THE CANADA FARMER

VOL. V. No. 10. TORONTO, CANADA, MAY 15, 1868. POSTAGE FREE.

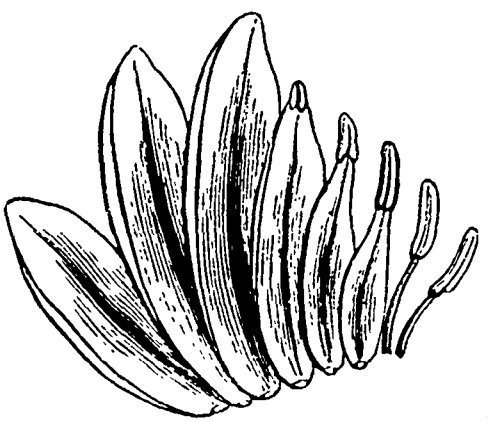
The Field.

The Reproductive Organs of Plants.

In former articles we have given a brief outline of the leading principles of vegetable structure and growth, under the heads of the Seeds of Plants, Germination, the Root, the Stem, and Leaves. To complete the summary, it now only remains to notice the Flower, or reproductive system of Plants. There is the closest analogy between a flower and an ordinary branch. Both spring from a bud, on similar situations of the stem; both follow the same order of arrangement, and in irregular or redundant growths one is frequently transformed into the other. The proofs and illustrations of the analogy of the two structures are numerous and extremely interesting, but cannot be more than merely alluded to in a notice of this brief and elementary character. It will be sufficient here to state that the flower is a branch, shortened and modified in a particular manner for the purpose of producing not buds for the growth of the individual, as in the case of ordinary branches, but seeds capable of independent growth, and destined for the perpetuation of the species.

As the whole flower is a modified branch, so are the separate parts of a flower modifications of leaves. The transition, indeed, is often very beautifully manifest, and the frequent substitution of one for the other, affords striking evidence of the truth of the theory. The parts of a complete flower are as follows:—An outer circle of small leaves, usually green, forming the flower-cup or *calyx*. The separate leaflets of the calyx are called *sepals*. Within this is another circle of generally larger leaflets, usually of some bright colour, and of very delicate texture. The whole forms the *corrolla*, and the separate members are termed *petals*. Every one at all familiar with these beautiful formations knows that there is an endless diversity in both these parts of a flower. Sometimes the calyx is absent or deciduous. In other instances it is persistent after the corrolla has perished, and forms either a covering or a conspicuous appendage of the fruit. Again, this outer circle may assume the bright hues and the general appearance of the corolla, as in the fuschia and other familiar examples; or it may indeed take the place of the corrolla altogether, the latter being absent, or only rudimentary in the form of minute and inconspicuous scales.

These, though commonly the most showy portions of the flower, are nevertheless but the outer covering of the more important parts. They are merely the floral envelopes. The essential parts are yet to be noticed. Springing usually from the base of the petals, but sometimes adherent to them more or less, is a circle of delicate organs called stamens, consisting of a slender stalk or *filament*, supporting a slightly enlarged head called the *anther*, usually two-lobed, and filled with a powdery substance, called *pollen*, which, when the flower is fully developed, is discharged through a fissure or opening of the anther,



and serves to fertilize the innermost organ of the flower containing the ovule or infant seed. This centre portion is the seed-vessel or pistil, and consists, where all the parts are fully developed, of the

ovary at the base, enclosing the seed, and bearing a single or divided prolongation from the summit, called the *style*, capped by a slightly dilated head, the *stigma*, which is moist, and destitute of the usual covering or cuticle that envelopes nearly every other part of a plant. As might be expected, the filament of the anther and the style of the pistil are not always present, neither being essential to the organ. Where the flower is comparatively erect, the stamens usually surmount the pistil, and the pollen from the anther drops on to the adhesive surface of the stigma below. But in pendulous or drooping flowers, where the relative position of the parts is reversed, a corresponding modification is seen in the development of these organs. The style is then much lengthened, and carries its head beyond the stamens, so that, as the flower hangs downwards, the latter will still be above the stigma, in such a position as to shed their contents on the stigma below them. A beautiful instance, one among myriads, of the perfect and marvellous adaptation in even the most minute details of the handiwork of the great Creator. There are no oversights or mistakes in His creations.

It is easy to trace the analogy of the first of the floral envelopes, the calyx, to a circle of leaves, the transition and resemblance being often very manifest; and again, it is not difficult to see the close analogy of the next circle of petals to the sepals of the calyx, and consequently also to leaves. The transformation of structures essentially similar into stamens, and even into pistils, is equally evident in nature; and one of the best examples of this analogy is found in the white water lily (*nymphæa odorata*), where the gradual transition can be very distinctly seen, as shown in the accompanying illustration, which represents a single member of the different circles of the flower. In this and similar flowers the circles are multiplied, and the gradation becomes more evident than in ordinary flowers where the parts are fewer and distinct. Any one can verify this statement by examining a flower of this beautiful plant, which is not uncommon in still and shallow Canadian waters. In our orchards, gardens, and fields, we also frequently meet with monstrous growths, in which the very central parts of the flower revert to their original type, and expand into green leaves, or even slender leaf-bearing branches. One of the nearest approximations to the leaf type of the pistil, is seen in the pod of the pea and other leguminous plants, in which the resemblance to a leaf folded inwards and bearing buds on its edges is very apparent.

The accompanying illustration of the Spring Beauty (*Claytonia Caroliniana*), almost the only common blossom to be met with at the present time, though not a flower of the most regular type, may nevertheless serve to show clearly the several parts which have been enumerated.

The members of both calyx and corrolla are frequently coherent, forming cups or tubes of various forms with a lobed and expanded border. The