a violet flower have, as is well known, very short filaments, sometimes hardly visible to the naked eye. Their anthers, on the other hand, are broad and composed of two cells, separated by a rather conspicuous connective. The latter carries on its top a peculiar appendage which is generally brown or reddish brown. The anthers proper, that is to say, the portion of the stamens below the appendages, are placed close together and have the appearance of a cupola, from the centre of which emerges the pistil. In their cells they carry numerous pollen grains which, when normally developed, appear more or less triangular, quadrangular, or elliptic, depending upon the species and also on from which side they are viewed.