

fully formed. Then the life story of it may be written just as we would write the life story of a frog, or other animal.

This periodic examination will lead up to the formation and development of fruit, and the dispersal of seeds. The seeds should be preserved in labelled packages, planted in the following spring, and their germination and early growth noted, thus completing the observation of the life-cycle.

While doing such work as the above, the pupil will discover the distinction between annuals, biennials, and perennials. Usually this distinction is brought before the student after a few months' study, but, evidently, no one can appreciate the distinction until a type of each class has been studied for two or more years.

Thus, the study of plants, "in the large," will be followed by the study of their more particular structure: the buds, leaves, flowers, fruit, and seeds. Each of these may be taken in turn, and studied minutely.

Bring into your school-room, in March, branches of different trees, e. g., maple, apple, horse-chestnut. Keep their cut ends immersed in water, or in moist soil (cutting the ends occasionally,) and observe the development of the bud. What becomes of the brown scales? How is the bud protected? Where are the buds situated? Which buds develop first? Are there any which will not develop in the room? Observe the development of buds on the tree later. What is a bud? How does it grow? Find the buds which become flowers. Which appear first, the leaves or the flowers?

In the maple, the flowers are noticeable first, in the apple both develop together, while in the horse-chestnut the tree is in full foliage before the flowers appear. Try to discover other trees like each of these types in respect to the appearance of the flowers, compared with the leaves.

Following the plan suggested in a preceding paragraph, observe these trees at least once a month throughout the season. The development of the fruit should be followed closely and a record of observations kept. Does each blossom produce a fruit? If not, about how many blossoms do produce fruit? Of fruits which set how many mature? What causes some of the fruit not to develop? Open those fruits which fall early to discover the cause of their non-development.

Study the structure of the fruits of the trees mentioned. (Third book pupils can do this.) In the maple fruit, the peculiar wing and the manner of falling are noticeable; in the horse-chestnut, the burr or shell, and the richly colored brown nuts; in the apple, the fleshy fruit and seed cavities. How many seed cavities are there? How many seeds in each cavity? Look for other fruits like each of these types. Thus the ash and the elm have winged fruits; the chestnut and beech-nut have burrs; the pear and quince are fleshy. Why are fruits green while immature, and brown when ripe? Do these colors protect them in any way?

In higher classes, the study of buds may be continued, in order to find when, where and how, new buds are formed each year. Examine the branches closely each month. You will find that the buds are formed early in the season before the leaves fall. Where are they formed? How and when are they coated with resin? What other protection have they? Open one to see. Try to discover all that is contained in a bud. Study the mark (scar) left by the leaf after it has fallen from the tree; also the ring-like marks of the scales of a bud. The