

though personally, I depend on the leaves at all times for identification. The time of blooming is also a help at that particular season.

But, you will say, what about the black ones? I find the text gives them as a *variety* of the Pennsylvania. Here is a chance for the inquisitive or ambitious student to find out, through reading, the technical difference between *species* and *variety*. I suggest, in connection with this, the reading of Mendel's Law, Plant Breeding, and similar topics in any good text on Biology or Botany. Two good books in connection with this are Darwin's "Origin of Species" and Burbank's "New Creations in Plant Life."

We spoke of the "black" blueberries. Rub a blue one, and notice that it becomes black. The blue coating that so easily rubs off is called "bloom". To find the probable use of this "bloom", dip a unrubbed and a rubbed blueberry into water, and see to which one the water adheres. Might the "bloom" be of service to the berry in wet weather? You will find a "bloom" on plums and other fruits.

What plants associate with blueberries? The bog blueberries have different neighbors from their pasture brothers. It is interesting to note that among the blueberries' neighbors we find Leather Leaf, Andromeda, Pale Laurel, Sheep Laurel, Rhodora, Pyrola and Mayflower, all of which belong to the same botanical family as the blueberry itself. Could it be possible that their common inherited tastes and habits have kept them together, just as in rural communities so many members of the human race are relatives? In the latter case many households trace their descent from one or two families who settled there a century or two ago. I wonder what tribe of plants was the common ancestor of the blueberry and its relatives centuries upon centuries ago!

Blueberries, as we all know, occupy waste or neglected ground. Is this a matter of choice or of expediency? What is the general nature of blueberry ground? When you go on that next trip take a piece of blue litmus paper with you. Test the moist earth. Test not only blueberry ground, but both cultivated and uncultivated ground in several localities. Of course you know that if the litmus turns red, the soil is "sour" or acid. If you find the blueberries nearly always growing in acid soil, is it safe to say they prefer that soil? Possibly they do. If we find certain regiments occupying, at present, certain positions in Europe,

possibly they are there because they were crowded out of better positions. On the other hand, they may be there from choice.

Some plants are so constituted that they cannot stand acid soil, they would die rather than submit to it. Blueberries and their relatives find life pleasant there; and find it easier to occupy the acid soil some other plants have abandoned than to fight their way to cultivated ground. The presence of blueberries, then, gives one some idea of the condition of the soil. Drainage and cultivation would bring in an invading army of other plants, and the peaceful blueberries would retire to the neglected pastures and bogs.

Topics for Nature lessons not yet mentioned are:

What insects have you found attacking blueberries? What is the science of *canning* blueberries and other fruit? What does Nature grow berries for? What is the geology of a blueberry barren or peat bog? Account for the "star" at the end of a blueberry. What about the blueberry industry? What is their geographical distribution? Why does a fire increase the blueberry crop? Try taking up these topics. Study them with your pupils.

RARE AND LOCAL FERNS.

J. VROOM.

In low, rich woods, or among wet rocks, let us look for the Maidenhair Fern. It is very scarce and local, but has been found at several places in Nova Scotia and in northern New Brunswick. The fan-like shape of its fronds, and the one-sided, wedged-shaped segments and glossy stalks, are so distinctive that it cannot be mistaken for anything else. The fruit is borne on the under side of a lobe of the frond which is folded over to form a covering. This is generally regarded as the most beautiful of our native ferns.

A rival of the Maidenhair in beauty, found in similar situations, is the Bulblet-bearing Bladder Fern. The stream which we are following is any one of a hundred brooks in Nova Scotia or New Brunswick. If it happens to be in a limestone region, we may search for this fern with good hope of finding it, especially if we look for it near falling water. Its slender bipinnate fronds are from one to two feet long, are widest at the base, and commonly bear on the under side a few fleshy bulblets which will fall off and begin life as independent plants.