

in which a child comes under those influences are more than balanced by the hours of school and play. Instruction in good living, if it be not continuous, like daily bread and sunshine, is of small account; and instruction in good living given constantly, with simplicity, with heartfelt sincerity and kindness, is what children especially need to receive from their teachers. What shall it profit a boy, if he leaves school skilled in figures, but untaught in many honours that would make him an upright man of business? Or a girl, if with her grammar and her rhetoric, she has not learned to speak the words of truth, of righteousness, of Christian charity?"
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BOTANY IN THE SCHOOLS. III.

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In our last paper an outline, necessarily brief, of the examination of a Buttercup was given, and it was suggested that the examination should be followed up by that of the Hepatica, or some other common plant of the same Order, so that it might be seen why such plants are grouped together. We propose in the present number to indicate how such an examination might be conducted, and then to pass on to a plant of another group, furnishing an illustration of marked differences in the structure of the flower. For purposes of comparison, the following figures of the various parts of a Buttercup are given:

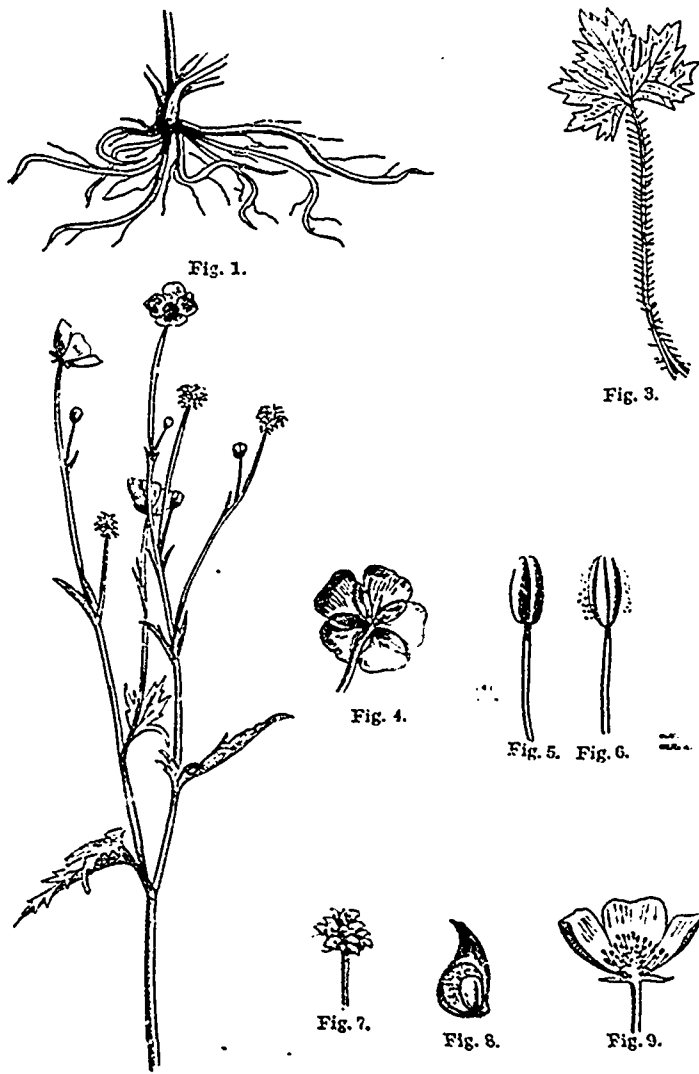


Fig. 2.

Fig. 1. Fibrous root of a Buttercup. Fig. 2. Stem of same. Fig. 3. One of the radical leaves. Fig. 4. Back of a flower, showing sepals and petals. Fig. 5. Stamen. Fig. 6. The same discharging pollen. Fig. 7. Head of carpel. Fig. 8. A carpel magnified and cut through to show the ovule. Fig. 9. Section of a flower.

The root of the Hepatica as shown below (Fig. 10) is not very much different from that of the Buttercup. It may in like manner be described as *fibrous*. The next point is the stem. In the Buttercup it will have been observed that the stem is that part from which the leaves spring. Examining the Hepatica in the light of this fact, and following the petioles of the leaves down to their insertion, it will be found that they and the roots appear to spring from the same place—that there is apparently *no stem*. Plants of this kind are therefore called *acaulescent*, that is *stemless*; but it must be pointed out that the absence of the stem is only apparent. In reality there is one, but owing to the suppression of the internodes, it is so short as to be almost indistinguishable. The leaves of this plant must, therefore, be all *radical*.

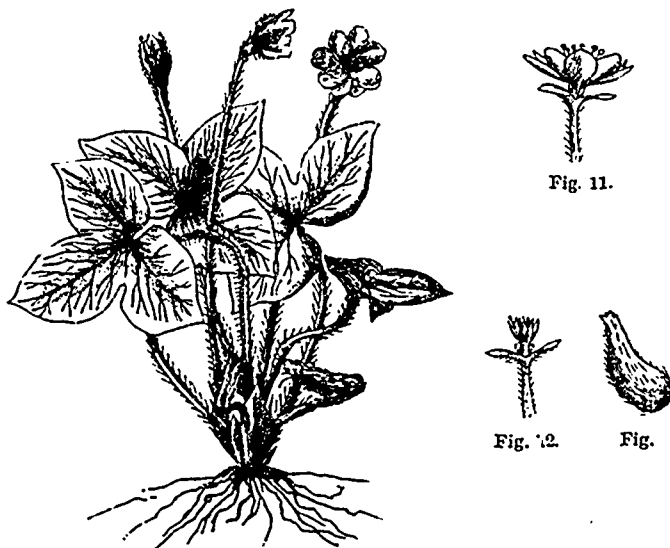


Fig. 10.

Fig. 10. Hepatica. Fig. 11. Flower of same with three bracts underneath. Fig. 12. Head of carpel. Fig. 13. Single carpel.

The flowers of the Hepatica are all upon long peduncles, which, like the leaves, appear to spring from the root. Naked peduncles of this kind are described as *scapes*. The flower-stalk of the Dandelion is another example. In examining the flower itself the same order may be observed as in the previous examination. Just beneath the coloured leaves there are three leaflets, which, at first sight, will almost certainly be regarded as a calyx. If these leaflets, however, be carefully turned back, a *short bit of stem* will be found between them and the coloured part of the flower. As they are, therefore, *below* the receptacle, they cannot be sepals, but are simply *bracts*, and the flower, from the absence of one of the four sets of floral organs, is *incomplete*. If we followed the analogy of the Buttercup, we should be disposed to consider the coloured part of the Hepatica as a corolla; but there is an understanding among botanists that when only one set of floral envelopes is present, that one must be the calyx, whether coloured or not. Our flower is consequently *apetalous*. Removing the colored sepals, what is left of the flower very much resembles what was left of the Buttercup after the removal of the calyx and corolla. The stamens are very numerous, and are inserted on the receptacle. The carpels are also numerous, and are inserted on the receptacle, and are free from each other (*apocarpous*). And an examination of one of the carpels shows that it contains a single ovule. On the whole, then, it appears that while there are undoubtedly differences between the Buttercup and the Hepatica, yet the *structure of their flowers* is strikingly alike. The parts are all separate from each other and inserted on the receptacle, and the stamens and carpels are in each case numerous. There are also other grounds on which these plants are classified in the same Order, but the above will be sufficient for an introductory lesson.