

The conspicuous vegetative development of certain wild violet forms, the systematic value of which may at first seem difficult to understand, may therefore often indicate, to the student of violets, their hybrid value. It must be understood, though, that however helpful be the general characteristics briefly hinted at above for the recognition of hybrids, the decision as to whether a suspected form be really a hybrid or not can be satisfactorily reached only through a minute study of its morphological and sexual characteristics. This means not only that a violet in order to be classified as a hybrid, should be intermediate between supposed species as far as vegetative characters are concerned, but also, and particularly, that the morphological and cytological development of its sexual organs should most strongly support its supposed hybrid nature. In doubtful cases, the functional capacity of the pollen and the ovula must really furnish the final decision on the question whether a certain individual should be regarded as a hybrid or not. Space will not permit that in this article European literature bearing upon the subject of hybridization as influencing the development of sexual organs in violets be quoted. This is also, in fact, unnecessary as numerous observations relating to the subject have been recorded in North America. This is especially true as far as the development of seeds in hybrid violets are concerned, in other words, as far as the development of, or rather the failure of development of the female organs is concerned.

Strangely, but as a matter of fact most naturally, contrasting with the luxuriant growth of the vegetative organs of a violet hybrid stands its more or less marked sexual impotence, i.e., its incapability, to a greater or less degree, of reproducing itself sexually. Generally a violet hybrid is markedly barren and although developing numerous capsules and ovules fails to produce an adequate number of germinable seeds.

A few quotations from one of the excellent papers of Dr. E. Brainerd³ on the subject will suffice. Thus, describing the hybrid plants between *V. septentrionalis* and *V. fimbriatula* Dr. Brainerd says that "in the late summer they produce numerous cleistogamous flowers and fruit, but nine-tenths of the ovules remain unfertilized."⁴ Observations on hybrid plants of the combination *V. cucullata* x *fimbriatula* also reveal the fact that specimens of the same in their cleistogamous flowers, develop capsules which either contain only a few ripened seeds or even become "brown and withered as though

³ Rhodora, Vol. 6. pp. 213-223.

⁴ l.c. 216.