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THE IMPORTANCE OF NATURE STUDY, WITH SOME SUGGESTIONS AS TO METHODS.*

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Since most of us were pupils at the primary schools, marked changes have taken place in the subjects taught therein. This need create no surprise. Strange it would be if reforms in education did not keep pace with the revolutionary changes going on in the world around us. To-day, as never before, the plea is being made for a course of study which will better adapt the child to his environment. Hence, subjects like manual training and domestic science are receiving a place on the curriculum. Nor need there be any conflict between those subjects and what have been always considered the essentials of a proper school course; rather will they supplement the latter. I think we are all pretty well agreed as to their educational importance; if so, it is our duty to do all we can to encourage their existence. This we can do by speaking well of them and by giving them our sympathy and hearty support.

There is another subject, nature study, which has been attracting a good deal of attention. It is now about four years since it was formally introduced on the curriculum; and the question may well be asked, what has been accomplished? I venture to say a good deal has been done. We may not fully realize this; we may not be always conscious that we are dealing with nature study when, perhaps, we are doing some of our best work in the subject. We have heard a good deal about it and have listened to considerable discussion upon it; and I think we are, perhaps unconsciously, more interested in the things around us than ever before. I fully believe also that our pupils have imbibed some of this enthusiasm, and that they are beginning to see pleasures in the common things of every day life.

*Read before Ottawa Teachers' Association, May 8th, 1908.

There seems to be some difference of opinion as to what nature study is. With some it is a method of teaching—the natural method. With this opinion I must disagree. I do admit there is such a thing as natural or common sense method in teaching, *e.g.*, if we wish to teach carpeting in arithmetic, the natural method is to have the pupils go through the actual operation of carpeting. There is no question as to the value of this method, but it is not nature study. How can it be, shut off as we are from the very face of nature? With others nature study is confounded with elementary science. 'Tis true that in actual practice it is sometimes difficult to distinguish the two. At least, as teachers, we are so anxious to impart knowledge that I'm afraid we do not always avoid the domain of science. Nature study, however, is not science; it is the study of the objects and conditions everywhere environing us, that we may the better see and comprehend the common things of life; above all, that we may acquire a sympathy with, and a love for nature. In my opinion, it matters little what name we give it, whether nature study or elementary science, or whether we give it a name at all, so long as we endeavor to acquire this sympathy with nature; and, as Bailey says, "To see what we look at and to draw proper conclusions from what we see."

As to its educational values, I need offer no special plea. On this topic you have already listened to much discussion. It rests upon the same psychological basis as domestic science and manual training, and is advocated by most of the distinguished educators of the present day. We are all well aware of the "knowledge never learned of schools," which a child acquires during his early years; the idea is to continue, as far as possible, the same natural means of educating. It is claimed our school work has been too bookish; we talk about sense perceptions, sense training, objective teaching, and concrete notions; and yet, we cling to our books as closely as ever. If there is anything in the educational principles, from percept to concept, from particular to general, surely it is in nature study, with its objective realities, that they receive their truest and widest application. The subject, therefore, rests upon rational and sound pedagogical principles. Moreover, few other subjects on our curriculum give anything like the same training in observation, nor does it stop here; the child must interpret what he sees, thus his reasoning and judgment are exercised and trained; his mental activities are made the most of and are directed along useful lines. The child is interested in the common things about him; if we are to succeed as teachers we must take advantage of this interest and

seize upon this mental desire for knowledge, otherwise it will fade away and a golden opportunity is lost.

Not only is nature study pedagogically sound, but it is also the very foundation of many of the other subjects we are called upon to teach. Much of geography is essentially nature study. I'm afraid, however, we do not always go to nature and the world outside to give our classes concrete notions in this subject. We have been too long adhering to the text-book and the classroom. In art much of the material employed is taken from nature, and the better a child is able to see and to interpret this material, the better will he be able to give expression to it. Much of the literature taught in the various grades abounds in nature pictures, and what child, who has never learned to examine and to verify these, will appreciate and enjoy the sentiments of the poet? The material for much of our work in composition may also be taken from nature study topics, thus, by correlation, it will prove a help in our ordinary school work and not a hindrance.

There is another and, in my opinion, the most important value of nature study, viz.: the influence it has on the character of the child. We emphasize character building, and rightly so, as the chief object of education. In no way, however, can we influence a child's character more than by giving him a love for nature, a love which will prove a solace to him when tired of the monotony of every day life. It gives a sympathy not only between teacher and pupil, but also with every living thing. The more we know of nature the more humble we must necessarily become—since a knowledge of nature lifts the veil of science, that unlimited field of knowledge, and makes us feel how very little we know. Not only does it make us humbler, but also kinder, more patient and more considerate. This may be said to be the æsthetic or emotional value of the subject; and who will deny that the æsthetic training of our pupils is daily becoming more necessary?

As this country grows older and becomes better settled more attention will be given to decorations and general improvements. Already in this city, the matter is assuming large proportions, in the efforts that are being made to make Ottawa the Washington of Canada. If the work is to be a success we must do something in our schools to help it along and to enable our future citizens to better enjoy their surroundings. We look upon the C.P.R. as a soulless corporation without a spark of sentiment or refinement; and yet, I notice that orders went forth the other day to have a flower garden at every station across the continent and seeds were distributed for that purpose. Think of the comfort, the pleasure, the solace that will come to many a

weary traveller when beholding those flowers; and to the station agent and his family, in many an out of the way place, in tending and caring for them. If the C.P.R. is alive to the necessity of those things, surely we, the teachers of this province, should not be left behind. What an opportunity there is to give such a training by raising flowers in connection with our schools! Perhaps the most valuable lesson that has been given in this city in this connection was that given last fall by His Excellency, Earl Grey, when he had some hundreds of the school boys take part in the planting of bulbs at Rockcliffe. The animal nature is evident in us all; let us check it by cultivating the emotional and æsthetic side. For this purpose nature study has the same claim on our curriculum as art, music, or even good literature.

While the educational value of the subject is pretty freely admitted there are some imaginary objections to its universal adoption. The chief of these is the lack of time; it is quite true that teachers are, as a rule, pretty busy. So far, however, as our urban schools are concerned I need scarcely remind you that overteaching is one of our greatest weaknesses. Too much is done by the teacher and too little self-effort or self-investigation is demanded from the pupil. I am old-fashioned enough to champion the three R's. These, in my opinion, must continue to form the basis of our school work. Is it not possible, however, that we are spending too much time in grinding them and that equally good results might be obtained in a shorter period? I have every faith too in giving our boys and girls a taste for the right kind of reading; and the teacher, who is succeeding in doing this, is doing a work of the highest educational value. I am well aware that some of the advocates of nature study are apt to speak slightly of books and to maintain that our pupils must become original investigators. While it is important that we, as teachers, should encourage, as far as lies in our power, the spirit of self-discovery, the great majority of mankind must ever depend upon books for the bulk of their knowledge. There is, however, no quarrel between nature study and the three R's. Those teachers who fly in the face of nature study in defence of the three R's are not always the ones who are doing the best work in the latter; as a rule, the teacher who does the three R's best will also do nature study best and will find time to do it. Let me repeat, nature study, if properly taken up, will prove an assistance to the rest of the schoolwork; and the three-quarters of an hour or hour devoted to it each week will prove a delightful recreation from the ordinary school grind. I am satisfied too that many of the lessons we give in nature study

will remain green in the memories of our pupils when perhaps many of those given in other subjects are gone and forgotten.

Another objection, frequently advanced, is that the teachers are not specially prepared to teach the subject. This is no insurmountable objection. A great deal of knowledge is not necessary. What is specially required on the part of the teacher is a belief in the educational values of the subject combined with a strong desire to do the work, and with an earnest effort and a will to become better acquainted with the common things around us. That most of us are entirely unacquainted with our surroundings need scarcely be affirmed. Is it not our duty to do all we can to remedy this state of affairs? The old saying, "Where there's a will there's a way," holds specially true in the teaching of nature study. Enthusiasm counts for more than anything else. The difficulty is we have become so accustomed to the pouring out of knowledge to our pupils that we are ashamed to say "I don't know"; after all, how little any of us know! Why can't we give our pupils some topic to investigate and at the same time work with them? It may be how an apple is formed in the bud, or how a maple tree gets out of the seed, or the various changes through which a butterfly passes. In investigating these topics with our pupils, being willing to have them teach us if necessary, our knowledge will soon increase; and our confidence in and love for the subject will lead us to do better things. Moreover this mutual effort of teacher and pupil to investigate together will do more to stimulate the latter to self-exertion than will all the second-hand information we can otherwise give him. I am not denying the importance of and the necessity for knowledge on the part of the teacher; what I do say is, that lack of knowledge need not deter us from taking up the work. Besides, too much knowledge may lead us into our present fatal error of telling what the child should seek for himself.

It is true that the subject, as dealt with in many of the texts, is quite exhaustive; and is sufficient to discourage the average teacher who has done little in the various sciences. Nature study, however, as I have already said, is not science. It takes things as they are around us and endeavors to understand them without any attempt at systematic order or classification; it is wholly informal and is free from definitions and technical terms. We may be interested in insects, their habits and metamorphoses without attempting to know anything about them from a scientific point of view. Leave all that to the specialists. We may take much pleasure in birds, their songs, migrations, habits, and uses, without ever having heard of

ornithology. Just as in literature we may appreciate the beauty, the sentiment, and the feeling without entering into a detailed analysis of it, so in nature study we may learn to love a flower, a bird, or an insect without having any technical knowledge concerning any of them. Of course in taking up the work a vast fund of knowledge is sure to be acquired by the pupil and this knowledge will form, later on, an excellent scientific foundation.

There is no doubt, however, that the complexity of material is a stumbling block, hence the necessity for some outline of work for the various grades. There must be a great deal of elasticity in the course laid down and there need be no special order for taking up the work, except what may be incidentally suggested, as the teaching of a lesson in literature, a topic in geography or any other individual occurrence. It is well too, in graded schools that, while each teacher is given great latitude, some definite course be followed in each grade. Otherwise much confusion and useless repetition are sure to follow. The work for each grade, as outlined in the school regulations, is merely suggestive and may be supplemented to meet any local conditions. The course to be followed should deal with plant and animal life, the earth itself, the sky, the atmosphere, in fact everything around us. I understand some such course is being outlined for the various grades in your schools; it is, therefore, unnecessary that I say more on this phase of the subject.

I do strongly advocate, however, that, during the long winter seasons when out-door work in nature is practically impossible, or at least very difficult, more attention be given, especially in the Third and Fourth Forms, to elementary science. I am fully aware that it has been, and is to-day, customary to introduce this phase of school work in the High or Secondary School. This I consider a mistake. There is much in elementary physics and even in chemistry that the average child, who will never go beyond the primary school, might take up with great profit. In fact the course outlined in the regulations covers some of this work. I see no valid reason why those Forms should not have simple experiments to show them the chief properties of air—such, *e.g.* as its composition, weight, pressure, the structure and uses of a barometer; simple experiments on water, *e.g.* hard and soft, chief impurities, filtration, evaporation, condensation and buoyancy; on heat, such as sources, expansion by heat, conduction, convection, radiation and the structure and uses of thermometers; simple lessons on the cause and transmission of sound, light, etc. There is, in all this work, much valuable information which will enable pupils to better

understand their surroundings; for what things are so common as air, water, heat and soil. The proper understanding of these will enable the pupils to more easily comprehend the facts of geography, physiology, and other subjects that are taught. I realize that this would involve having in each school simple apparatus to carry on the work. The cost would not be great and the interest taken by the pupils and the value derived from two such lessons each week would more than make up for it.

Let me pass on to what we may call the general method of treatment of nature study. It is so wide and is of such a nature, it may be said that each teacher must be a law unto himself. Certain it is, that the method to be employed must be almost as informal as are the topics to be studied. It would prove fatal to the subject to set down hard and fast rules for its treatment. It may be truthfully said that the feeling and disposition of the teacher towards the work counts for more than any formal method. What the teacher requires more than method is a love for nature; this love, combined with a reasonable amount of knowledge and with a desire to get more, will doubtless bring success. This does not mean that children are to be taught by the teacher. The former are to find out facts for themselves under the guidance and direction of the latter who must always keep her knowledge in the background. It is a golden rule that the child must not be told what he can reasonably find out for himself.

We frequently hear it said that a child is a born naturalist. This statement I consider extreme. It is quite true, I think, that childhood is the age when most enthusiasm can be produced; when the mental activities are seeking to be satisfied. In later life we become set in our ways and notions, and it is more difficult to produce an impression upon us. Our own experiences, however, will teach us that a child may live daily surrounded by nature without learning to interpret what he sees. The direction of a teacher is necessary. How many people there are who are quite familiar with mosquitoes and with the "wrigglers" of a water barrel, but who never for a moment connect the two and who are surprised when they are told that both are stages in the life history of this insect. We must take care then that children do see; and by well directed and judicious questioning we must assist them to interpret what would otherwise have no meaning for them. Mere contact with nature or with natural objects is insufficient.

If nature study teaching consisted in setting before the pupils a number of facts in nature to be memorized, or a number

of objects about which they were to find out facts as best they could, the work might be easily done. But it is neither the one nor the other. The main question for the teacher is, what is the best way to bring the material before the pupils in order to get the most self-effort from them? A question is always a challenge to a child, especially if that question is in the shape of a problem to be solved, *e.g.*, where do the birds that remain with us all winter secure their food? On what kind of day do the streets dry up fastest? In what part of the sky do you look for a new moon? How is a duck specially adapted for swimming? Why can it keep warm while swimming in cold water? By questions such as these the children are kept on the alert looking for something on which they are to report. Thus are they learning to look around them and soon the habit is formed. Another thing in which the teacher must be very careful is not to discourage pupils by forgetting to take up problems thus set them, or by giving little attention to objects they may bring in for examination. Children are very sensitive in this matter and a little thoughtlessness on the part of the teacher may cast the shadow of discouragement over them.

The time of year, too, must necessarily influence the work to be done, *e.g.*, spring time is the season for the germination and planting of seeds, the setting out of flowers, the opening of buds, the return of the birds, etc. In the fall, comes fruits and seeds, the means of dispersion of the latter, caterpillars and cocoons. Some topics may require more than one season to work out, *e.g.* the metamorphosis of a butterfly, the growth of a plant from seed to fruit, etc. The weather we have always with us; and it furnishes many interesting topics for investigation.

Many of the lessons in our readers abound in nature study topics and furnish an excellent means of treating it incidentally. In our general literature too, is to be found much, both in prose and poetry, which is descriptive of nature, and the reading of which by our pupils will do a great deal to create a disposition to become better acquainted with her. Moreover, this incidental treatment of the subject is of great value and does away with the excuse of lack of time for more formal nature work.

The teachers of this city have every advantage in cultivating the acquaintance of nature. I know of no other city offering like facilities. Here live many of the best experts in Canada who are ever ready and willing to render assistance, and an association with whom is an inspiration in the work. You have here also the Field-Naturalists' Club, an organization of wide reputation,

the president and the secretary of which, we are proud to number among our fellow teachers. Take advantage of these facilities and I am sure you will soon become more interested in a subject which, for pupils in our day, had no existence.

In conclusion, I have tried to present this subject to you not from the standpoint of the faddist, but from the standpoint of one who believes that our primary schools, dealing as they do with the masses, must continue to fit our people for the affairs of every day life. At the same time I am convinced we can do much to train the future men and women of this province, that there is lying everywhere around them a means of creating a disposition to appreciate the sentiments of the poet who said:

“Nature never did betray
The heart that loved her; 'tis her privilege,
Through all the years of this, our life, to leap
From joy to joy; for she can so inform
The mind that is within us, so impress
With greatness and beauty, and so feed
With lofty thoughts, that neither evil tongues,
Rash judgments, nor the sneers of selfish men,
Nor greetings where no kindness is, nor all
The dreary intercourse of daily life,
Shall e'er prevail against us, or disturb
Our cheerful faith, that all which we behold
Is full of blessings.”

SOME BIRD HABITS.

BY NORMAN CRIDDLE, TREESBANK, MANITOBA.

Several years ago my brother Stuart drew my attention to some remarkable habits practised by the Killdeer Plover while endeavoring to preserve its eggs from enemies. He had observed that this bird, while sitting upon its eggs, when disturbed by a dog, would leave the nest and flutter along the ground as if badly injured, as many other birds are known to do, and so entice the dog away. But, if the danger came from a cow, or horse, the tactics were changed and the bird, with wings and feathers spread out, would run into the animal's face and so by startling it drive the intruder aside. In the former instance the



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