

BIOLOGICAL FIELD WORK

Sister M. Agnes, 1917.

(Abstract)

A love of nature impels students to delve deeply into its secrets and by constant and close observation, nature is forced to give out one true requisite of happiness in this life, something of which mankind is always in search and that is knowledge. As a logical consequence of this we contend that biological field work requires that we have not only the eyes to see but it demands that we read aright what we see. Unless we have deeply studied their life processes we cannot understand the beauty and order in the gradual evolution of plant and animal life.

The region now within the boundaries of the State of Oklahoma, in spite of the ruthless slaughter of many innocent victims in the past, still teems with animal life, while its geographical situation gives peculiar variety to its flora. One point should be impressed upon the minds of youthful explorers and that is, there should be no indiscriminate, useless, or wanton destruction of either plants or animals.

Early autumn ushers in a great variety of butterflies, moths, beetles, and other interesting Arthropoda. The honey bee at this season will usually be seen busily engaged on its favorite flower, the golden rod. The most common and easily captured of the butterflies are the great monarchs, interrogation, silver-spot, clouded sulphur, cabbage, and the beautiful swallow tail. The great monarchs may be found at any time from April until the last of October. They never seem to be in a hurry. Slowly descending or advancing, they describe a variety of graceful curves and undulations and finally hang motionless so long from some flower, preferably one of the Labiates, that we may easily pick them up with our fingers. During the high winds or light rains they will be noticed gaily sporting about heading against the wind and it is due to this characteristic that Mr. Moffatt has suggested a very appropriate name for it, "The Storm King." The interrogation flitting about from one moist spot of earth to another is easily recognized, but when resting, it folds its wings over its back and resembles the surroundings so closely that only a sharp eye is able to distinguish it.

Caterpillars of these species are numerous and are easily located. The monarch caterpillar is usually found on the milkweed, the swallowtail on parsley and wild carrot, even the garden carrot. The eggs are always laid on the Umbellifera, so if we find eggs of *Asterias* on an unfamiliar plant we may safely conclude it belongs to the parsley family. The interrogation caterpillar makes its home on the elm tree or hop vine; the sulphur hovers about *Cassia*, alfalfa or clover, so if we desire specimens of that family we go to the above named plants. The cabbage as its name signifies had made itself notorious on account of the damage done, and we must seek it in its favorite haunt, "the cabbage patch."

The "wooly bear" gives equal attention to the mulberry or walnut leaves and garden plants. Others, for instance, the "spinxes" prefer the tomato plant. A few inches of moist earth are indispensable as many complete their life cycle in the ground:

A trip to some neighboring lake or small stream will result in abundance of crayfish, clams, snails, leeches, and larger fish. There is no dearth of crayfish but one must look for them. Searching along some narrow stream, turning up rocks, peeping into crevices or sheltered places will always result in a prize. We pick the crayfish up with our fingers, but not the clams, since they are usually in deeper water. We secure the clam by placing a stick between the valves where the foot is protruded. Immediately it will close tightly and the mussel can be lifted out. Leeches are frequently found adhering to the shell. Everyone is familiar with snails and their habits. What child has not been amused or entertained himself with their shells at least? The Periwinkles are also of much interest. These leave clusters of eggs on sticks and blades of grass. The little animals float on their backs or climb perpendicularly to the surface where protruding from their spirally twisted shell they search for food.

In early spring, the habits of the birds can be studied side by side with growing plants and whirring insects. On one outing the students observed a couple of blue jays return to an old nest they had watched them build the previous spring. Two orioles set up housekeeping in a nearby tree; the jays seemed to resent this proximity to their domicile and many battles took place. On one occasion Mr. Jay lighted suddenly on the female and holding her feathers in his beak he circled round and round, interrupting these antics with vigorous shakes. A few well directed clods persuaded him to release his hold and retreat in high dudgeon to his own quarters, no doubt to await a more opportune time for the continuance of hostilities. However, the class had the satisfaction of seeing both young broods reach maturity. A brown thrasher built a nest in a honeysuckle vine on the school grounds and became so tame as to take food out of the children's hands. When fully satisfied the bird was seen to hide the remainder of the meal in a hedge for future use.

During the winter months the small streams abound in *Spirogyra*, *Cladophore*, and other forms of *Algae*. These are found floating on the surface and at the bottom of the water, sometimes forming a growth so luxuriant as almost to choke up the stream. A visit to a neighboring watering trough will result in a collection of good specimens of *Sphaerella*, *Ocellitoria*, and occasionally *Nostoc*.

Mosses are then at their most flourishing period and Sporangiums in all stages of development can usually be found. If one

wished to study its complete life cycle in its native environment the middle and latter part of August will be found to furnish a great number of gametophytes bearing sexual organs. The *Marcantia* may be seen growing all the year round on damp rocks in sheltered ravines and mossy slopes sending its tender rhizoids into the hard rock, presenting a beautiful and peculiar study of the disintegration of the harder substance. It can readily be recognized by its ribbon like thallus which, branching regularly, sends up its umbrella like receptacle bearing either antheridium or Archegonium. The *Polymorphia* produces its reproductive organs in late March or early April while other forms have been discovered with fertilized Archegonia in mid-winter.

The fungi groups and lichen are well represented in any woodland and abound at almost any season of the year forming growths on decaying wood, spreading over entire trees, or forming great gray masses in the rocks, preparing the way for higher forms of plant life. Some mossy hillsides where springs creep out and trickle down forming bogs of peatmoss, will reveal the rustling "Equisetum" known familiarly as "horse tail".

In connection with the Canada toad flax, a remarkable incident has been noted. Previous to 1910 all specimens gathered near Guthrie had only the odor of ordinary green grass. That year two or three plants discovered gave forth a faint perfume. In each succeeding year we have found them more and more scented until the last year or two all have become fragrant.