

(fig. 9), and there are three stamens (fig. 12), of which, however, only two have both anther-cells developed. One of these stamens has always, as in the preceding two species, the connective folded around the style and stigma, as shown in figure 10, and the structure of the anthers and the connective is identical. The cleistogamic flowers are in this species, *V. sagittata*, constantly raised above ground on erect peduncles of quite considerable length, and it appears as if the position of these peculiar little flowers might constitute, if not a specific, then at least a sectional character. And in looking over the several species in which cleistogamic flowers occur, we notice that some of the acaulescent, woodland types: *V. papilionacea*, *Macounii*, and *villosa* show a tendency of burying the flowers in the ground, while the bog plants: *V. sagittata*, *blanda*, *lanceolata*, *primulæfolia*, *affinis* and *cucullata* always bear the cleistogamic flowers on erect peduncles; on the other hand, *V. emarginata* and *ovata*, both inhabitants of sandy, gravelly hill-sides, bear the flowers raised above the ground. This varied position observed in the cleistogamic flowers depends evidently upon the character of the substrate: humus, wet boggy ground or gravelly soil, besides that, the atmospheric conditions may not be excluded. If the flowers and fruits of the bog species were buried in the wet moss, they would, no doubt, be exposed to decaying, and it seems very natural that *V. affinis* always bears these flowers raised above ground, when it occurs in swamps or wet meadows, while it partly buries them in the ground, when growing in thickets, border of woods, etc.

Very peculiar is the mode of growth observed in *V. rotundifolia*. The perfect flowers are in this species plainly developed from the axils of the basal leaves: acaulescent, while the cleistogamic are borne in the axils of cauline leaves: caulescent; it appears as if the stems which bear the cleistogamic flowers in this species are mostly subterranean, but we have seen one instance, however, where a stem bore a few green leaves instead of merely scale-like. In *Viola orbiculata* it is interesting to see that two sets of aerial stems with green leaves and flowers develop in the same season, and that the flowers of the first set are perfect and very showy, though sterile, while the later developed are all cleistogamic and closed, but produce seeds.