

Although much more conspicuous and pretentious in aspect the ordinary showy petaliferous flowers of our violets are of far less importance for the propagation of the individuals than are the cleistogamous ones. This is evident from the fact that only in few cases do they produce any seed. Their life generally ends with the withering of their petals, shortly after which all traces of the whole flower are gone. In most cases, there is no postfloral maturing of capsules because the ovules are incapable of developing into germinable seeds. The reason for this sterility is simply that, as a rule, the petaliferous flowers are not fertilized. They lack the ability of self-fertilization and are consequently dependent for their fertilization on outer agencies. Furthermore, special arrangements and morphological peculiarities of the sexual organs, the nature of which need not be described in this connection, tend to make self-fertilization extremely difficult, if not wholly impossible.

Under these circumstances it is evident that when seed is found developed in the capsule of a petaliferous violet flower, it must be regarded as the result of a cross-fertilization between two flowers. These two flowers may belong to the same individual, to two different individuals of the same species or to two individuals of distinct species. To which one of these three possibilities the development of seed in the capsules of petaliferous flowers is to be attributed in individual cases can only be determined by a study of the progeny raised from this seed.

That the capsules of petaliferous flowers in most species of our violets frequently produce germinable seed, is beyond doubt. Actual observation supporting this statement are, however, rather scant. Brainerd² states that though the infertility of the petaliferous flowers has often been observed, he has "during the past season (1903) found these capsules to be usually fertile." In the vicinity of Ottawa the same observations have been made on *V. Macounii* Greene and the writers believe they could be easily made on practically all species of acaulescent violets were these more closely observed.

That fertilization of petaliferous flowers really often takes place, is demonstrated beyond a doubt, by the frequent occurrence of hybrids between different species of violets. As the formation of hybrids through cross-fertilization of the cleistogamous flowers is wholly out of the question the mere fact of their occurrence must necessarily prove that fertilization of and seed formation from petaliferous flowers often occur.

²Rhodora, Vol. 6., p. 10.