

NATURE-STUDY — MARCH.

March came in like a lion this year with frost and snow, and wind piling huge drifts. It may go out like a lamb; so that although it looks like winter now, the bright warm days will soon be here, bringing the birds from their southern winter homes, and later the butterflies and moths from their cocoons. The fields and woods will soon be alive with insects, as well as birds, and the buds will follow the example of boys and girls and lay aside their winter wraps and burst into leaf and flower. Children should be led to watch for these indications of coming spring. The sun rising earlier and farther to the east each morning and setting later and farther up in the west each evening (on the 20th it rises due east and sets due west); its position at noon is higher, and the middle of the day is warmer. The buds on trees and shrubs will soon begin to swell. Their unfolding may be hastened by bringing some twigs into the school-room, putting them in water and placing them in windows exposed to the sun. In these favored positions they will burst into leaf or flower, and may be studied, and their development watched with more interest in the fields later on.

The willow catkins are collections of the simplest flowers. If gathered from one tree or shrub they may all be *staminate*, consisting of two little stamens (*a*) growing from the base of a little leaf; or the flowers may be *pistillate*, consisting of a pistil (*b*) growing from a similar little leaf or bract. Try to get catkins that will show both staminate and pistillate flowers. (See EDUCATIONAL REVIEW, Vol. XI, page 211). Obtain, also, some of the catkins of the poplar, alder, birch and hazel. The poplar, like the willow, has its staminate and pistillate flowers on the different trees, and are said to be *diœcious*. The alder, birch and hazel have them on the same tree (*monœcious*). Horse chestnut branches have large, sticky buds; lilacs have large and small buds. (It will be interesting for the children to find out what the larger buds contain in addition to the smaller ones as they unfold). The clusters of buds of the red maple with their brilliant colors as they open will be a source of delight and instruction to children. Nearly all our trees and shrubs unfold their flowers early. They are not showy, as a rule, but each has a beauty of its own. What more beautiful sight than a red maple tree in full bloom with its clusters of brilliant red flowers! But prepare children for this and other interesting sights by studying branches in the school-



room in March. Show that these flowers are developed early in order that pollen may be carried freely by the wind without being hindered by leaves. Tell of the nature and use of pollen in fertilization. Shake some of the willow or alder catkins when the flowers are mature and watch the clouds of pollen dust disperse in the air. Collect some of it and put it under a magnifying glass or microscope if you have one. Let the pupils make drawings of the twigs and branches, showing the position and forms of buds, a catkin discharging pollen, etc.

In late March or the beginning of April is a good time to look for cocoons on low bushes or stout, rough stalks growing under trees. Perhaps you may be fortunate enough to find the cocoon of the Emperor Moth, which is larger and more easily identified than others. Here is a picture of one less than the actual size, which may assist the children in their search. It is somewhat bag-shaped, and pointed at the upper end. The beautiful moth that will come from it in late spring or early summer will repay the trouble of searching for it. (See REVIEW, Vol. I, page 5, for a full description). If you wish cocoons to hatch well, keep them in a cool place until the weather has evidence of summer heat in it; then bring them into a warm place and let the children see the wonderfully beautiful creature that will emerge from its case.



In the same way that children are prepared to study twigs, by putting them in water in a warm, sunny place, they should also be prepared to watch the growth of plants. Have boxes in readiness to plant seeds, that the study of growing plants may be made before these appear in the field. In this way by anticipating Nature children know what to look for, and become alert and expectant. Let them form the habit of recording their own observations: To teach the child to make a simple and accurate record of the appearance of the first robin; the first Mayflower, dog-tooth violet, or other spring blossom; the first sound of the frogs in the neighboring swamps or pools; the first bird to build a nest and lay its eggs (can any of our readers tell which it is?); the first of the hibernating animals to come forth from its winter sleep; the last snow storm; the last frost; the breaking up of the ice in the nearest streams or lakes—these and many other data are useful to farmers and scientific workers; they are of far greater importance to the boys and girls who make