

## HINTS ON THE USE OF BOTANICAL TEXT BOOKS.

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In Bailey's Botany, pages 52-58 give useful hints on the study of stems. Stems of hard-wood trees are best studied in winter, when no leaves obscure the mode of branching.

One of the first useful lessons is the identification of trees by their bark, their buds and their general shape. Then, when the trees are cut for logs or fuel, children may distinguish between heart-wood and sap-wood. The yellow birch is excellent for this; for the heart-wood is reddish in color, and the sap-wood is white. Can a tree live and grow after it has lost its heart-wood? A hollow tree is common to our experience. It answers this question. Can a tree live after its sap-wood is destroyed? We can't very well destroy the sap-wood without destroying the bark. Therefore, we are not always sure whether the loss of sap-wood or of bark kills the tree. As a matter of fact, the loss of either would kill it.

We are aware that removing bark from the white birch does not kill it. But perhaps the children have not noticed that ordinarily we take only the outer bark, and leave the inner. A tree can stand the loss of its outer bark, but to lose the inner bark is fatal.

Some trees, such as elms, have their bark deeply furrowed, lengthwise on the trunk. Here, again, the cracks are only in the outer bark. Occasionally, however, even the inner bark will split and come off. This happens with our fruit trees. In such cases, the tree always dies. Page 96 will tell us why. Page 97 may give a hint that will help decide why cracks in the *outer* bark of thick-barked trees are beneficial. Lenticels (page 89) serve the same purpose in thin-barked trees.

If children ask what bark does for the tree, one use is easily shown by paring a potato, and noticing how quickly it will shrivel if left a few days. The skin of the potato is really bark. As an example of how quickly cork cells will form in bark when necessary, we need only refer to the change that takes place in a year in the letters where children — and even grown-ups — carve their names on trees.

During the winter is a good time to read pages 67-72. The suggestions on page 71 are

good; though "Kinds of Wood" will be the only part that can be followed in winter.

Pages 82-85 can be studied now. Bud arrangement is the same as leaf-arrangement. Therefore the latter can be determined by examining the former.

Perhaps the two chief considerations under leaf arrangement are (1) as marks of identification, and (2) advantages of sunlight. The latter would better be studied in summer.

The experiments on pages 101 and 103 could be carried out now. House plants brought from some child's home will serve well. In summer there will not be time for this work.

Chapter XIII is worth reading through. But all parts do not equally touch our daily experiences.

Chapter XV is typically winter work. The same chapter could very profitably be reviewed when the buds are opening in May. It does not matter what trees and shrubs are used for this chapter. The ones named in the book are suggestive. But the ones most easily available are the ones to use.

Chapter VI would be very appropriate for March. Most of the seed-germinating work fails because we are so liable to neglect keeping the water supply regulated. If seeds soak, and then dry, they rarely recover. Therefore, lay a pane of glass over the dish in which the seeds are germinating. Keep one side of the glass raised a half inch to allow air circulation.

If the foregoing work is disposed of by the end of April, the remainder of the term may be devoted to the spring flowers as they come along.

More important than any text book is the object itself. The forest, the field, the orchard, the garden, the road-side, all claim attention. The book is for reference *after* having studied the plant.

Associate Botany with Geography. In our houses and greenhouses we grow plants whose native home was perhaps on the other side of the globe. Even our cultivated flowers and vegetables have been gathered from every continent. The United States Government keep men travelling in China and Japan and the East Indies searching for plants that may be grown in this country for ornament or for food.

The geography of our spices, our furniture,