

pubescens, *glabella* and *orbiculata* ought to be reckoned of the same group as *V. Canadensis*, but in these species as well as in the more southern *V. hastata*, the above-ground stems are readily seen to have developed directly from the rhizome and in the axils of leaves, pertaining to the terminal bud. In other words, their rhizome represents a monopodium just as typical as the one described above, with the only difference that in the one case only flowers develop, while flower-bearing stems develop in the other. These flower-bearing stems die down to the ground without leaving any basal buds for reproduction; this is secured by the terminal bud of the under-ground main-axis.

In *V. pedata* the rhizome is constantly vertical; it is rather short, but quite thick, and the primary root persists for about two years. In *V. papilionacea*, *affinis*, etc., the rhizome is horizontal, somewhat longer, but the internodes are barely visible. The thickness of the rhizome is in these species (B) as well as in *V. pedata* due to the swollen bases of the petioles, as we have described in a previously published paper.¹ In *V. primulaefolia* and its allies (E) the rhizome is quite slender, and these species are characterized by their more or less profuse development of long, very slender, subterranean stolons, each of which becomes terminated by a rosette of leaves like the mother-shoot, and in which the same monopodial branching takes place.

The peculiar instance of both caulescent and acaulescent flowers developed upon the same rhizome is illustrated by *V. rotundifolia*, as described above. However, our material was rather scant of this species, thus we were unable to make out whether the cleistogamic flowers are borne on stems that are aerial or subterranean under normal conditions.

In *V. sarmentosa* we have a type which is very different from all the others on account of its sarmentose habit. The stolons are, as it appears from our dried material, always above ground, inasmuch as they all bear typical stem-leaves, but scattered, not forming a rosette as in the monopodial species. None of our specimens showed any rhizome, but they were all developed from stolons, which had rooted and become separated from the mother

¹ Memoirs of the Torrey Botanical Club. Vol. 2, No. 3, p. 66.