

that the members of each of these whorls are in their nature identical, and the same as if they were whorls of ordinary leaves, brought together by the shortening their common axis, and modified in form by the successive elaboration of their nutriment. Further, according to this view, a whorl of leaves itself is to be considered as identical with several detached leaves dispersed spirally along the axis, and brought together because the axis is shortened. Thus all the parts of a plant are, or at least represent, the successive metamorphoses of the same elementary member. The root-leaves thus pass into the common leaves;—these into bractæ;—these into the sepals;—these into the petals;—these into the stamens with their anthers;—these into the ovaries with their styles and stigmas;—these ultimately become the fruit; and thus we are finally led to the seed of a new plant.

Moreover the same notion of metamorphosis may be applied to explain the existence of flowers which are not symmetrical like those we have just referred to, but which have an irregular corolla or calyx. The papilionaceous flower of the pea tribe, which is so markedly irregular, may be deduced by easy gradations from the regular flower, (through the *mimoseæ*,) by expanding one petal, joining one or two others, and modifying the form of the intermediate ones.

Without attempting to go into detail respecting the proofs of that identity of all the different organs, and all the different forms of plants, which is thus asserted, we may observe, that it rests on such grounds as these;—the transformations which the parts of flowers undergo by accidents of nutriment or exposure. Such changes, considered as monstrosities where they are very remarkable, show the tendencies and possibilities belonging to the organization in which they occur. For instance, the single wild-rose, by culture, transforms many of its numerous stamens into petals, and thus acquires the deeply folded flower of the double garden-rose. We cannot doubt of the reality of this change, for we often see stamens in which it is incomplete. In other cases we find petals becoming leaves, and a branch growing out of the centre of the flower. Some pear-trees, when in blossom, are remarkable for their tendencies to such monstrosities.³ Again, we find that flowers which are usually irregular, occasionally become regular, and conversely. The common snap-dragon (*Linaria vulgaris*) affords a curious instance of this.⁴ The usual form of this plant is “personate,” the corolla being divided into two lobes, which differ in form, and

³ Lindley, *Nat. Syst.* p. 84.

⁴ Henslow, *Principles of Botany*, p. 116.