## BOTANY.

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This is the month of Compositae. The golden-rods and asters are everywhere. May we make a little closer acquaintance with the family? Very few characteristic marks are necessary to distinguish it. Before giving any, however, I suggest a careful examination of the flower of the dandelion, large blue aster or daisy, and a thistle or burdock.

In the dandelion, how do we know that each yellow petal-like division is not a petal? Pull one out. What do we see besides the "petal?" Notice the pistil with its curled two-pronged stigma. Taking this pistil near its top, gently pull it. It pulls out of a sheath. What is this sheath? With a pin, separate it into five divisions, each of which is attached by a slender filament to the "petal" below. The sheath proves to be nothing less than five stamens, whose long, slender anthers grew together round the style. Is this "petal" really the shape of an ordinary petal? Notice that it is goblet-shaped at the base; and one side of the goblet is prolonged into what we at first thought was a petal. In fact, this is a whole flower. We already noted its pistil and its five stamens.

The numerous white hairs attached to the seed below the corolla are in the right place for sepals. They do not look like sepals, but on account of so many small flowers growing in such a compact mass, sepals were not needed. Instead of throwing them away, however, the plant found another use for them. Every child knows what that use is. Any windy day after a dandelion has gone to seed, it gives a free demonstration of its ability to fly over a neighboring field, where it may have more room to grow. True, it cannot alight on any desired spot at will; but each plant sends so many seeds out over the fields that some must fall on favorable soil. It is a game of chance. Many are wasted. But, from the gardener's point of view, too many find a suitable lodging.

The dandelion corolla shows that some of its ancestors had five distinct petals. How fortunate for the botany students of the present day that those five teeth are at the end of the corolla — giving mute evidence of part of its evolution! The five petals grew together, and started to roll into a tube. But, for some reason, they gave it up.

Now look at the small central flowers of the aster or daisy. Here, the corolla is completely rolled into a tube. Otherwise, the structure is practically the same as in the dandelion. But with the flowers thus rolled, the corolla seemed to be defeating its own purpose. By rolling into a small tube and placing some nectar at the bottom the plant made a visiting insect work for its living. In thus working, it came in closer contact with all parts of the flower than in the case of a flat, open flower. But this scheme had a serious drawback. When the corolla is completely rolled up, insects could not see it very far away. The habit of clustered flowers was some assistance. One enterprising plant, however, somewhere in the distant past, hit upon a plan that has worked well. It left part of its flowers flat to attract the attention of insects; and rolled the rest to keep them working when they arrived. Since the wants of various insects must be catered to, various sizes, colors and arrangements have been adopted. This gives rise to various genera and species.

This plan of a few outer rows of flowers with flat corollas and inner ones with tubular corollas has persisted in such plants as the daisy and may-weed; the ragworts, of which we have four or five species; the golden-rods, about a dozen species; the asters, also of more than a dozen species; the fleabanes, coltsfoot, coneflower, yarrow, and bur-marigold.

But there is often more than one way of meeting a difficulty. Some other plants of similar structure left their corollas rolled up, but increased their size or the size of their clusters. These, too, have in process of time assumed many forms. Here belong such plants as the thistles, burdock, tansey, everlasting, boneset, and mugwort.

Belonging to the group that never rolled their corollas are the dandelion, fall-dandelion, cichory, hawkweed, white lettuce, sow-thistle, goat's beard and others.

As various as these plants seem to be, however, they all agree in having clustered flowers (in heads), surrounded by an involucre of few or many bracts; and each individual flower having its fine anthers joined, forming a tube round the style. After all, it is an easy family to identify. There is much more difficulty, however, in determining all the species of some of the genera.

Because of the variety of ways this family of plants has worked to secure the cooperation of insects and the wind in pollinating and scattering its seeds, botanists class it as one of the most highly specialized groups. It is at the top in the