

NATURE STUDY—No. VI.

NATURE-STUDY WITH ADVANCED CLASSES—AN EXPERIMENT.

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Bailey has said : "When the teacher thinks chiefly of his subject, he teaches a science ; when he thinks chiefly of his pupil, he is probably teaching Nature Study." This sentence puts in a nut-shell the proper *attitude* of the teacher of Nature-Study, but it should also be the attitude of every teacher who claims to *educate*, no matter whether he is dealing with pupils in the public schools, or with students in the colleges and universities. It must be admitted that the framers of the courses, and the teachers as well, in most of our colleges, lay too great stress on the subject-matter, and leave out, to a large degree, the student. Of all colleges, an agricultural college should be the best school for the study of Nature,—and for Nature-Study as well, if there is a real distinction ; for from the outset the attention of the student is directed towards the soil, the plant, and the animal ; yet, it must be confessed that the method of instruction in some of these colleges is still 'largely a reflection of mediæval practices and ideals.'

For some time past the writer felt that the studies of the regular session dealt too much with laboratory collections and with books, and too little with out-of-door subjects. He felt also that the student should acquire the "habit of observing and seeing for himself and at his best, without books or help, in the presence of the facts and in the open air." It is true that the in-door method of investigation is an adaptation to meet unfavorable conditions. The regular session of the Ontario Agricultural College does not begin until the middle of September ; winter sets in about the first week of November ; and the session closes on the 15th of April. There is therefore little opportunity for thorough out-of-door studies during the regular session.

To remedy this state of affairs, a two months' course in Nature-Study was given at the College, for the first time this year to the students of the Third Year. This course began on the 20th of April, and continued until the 15th of June.

As the students were already familiar with the elementary facts of botany, physics, entomology, and zoology, the method of in-

struction was of course different from that usually adopted in our Public and Normal schools. The instructors gave no set of lectures ; they acted as guides, and suggestors of lines of investigation. The topics assigned to each student for investigation related as far as possible to matters of economic importance to the agriculturist ; for it was believed that such investigations would carry out the dual purpose of Nature-Study, which is : first, to “develop an attitude—a power of interpretation and appreciation of nature, a power of self-expression which will enable the student to gain a better control of himself and his surroundings, to live a fuller life, and to be of greater service to society than he otherwise would be” ; and, second, to gain that intimate knowledge of nature which will make men better able to cope with their living environment, or, in other words, for its economic usefulness.

From the very outset, the subjects assigned to each student could be studied best at that particular season ; for the writer believed strongly that Nature-Study should be taken up from a seasonal standpoint. Every student had to show the results of his studies in careful drawings and well-kept notes. For the first two weeks all the students took the same work, but for the remainder of the term individual work was the rule. Classes were formed for the study of birds every morning, and besides, excursions were made to the museum. Excursions took place also for the study of the structure and habits of the forest trees, the spring plants, the life of ponds and streams, and the common insects of the orchard ; as well as the study of the different soils of the Farm, and the rocks of the neighborhood.

Particular attention was given to the study of the winter buds and twigs of our common shrubs and trees. Keys were made for the determination of the common shrubs and trees on the College campus by means of their winter buds.

Following were some of the topics assigned : Recognition of trees and shrubs by the winter twigs and buds ; the story of an apple twig ; a study of the fruit-spurs of our common orchard trees and shrubs ; a study of trees, from a distance and at close range ; a study of germinating seeds ; a study of the wood of dicotyledonous trees ; a study of the wood of coniferous trees ; recognition of grasses by their leaves ; studies of the sundew ; studies of the

rosaceous family ; the development of the apple and cherry ; studies of the heavens at night ; the story of the dandelion ; the development of the frog ; the life-history of mosquitoes ; studies of snails and slugs ; the habits of the common birds (about 60 were identified during the term) ; studies of the currant-worm ; development of barberry and wheat rust ; lady-birds ; a soil survey of the Farm ; the grasses of Guelph ; insects and plants ; etc.

Throughout the whole course every student was compelled to record daily in the "Nature-Study Journal" some observation which he had made during the day. This Journal was carefully inspected every day by an instructor, in order to determine the accuracy of the descriptions of the observations made by the students. As the term wore on, the observations were given in greater detail.

For the first two weeks of the term the class met for an hour every day at two o'clock. At first the time was devoted mainly to explaining the written instructions given out to the students, and to encouraging the observers. Later, however, two of the students were selected every day to report the results of any investigation which they had concluded. The object of this was to give them facility in expressing their ideas before an audience.

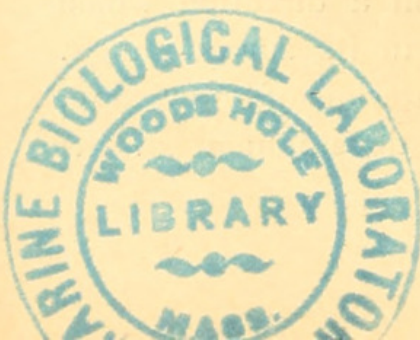
It is likely that some of the students who took this Nature-Study course at the Agricultural College will sooner or later become teachers of Agriculture, and perhaps Nature-Study, in either the Public or High schools of this province. In the writer's judgement, the knowledge of plants, animals, earth, and sky is absolutely necessary to the teacher who essays to teach Nature-Study. It appears to be of greater importance than the knowledge of the psychology of the child. It is probable that the teacher, who is himself a nature student, has gained through his own experience an insight into the best way of interesting the child, such as he could never obtain in any other way. A teacher may have a knowledge of child-nature, but if he has not a knowledge of nature as a part of his environment, it will be next to impossible for him to maintain for any length of time, in a direction which will be educative, the child's natural interest in its surroundings. How can a teacher train the child to use the materials of knowledge, such as plants and animals, in the proper development of the

phases of its being, if that teacher himself cannot use the materials of its knowledge?

That this Nature-Study course was a success, was the verdict of the whole class. Although it ran into the holidays of the student, who usually places a high value on his holidays, yet every member of the class considered that the time had been well spent, and that they had got a glimpse into nature that will ever remain as a refreshing picture. Most of the students were the product of our Public and High school system, and had to a certain extent lost their independence. They had been spoon-fed too much, and were practically unable to investigate and verify facts for themselves. This Nature-Study course delivered them from this bondage; it made them investigators and have opinions of their own. To the writer the work seems of great value, not only for the information the students obtained at first hand, but for the attitude which it developed and the point of view obtained. The writer was not teaching botany, entomology, and geology; he was teaching plants, insects and fields.

The Nature-Study course will be given again next spring; and, if it proves satisfactory, will become a permanent feature of the Third Year.

As advocates of Nature-Study we all have one common object in view. Human as we are, our methods will be as varied as our minds, and methods are not the be-all and the end-all of education. With some of us, our methods may lead some authorities to believe that we are furnishing information chiefly; with others, methods may be over-done, too much attention being given to the cultivation of the Nature-Study *attitude*, and too little to the useful side. There is a happy medium, but only the very best teachers can hope to attain to that stage of perfection. It is clear, nevertheless, that, whatever mistakes may be made at the outset as to methods in the introduction of Nature-Study, "the essence of it," in the words of Bailey, "can never pass away, because it is fundamental to the best living."





Lochhead, W. 1903. "Nature Study No. 6 - Nature Study with Advanced Classes - An Experiment." *The Ottawa naturalist* 17(7), 129-132.

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