

PRACTICAL BOTANY.

No. III.—THE VIOLETS.

About ten species of violet are found in these Provinces, including the pansy of the gardens. This latter finds a place among wild flowers because it shows a tendency to escape from cultivation. It may often be seen growing wild, but a neglected garden in the vicinity will perhaps indicate whence it comes.

Most of our violets appear in May, but the present season is so late that June will be here probably before many of them are found in full bloom. These plants present so many interesting features that they may be made the subject of several consecutive lessons, and indeed may be studied throughout the summer. It is difficult to determine some of the species; but let the first one before the class, perhaps the common white violet, be thoroughly studied, and you will be surprised how readily the quick-witted pupils will notice differences between it and others. (How many know only two species of violet—the common white and the common blue violet; and yet we have three or four species of white violet, several species of the blue and violet blue, one white tinged with blue, and another yellow. All of these may not be found in one locality, but have the pupils institute a thorough search in their neighborhood and perhaps half of the total number of species may be found).

Let us look at some of the General Characteristics of this family of plants. We may conveniently arrange violets into two classes,—the first comprising those species which have leafy stems, and the second those in which the stem is underground, the leaves and flowers from which appear to spring directly from the ground. Notice that in both classes the root-stock or part below the soil is an underground stem, which sends out slender fibres (the real roots) in every direction. This root-stock has certain characters belonging to a stem which a real root never possesses, such as scales or rudimentary leaves, runners or subterranean branches which are produced later in the season. These runners sometimes produce small flowers. Flowers? When and where shall we look for them? What are they like? Yes, they are flowers, and you will require to search carefully for them. Later in the season and throughout the summer, if you examine the common white violet you will find small inconspicuous flowers, without any white petals. They are very minute and look like tiny buds. They may be found among the clusters of leaves, under or around which they are almost hidden. Sometimes they are found beneath rubbish about the roots. Although these flowers have no petals, they have distinct sepals (how many?) closing

tightly around a pistil, with rudimentary petals (how many?) and stamens (how many?) Thus it will be seen that these flowers possess all the parts that flowers usually have—pistil, stamens, petals (incomplete and only rudimentary) and sepals. They are of great importance, however, as several species only perfect seeds by means of these little flowers. A small magnifying glass may be needed to make out some of the parts.

Probably the first violet brought into class for examination will be a stemless variety—either the common white or the blue violet. Have the pupils sketch the plant as a whole and then by parts. Commence at the root-stock. Try to familiarize the pupil's mind with the idea that it is an underground stem. Name other plants that have stems which lie on the ground or under it—the Solomon's seal (an interesting example), the raspberry, the couch-grass, the potato and many others. The leaves rise from the root-stock on wide petioles. They may differ somewhat in shape even on the same plant (this is especially the case with the two common species above named), but their general shape may be determined after careful comparison and study. The flowers are borne on the end of a stalk called a scape (notice whether there are any little bracts on this scape). The calyx with its five green sepals forms a cup for the rest of the flower (notice if there are any flower buds, how this protects the more delicate parts inside). Notice the appendage or little ear at the base of each sepal. The corolla has five petals. Let each petal be pulled off and sketched separately, describing particularly the size, veins, bearding. Notice that the lower petal is somewhat larger than the others and prolonged backwards to form a spur. (Whether this spur is long or short, stout or slender, is of importance further on in assisting to determine one species from another). This spur or sack serves as a reservoir for nectar. (Bees, butterflies and other insects visit flowers to obtain this nectar, which some of them elaborate into honey. Is the plant robbed of its nectar by these insect plunderers or does it receive anything in return? The more advanced pupils may be told that flowers are fertilized by the agency of insects. (Read Sir John Lubbock's "British Wild-flowers in relation to Insects," or Gray's "How Plants Behave.") Sometimes the side petals alone are bearded. Notice how the stamens closely surround the pistil. They are short, and it may be noticed that some are slightly united at the base. How many stamens? What are the anthers? What do the anthers contain? What are the filaments? What do you notice about those filaments that are opposite the lower petal of the corolla? Point out the pistil and