

2. COLLECTING AND PRESERVING BOTANICAL SPECIMENS.

I doubt not many of your readers will be glad to have some suggestions and directions as to the best methods of collecting and preserving botanical specimens; and also as to the best means of engaging the attention of the scholars in the observation of objects of Nature, particularly of the plants which grow every where around them.

A very good and convenient press for making specimens consists of merely two pieces of planed boards, each about fourteen by twenty inches, and with two clests screwed across each board to prevent them from warping or splitting. Next provide an abundance of paper for dryers. Common wrapping-paper will do, about twelve by eighteen inches in size, or newspapers folded to that size will answer. Then we want a quantity of white printing paper, of about the same size. Newspaper, folded to the proper size, will answer for many plants, but the white printing paper is best.

Now, how much of a plant shall we take for a specimen? I answer, whenever the plant is small enough to go into a sheet 10 by 16 inches without much crowding of the parts, take the whole plant. Let it be in flower, or better, in flower and fruit, and take the root also, or a part of the root, if it is large. The principle is to have as fair and full a representation as possible of all the parts of the plant. The roots, or the bulbs and tubers, of some plants are important characters, and some times furnish distinctive marks. To make good specimens of Claytonia or Spring-beauty, it is best to dig up the tubers, which are buried several inches in the ground, and not to separate the stems from the tuber; they may be thinned out, however, where they are too numerous. The same rule should be observed with respect to specimens of Trillium, Erythronium, Scilla, Allium, and some Orchidaceous plants. When the tuber or bulb is large and bulky, it may be reduced to a convenient size by slicing off longitudinal pieces. Some long and slender plants, as grasses, can be easily bent once or twice, so as to include the whole in a single sheet. But where the plant is too large to be used entire, we take a portion, as a branch with leaves, flowers and fruit, if possible. In some cases we have to take specimens of a plant at different times, in order fully to represent its characters: for instance, some Willows, the Elms, and some Maples, develop their flowers and nearly mature their fruit before the leaves are fully expanded. In this case we get first specimens of the flowers, and afterward of the leaves and fruit in the order in which they appear.

Now, suppose we are ready to prepare botanical specimens. We first lay down one of the press-boards, upon which we place five or six sheets of the drying-papers. Next the specimen is to be spread out, as naturally as possible, in the white sheet. Of small plants several specimens may often be placed in one sheet. This sheet, containing the specimen or specimens, is next to be placed on the layer of dryers, and five or six sheets of dryers to be placed above it. Now, if we have any more specimens, we may fill another white sheet and place on it more dryers, and so alternate them until we have in press all the specimens we wish. The object of these dryers is to absorb the moisture from the plants. To effect this, we apply the other press-board above, and upon it we place a heavy weight, not generally less than fifty pounds, and for most plants, especially when there are many in the press, one hundred pounds will not be too much. The usual custom is to leave the press in this state, without change, for twenty-four hours, then to remove the dryers, which have by this time become damp with the moisture absorbed from the plants, and replace them with fresh ones; then re-apply the weights and leave them another day, repeating the change of dryers daily until the moisture is entirely removed from the specimens, which usually require about a week: some succulent plants will require a longer time. The damp drying-papers may be prepared for use again by half an hour's exposure to a hot sun, or by holding them before a fire.

It frequently happens, after a lot of plants have been in press for one, two or more days, we want to introduce more specimens. In this case we should separate those which are partially dry from the fresh ones, by intervening a piece of oiled cloth or oiled paper. This should be done for every new addition to the press. When dry, the specimens are to be carefully transferred to the Herbarium. We shall be more sure of making good specimens, and shall make them in less than half the time, if we change the dryers twice per day. With some delicate plants this is essential in order to preserve the colors of the flowers.

The process of making botanical specimens involves a considerable amount of labor. True, it does; but it will pay. No person can become an accurate botanist without a Herbarium; for well-prepared specimens may be kept any length of time, and are always ready for examination and comparison. Besides, a good Herbarium is a source of pleasure, and nothing is more suitable for a place on

the parlour table, even though it contains only a source or two of plants. Much intellectual enjoyment and pleasure may be derived from such a collection. The Ferns and Mosses, especially, make beautiful specimens, well worthy a place in every lady's cabinet of curiosities.—George Vasey in *Illinois Teacher*.

3. THE BIRD AND THE QUADRUPED.

With what a glance of scorn may the weakest bird regard the strongest, the swiftest of quadrupeds—a tiger a lion. The bird needs not to seek the air that he may be reinvigorated by touching it. The air seeks and flows into him; it incessantly kindles within him the burning fires of life. It is this, and not the wing, which is so marvellous. Take the pinions of the condor, and follow its track, when from the summit of the Andes, and the Siberian glaciers, it swoops down upon the glowing shore of Peru; traversing in a moment all the temperatures of the globe, breathing at one breath the frightful mass of air,—scorching, frozen, it matters not. You would reach the earth, stricken as by thunder. Strength makes joy. The happiest of beings is the bird, because it feels itself strong beyond the limits of its action; because cradled, sustained by the breath, it floats, it rises without effort, like a dream. The boundless strength, the exalted faculty, obscure among inferior beings, in the bird is clear and vital, of deriving at will its vigour from the material source, of drinking in life at full flood,—is a divine intoxication.—Jules Michelet.

4. THE CROW'S VALUE TO THE FARMER.

Whatever wrong the Crow commits against the cultivators of the soil may, by a little painstaking, be materially lessened or wholly prevented. The benefits he confers are both numerous and important. During the time he remains with us he destroys, so says no less authority than Wilson, "myriads of worms, moles, mice, caterpillars, grubs and beetles." Audubon also affirms that the Crow devours myriads of grubs every day of the year,—grubs which would lay waste the farmer's fields,—and destroys quadrupeds innumerable, every one of which is an enemy to his poultry and his flocks. Dr. Harris also, one of the most faithful and accurate observers, in speaking of the fearful ravages wrought in our grass-lands and gardens by the grub of the May-beetles adds his testimony to the great services rendered by the Crow in keeping these pests in check. Yet here in Massachusetts, regardless of such testimony in their favor, we have nearly exterminated these birds, and the destructive grubs, having no longer this active enemy to restrict their growth, are year by year increasing with a fearful persistence. We have seen large farms, within an hour's ride of Boston, in which, over entire acres, the grass was so completely undermined and the roots eaten, away that the loosened turf could be rolled up as easy as if it had been cut by the turfing spade. In the same neighbourhood whole fields of corn, potatoes, and almost every kind of garden vegetable, had been eaten at the root and destroyed. Our more intelligent farmers, who have carefully studied out the cause of this unusual insect growth, have satisfied themselves that it is the legitimate result, the natural and inevitable consequence, of our own acts. Our short-sighted and murderous warfare upon the Crow has interrupted the harmonies of nature, disturbed her well-adjusted balance, and let loose upon agriculture its enemies with no adequate means of arresting their general increase.—By T. M. Brewer, in *Atlantic Monthly*.

IV. Biographical Sketches.

1. HON. J. E. SMALL.

Judge Small was in the 72nd year of his age, having been born in February, 1798. He was a native of York (now Toronto), his father being clerk of the Executive Council. Early in life he entered the legal profession which he pursued with much success. He took great interest in political affairs, and ranged himself with the reformers of those days when they were battling for responsible government against the Family Compact. In 1839 he went as a commissioner to the Home Government touching the questions which had agitated and were still agitating the country. Shortly after the union between Upper and Lower Canada was effected, he became the first member for Toronto. In September, 1842, he entered the government of Mr. Baldwin as Solicitor-General for Upper Canada, and in December of the same was made an Executive Councillor. Upon a change in the government he retired, though much pressed to remain, and did not afterwards engage, to any considerable extent, in political affairs. In October, 1849, he was appointed Judge of the County of Middlesex, remaining so till his death, a period of twenty years. *London Free Press, May 29.*