

## LEAFLET II.

### THE NATURE-STUDY MOVEMENT.\*

By L. H. BAILEY.



**THE** nature-study movement is the outgrowth of an effort to put the child into contact and sympathy with its own life.

It is strange that such a movement is necessary. It would seem to be natural and almost inevitable that the education of the child should place it in intimate relation with the objects and events with which it lives. It is a fact, however, that our teaching has been largely exotic to the child; that it has begun by taking the child away from its natural environment; that it has con-

cerned itself with the subject-matter rather than with the child. This is the marvel of marvels in education.

Let me illustrate by a reference to the country school. If any man were to find himself in a country wholly devoid of schools, and were to be set the task of originating and organizing a school system, he would almost unconsciously introduce some subjects that would be related to the habits of the people and to the welfare of the community. Being freed from traditions, he would teach something of the plants and animals and fields and people. Yet, as a matter of fact, what do our rural schools teach? They usually teach the things that the academies and the colleges and the universities have taught — that old line of subjects that is supposed, in its higher phases, to lead to “learning.” The teaching in the elementary school is a reflection of old academic methods. We really begin our system at the wrong end — with a popularizing and simplifying of methods and subjects that are the product of the so-called higher education. We should begin with the child. “The greatest achievement of modern education,” writes

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\* Reprinted from the Proceedings of the National Educational Association, 1903. Paper read in general session at Boston, July, 1903.

Professor Payne, "is the gradation and correlation of schools, whereby the ladder of learning is let down from the university to secondary schools, and from these to the schools of the people." It is historically true that the common schools are the products of the higher or special schools, and this explains why it is that so much of the common-school work is unadapted to the child. The kindergarten and some of the manual-training, are successful revolts against all this. It seems a pity that it were ever necessary that the ladder of learning be "let down;" it should be stood on the ground.

The crux of the whole subject lies in the conception of what education is. We all define it in theory to be a drawing out and a developing of the powers of the mind; but in practice we define it in the terms of the means that we employ. We have come to associate education with certain definite subjects, as if no other sets of subjects could be made the means of educating a mind. One by one, new subjects have forced themselves in as being proper means for educating. All the professions, natural science, mechanic arts, politics, and last of all agriculture, have contended for a place in educational systems and have established themselves under protest. Now, any subject, when put into pedagogic form, is capable of being the means of educating a man. The study of Greek is no more a proper means of education than the study of Indian corn is. The mind may be developed by means of either one. Classics and calculus are no more divine than machines and potatoes are. We are much in the habit of speaking of certain subjects as leading to "culture;" but this is really factitious, for "culture" is the product only of efficient teaching, whatever the subject-matter may be. So insistent have we been on the employing of "culture studies" that we seem to have mistaken the means of education for the object or result of education. What a man is, is more important than what he knows. Anything that appeals to a man's mind is capable of drawing out and training that mind; and is there any subject that does not appeal to some man's mind? The subject may be Sanskrit literature, hydraulics, physics, electricity, or agriculture — all may be made the means whereby men and women are educated, all may lead to what we ought to know as culture. The particular subject with which the person deals is incidental, for

"A man's a man for a' that and a' that."

Is there, then, to be no choice of subjects? There certainly is.

It is the end of education to prepare the man or woman better to live. The person must live with his surroundings. He must live with common things. The most important means with which to begin the educational process, therefore, are those subjects that are nearest the man. Educating by means of these subjects puts the child into first-hand relation with his own life. It expands the child's spontaneous interest in his environment into a permanent and abiding sympathy and philosophy of life. I never knew an exclusive student of classics or philosophy who did not deplore his lack of touch with his own world. These common subjects are the natural, primary, fundamental, necessary subjects. Only as the child-mind develops should it be taken on long flights to extrinsic subjects, distant lands, to things far beyond its own realm; and yet, does not our geography teaching still frequently begin with the universe or with the solar system?

In the good time coming, geography will not begin with a book at all, as, in fact, it does not now with many teachers. It may end with one. It will begin with physical features in the very neighborhood in which the child lives—with brooks and lakes and hills and fields. Education should begin always with objects and phenomena. We are living in a text-book and museum age. First of all, we put our children into books, sometimes even into books that tell about the very things at the child's door, as if a book about a thing were better than the thing itself. So accustomed are we to the book-route that we regard any other route as unsystematic, unmethodical, disconnected. Books are only secondary means of education. We have made the mistake of considering them primary. This mistake we are rapidly correcting. As the book is relegated to its proper sphere, we shall find ourselves free to begin with the familiar end of familiar things.

Not only are we to begin with common objects and events, but with the child's natural point of contact with them. Start with the child's sympathies; lead him on and out. We are to develop the child, not the subject. The specialists may be trusted to develop the subject-matter and to give us new truth. The child is first interested in the whole plant, the whole bug, the whole bird, as a living, growing object. It is a most significant fact that most young children like plants, but that most youths dislike botany. The fault lies neither in the plants nor in the youths. A youth may study cells until he hates the plant that bears the cells. He may acquire a technical training in cells, but he may be

divorced from objects with which he must live, and his life becomes poorer rather than richer. I have no objection to minute dissection and analysis, but we must be very careful not to begin it too early nor to push it too far, for we are not training specialists: we are developing the power that will enable the pupil to get the most from his own life. As soon as the pupil begins to lose interest in the plant or the animal itself, stop!

There is still another reason for the study of the common things in variety: it develops the power to grasp the problems of the day and to make the man resourceful. A young man who has spent all his time in the schoolroom is usually hopelessly helpless when he encounters a real circumstance. I see this remarkably illustrated in my own teaching, for I have young men from the city and from farms. The farm boy will turn his hand to twenty things where the city boy will turn his to one. The farm boy has had to meet problems and to solve them for himself: this is sometimes worth more than his entire school training. Why does the farm boy make his way when he goes to the city?

It is no mere incident to one's life that he be able to think in the thought of his own time. Even though one expect to devote himself wholly to a dead language, in school he should study enough natural science and enough technology to enable him to grasp living problems. I fear that some institutions are still turning out men with mediaeval types of mind.

Now, therefore, I come again to my thesis,—to the statement that the end and purpose of nature-study is to educate the young mind by means of the subjects within its own sphere, by appealing to its own sympathetic interest in them, in order that the person's life may be sweeter, deeper, and more resourceful. Nature-study would not necessarily drive any subject from the curriculum; least of all would it depreciate the value of the "humanities;" but it would restore to their natural and proper place the subjects that are related to the man. It would begin with things within the person's realm. If we are to interest children — or grown-ups, either, for that matter — we must begin by teaching the things that touch their lives. Where there is one person that is interested in philology, there are hundreds that are interested in engines and in wheat. From the educational point of view, neither the engine nor the wheat is of much consequence, but the men who like the engines and who grow the wheat are immeasurably important and must be reached. There are five millions of

farms in the United States on which chickens are raised, and also thousands of city and village lots where they are grown. I would teach chickens. I would reach Men by means of the Old Hen.

How unrelated much of our teaching is to the daily life is well shown by inquiries recently made of the children of New Jersey by Professor Earl Barnes. Inquiries were made of the country school children in two agricultural counties of the State as to what vocation they hoped to follow. As I recall the figures, of the children at seven years of age 26 per cent desired to follow some occupation connected with country life. Of those at fourteen years, only 2 per cent desired such occupation. This remarkable falling off Professor Barnes ascribes in part to the influence of the teacher in the country schools, who is usually a town or city girl. The teacher measures everything in terms of the city. She talks of the city. She returns to the city at the end of the week. In the meantime, all the beauty and attractiveness and opportunity of the country may be unsuggested. Unconsciously both to teacher and pupil, the minds of the children are turned toward the city. There results a constant migration to the city, bringing about serious social and economic problems; but from the educational point of view the serious part of it is the fact that the school training may unfit the child to live in its normal and natural environment. It is often said that the agricultural college trains the youth away from the farm; the fact is that the mischief is done long before the youth enters college.

Let me give another illustration of the fact that dislike of country life is bred very early in the life of the child. In a certain rural school in New York State, of say forty-five pupils, I asked all those children that lived on farms to raise their hands; all hands but one went up. I then asked those who wanted to live on the farm to raise their hands; only that one hand went up. Now, these children were too young to feel the appeal of more bushels of potatoes or more pounds of wool, yet they had thus early formed their dislike of the farm. Some of this dislike is probably only an ill-defined desire for a mere change, such as one finds in all occupations, but I am convinced that the larger part of it was a genuine dissatisfaction with farm life. These children felt that their lot was less attractive than that of other children; I concluded that a flower garden and a pleasant yard would do more to content them with living on the farm than ten more

bushels of wheat to the acre. Of course, it is the greater and better yield that will enable the farmer to supply these amenities; but at the same time it must be remembered that the increased yield itself does not arouse a desire for them. I should make farm life interesting before I make it profitable.

Of course, nature-study is not proposed merely as a means of keeping youth in the country; I have given these examples only to illustrate the fact that much of our teaching is unrelated to the circumstances in which the child lives—and this is particularly true of teaching in the rural schools. Nature-study applies to city and country conditions alike, acquiring additional emphasis in the country from the fact that what we call "nature" forms the greater part of the environment there. But the need to connect the child with itself is fundamental to all efficient teaching. To the city child the problems associated with the city are all-important; but even then I should give much attention to the so-called "nature subjects;" for these are clean, inspiring, universal. "Back to nature" is an all-pervading tendency of the time.

We must distinguish sharply between the purposes of nature-study and its methods. Its purposes are best expressed in the one word "sympathy." By this I do not mean sentimentalism or superficiality or desultoriness. The acquiring of sympathy with the things and events amongst which one lives is the result of a real educational process—a process as vital and logical and efficient as that concerned in educating the older pupil in terms of fact and "science." Nature-study is not "natural history," nor "biology," nor even elementary science. It is an attitude, a point of view, a means of contact.

Nature-study is not merely the adding of one more thing to a curriculum. It is not co-ordinate with geography, or reading, or arithmetic. Neither is it a mere accessory, or a sentiment, or an entertainment, or a tickler of the senses. It is not a "study." It is not the addition of more "work." It has to do with the whole point of view of elementary education, and therefore is fundamental. It is the full expression of personality. It is the practical working out of the extension idea that has become so much a part of our time. More than any other recent movement, it will reach the masses and revive them. In time it will transform our ideals and then transform our methods.

The result of all this changing point of view I like to speak of

as a new thing. Of course, there is no education that is wholly new in kind; and it is equally true that education is always new, else it is dead and meaningless. But this determination to cast off academic methods, to put ourselves at the child's point of view, to begin with the objects and phenomena that are near and dear to the child, is just now so marked, and is sure to be so far-reaching in its effects, that I cannot resist the temptation to collect these various movements, for emphasis, under the title of the "new education."

"Nature-study" is another name for this new education. It is a revolt from the too exclusive science-teaching and book-teaching point of view, a protest against taking the child first of all out of its own environment. It is a product of the teaching of children in the elementary schools. The means and methods in nature-study are as varied as the persons who teach it. Most of the criticism of the movement — even among nature-study folk themselves — has to do with means and methods rather than with real ideals. We are now in the epoch when we should overlook minor differences and all work together for the good of a common cause. There is no one subject and no one method that is best.

While it is not my purpose to enter into any discussion of the methods of teaching nature-study, I cannot refrain from calling attention to what I believe to be some of the most serious dangers. (1) I would first mention the danger of giving relatively too much attention to mere subject-matter or fact. Nowhere should the acquiring of mere information be the end of an educational process, and least of all in nature-study, for the very essence of nature-study is spirit, sympathy, enthusiasm, attitude toward life. These results the youth gains naturally when he associates in a perfectly free and natural way with objects in the wild. Science-teaching has fallen short of its goal in the elementary schools — and even in the colleges and universities — by insisting so much on the subject-matter that the pupil is overlooked. In standing so rigidly for the letter, we have missed the spirit. President Eliot has recently called attention to this danger: "College professors heretofore have been apt to think that knowledge of the subject to be taught was the sufficient qualification of a teacher; but all colleges have suffered immeasurable losses as a result of this delusion." (2) A second danger is the tendency to make the instruction too long and too laborious. As soon as the child becomes weary of giving attention, the dan-

ger-point is reached; for thereafter there is loss in the spirit and enthusiasm, however much may be gained in dry subject-matter. I believe that even in high schools and colleges we make mistakes by demanding too long-continued application to one subject. Short, sharp, enthusiastic exercises, with pith and point, of five to ten minutes' duration, are efficient and sufficient for most purposes, particularly with beginners. (3) A third danger is the practice of merely telling or explaining. Set the child to work, and let the work be within his own realm. Pollen, lichens, capsules, lymphatics, integuments—these are not within the child's range; they smack of the museum and the text-book. Yet it appears to be the commonest thing to put mere children at the subject of cross-fertilization; they should first be put, perhaps, at flowers and insects. I wish that in every schoolroom might be hung the motto, "Teaching, not telling." (4) A fourth point I ought to mention is the danger of clinging too closely to the book habit; this I have already touched on. We are gradually growing out of the book slavery, even in arithmetic and grammar and history. This means a distinct advance in the abilities of the teacher. Of all subjects that should not be taught by the book, nature-study is chief. Its very essence is freedom from tradition and "method." I wish that there were more nature-study books; but they are most useful as sources of fact and inspiration, not as class texts. The good teacher of nature-study must greatly modify the old idea of "recitations." I wish to quote again from President Eliot: "Arithmetic is a very cheap subject to teach; so are spelling and the old-fashioned geography. As to teaching history in the old-fashioned way, anybody could do that who could hear a lesson recited. To teach nature-studies, geometry, literature, physiography, and the modern sort of history requires well-informed and skillful teachers, and these cost more than the lesson-hearers did." (5) Finally, we must come into contact with the actual things, not with museums and collections. Museums are little better than books unless they are regarded as secondary means. The museum has now become a laboratory. The living museum must come more and more into vogue,—living birds, living plants, living insects. The ideal laboratory is the out-of-doors itself; but for practical school purposes this must be supplemented. The most workable living laboratory of any dimensions is the school garden. The true school garden is a laboratory plot; time is coming when such a laboratory will be as

much a part of a good school equipment as blackboards and charts and books now are. It will be like an additional room to the school building. Aside from the real school garden, every school premises should be embellished and improved as a matter of neighborhood and civic pride; for one cannot expect the child to rise above the conditions in which he is placed. All these dangers cannot be overcome by any "system" or "method;" they must be solved one by one, place by place, each teacher for himself. Whenever nature-study comes to be rigidly graded and dressed and ordered, the breath of life will be crushed from it. It is significant that everywhere mere "method" is giving way to individualism.

In time, the methods of teaching nature-study will crystallize and consolidate around a few central points. The movement itself is well under way. It will persist because it is vital and fundamental. It will add new value and significance to all the accustomed work of the schools; for it is not revolutionary, but evolutionary. It stands for naturalness, resourcefulness, and for quickened interest in the common and essential things of life. We talk much about the ideals of education; but the true philosophy of life is to idealize everything with which we have to do.