

While thus cleistogamic flowers appear to be common to a number of species of *Viola*, there are certain North American species in which they are absent, for instance, *V. pedata* and *rostrata*. In *V. striata*, *Canadensis*, *pubescens* and *glabella* we have observed a few instances where the last developed flower was merely rudimentary, but with no signs of producing any seeds, while such were produced by all the perfect ones on the same stem. And in *V. sarmentosa* we have not succeeded in detecting a single cleistogamic flower in our herbarium specimens, and not in *V. Langsdorfii* either. We hope, however, that Canadian botanists will re-examine these species in the field, more especially the two last mentioned, since it is very important to learn something about the structure of the cleistogamic flowers in general in others than those described above

#### VARIATION IN LEAF-OUTLINE.

When numerous leaves develop from the same bud as in the monopodial, acaulescent violets, certain variation becomes always more or less noticeable in the leaves. Those that develop first, before the flowers, are frequently different from the later ones, and in certain species, *V. papilionacea* and *palmata*, for instance, the first of these are generally cordate or reniform, but entire, while the later ones, sometimes, are more or less deeply lobed. In *V. sagittata* the variation in leaf-outline is quite considerable, and we have, sometimes, noticed a number of forms upon the same individual during one season, from the oblong-ovate to the lanceolate, with the base hastate, or from the deltoid, entire to the deeply lobed, the latter being characteristic of the so-called *V. emarginata*. Such variation seems largely due to the position of the leaves in the bud, but there are, also, cases where the nature of the surroundings seems to affect the leaf-shape. *Viola emarginata*, for instance, does not develop the deeply cut leaves except when it grows in rich soil and in shade; in open places and in sandy soil the leaves become entire and often quite narrow like those of *V. sagittata*. *V. palmata* has always the later leaves deeply lobed, when growing in woods, while *V. papilionacea* shows a pronounced lobation, when observed in damp, shaded places, along creeks, etc.