

mediate grades learn entirely through observation. Cultivate a love for nature by bringing them in contact with nature. A little school-room work in germination will give an increased interest to the naturally observant child, and open the duller eyes of his companions. If botany is to be taught only in the spring—as it unfortunately too often is—April is the time to begin, because it is so soon afterwards that the countless seedlings of maples and other plants are the most important phase of plant life.

In the lower grades too much detail must be avoided. Let the children, however, first see and study the appearance of the seeds to be planted; let them open soaked seeds which reveal within the tiny plant. Previous to the beginning of these lessons, some seeds, as beans, peas, etc., should be planted, so that the seedlings will be ready for study as soon as the work on the seed is done. How interested the children will be in noticing the change of color in the cotyledons, and how closely these hold themselves over the plantlet until the tender little thing is far out of the ground. This indoor work opens mind and heart to the beginning of life out doors with which they soon come into daily contact. With opened eyes the child now goes out to observe, and delights in what the untrained child quite fails to see.

A little later flowers will form the chief attraction to the children, and many of the most happy lesson hours can here be spent. It is not necessary to burden a child's mind in the lower grades with the names of the parts of the flowers, for this knowledge will be of little use. Interest the children rather in the color, the habits and haunts of the flowers, and the order in which the flowers come. Take, for example, the violets, which can be abundantly found. They will soon learn and will not easily forget that the violets are among the earliest flowers, that the sweet-scented, small, white ones grow in wet, swampy places, and that the blue violets, with short stems, prefer the sandy places, while others, with long stems, grow in the wet places with the white ones. If the haunts of many flowers are marked and remembered, the later seasons will reveal the fruit. It is evident that we must teach children to *love* plants if we would have them *know* plants; we must inspire them with a sort of interest which results almost in devotion; we must keep their observing powers ever on the alert.

The work thus begun in the lower grades may be carried on in the fifth, sixth, seventh and eighth grades with advance steps in each. The interest must still be maintained by simple, plain teaching. In connection now with the learning of the parts of the flower may be

taught the function of each part. The children in the country may not have observed the insects' visits to the flowers, and even if they have, may not know how important a part bees, butterflies and many insects play in carrying the pollen from one flower to another, and thus fertilizing it. The bumble bee, for instance, is the only insect which can cross fertilize the red color; thistles are beloved of butterflies; the common Blue Flag, or Iris, from its large and showy blossom, from its size and shape, from its *blue* color, makes itself especially attractive to the bee, and because of the position of its stamens and pistils cannot be fertilized in any other way than by insect visits. Teach children that the colors of flowers are intended only indirectly for our pleasure, that "Nature's first consideration is the bee;" that she uses her color to attract the insect and the bird for purely practical purposes. In this simple study of the flower a teacher could linger for many lessons over the significance of the color, form and fragrance of flowers. Interest the children in the color in the large proportion of sweet-scented white flowers—a proportion of 14.6 of white to 8.2 of red—a fact accounted for by the need of making themselves conspicuous because of their dependence upon night flying insects; interest them also in the bright markings of the nectar guides, which lead an insect to the nectar, and at the same time insures cross fertilization. These wonders which lie at our very feet are not too difficult for children to learn. Through these channels an almost irresistible charm is, early in life, attached to the flowers.

Then, too, in these grades the variety of form and shapes of leaves may be studied; the stem and twigs, the roots and rootlets. Here in the teaching of nature lessons belongs the composition work. After a lesson taught, for instance, on the lilac twig, with its almost bursting buds covered by scales to protect from winter's cold the delicate leaves and flowers—after this study, I found the children anxious and proud to sketch the twig and tell of the change which spring would bring. In no way can they so well impress upon their minds the points which they have observed as by careful and frequent sketching.

Nature, so far, has altogether been the teacher, but in the ninth grade the text-book must be used. We cannot, however, teach Gray's "How Plants Grow," without still learning from Nature. We regret the absence of laboratory and microscope in the school-room, for their importance cannot be too highly estimated. These bring, what is always so welcome, first-hand knowledge and the power to be an investigator; the result is the gaining of accuracy in statement, the power to reason, and the priceless habit of observation.