

things, I am afraid I do not know any more than yourselves about what is in this part of the country. But great scholars have often said that what knowledge we find out for ourselves is the most valuable in making us able to take a good position in the world. Now, suppose we spend our ten minutes a day for object lessons on our birds for the next week or fortnight. As finding out the facts for ourselves is said by everyone to be the best way, and in natural science the only way of any value, how shall we begin? Well, I think I can give you a hint. I want each one of you to tell me how many different kinds of birds you can see before our lesson to-morrow. Look at them as well as you can, so that you can tell us what your birds look like—so that we may know how many have seen the same bird.

"But a curious boy will come in with 'but we won't know the bird's name.'"

To which you will reply: "And perhaps I can't tell you. Scientific people say 'some persons know very many names of things, but after all they don't know much else about them.' We shall try, first, then, to know something about our birds, and sometime or other we can't help knowing all the different names people give them."

Then you will ask: "What points about these birds will you try to find out?"

One will answer, "Its size."

Another, "Its color."

Another, "Where it nests."

Yet another, "What kind of eggs are in its nest."

Still another, "What it feeds on."

And still another, "What its song is."

Then you will say: "Why, if you all do that we will find out enough to make a big book about nothing else but our birds! And there'll be lots of fun in it, too." Then you will conclude by saying, "We are sure then of having more than enough for our next lesson. And every different kind of bird we find we must write down in our list of birds, with all the things we find out about them."

"Now, what do you say to that programme? Can you not lighten the monotony and wearisomeness of your pupils' school labor, while you are training them to observe, to make notes and to reason?"

"I believe there is something in what you say. I'll try it and report the progress another day."

#### Ferns.

All of us, pupils as well as teachers, have admired ferns, and yet when it comes to a knowledge of them, their characteristics, habits, mode of growth, all but a few must confess to no more than a superficial ac-

quaintance with a family of plants distinguished for their beauty and simplicity of structure. So simple is this structure that any one, by a little serious application of two or three hours may become perfectly acquainted with the characters that are so plainly stamped on every fern and which seem to invite us to become more closely acquainted with the forty species of ferns that are found in these Provinces.

Ferns belong to the flowerless (cryptogamous) series of plants. They send up from a stem (rhizoma) just at or beneath the ground a leafy structure (frond) raised on a stalk or petiole (stipe) which latter is fitted into the underground stem in either of two ways: It is articulated, that is, fitted into the stem like a bone into a socket, or it is continuous with the stem. Nearly all our ferns belong to the latter class. This mode of insertion may be seen by pulling the stipe firmly but evenly a little sideways, when it breaks off bringing a portion of the underground stem with it like a splinter.

The frond is either *entire*, that is in one leaf (this is the case in only two of our ferns); or it is *pinnate*, that is divided, with the divisions running from the mid-rib (rachis) at or nearly at right angles, like the barbs from the shaft of a feather. These pinnate fronds may be once, twice, or thrice pinnate, according as their divisions (pinnae) are whole, divided or subdivided.

Ferns are reproduced by spores. These are minute bodies, too small to be seen by the naked eye, but they are aggregated usually in brownish dots, or clusters (sori) on the under side of the drooping frond. These dots are clusters of spore-cases (sporangia), each spore-case (viewed with a magnifying glass being something like a short-handled dipper with a firmly cemented cover) containing minute spores which when mature, burst through the case and escape into the air, and are borne hither and thither by the wind until they find suitable conditions for growth. (The growth of a fern from the spore is an interesting, study but too complicated to be dealt with here). Usually each cluster of spore-cases is covered by a shield (indusium). Sometimes they are borne on the margin of the under side of the frond or its divisions, protected by a portion of the frond turned over, like the hem of a handkerchief. Sometimes a special frond or portion of it is devoted to producing the clusters of spore-cases, when such frond or portion is said to be fertile.

August and September are the best months for studying ferns. With this introduction, and with the key in Lawson or Spotton, you will soon be able to study and identify every fern with ease. And there will be no end of pleasure in it for you and your pupils.