

NATURE STUDY No. XXXVIII.

SCHOOL EXHIBITS OF PRESSED PLANTS.

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Largely as an outcome of the Nature Study movement, much attention has recently been given in rural schools to the formation of collections of various Natural history objects. The appreciation of the value of this work has found expression in the efforts made by the authorities of local Fairs and Exhibitions to encourage the teachers and scholars of their several districts, by offering prizes to be competed for under stated conditions. It cannot be doubted that the small expenditure involved has in the main been amply justified by the results. There are, however, some features of this work which may be advantageously considered by the teachers when themselves entering upon these competitions or persuading their scholars to do so. In this, as in every other kind of work, the first consideration should be: Is it advisable? If this is decided in the affirmative, then some definite idea should be formed beforehand as to the educational use the effort is to be put to and the way it is to be carried out. The writer has had many opportunities during the past ten years of examining and judging collections of plants, native woods and seeds, etc., which have been entered for competition at various Exhibitions. In most cases, there has been evidence of much energy, patience and care in making and preparing the specimens for exhibition; but there have also been signs that the makers of some of the collections have not quite understood the main principles involved in making a collection at all, or of making it educationally valuable. Most of the short-comings seem to have been due to a lack of knowledge of what the results of long experience, gathered from many different students, have shown is the best way to make a representative collection of natural history objects. It is with the hope of helping my many friends among the teachers and scholars of our country that I write this note. I believe that the encouragement of these natural history competitions, extended by Exhibition Associations, is a very wise one:—from their own point of view in the first place, the large number of visitors who invari-

ably crowd around these exhibits, bears testimony to the great interest in the subject, not only on the part of the friends of the exhibitors, but also among the general public; and, besides, it is highly commendable, because they are stimulating the study of branches of knowledge which are now acknowledged to be of the utmost importance, in finding simple means for preventing loss in the crops of the country and thus increasing enormously its revenues, as well as, at the same time, the prosperity and happiness of the individual citizen. Teachers and students may therefore feel quite justified in giving the necessary time and thought required in trying to learn the true nature of some of the common natural history objects around them. These to most minds will be found on closer acquaintance to be so attractive that they will stimulate further study and engender a craving for more knowledge concerning all similar objects. This will bring with it increased powers of observation and comparison, in short, a scientific attitude of mind which strives to see things in their true light, to think correctly, and to understand what is being considered. To do this will require much patience and mental self control, as well as great care to avoid jumping to hasty conclusions. It may be claimed, then, that this work is certainly useful, not only from an educational point of view because it demands close observation and thought, which train the mind and form character; but also because the actual knowledge acquired is of use in the ordinary walks of every day life. A nature study may be defined as an educational exercise consisting of a careful observation of some common natural history object, together with a conscious mental effort to learn as much as possible of its nature and uses:—what it is, what it does, why it does it, how it does it, and what its relation is to man or more directly to the observer himself. In such an exercise it is convenient and often necessary to preserve specimens both of the objects under consideration and of similar and allied forms, so as to have these at all times easy of access for study and comparison. This means to make a collection. In doing this, it is soon noticed that each kind of plant has its own habitat or special locality where it finds conditions most suitable to its highest development, and that, to find it in the best state for study, it must be sought for in those localities. For the

thorough understanding of a species, it is necessary to know the plant in all its parts and in all its different stages of development. Specimens should be collected illustrating all these points, and should be chosen, first of all, with an idea of presenting the average development and typical form of the species. Dwarfed or gigantic specimens should be shown only as indicative of the range of variation. There seems to be a tendency with beginners to collect specimens with unusually large leaves or flowers, which specially strike them, or dwarfed or imperfect specimens, "chips," which are easy to preserve and mount, but which give little information when referred to in a collection. Separate leaves or plants without flowers or fruit should not be included, unless these parts are otherwise shown. Each species should be represented, if its average size will permit of this, by a specimen showing the root, the stem, the leaves both from the root and on the stem, the flowers and the fruit. In large plants, as in the case of coarse-growing herbaceous plants, shrubs and trees, portions must be selected illustrating the various parts. In order that the collection may be of the greatest use, it is necessary to label carefully and neatly every specimen, giving the name, the habitat or nature of the place where found, the exact locality, so that if necessary further specimens may be collected, and the date of gathering, so that the time of flowering and seeding may be known. Valuable additions to a collection of plants are specimens of the seeds and of seedlings showing the seed leaves. In the matter of mounting and labelling, neatness and uniformity are very essential. Specimens should be dried quickly, so as to preserve the colour as much as possible, and in a natural manner, so that the flowers may take the same positions as when the plant was growing, and so that the undersides of some of the leaves may be seen. In preserving a plant, it should be neatly arranged, when first pressed, between the folds of a single sheet of thin paper, once folded. This should then be placed between driers of absorbent paper, which for a few days must be changed every day, and dry sheets substituted, without disturbing the plant in its folder. On the second day the specimens should be examined to see that all the characters of the plant are shown, and, if they are not, parts may be moved a little to improve the arrangement; but after that the specimen should not be disturbed until it is quite dry, when it may be taken out and mounted permanently on paper thick enough to allow of examination without breaking the specimen. Each plant should have a separate sheet to itself, and all the mounting paper in a collection should be of the same size and labelled in the same

place. The specimens may be attached to the mounting paper either by narrow strips of paper neatly stuck over the stems, or with liquid glue placed at several points on the firm parts of the underside of the specimen. The different sheets should be placed together in their botanical families in accordance with some recognized list. The "Catalogue of Canadian Plants" by Professor John Macoun, our highest authority, is universally followed in Canada. This catalogue can be procured from the Geological Survey Department at Ottawa. The sheets should always be kept separate and for a reference collection for a school, after being displayed at the local exhibition, should be carefully put away in a neat box made a little larger than the size of the mounting sheets. Specimens of plants should never be put in bound books, nor should the sheets be caught together at the edges, with cords as is sometimes done. In both of these ways, the specimens are easily broken, there is no way of interpolating in their proper places species subsequently collected, it is inconvenient to examine and compare the species, and, when the collection is required for an exhibition, it cannot be displayed in an attractive manner, which is an important point with the exhibition authorities.

In order that these collections may be of the greatest educational value, the specimens should be gathered as much as possible by the students themselves, and the name of the collector should appear on the label. The teacher should merely help in identifying and comparing the plants with related forms and also in showing how to prepare the collection for exhibition.

Collections of the seeds of weeds make an attractive and useful exhibit. Owing to the good work of the Seed Branch of the Department of Agriculture under the direction of Mr. G. H. Clark, great interest has been recently developed in recognizing the various weed-seed impurities in crop seeds offered for sale. Farmers are now alive to the importance of knowing the appearance of the seeds of these enemies which in the past they so often carried on to their land, mixed with the seed they sowed for crop. All of the weed seeds have characteristic shapes, colours and markings, by which after a little practice they are just as easily recognized as the crop seeds among which they occur. In making collections of weed seeds, the appearance of those of the worst pests is soon learnt, and the boys and girls of Canada have a grand opportunity of using their sharp eyes to the advantage of their fathers, by examining the seeds bought for sowing and finding out whether any weed seeds are included.

Seed collections should be exhibited in small bottles, all of the same size, neatly labelled in the same place on each bottle. Well cleaned seed, as well as some in the husk should be shown.



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