

to present all the surface possible below ground. Why? (Older pupils may be questioned more fully on what constitutes the food of plants and how they take it up).

Ask pupils to collect the little plants of maples, beeches and others, growing in hardwood groves, and which may be easily detected, peering out from beneath last year's fallen leaves, especially on a sunny hillside. Let them contrast these with the plants they have cultivated. Encourage them to search. Enter upon the work with enthusiasm. Let the pupils make drawings of the different plants studied, and of the same plant in different stages of growth. Let them write about what they have found out and they will express themselves clearly and well, if they have not been told what they ought to have seen for themselves, after careful questioning.

NO. II. EARLY FLOWERS.

While the pupils are engaged in cultivating the plants referred to in No. I., they may be encouraged to look for those early flowers (catkins) that appear upon the willow, alder, birch, hazel and other trees and shrubs before the leaves appear. They may be found, especially on the willows, as early as the first week in April, and continue for several weeks; so that by the time the REVIEW comes to hand, there will be abundance of material for plant lessons. The flowers are a little difficult for beginners but attention may be drawn to them, their characteristics as flowers observed, and sketches made of them. Older pupils may investigate further and find out the composition of the flower. The figure represents a branch of



Corylus rostrata (hazel-nut). The drooping aments or catkins at *a* contain the staminate flowers; a bract showing the stamen with its short filament adhering is seen at *b*; the inconspicuous pistillate flowers are shown at *c*, with one at *d* enlarged. The staminate and pistillate flowers in the *Corylus* grow on the same plant — hence called

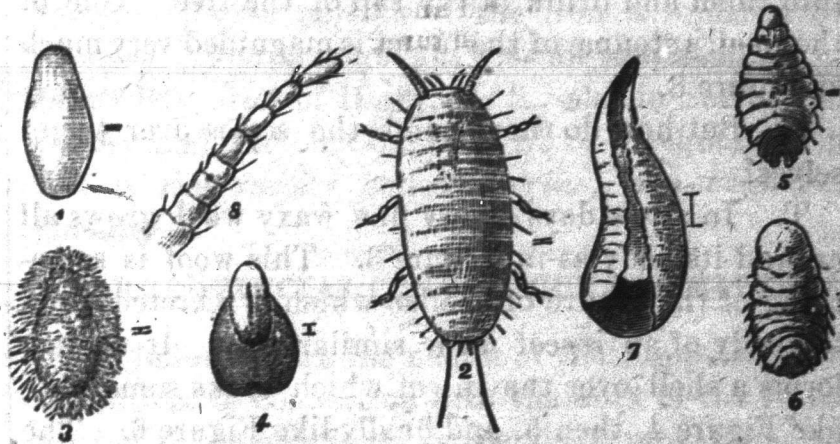
monœcious (growing in one household). In others, as the willow, the staminate and pistillate flowers grow on separate trees; hence they are called diœcious (growing in two households).

On the common alder the staminate and pistillate flowers (catkins) are arranged in nearly the same way as in the above illustration. Collect also the flowers of the oak, birch, beech, hornbeam, sweet fern, (*myrica asplenifolia*), and poplar. Distinguish staminate from pistillate flowers. Are the plants monœcious or diœcious?

FERNDALE SCHOOL.

NO. XI.—THE OYSTER-SHELL BARK LOUSE.

(*Mytilaspis pomorum*. Bouché).



TEACHER. I have here a piece of the smooth bark of a young apple tree, very thickly covered over with small oyster-shell shaped scales about the eighth part of an inch in length. I cut off a piece of the most densely covered, exactly one inch square. Please count the number of scales on it.

S. About 200.

T. Very good. I now scrape off one of them carefully with my pen-knife, turn it upside down and examine it with the microscope. It looks like Figure 7 above. Examine, and tell what you see.

S. It looks something like a curved canoe, broader at one end, and nearly all filled up with beautiful white potatoes shaped like Figure 1 above, only so small that there must be twenty or thirty of them in the broader part of the canoe.

T. Correct. These are the eggs of the insect which has shrivelled up to a very small speck at the narrow end of the scales. Some of these scales are more than a year old and empty. Supposing one half of them to be filled with eggs, how many eggs are there on this square inch of bark?

SCHOLARS. One hundred multiplied by thirty—three thousand.

T. Yes; at the very least there are three thousand. And about the end of May and the first of June the warm sun will hatch these eggs, and from under these scales will come myriads of small lice like Figure 2 above, but so small that you can hardly see them with the unaided eye. Notice the two fine lines on the right side of the figure. The distance between these two lines is the real length. These small marks are put beside each figure to show its real size when not magnified.

S. That is why our gardener paints the trees about the first of June with soft soap, diluted with a strong solution of washing soda, I suppose.

T. That is quite the proper thing, for it will be sure to kill them at this tender and unprotected age.