

Muscle Shoals in Alabama, De Sota's Mound at Memphis, Tenn., and the Grand Canyons of Colorado.

- B. About Roadmaking:
1. The first highways were laid out along the line where traveling was easiest, and so far as possible, they are still built that way.
 2. The south slope of a mountain being clear of snow longest, this should be chosen for a road whenever possible.
 3. The road in front of our school is a rock surfaced, or macadamized road. Brick, asphalt, concrete, and stone are important materials used in road-making.
 4. The states help in building roads by issuing bonds, or by taxation. Virginia raises a great part of her money for road-making by a gasoline tax and is opposed to bond issues for such purposes.

III. Abilities Selected for Emphasis

- A. In the Use of Books:
1. To read maps, diagrams, and charts in the geography text
 2. To use reference books in selecting suitable material for reports and discussions
- B. In Writing and Speaking:
1. To write descriptive paragraphs.
 2. To write business letters to the Chambers of Commerce of different cities to secure pictures.
 3. To give oral reports in clear cut sentences.

IV. Habits and Attitudes Fostered

- A. Habits of attention were fostered by:
1. Observing the tourists' license plates.
 2. Observing the products hauled by the trucks.
 3. Watching magazines for pictures for their books.

- B. Habits of self-reliance were taught by:
1. Having the pupils write their own letters to the various Chambers of Commerce.
 2. Having each arrange his or her own book.

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KATIE LEE ROLSTON

NATURE STUDY IN THE PRIMARY GRADES

NATURE-STUDY is practically a new subject which has been added to our school curriculum. It is not merely a study of nature, as the term seems to imply. Nor is it a study of the facts of science. Its object is to give the child a sympathetic attitude toward the out-of-doors for the purpose of increasing in him the joy of living, which might enable him to live a more worth-while life.

In the schools today we are attempting to instill in him these principles. Nature-study receives almost the same amount of emphasis as do the other subjects of the curriculum. It is so correlated with the other subject matter that the plan of all the work is based on the child's environment. Lessons in reading, spelling, and arithmetic may be suggested by some phase of nature; songs and stories may be taught; bases for drawing and painting may be illustrated.

When the children are in the school room

busy with their books, Nature outside is doing a wonderful work. Under the children's eyes changes are taking place, and naturally their interests are outside with Nature. With this interest thus directed toward Nature it is now the teacher's opportunity to so relate the schoolroom activity with Nature that the children will be interested. By introducing Nature-study into the daily program of the schoolroom as a necessary subject and not as an extra subject added to an already over-crowded curriculum, it will be a help to the teacher in her work in her school room. For instance, during the morning period spring flowers may be introduced in the form of informal conversation and discussion. During the day it may be used as a basis for reading, for language work, and as a subject for study during the art period. The work of the school is enriched when Nature-study can be substituted for textbooks.¹

Many say that in real Nature-study the project method has always been used. It is true that the subject matter has been taken from the child's interests, and in so far as these interests were true to the child's nature the activities of Nature-study were motivated from within the child. But in the project method, which we are beginning to use at present, there is a change from the old method. In the past the emphasis was placed on the observation of the material or of the representatives of the materials. In the present project method the emphasis is on the activity instead. The child studies the material through the actual handling and work with it.

In many places Nature-study is not a part of the curriculum, yet in other places it has greatly succeeded in doing beneficial work. The climate of California has been a help in the work done in Nature-study. The interest has steadily grown. Much actual work is done by California school children. Gar-

dens are planted, excursions are taken, and the children thus have first-hand knowledge.²

St. Louis is also succeeding in its work. William T. Harris was the first to start Nature-study in primary education in that vicinity; the interest has been continued largely through the work of J. A. Drushel,³ head of the biological department of Harris Teachers College. In St. Louis the museum has been a useful feature in the system. Materials are borrowed which might be of use to the children in illustration of their work in Nature-study.

One other distinctive feature of the work done in St. Louis is the limitation put on the number of topics studied in each grade. One or two main topics are chosen, then they are studied in detail. For instance, in one grade mammals might be studied for the first half-year. Here ten animals are selected from the zoo and studied. In the second half of the year there may be a study of birds. Birds of the city are selected and studied. Then in other grades certain subjects are chosen and studied in the same manner. In the first six grades the work is planned "to acquaint the child with the more common forms of life about him, birds, mammals, plants, and insects."⁴ The teacher guides the child's observation and study of the specimen and discusses with him what he has learned.

In other places notable work has also been done, especially in the Francis W. Parker School in Chicago (the elementary school of the University of Chicago), and in the rural schools of New York State. In all these places emphasis is put on the actual handling of the material, thereby enabling the children to acquire first-hand knowledge.

Projects in Nature-study planned with

²Michell, Dora. *Work with Nature-Study*. NATURE-STUDY REVIEW, 13 (May, 1917), p. 272.

³Harris, W. T. *Nature Study*. NATURE-STUDY REVIEW (Feb., 1921), p. 52.

⁴*Public School Messenger* of St. Louis (Jan., 1920), p. 4.

¹Bulletin from Department of Interior. *Cycle of Garden Life and Plant Life*, Vol. 15 (1925), p. 2.

special reference to the appropriate seasons of the year and to the needs and conditions of the grades of the schools have been worked out by experienced persons. These plans are published by various states, the Bureau of Education, and many schools which aim to help the teachers of the grades, in their teaching of Nature-study, to get the very best results from the pupils.

Before Nature-study was realized to be so important a subject for study, President Eliot of Harvard, in 1907, said, "To my thinking, the real reason for the unsatisfactory condition of Nature-study in American schools in general is that it is practically impossible in many places to find teachers who are competent to direct the study in an intelligent manner."⁵ At about this time many normal schools introduced into their curricula courses in Nature-study. But this subject was an elective and only in a few schools did it rank with the other courses offered. Of the teachers who taught Nature-study in the public schools one out of every fifty had had training. In California, Missouri, and New York the best results in Nature-study were obtained. After an investigation was made it was found that the majority of the normal schools and colleges of these states required Nature-study, especially of the elementary teachers.

The most helpful factor in awakening the United States to its present interest in Nature-study was the establishment of the *Nature-Study Review*. This magazine was started in 1905 by Maurice A. Biglow, Professor of Biology, Teachers College, Columbia University. The editorial committee was composed of many distinguished educators from well known colleges, and men who had had experience in Nature-study work. The magazine was devoted primarily to scientific studies of nature in elementary schools. This magazine helped the Nature-study movement move forward. Investigations were made and articles were published

which gave the public a clearer idea of the subject.

Through investigations made by the *Nature-Study Review* there was found to be a great need for a course of study in Nature-study for the different grades. The work of one grade often overlapped that of another. Courses of study were soon introduced in the various states. When compared they were found to be very similar. Their primary aim was to create in the child an interest in nature and sympathy for objects of nature. The second aim was to teach the child how to investigate and work out problems so that in later life he might continue to do so. The subject matter was adapted to the interests and abilities of the children of the different grades. The studies were so arranged that the children might study the objects of their immediate surroundings.

A source of much work in the development of Nature-study is Cornell University. During the year 1891-93 there was a period of agricultural depression in New York State. Various charity organizations of New York City were called on to help the people of the rural districts. After a study of the situation it was found that the people were not interested in farming in such a way that they might make a success.⁶

A plan was adopted by which the school children might be taught interesting phases of life on the farm. As all children love flowers, they began with a study of flowers. Soon the children began to discover that the common plants of the garden had life histories also. By teaching Nature-study as a preliminary for agriculture, the proper attitude for agriculture was established. An intelligent interest of the whole environment was awakened. The boys and girls in school studied all members of nature life, birds, trees, soils, and weather.⁷

In 1894 an appropriation of \$8,000 was

⁵Eliot, J. C. *Teacher-Training in Nature-Study*. NATURE-STUDY REVIEW (Jan., 1907), p. 52.

⁶Comstock, A. B. *Handbook of Nature-Study*, p. 5.

⁷Bailey, L. H. *Nature-Study Review*, III, p. 247.

secured for the Cornell College of Agriculture to carry on this work. Leaflets were issued containing articles which might help the teacher in her work with the children. The work of Cornell University has gone on each year. Besides the work done at the University, the Nature-study idea has extended through teachers' institutes, state summer schools, through publications, and correspondence courses.

It was about the beginning of the last quarter of the past century when our present Nature-study was first seriously introduced into our primary schools. At first this movement was not received with much enthusiasm. The average person did not aim to promote the child's individual development and to aid him to acquire knowledge necessary for everyday life. His aim was to teach the child the fundamentals of reading, writing, and arithmetic along with some training in morals, religion, and behavior. People believed that by acquiring these fundamentals one was able to lead a most profitable life.

Perhaps in America the one who has done more than anyone in the development of Nature-study in the primary grades is Wilbur S. Jackman. He attempted to adapt Nature-study to child-nature. He believed that the child wanted not to examine one object at a specific time, but to examine everything around him all the time. For example, in the autumn the preparation of animal and plant life for the coming cold weather was the center of attention. There might be studied the causes of the migration of birds, the thickening of fur on fur-bearing animals, and the withdrawal of the fishes and tadpoles to crevices in the bottom of rivers and ponds.⁹ These subjects would be of most interest to children, and, while they were learning these, other subjects might be brought in.

Furthermore, it seemed natural for the child to study individuals rather than types.

The advanced scientist classified everything. But to the child it mattered not whether his work was classified or not. He studied the individual, and the relations of that individual to the environment.

Mr. Jackman believed that observation should play a large part in the study of Nature, but not that alone. Through observation along with the direct contact with Nature the child learns to reason. There comes to him independence of thought, self-reliance, and general strength of character. Through actual contact with Nature keen desire for self-expression arises.¹⁰ According to Mr. Jackman, the main object in Nature-study is to give the child an understanding of his environment—an understanding of the life of which he forms a part.

Although Nature-study is a recent movement in the United States, we may go back many centuries to find the beginning of this movement in the form of object teaching. As early as 1592 we find Comenius teaching his pupils about their environment. He believed that education in Nature-study should begin during infancy, the child, during his first six years, acquainting himself with the objects of Nature about him, such as animals, stones, and plants. He should begin with his immediate surroundings, then branch out to other environments.

Rousseau's ideas were similar to those of Comenius. He said the child should study always the thing itself, except when it was impossible to secure the actual thing. The sign might take away the attention of the child, and make him forget the thing it represented.

It was perhaps Pestalozzi, the founder of our modern elementary school, who did more than anyone else to put object teaching on a scientific basis.¹¹ Even so early a thinker as he realized that man is merely a product of Nature and that his whole life is

⁸Michell, Dora. *Nature-Study*. NATURE-STUDY REVIEW (Sept., 1923).

⁹Michell, Dora. *Nature-Study*. NATURE-STUDY REVIEW (Sept., 1923).

¹⁰Jackman, W. J. *Nature-Study*. ELEMENTARY SCHOOL JOURNAL (IV), p. 147.

¹¹Monroe, Paul. *A Cyclopedia of Education* (IV), p. 524.

based on his natural environment. He believed that the whole aim of primary education is to fix the child's attention, to sharpen and exercise his judgment, and to lift his ideas to higher ones. By beginning with Nature-study he thought these ideals might be accomplished.

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IS YOUR SON OR DAUGHTER GOING TO COLLEGE?

ALL young America is headed for college! Rich or poor, fit or unfit, from the cities and the farms, all the youth of the country is marching along the road that leads to the university. By public highways and private byways, they are pressing on, their eyes on the light of learning ahead. Each one, his eager parents urging him forward, sees in this higher education the sure symbol of success and happiness.

If only it were as easy as that! If only one might arrive at the land of heart's desire by following so plain a path!

But life is not like that. However much we may prate of all men being born equal, we know that it is not true nor will it be so long as each of us is the sum total of the dominant traits of each of a varied stream of ancestors stretching in ever-increasing number back to infinity. Until God or science, or God directing science, or whatever we choose to believe, has devised means by which we may all start life with an equal natural equipment, human beings cannot all attain the heights by the same route. To some it is given to work out their life's happiness with their brains, to others with their brawn; to some to reach the goal through the things of the mind, to others through their hands or human contacts. To some, college will be the biggest factor in their success; to others it will be no less than a real tragedy.

The colleges have much to give. There is also much that they cannot give. To simpli-

fy the discussion of what the colleges have, and have not, to offer the student, it is necessary to divide them into two general classes, those which specialize in preparing students for their life work, and those which place the emphasis on the cultural side, giving a foundation and a background rather than a definite training for life. This leaves out of the picture, for the moment, the large number of colleges which are doing both things.

The strictly vocational colleges can take boys and girls who know what profession they want to follow and train them for that profession. They can prepare a man to be a farmer or an engineer, or a girl to be a librarian or a secretary or a dietician.

The great advantage that a vocational college has over the strictly cultural college is that its students come to it with a definite objective. If a normally intelligent boy wants to become an engineer and goes to a good engineering college, he will leave it, an engineer; if he wishes to become a pharmacist, he can go to a college which will make him one. Whether he be a good or a bad or an indifferent engineer or pharmacist depends entirely on himself.

The chief thing that the cultural college can give is not an end but a means to an end; it does not turn out a finished product, but a product capable of finishing itself. It can lay the foundation, and give the tools with which to build the structure of life upon it. It should give him a new appreciation of beauty and of the intellectual and spiritual side of life, the things that we commonly call "culture." But there is much that the college cannot accomplish.

It can give a student facts, but they are useless unless at the same time he has learned to go to the sources and to seek out his own facts; it can give him a good foundation of general knowledge, but this is useless unless she has learned at the same time not to accept knowledge unquestioningly, unless he has learned to do his own thinking, unless he has learned a sense of value.