

Nature Study

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Participate and Interact
With Nature

The American Nature Study Society

Nature Study

The journal of the American Nature Study Society

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Pupil Participation and Interaction

VERNE N. ROCKCASTLE
Cornell University

Not only is it important for pupils to have direct experience with the things of science, it is equally important that each pupil have an opportunity to explore, manipulate, disassemble, reassemble, and share verbally with his classmates his reactions, his question, his creative suggestions, and his emotions.

A three-year old girl climbed atop the kitchen counter to get a glass of water. With the first glass she became intrigued by the rising sound as the glass filled with water from the tap. So she poured it out and re-filled the glass. Again and again — twenty times or more — she repeated this activity, completely forgetting that she had been thirsty. Her repeated trials, and the subsequent internalization of a concept, may have formed one of the most solid bases in her science background. Why? She was not inhibited by time, materials, or interruption from an activity in which all her senses could be brought into play. But what might an experienced adult (such as some teachers) have had to say about this? "A waste of time!" Perhaps it would be a waste of time to an adult who in a lifetime has drawn innumerable glasses of water. But not to a child who is exploring his environment in the only way a child knows how — by direct experience, by complete and uninhibited participation.

In addition to participation, children must be allowed to react socially in twos, threes, and in larger groups. Sometimes a difference of opinion will spark a re-trial and a re-assessment of a conclusion. Sometimes the agreement of several will firm up an otherwise shaky conclusion. Sometimes the comment or question of one child will be just that missing piece of a mental structure that another is in the process of formulating.

Jean Piaget states, "When I say 'active' I mean it in two senses. One is acting on material things. But the other means doing things in social collaboration, in a group effort. This leads to a critical frame of mind, where children must communicate with each other. This is an essential factor in intellectual de-

velopment. Cooperation is indeed cooperation."

The role of social interaction is important in Piaget's theory of development. A characteristic phenomenon in intellectual difficulties of preschool children is that they have difficulty in conceiving of any point of view other than their own. Coming to an awareness that another child sees something differently from the way he sees it plays an important role in bringing a child to accommodate, to rebuild his point of view, and come closer to a coherent operational structure.

A kindergarten class was being taught something about light bulbs and batteries. They were working in twos, with the teachers of the school system looking on. Each child had a bulb, a battery, and a piece of wire whose insulation had been scraped away at each end. They were all trying to make the bulb light. After about ten minutes, one pair got their bulb to light. This sparked great curiosity, sharing, and eventual lighting of all bulbs, at which point one boy volunteered, "But my father's flashlight takes two batteries."

Each pair of children was then given another battery and asked to try to make the bulb light. Again ten minutes went by with much trial and error — and discovery. But this time, through social interaction, there was a great deal of questioning, of sharing of ideas, of conflicting opinions, and subsequent trials. In that second ten minutes, much more learning occurred as a result of the social interaction than occurred in the previous ten minutes.

One boy noted that when he put two batteries together, his bulb was brighter than the first time. Another pair of children, however, got no light when they used two batteries. Upon comparing their set-up with that of the bright-light children, they found that their batteries were point-to-point instead of point-to-base. When they changed, their light became brighter, too. Similar kinds of comparing, questioning, suggesting, trying, manipulating, and re-examining

went on during the second time period that did not occur during the first.

When small group activity is the route of scientific experimentation, vary the group structure and group size to allow maximum freedom for the child who is not a natural leader.

One way to establish the leadership or the committee chairmanship for a group of a class activity is to award the chairmanship to that child whose birthdate is nearest the date of the activity. This avoids having to choose among all the children, and also it implies that the chairmanship will rotate during the year. If a teacher wishes, the various assignments can be given to pupils in a group according to the apparent desirability of the assignment and the nearness of the birthdate to the date of the activity.

When arranging for group activity or experimentation, it is well to remember that each pupil should be involved if at all possible. Most experimental situations can be broken down into a series of small responsibilities. For example, in an exercise involving triangulation on weather balloons (see UPPER WINDS FOR UPPER GRADES), the jobs that each team must assign are:

- balloon releaser (or count-down chief)
- timer
- sighter
- vertical angle reader
- horizontal angle reader
- recorder

For such an exercise, teams of six each represent an efficient grouping of the class. For other exercises, smaller or larger groups, as the exercise seems to indicate, would be arranged. In all activities, remember that the social welfare of the child as well as his scientific and intellectual progress is to be served.

Snows of winter offer opportunities for a variety of inquiry for the young scientist. Many questions related to snow are asked by children and adults. Answers are often more easy and interesting to come by when the inquirer is directed to discovery by observation rather than by seeking answers from an authority.

ANSS ANNUAL MEETING

December 26-30, 1968

FALL, 1968

The American Nature Study Society will be quartered mainly in the Statler Hilton Hotel, Dallas, Texas. Send reservations to AAAS Housing, Dallas Convention Bureau, 1507 Pacific Avenue, Dallas, Texas 57201. Single rooms \$12 - \$15, Double \$16 - \$18.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE AND PARTICIPATING AFFILIATED SOCIETIES

ANNUAL MEETING, DALLAS, DECEMBER 26 - 31, 1968

Statler Hilton Hotel

GENERAL THEME: SCIENCE, EDUCATION AND SOCIETY

Program for the American Nature Study Society

Arranged by MRS. J. LEWIS SCOTT

Co-Director, Bioscience Center, Powdermill Nature Reserve of Carnegie Museum

Thursday, December 26

8:00 p.m. — ANSS BOARD OF DIRECTORS MEETING
Gold Room

Friday, December 27

9:00 a.m. — SESSION I
Theme: UNIFIED KNOWLEDGE OF MAN
AND ENVIRONMENT
Gold Room

Chairman: William B. Stapp (University of Michigan)

1. The Newest Frontier in Conservation Education.
Albert H. H. Dorsey (formerly Coordinator Conservation Curriculum Improvement Project, currently Chief Supervisor Curriculum Development State Department of Education, Columbia, South Carolina. Publication: "People and Their Environment—Teachers' Curriculum Guide to Conservation—8 Volumes. Display Booth 97) 25 min.
2. Curriculum Development in Environmental Education.
Mrs. Carolyn A. Gibson (Director, High School Science Research Program, University of Pittsburgh) 25 min.
3. Nature Education for the Year 2000
Joseph I. Lipson (Professor of Science Education, Nova University, Florida) 25 min.
4. Nature Interpretation and the Machine Age.
Ben D. Mahaffey, (Instructor, Department Recreation and Parks, Texas A&M University) 25 min.

9:30 p.m. — ANSS BOARD MEETING
Gold Room

Saturday, December 28

9:00 a.m. — SESSION II
Theme: THE SYSTEM, SOCIO-ECONOMIC-POLITICAL,
AND ECOSYSTEMS
Silver Room

Chairman: Howard E. Weaver (University of Illinois)

1. Role of IUCN in Maintaining the World Ecosystems.
Joe Berwick, (Secretary General, IUCN, Morges, Switzerland) 25 min.
2. The Creation of New Knowledge and Our Way of Life.
Donald J. Zinn (President, National Wildlife Federation) 25 min.
3. The International Biological Program and the Environmental Crisis.
W. Frank Blair (Professor of Zoology, University of Texas) 25 min.
4. The Ecosystems and the Bureaucrat.
George M. Woodwell, (Chairman, Committee on Public Affairs Ecological Society of America) 25 min.

5:30-6:30 p.m. — JOINT MIXER OF THE TEACHING SOCIETIES

9:30 p.m. — LENSES ON NATURE
Grand Ballroom
Chairman: John A. Gustafson
(State University of New York, Cortland)
Co-Chairman: Edward C. Fritz
(President, Texas Chapter, Nature Conservancy)

Sunday, December 29

12:00 noon — ANNUAL LUNCHEON AND PRESIDENTIAL ADDRESS
Silver Room

Chairman: Mrs. J. Lewis Scott

Guest speaker: Mrs. Howard S. Kittel, Fort Worth (Third Vice President, National Council of State Garden Clubs, Inc.) 10 min.

Presidential Address: Douglas E. Wade (Northern Illinois University) "Nature Moves with the Times"

2:00 p.m. — SESSION III
TAILORING OUTDOOR PROGRAMS
TO COMMUNITY NEEDS
Gold Room

Chairman: Robert L. Vogel, Instructor, Outdoor Teacher Education, Lorado Taft Field Campus, Northern Illinois University

Presentors:

1. John B. Cox, Assistant Director, Program of Outdoor Education, Title III, ESEA, 25 minutes
Albuquerque Public Schools, Albuquerque, N. M.
2. Fred L. Betz, Director, Outdoor Education and Camping Program, Title I, ESEA, Chicago Board of Education 25 min.
3. David W. Faith, Instructional Leader, Program of Outdoor Education for Southern Idaho, Title III, ESEA, 25 min.
American Falls, Idaho

Reactor: Morris Wiener (Associate Professor, Outdoor Teacher Education, Lorado Taft Field Campus, Northern Illinois University)

ANSS BOARD MEETING — Public cordially invited. Gold Room

8:00 p.m. — Special Panel: NATIONAL OUTDOOR EDUCATION ORGANIZATIONS. 60 min.

Chairman: Clifford E. Emanuelson (Nature Conservancy)

1. National Outdoor Education Association.
Edward J. Ambry (Director, New Jersey State Council for Environmental Education)
2. Conservation Education Association.
Stanley B. Mulaik (University of Utah)
3. Association of Interpretive Naturalists.
Howard E. Weaver (University of Illinois)
4. American Nature Study Society.
Douglas E. Wade (Northern Illinois University)

Resume — ANSS BOARD MEETING

Monday, December 30

8:30 a.m. — FIELD TRIP: Reading the Landscape in the Dallas-Fort Worth Area

Chairman: Stanley B. Mulaik (University of Utah)
Front Entrance Statler Hilton Hotel

Tailoring Outdoor Programs to Community Needs

Communities throughout the nation are rapidly developing outdoor education programs which have long been overdue. Robert L. Vogel, chairman of Session III will present some introductory statements regarding the major sources of support for outdoor education programs, and the general goals and objectives of these programs will be examined briefly.

The major format of this examination will evaluate the design and purpose of each school program, how it is tailored to community

needs; how the population is served; scope of the program related to numerous factors; reception by the community; evaluation of the program as in evidences of behavioral changes in children; and major limitations that the program faces currently.

Participants will be given 25 minutes to develop their presentations, and fifteen minutes of questions will follow. Dr. Morris Wiener will present a reaction in the light of his perspective developed through his professional preparation and experiences in the areas of curriculum development and outdoor education.

Schools Only Educate - Society Acts and Decides

ROBERT E. ROTH
University of Wisconsin

The major goal of education, according to the Educational Policies Commission of the National Education Association is: "To help the individual develop abilities in critical and reflective thinking so that he can participate in and contribute to a changing democratic society." The emphasis is placed on ability to think as a factor contributing to a happy and satisfying life. A corollary to the above goal is, of course, the transmission of the cultural heritage.

The role of education in Environmental Education could be described as being: "To develop abilities to think critically and rationally about environmental matters." It seems that conservation education, as it has been practiced and taught, has not been particularly successful in realizing this goal because of at least two major problems: (1) The lack of a precise definition of conservation; and (2) the lack of an identified body of knowledge that is useful for curricular development.

Another aspect of educational development for conservation and environmental decision making that must be considered is related to the purpose and capabilities of the school itself. If one asks the question: "What can the schools do?" there are two answers that seem appropriate. The first is that the schools can help the individual develop abilities

and reflective thinking. The second is that the schools, as an instrumentality of society, are charged with the responsibility for transmitting the cultural heritage. This heritage is selected by various groups and professionally trained educators, like locally selected community boards of education, interest groups, professional educators, administrators, and the ultimate source of the curriculum — the teacher. The "heritage" will reflect environmental concerns only insofar as those doing the selecting are aware of the environmental imperatives.

The second question also must be asked, particularly in light of our past attempts in conservation education, and that is: "What can the schools *not* do?" The schools cannot remake society in a conservation image, or any other image for that matter. No single societal institution has ever been able to do this. Similarly the schools cannot make a cultural heritage, they can only reflect the culture.

In response to these facts of educational existence and life, I would submit the definition for environmental education proposed by Dr. Paul F. Brandwein which has particular utility at the present time. Recall that his proposal was stated as follows:

The recognition by man of his interdependence with his environment and with life everywhere, and the development of a culture which maintains that relationship through policies and practices necessary to secure

the future of an environment fit for life and fit for living.

The first position of this definition, "The recognition by man of his interdependence with his environment and with life everywhere," . . . seems to be appropriate for education and is that which can be done by the schools in line with their mission as a social institution. The second part, ". . . and the development of a culture . . ." cannot be accomplished by the schools alone, but is more appropriately the relevant domain of the politico-socioeconomic society at large.

Finally, if the above definition is acceptable as a starting point for a refocused approach toward attaining an environmentally as well as scientifically literate citizenry, an identified body of knowledge about the environment is essential. To be scientifically accurate, intellectually honest, and environmentally useful, groups of active environmental managers, scientists, and researchers must become involved in building this body of knowledge. Professional educators, scientists, and humanitarians must also communicate and cooperate if a usable body of knowledge about the environment that is also appropriate for curricular development in our schools is to result.

We have much information around us, but a concerted effort is necessary to go the next mile and build meaningful, educationally correct, and scientifically accurate educational curricula. The time has never been so appropriate as now.

IBP and the Environmental Crisis

The ANSS program at Dallas, December 26-30 promises to have much relevance to the issues of the day concerning the environment. Mrs. Ruth Scott has prepared a program of high caliber considering the people she has obtained for panels and as speakers. Professor Frank Blair of the University of Texas provides a key to the major features when he writes:

"The environmental crisis in which man finds himself is one of the most serious problems, if not transcending all other problems. The International Biological Program is deeply concerned in this problem and it promises to bring many significant features to the fore. The IBP is a multi-national ecosystems function, and the program will officially end in 1972. The kinds of new biology which will be generated under this program is expected to continue indefinitely, since it is essential to proper management of the earth's environments."

TIPS PACKET AVAILABLE

ANSS has just published an attractive Packet of TIPS and Photos, containing 18 Nature Study projects and 24 photographs suitable for classroom instruction. The packet is a compilation of Nature Study TIPS from this magazine, most of which have been out of print. Teachers and nature interpreters will find such old favorites as Roth's "Time Lapse Geology," Mulaik's "Spiders," and Bonwill's "A Learn-From-Nature Trail" among the eighteen projects in the packet. The photographs have previously appeared as center spreads in NATURE STUDY. Each has a caption on the back for teaching purposes.

If you have been wishing to get some of these out-of-print TIPS and photos, or if you have friends who wished they might have them, here is your chance. They may be obtained from the editors (Stanley B. Mulaik or John Gustafson), or if you wish them in quantity, write to the publisher: The Park Press, 330 Locust Street, Indiana, Pa. 15701. Cost of each packet is \$2.50; in quantities to bookstores at 20% discount.

Interpretive Training Needed

Outdoor recreation is not new. The youngsters of ancient cave dwellings often descended to the valley streams to wade and swim, or perhaps to bring home some fish or crawdads or even frog legs for the family meal. The dwellers of ancient forests may have climbed some knoll to gaze in awe at a distant storm or to watch a brilliant sunset. Those people were geared to the outdoors. Many millenia of such life made them psychologically and genetically fitted to the wilderness around them. Their training enabled them to live successfully off the land. Theirs was a life which had no need to develop a fitness for intense crowding into cities.

In these early days in the dawn of history, man did gather into communities, but largely for protection, yet he did not lose contact with the fields where he went to care for and harvest his crops, and where he grazed his domesticated stock. Nor did he fail to go to the distant hills to snare wild game to supplement his meager fare gathered from his fields and flocks.

Scarcely a generation ago there was a rare child who didn't have grandparents, uncles and aunts or other relatives who lived on a farm to which periodic visits were made. On these visits the local fields, woods, streams and meadows were explored. Contacts with its animal life were meaningful experiences. There was an identity with nature which was a healthy situation. This gave an outlet to pent up psychological and often misunderstood longings to bring man's basic outdoor nature, built through many thousands of years, a sense of satisfaction and spiritual uplift. A relative on a farm today is a rarity.

Outdoor recreation is not new. What is new are the vast problems raised by the immense crowds now seeking outdoor experiences. The outdoors attracts them, but their years of being penned up in endless rows of modern houses in modern megalopolis has not given a skill in gaining a meaning from the occasional outdoor experience. They see trees and do not understand them or the forests they comprise. They hear sounds of the woods but these have no meaning. To them deep woods seem silent when in truth the insects, birds and mammals, the storm blowing through the tree tops, all have a story to tell.

Man longs for interpretation of the things he sees and hears in the outdoors and the experiences he has there. To satisfy this longing, the U. S. Forest Service, the National Park Service and other services try to give interpretation

in a number of ways. Self-guided nature trails, interpretive museums, and even personally guided tours have been offered, but the numbers who demand the service are growing faster than the interpretive programs can be expanded. The most optimistic predictions indicate that our population will double by the year 2,000. Some say it will be sooner. In any case, with greater leisure, possible shorter work day, and longer vacations, there will be a tripling of the number of people seeking outdoor experiences.

New teachers entering the field of teaching generally have little firsthand experience with interpretation of the outdoors. The children in their classrooms will fare little better. When they do go with their parents on forays into the woods, fields, and streams, these and the sounds of nature will have little meaning for them.

The sudden silence of birds when danger is near will not be understood. A change in the wind direction will scarcely be noted, and less likely to be related to a change in the weather. Teachers must be trained to have a better rapport with the out-of-doors in order to provide more meaningful experiences for children. Indoor trained biologists with their laboratory skills can do little more in the outdoors than to struggle to adapt their laboratory activities in the outdoors. They provide only low quality outdoor interpretation. The traditional biology courses to which elementary teachers are exposed give little of value for the lower grades let alone any skills in outdoor interpretation. Teachers must seek skilled outdoor leaders who are skilled interpreters.

A summer at one of the National Audubon Camps is an unforgettable experience in outdoor interpretation. The teacher who needs credit may earn upper division or graduate credit at some of these camps which cooperate with universities. S.B.M.

"It is the firm conviction that teachers and parents, as time passes, will appreciate more and more the need of the growing intellect to be placed in contact with the real objects and laws of the natural world, until *Nature Study* in some form becomes the first essential in an elementary education.

—Horace H. Cummings in
"Nature Study By Grades."

"We must get more into the open for the health, whether of the body or the soul."
—Baden Powell

City Recreation and Nature Interpretation

ELIZABETH CLARKE
*Supervisor of Gardens
and Nature Activities*

Many children in large cities never get to the country. Imparting some of the joys of the out-of-doors to city youngsters is a challenge. To have fun and yet provide a learning situation is possible. The leader can plan a series of weekly nature and science programs in advance and can present visual stimuli in the form of bird's nests, different shapes of leaves, and different kinds of flowers. A shelf at eye level displaying pine cones, seed pods, leaves and other nature items, all properly labeled, can form the basis for fun and learning.

Films, records of nature songs, or discussions on timely subjects vary the program. Additional interest can be provided by incorporating arts and crafts projects. Some examples are the making of bird mobiles or the compiling of booklets of crayoned pictures of birds observed by the children. In these booklets the children can write a few sentences about birds, their habits, their nests, eggs and food. The booklet might be displayed at the center and then taken home to show the parents one of the activities engaged in a recreation situation.

Another craft project of interest to city children is constructing a model farm of cardboard or other scrap material for the house, barn and barnyard animals. The finished project can be set up on a table for all to see.

Of added interest to the farm project is butter making which is fascinating to the very young, and a highlight of the total project. In this activity, the leader has an opportunity to stress the importance of the cow and the fact that milk is a natural product from which butter is made.

This leads to discussion of food. It is difficult for city children to associate vegetables on the grocer's shelf with the fresh vegetables grown from seed. Craft projects using seeds can be employed as a part of the nature program for active young people. Seed pictures, using different shaped seeds, keep busy hands and minds active associating the names of seeds and vegetables used to complete their pictures. Trips to vegetable markets help to associate products with projects completed during the winter months.

For summer the interest in vegetables or flowers can be continued by planting seeds indoors, in egg shells if necessary,

NATURE STUDY

Ozalid Leaf Printing

JOREEN PIOTROWSKI and WAYNE T. BELL, JR.

Ozalid leaf printing makes it possible to reproduce the delicate patterns of leaves. It is a simple, inexpensive process requiring little skill and no great array of equipment.

Materials:

- An interesting leaf or fern
- Ozalid (o' za - lid) paper
- A piece of sponge or cotton
- Bottle of ammonia
- Large-mouthed glass gallon jar with lid
- Small glass (to fit inside gallon jar)
- One pane of glass slightly larger than the Ozalid paper (window or picture glass will do)
- Cardboard (cut to same size as the glass)
- Tape, masking or electrical

Ozalid paper is specially treated to be chemically sensitive to light and ammonia; it can be purchased at a large stationery or photographic store for a penny a sheet. If you expose the paper to bright light, all but the leaf-covered area will bleach out, leaving the pale, yellow "shadow" of the leaf on the paper. If you place it in ammonia fumes, the shadow's chemical coating develops and turns the shadow gray, brown, or purple, depending on the type of paper purchased.

Directions:

1. Lay the sponge or cotton in the small glass, soak it with ammonia, and put it in the gallon jar. Screw the gallon jar lid tightly and wait for the jar to fill with the ammonia vapor. This is your developing chamber. (Figure 1.)

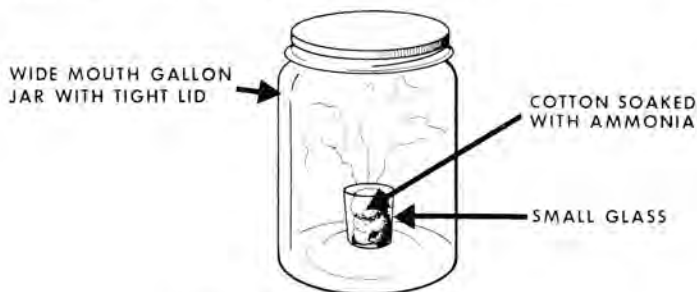


Figure 1. Developing Chamber

2. Using tape, hinge one side of the piece of plate glass to the cardboard, as shown in Figure 2. This frame will flatten and preserve your leaf arrangement. For greater safety, tape the glass edges.

3. Place your leaf on the glass in any position you like. Lay the ozalid paper, yellow (coated) side down on the leaf, and close the "sandwich" with the cardboard.

4. Turn the glass up and expose to sunlight. Hold the frame tightly at the edges, being careful to keep your fingers from shading the paper. Wait until all trace of yellow disappears (5-10 seconds in bright sun, half a minute or more on cloudy days).

5. Remove the leaf and paper and place the paper in the developing chamber. Remember to replace the lid. Do not let the paper touch the sponge or cotton.

6. The ammonia fumes should quickly turn the "shadow" to a darker color. More ammonia may be needed if your print does not develop within two minutes.

The printing may be done indoors using a bright electric bulb instead of the sun as the light source. Be sure the room is well-ventilated for ammonia fumes may be harmful. Use flowers, ferns, and dried butterflies for your subjects. Do not expose your print to bright light as it may fade. Artistically arranged, the finished prints can be used to make durable leaf notebooks, stationery, place markers, and party favors.

— from CONSERVATION CORNER
Department of Conservation, Cornell University

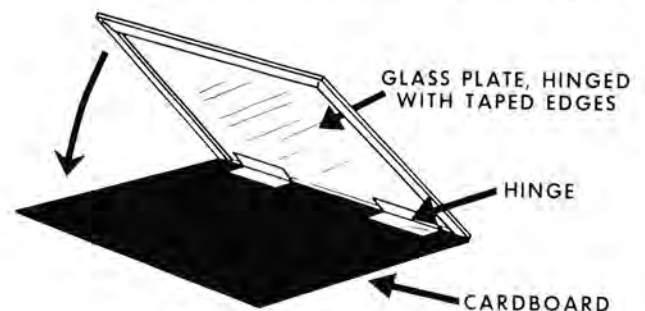


Figure 2. Printing Frame

then planting the seedlings in the open near the recreation center. Vegetables are exciting from the first seedlings that push up above the soil in the spring to their harvest. A corn roast or hot-dog roast in summer is as rewarding as the harvest of vegetables taken home at the end of each gardening session.

To stimulate interest among gardeners at the centers having gardens, civic organizations and garden clubs judge the work of the young people. Certificates and hand tools are offered as prizes for the centers with winning gardens.

Gardening in winter can be accomplished in a greenhouse with controlled heat and light constructed inside a recreation center. Here little people may be

instructed in the correct way to propagate plants, mix soil, and pot up rooted cuttings. Each child takes pride in being able to name the kinds of plants growing in this miniature greenhouse. When to water the plants, controlling temperature for best growth, and making simple experiments on plants keep interest high. It also gives an opportunity for youngsters to marvel at the motion of the sensitive plant and the prayer plant. Working with plants in the warm greenhouse is strange when it is cold and snowy outside.

Winter snow suggests a project on animals and their tracks. Drawing tracks of wild animals and learning about animal habits can culminate in attractive

booklets. Other subjects for projects for the serious older children are found in science, space, weather and the heavens. The book Brain Boosters supplies ideas for teen agers.

At first thought nature in a city recreation center seems almost impossible. Taking it step by step, and bringing the out-of-doors, part of the woodland, the farm and garden to the children at the center opens avenues of learning that might otherwise go unnoticed.

The rewards and satisfaction of working with children are counted in the smiling faces and in an awakening of an inner understanding of the world around them and the interdependence of man and nature.

Problems of Cities and The Natural World

Polluted air and water, overcrowding, loss of living space and of wild nature, huge amounts of waste — all are dangerous by-products of great technological advances. But it doesn't have to be that way if we insist on a "rational use of the environment to achieve the highest quality of living for mankind."

That is the new meaning and concern of conservation, and it is cogently explained in *AN ENVIRONMENT FIT FOR PEOPLE*, by Raymond F. Dasmann. This new Public Affairs Pamphlet is available for 25 cents from the Public Affairs Committee, 381 Park Avenue South, New York, N. Y. 10016. Dr. Dasmann is Director of Environmental Studies for the Conservation Foundation and writes for both scientific and popular publication.

"Cities have become focal points in a threatened decline in the quality of human life," Dr. Dasmann points out; and conservationists, "once involved mostly with the natural world and the rural scene," have today shifted their attention to encompass too the problems of the urban areas, where 70 percent of America's population live.

The problem of the cities — whose needs are interdependent with those of the rural and marine environments — are outlined by Dr. Dasmann in these terms: "the nature and arrangement of living space; the problem of transportation; the provision of essential water, materials, and energy; the availability of outdoor recreation space, including areas in which some appreciation of wild nature can be obtained; and, perhaps most compelling of all, the problem of pollution.

"The latter," he emphasizes, "has become all-pervading; the air in many regions of the country is reaching a degree of pollution that threatens the health and welfare of the people; water pollution is present in all urbanizing areas and much of our surface water is unfit for recreational use and can only be used for water supply after expensive purification. Land pollution through solid wastes, the garbage and junk of an industrial society, is growing more severe and its effects range all the way from serious health hazards to the psychological hazard represented by 'uglification' of the landscape and cityscape. Pollution by increasing levels of noise at times threatens our hearing and may have broad effects on our health."

In explaining the conservationist's approach to these problems, Dr. Dasmann stresses the "rational use of the

environment that will at all times be based on a consideration of tomorrow's requirements as well as today's necessities . . . It is non-rational (for example) to destroy living species or to shatter the last remnant of a living community in order to make way for some marginal expansion of some already abundant crop or misplaced suburb." The goal must be "an environment that is healthy, esthetically appealing, and diversified."

Throughout his pamphlet Dr. Dasmann stresses the interrelationships among all parts of life on earth. "Thus," he writes, "air pollution from California's coastal cities affects the health of pine trees in the distant Sierra Nevada. Radio-isotopes from atomic explosions in central Asia can appear in alarming concentrations in Alaskan caribou . . . A decision made in Washington, D. C., can affect the conditions of life for creatures in remote Amazon jungles. Security and prosperity in the United States may depend on the balance of food and population in southern Asia." He expresses particular concern about present levels of population increase, for "some nations and regions behave as though their policy was to maintain maximum numbers of people at a minimum subsistence level."

In addition to his full discussion of the specific problems of urban areas — including a plea for "cities (to) provide diversity if human differences are to be maintained," — Dr. Dasmann reminds the reader of the related importance of conservation of rural lands, of the need for continued attention to the serious international problem of soil erosion, for a halt to the destructive exploitation of rangelands and forests, for the conservation of wildlife and protection of natural areas, and proper care of the valuable aquatic environments that are "the great regulators of the world's atmosphere and climate" and the source of a growing share of man's food supply.

Dr. Dasmann places on the individual citizen responsibility for insisting that our technology "be used for man's benefit and not his detriment, so that it may serve the welfare of all and not just the profits of a few."

AN ENVIRONMENT FIT FOR PEOPLE is No. 421 in the Public Affairs Pamphlet series, now in its 33rd year. The series includes many other distinguished titles concerning health and science, social and economic problems, family relations, and intergroup relations. All pamphlets sell for 25 cents each; a list is available upon request to the Committee.

NAAS COMMITTEE REPORTS

John W. Brainerd, reports that his committee for Natural Areas At Schools has for its goals: To help every school have outdoor environments for the study of natural resources, with emphasis on relatively natural areas. Considerable progress has been made in the past year. Dr. Brainerd has prepared NAAS Leaflet No. 1, *Promoting Natural Areas at Schools* and Leaflet No. 2, *Outdoor Environments for Indoor-Outdoor Education at Schools*.

These excellent leaflets are available from the Broad Brook Press, 933 Main Street, Bennington, Vermont 05201. (20¢; 25 for \$4)

ANSS Kit No. 1, *Presenting A Slide Showing of Local Natural Resources* has been revised, and revised copy for a first edition of ANSS Kit No. 2, *Preparing Educational Slide-Sets of Local Natural Resources* is ready and should soon be available from the Broad Brook Press.

John makes an appeal to others to write other NAAS leaflets. Topics suggested are as follows, but there are other needed titles:

Protecting Natural Areas at Schools

Mapping School Natural Areas and Their Resources

Making Trails in School Natural Areas

Teaching Lower Elementary Grades in School Natural Areas

Teaching Upper Elementary Grades in School Natural Areas

Teaching Art (or other subject) in School Natural Areas

"For most of us, knowledge of our world comes largely through sight, yet we look about with such unseeing eyes that we are partially blind. One way to open your eyes to unnoticed beauty is to ask yourself, 'What if I had never seen this before? What if I knew I would never see it again?'"

— Rachel Carson
From "Sense of Wonder"

NATURE STUDY

SHARP-TAILED GROUSE

Pedioecetes phasianellus

The nuptial performances of the sharp-tailed grouse are among the most peculiar in nature, and a photographer who records the activity on movie film has a prize. The photograph is of a sharpie on a spring booming hill. This bird prefers open woodland and brush and ranges from Michigan northward and west. As the forests of the area were cut, their numbers increased, though intensive agriculture makes deep inroads into their numbers.

The food is almost any vegetation and numerous insects, especially grasshoppers.

It readily perches in trees, though in winter it roosts in the snow.

Photo by

E. W. Cole

U.S. Soil Conservation Service

Provided by the Audio-Visual Committee

American Nature Study Society

No. 25

(May be removed for display.)





CANADA GOOSE

Branta canadensis

The Canada goose has stimulated many writers to tell about this bird for it has caught their fancy. The characteristic V-formation of a flock winging across the sky is a prominent feature. Ranging north from the northern tier of states through Canada in the summer where it nests, it is a conspicuous inhabitant of many bays, rivers, lakes, ponds and adjoining fields. In winter its range is southward from these states with a slight overlap of its summer range. When flying the flock is quite vocal with its honking.

The food is largely of grains, grass and a variety of aquatic vegetation. This photograph is of a specimen from Dauphin County, Pennsylvania.

Photo by

Gordon S. Smith

U.S. Soil Conservation Service

Provided by the Audio-Visual Committee

American Nature Study Society

No. 26

(May be removed for display.)

NATURE STUDY TIPS

The Nature of Lichens

SEVILLE FLOWERS

Lichens are made up of two different plants living together in a more or less harmonious relationship producing a characteristic form. Certain kinds of algae and fungi establish this biological partnership in which the alga furnishes the food while the fungus provides protection, and extra means of retaining water, and possibly certain nutrients. This exchange of mutual benefits is called symbiosis. Investigations on the extent of this kind of mutualism seems to show that the fungus is more of an aggressor and that the alga is an unwilling host in the enterprise.

The algae in lichens are free living forms, captured and entwined by fungus hyphae. Their reaction to this stimulation is reflected in rapid cell division which may represent an attempt to escape the clutches of the aggressor but the fungus soon surrounds the new cells by forming hyphal meshes. Rapid cell division may represent a sort of hyperplasia similar to that observed in the tissues of higher plants when they are infected by certain disease producing fungi. At any rate the algae do not appear to be too happy about the circumstances since they are reduced to the status of well treated slaves. The name helotism (a slave) has been suggested for this aspect of the relationship. Symbiosis, however, covers the conditions in its more flexible meaning, which, according to accepted standards, may be stated as "living together of dissimilar organisms, with benefit to one only or to both."

Regardless of which plant benefits mostly, the amazing thing about this partnership is that each particular combination of species of fungus and alga faithfully produces distinguishable lichen species. Furthermore, if lichens constituted only a small group of plants we should be inclined to regard them merely as one of nature's oddities—sort of museum pieces dusted off occasionally for exhibition—but when we consider the twenty thousand or more species that have been described, and the vast populations of many of them, we encounter a power in the plant world not to be taken lightly. They are meek and lowly creatures, retiring and often inconspicuous, their growth so slow that

they make a piker out of the tortoise when it comes to plodding; yet they have among them some of the hardiest and indomitable pioneers in the conquest of life over barren rocks. Crusty growths encroaching on lava or on sun scorched rocks and soils of deserts, or on the forbidding outcroppings of arctic wastes, they are true pioneers. The hyphal rhizoids of the fungous element penetrate the hardest rocks, dissolving part of their substance and softening the outer layers causing exfoliation. They facilitate the eroding power of frost and wind. The softened rock and lichen mass provides a point at which a spore or seed of some higher plant may take root and here begins a slow succession of plants that eventually cover the rocks.

Forms of Lichens

The lichen body is called a thallus, a term denoting a wide variety of plant bodies not differentiated into true roots, stems and leaves. Properly speaking both the fungous and algal elements are thalli, but since the former makes up the conspicuous part of most lichens and is responsible for the shape, size and color of the body, it is the custom in lichen terminology to limit the term "thallus" to the fungus. In a relatively few groups having the alga as the conspicuous member we speak of the thallus as invading and transforming the algal colonies in a particular manner.

The thalli of lichens are of four general forms: crustose, squamulose, foliose and fruticose.

The thallus of the crustose type forms a very closely adhering crusty or rimose growth on the substratum. They grow on trunks and branches of trees, old wood such as fences and roofs, on soil and particularly on dry rocks. If we examine a rock, for example, that shows different sized lichen colonies we see that they begin as a small roundish, thin or thickish thallus one to two millimeters across, and as it spreads out from a common center it tends to keep its circular form although the growing margins may become divided into little angular areoles separated by chinks or fissures. They have the appearance of the familiar condition observed when a flat area of mud deposit dries out and undergoes shrinking.

While the crustose lichens are closely attached to the substratum along the margins, so that the edges follow the contours and irregularities very closely, the squamulose forms have the region of active growth at a higher level in the thallus so that it tends to grow out free of the substratum and is not closely attached to it. There are several degrees of development depending on the extent of the free margin and among squamulose lichens we designate forms having a warty, a biscuit-like, a scaly or a somewhat leaf-like appearance.

The foliose lichens are flattened and expanded, more or less leaf-like, mostly horizontal on the substratum, but often ascending or even erect. They are attached by stout rhizoids variously distributed on the lower surface or by a single stout, centrally located umbilicus. The leaf-like thallus may be quite entire but in most species the margins are variously lobed or divided, the segments broad or slender, the surface flat or ruffled variously curved upward and downward, frequently strongly contorted or twisted.

The fruticose lichens have a more or less cylindrical, usually branched thallus attached by rhizoids at the base. Some are thick and short while others range through various degrees of thickness and length to extremely irregular filaments, often very long. The branching may be dichotomous or irregular and the surface may be smooth, cracked, variously roughened or with nodular thickenings, sometimes ribbed with longitudinal ridges. In some cases the body becomes flattened, at least in part, and the flattened portion may be perforated and netlike. The term fruticose means shrubby and many lichens of this kind stand erect and resemble minute shrubs although others are weak and pendent while others have a simple unbranched body. In size some are quite short ranging from five to ten millimeters in height to tall ones ranging upward to one and a half meters in height and length. (The *Cladonia* featured in Nature Study, Vol. 22, No. 1 belongs to this group.)

Colors of Lichens

The color of the thallus of a given species generally varies along a certain range of intergrading tints or shades while a wider variety is progressively encountered among different species.

No. 37 in the series.

genera and families. One of the striking features of the colors among lichens is their prevailing pastel quality. Even among those having the brighter hues there is a softness that blends pleasantly with contrasting colors, and rarely does a harsh note mar the general effect.

Gray is a predominating hue and a whole series of color values may be traced from it. Certain species are almost white, or rather ashy-white which ranges toward bluish-gray or dark ashy-gray. Others vary from ashy to brownish shades or even blackish, occasionally reddish-brown, chestnut or even purplish-black. Along another series is the gray-green quality frequently described as sea green. It passes into darker olivaceous shades, often nearly black, or it may merge with tints of bluish-green, or yellowish green, often very bright. A third line of tints is the yellowish quality or pale straw-color culminating in bright lemon yellows, saffron and mustard, often with a suggestion of rusty brown. The reds are delightfully showy. Most of them are bright cinnabar, rust-red, vermillion or orange. Rarely do they appear in paler tints. It is indeed a lively sight when a number of these brightly colored lichens get together on the same rock or tree. One particularly fine showing is made on darker rocks like lava or basalt when one finds orange and yellowish splashes mingled with soft sea greens and pale ashy tints in a variety of curious designs and patterns, variegated and gay.

Uses of Lichens

Numerous small insects, caterpillars, snails and slugs feed to a limited extent on lichen thalli. It is probable that many others are repelled by the bitter acids present.

Termites in Ceylon commonly eat lichens although they prefer algae. The workers scrape bits of thalli off and mould them into little balls 1.5 to 2.5 millimeters in diameter and carry them to their nest where they are sooner or later eaten.

In the arctic region the reindeer moss, *Cladonia rangiferina*, has a high palatability for numerous wild animals and forms one of the main sources of food. It grows in great swards in valleys and on protected hillsides, often becoming eighteen or twenty inches high. The Iceland moss, *Cetraria islandica*, is also an important lichen food. Both species are used in great quantities as supplementary feed for horses, cattle and pigs in Northern countries. A given area is usually harvested every three years, the lichens cleaned, soaked in soda solution for 24 hours, and then washed with water. After it is dry it is ground to a

powder and mixed with other foods. Animals thrive on it. The Iceland Moss is also used for human consumption as it is prepared in much the same manner. The powder forms a gelatinous mass when boiled and is used in soups, stews and a variety of other dishes. A jelly is made by the addition of various flavors and it constitutes the basis of desserts. It is also used in bread.

Various other lichens have been used for food by people of many countries and history is replete with examples. Lichens have been found in tombs in Ancient Egypt with other foods. Authentic cases are on record where soldiers and explorers have resorted to lichen as an emergency food. The rock tripe, *Cyrophora species*, was used by early explorers and woodsmen in Canada. Much interest and speculation surrounds the manna of the Israelites and it is generally believed that it was the lichen *Lecanora esculenta*. This species is abundant in the Levant where it grows on rocks but commonly becomes detached and is blown by the wind into local deposits, some of considerable size. In the same region and extending eastward around the Caspian Sea is *Parmelia molluscula* which grows on soil and breaks free whence the wind blows it into piles. It also has been considered as being biblical manna. In western North America a closely related species *Parmelia chlorochroa*, occurs on plains and deserts. The nutrients in lichens show about 11 percent protein and 88 percent carbohydrates.

Lichens have shared in the pharmacopoeia of nature. Their medicinal values are mentioned in ancient writings and in the herbals of the middle ages. With the advent of the "Doctrine of Signatures," which held that nature endowed various plants with a signature for indication of the virtues they possessed for man's use, lichens among other plants, found fancied uses. Accordingly it was believed that the long stringy thallus of *Usnea barbata* indicated that it would strengthen the hair and cure baldness. The pitted and reticulate character of the lungwort, *Sticta pulmonaria*, suggested the general similarity in appearance to the lungs and that it would cure afflictions of these organs. The yellow color of *Xanthoria parietina* indicated a cure for jaundice. The dotted appearance of the thallus of *Peltigera apluthosa* was believed to be a sign that it would relieve eruptions of the skin. The dog lichen, *Peltigera canina*, was prescribed for hydrophobia. Since *Parmelia saxatilis* occasionally grows on human skulls when exposed, it became known as the skull lichen and was regarded as a sure cure for epilepsy,

especially if it were obtained from the skull of a hanged or executed criminal.

Of all the older uses of lichens in industry perhaps the dyes have held on the longest. Some of them are still used to a limited extent. *Roccella tinctoria* yields a purple dye called orchil, or archil, although a wide variety of other species give the same pigments. It is not a single substance, but a mixture, and, the term orchil is general for three main kinds according to the method of preparation. There are true orchil, a purplish paste, cudbear, a reddish powder, and litmus, a true purplish-red powder. They are all derivatives of the oricine series of lichen acids usually prepared by cleaning, washing and treatment with alkali solutions such as soda or ammonium hydroxide.

Yellow and red dyes were prepared from *Parmelia conspersa* which contains salazinic acid yielding a yellowish-brown pigment. Species of *Haematoma* give a rich rust brown pigment.

Properly cleaned and powdered lichen thalli were perfumed with various scents combined with ambergris and musk and used as hair powder and to dust clothes closets and wardrobes. It is said to have retained the odor for a long time.

Things To Do With Lichens

Lichens make excellent terrarium plants. Students may collect them on a field trip, or bring them from home. Small stones or pieces of wood or bark on which lichens are growing can be arranged, along with mosses, ferns, and small evergreen trees, to make a fascinating bit of "woodland" scenery in a gallon jar or aquarium. Pixie cup lichens and British soldier lichens are particularly attractive. They require a minimum of care—do not over-water, and allow a little air circulation to prevent mold.

When on field trips, have the students examine lichen-encrusted tree bark and rocks with a hand lens. Try photographing with a portrait lens, to get close-ups.

Since lichens are pioneers in plant succession, try to find several stages, from bare rocks to lichen-covered rocks to shallow soil, where mosses and small herbs take over. Lichens often grow on poor soil, such as on hill tops, where patches of reindeer moss (a lichen) can be found.

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Desert Hiking Trail

ROBERT W. GAIL

From the top of Steens Mountain in southeastern Oregon you can see astonishing vistas of desert, lush pastures and meadows, rolling sagebrush-covered hills and awe-inspiring mountain crags. You may even, as Russell Pengelly did some five years ago, see a part of the way into the future.

The success of the mountain trails, the Appalachian, the Pacific Crest in the Cascades, and the Rocky Mountain Trails, led him to speculate on the vast and largely unreachable desert and semi-arid territories of the Great Basin, and on the possibilities of a hiking trail that would traverse some of these exciting places.

Mountain trails, because of their altitude and location, are open to use only during the limited summer months. A desert trail, on the other hand, would be most open to use in the spring and fall, and parts of it especially in winter. Thus, hikers could select the various segments of the trail to travel in whatever period of the year their vacations and inclinations provided for.

So was born the idea for a Desert Hiking Trail, to include a tremendous variety of scenic, geological, historical, biological and ecological points of interest. Pengelly, a biology teacher at Burns Union High School began a survey of pos-

sible and potential areas for such a trail. He discovered that it was eminently practical, and could be located almost in its entirety on public lands. Little or none of it need encroach upon private land.

Letters followed to people who would be concerned with such an idea: Congressmen, Senators, public officials in the Forest Service and the Department of the Interior, Recreation and Wildlife and Conservation groups. In short, anyone who might be interested in such a trail and influential in its development. All responses to date have been favorable.

Because of the impossibility of one man planning the whole route with full knowledge of the terrain involved, Oregon, the state of origin of the idea, was selected for the first step in the development. The general route proposed begins in the Wallowa National Forest in the northeast corner of Oregon, follows forest lands southwesterly through the Whitman and Malheur National Forests to and down the North Fork of the Malheur River. Leaving the river near Drewsey, the proposed trail would proceed in a southwesterly direction through the Stinkingwater Mountain country, (an area rich in fossils, agate and petrified wood) to the famous Malheur Cave.

From Malheur Cave it would proceed westerly to Diamond Craters, a volcanic area thought to be only about four hundred years old, still looking as though it might be too hot to step on. From Diamond Craters the proposed trail would reach the Malheur National Wildlife Refuge, where it would follow the eastern dike along the base of Steens Mountain. During summer months the trail would lead to the top of the mountain, thence down Whitehorse Creek to the Alvord Desert, southward along the Pueblo Mountains and into the Black Rock Desert of northern Nevada. Alternate trails for spring, fall and winter months could skirt the eastern base of Steens Mountain through the Alvord Desert, or the western slope perhaps as far west as Catlow Valley with all trails re-uniting at Fields, Oregon.

An interesting probability is that in such vast reaches of open country, a number of alternate, branching and feeder trails could and should be established in order to provide trails that could be used almost the year around. For example, a feeder trail from Bend, Oregon, could go through the Fort Rock Desert, the Lost Forest, Warner Valley Bird Sanctuary and the Hart Mountain Wilderness Area.

Forest Service Officials in that part of Oregon forests to be traversed by the trail have expressed an interest in the proposal. It would fit right in, they say, with their present plans, and could readily be incorporated into their trail system.

John Scharff, Manager of the Malheur National Wildlife Refuge, has given his nod of approval to the proposed trail where it follows the Refuge, with the provision that motor bikes could not be used on the Refuge because of their disturbing affect on nesting wildlife.

Bureau of Land Management officials in Oregon have expressed guarded interest. They find no major objections to the proposal.

Choice of actual routes, plans for development, rest stops, camping spots, water holes, bridges and other structures when and where necessary must wait on specific action by the Congress. Development and administration of the trail would most likely be under the jurisdiction of whatever branch of the government was in charge of the various areas, and would include the Forest Service, BLM, Fish and Wildlife (Refuges).

Continued on page 10



Photo by Russell Pengelly

Congeaed lava at Diamond Craters, looking almost hot to touch!

Education Must Be Relevant

M. GRAHAM CLARK
President, School of the Ozarks

Commencement is a time for evaluations. Usually the emphasis is on the graduate's need for evaluating where they are and where they are going. But it should also be a time for the schools and colleges themselves to evaluate where the graduates have been and what should be done to make education relevant to the needs of the time, that their programs will be relevant for classes yet to be graduated. Just as today's sun never rises on yesterday's world neither can the educative process be considered static.

Basic to any evaluation of the program of a school or college is the meaning of education. A graduate should ask himself, "Am I educated?" and the institution which awards the diploma should ask if its graduates have been provided with information, learning, schooling or education. True education is not the same as the first three, although there is often much confusion about them.

Information can be found in any source book, encyclopedia, or almanac. Facts, dates, records, documents, measurements and the like comprise information. This raw information has little to do with education (except the educated man knows where to find this material when he has need of it.) Computers and memory machines can do better than man in the storage of this material.

Schooling, the process of being taught in school (where instruction is given), consists in the learning of information, lists of memorable dates in history, memorization of rules and ex-

ceptions, classification of animals, plants and minerals. These may be tools of education, but they do not in themselves provide man with an education. Many men who have lacked these tools have been highly educated; others whose heads are filled with them may not be.

Learning is more disciplined and more specialized than schooling and implies that the learned person has a deep knowledge of a particular subject and a more than average comprehension of it. Learning implies knowledge acquired by systematic study in any field of scholarly pursuit. But everyone knows the axiom that "a little learning is a dangerous thing."

Education on the other hand, implies

discipline and development by means of learning, study, contemplation and experience. It enables a man to understand relationships; relationships between facts, and what are offered as facts; ideas and relations between one idea and another idea. The educated man or woman is aware of a value system that has relevance to them as individuals. No education is of value to a man if he cannot relate it to himself and himself to society of which he is a member.

Schools and colleges should constantly re-evaluate themselves; not waiting until commencement time for self-evaluation but maintaining a constant self-analysis to determine if what is offered as an education actually relates to the individual and his society. Only in this way can a school or college respond to the needs of society and claim the right to be an educational institution.

Lenses On Nature

PAUL V. WEBSTER

Types of Films for Classroom Use

There is such a great selection of films on the market, that it becomes increasingly difficult to choose the ones to use. One might place films into three categories for use in the biology classroom in order to insure the use of several from each category.

First are the films which can do an excellent job of demonstrating a difficult concept in a visual sequence, provided with a commentary on an elementary level in order to develop an interest in further investigation.

Second are a few selected films on a high technological plane or films with sequence on this level. This can demonstrate to the student that there is much to know in science and illustrates to the highly talented student that they are far from "knowing everything" in biology. Too many such films, however, might well discourage the student which is the other extreme to avoid. This type of film can also be selected to further educate the teacher of recent advancements in his field. In fact, it might be well for the teacher to select different films for this category each year as a type of in-service training for himself and other members of the department.

The third type includes the "mood" films. It is here that nature study films can be used to advantage. There are many excellent nature films which fill this need. One of the most important attitudes which a biology course should engender is an appreciation of life and a beautiful nature film can certainly aid in developing this appreciation. It might

be well for the teacher to distribute several of these films throughout the year rather than only showing them when ecology, conservation, or taxonomy units are being studied.

Audio-visual Committee

Any member who would like to serve on the ANSS Audio-Visual Committee inform Paul Webster, Bryan High School, Bryan, Ohio 43506. The society would also welcome articles concerning audio-visual subjects for publication in *NATURE STUDY*.

Good nature photographs for the center pages in *NATURE STUDY* are needed. It is preferred that these be 8 x 10 glossy photographs to be sent to Paul Webster or to the editors of the journal.

Among audio-visual materials are the Walt Disney productions which feature wildlife. These are available from state libraries and many university libraries. *White Wilderness* is an excellent film in this series. It beautifully portrays some of the animals of the frozen arctic such as the caribou, wolverine, musk ox, whale, wolf, lemming, polar bear, walrus, ptarmigan, and the snowshoe rabbit.

As with most of Walt Disney True Life Adventure films, there is too much personification, though this fault has not been emphasized by scientists as much as in former years. This fault can be discussed and evaluated following the showing of the film.

(A multiple choice test on this film will be included in a future issue of *NATURE STUDY*. Ed.)

DESERT HIKING TRAIL

Continued from page 9

Bureau of Indian Affairs (Reservations) and the Park Service.

The important work remaining to be done is for interested individuals and groups to espouse and promote the Desert Hiking Trail, and for people in the states from Idaho and south to the Mexican border to go over areas with which they are familiar and develop proposed routes so that when the Congress is ready to act all needed information will be available. Individuals can discuss the proposal at service clubs, chambers of commerce, club meetings of all kinds. Letters need to be written to congressmen and senators from other states than Oregon. The Desert Hiking Trail can become a reality in the future that Russell Pengelly saw from the top of Steens Mountain.

News and Notes

Welcome To New Members

Marion M. Aldrich, Pittsford, N. Y.
Ashwaubenon High School Library,
Green Bay, Wis.
Jeannie Ross Britt, Mars Hill, N. C.
Lynden Brown, Lebanon, Ore.
Craig Chase, Yorktown, N. Y.
John Ciardi, Metuchen, N. J.
Coughlin High School Library, Wilkes-
Barre, Pa.
Martin S. Davis, Topeka, Kansas
Mrs. Beatrice T. Derickson, Bear, Del.
David C. Engelson, Madison, Wis.
Mrs. Stanley A. Feitler, Pittsburgh, Pa.
Nathan Finck, Gates Mills, Ohio
Robert L. Garner, Philadelphia, Pa.
Dr. Martha Glascock, Iowa City, Iowa
Susan Godfrey, Newark, N. J.
Grace E. Godley, Morris Plains, N. J.
Mary D. Houts, Hershey, Pa.
Jackson County Park Dept., Blue
Springs, Missouri
Hal. L. Mickelson, Ogden, Utah
Marie Mitchell, Stockton, Kansas
Arthur Ogilvie, Palo Alto, Calif.
Thomas Powell, Editor, the Avont
Gardner, New York, N. Y.
Stephen Rituper, Jr., Bethlehem, Pa.
Jacob Shapiro, Oshkosh, Wis.
Leland C. Smith, Kenosha, Wis.
Mrs. R. V. Smith, Hamilton, Ohio
Carol J. Snow, Lander, Wyo.
Richard A. Tapply, Concord, N. H.
K. Roger Troutman, Mansfield, Ohio
Dietrich Waack, New York, N. Y.
Washington State Library, Olympia,
Wash.

"In the midst of our praise of un-
spoiled nature, let us remember the im-
portance of good companionship."

—Sam Campbell

An authority might tell one that
snowflakes have five points, or six or
seven, or some other number. On the
other hand, snowflakes may be said to
vary in number of points. The best ad-
vice to give here is to go to PROOF for
authority. In other words examine snow-
flakes and get the right answers. Snow-
flakes have a fixed number of points, or
they are variable. All snowflakes are
alike or infinite in variety. The basic pat-
tern of snowflakes in a given snowfall is
related to conditions of formation, or
while snowflakes might vary, types are
not distinguishable.

What is the real story? Examine snow
during different snowfalls and under
different temperature and wind con-
ditions.

—Nature News-Notes, Nov. 1965

Western Section Elects

At the June meeting of the Western
Section of ANSS which met in Logan,
Utah, as an affiliate of the Pacific Di-
vision of AAAS, Mrs. Dorothy K. Platt
of Salt Lake City was elected president
to serve for 1968-1969. She succeeds
Theron Strange of Seattle, Wash. Mrs.
Platt had prepared an excellent program
which was attended by over a hundred
people. The field trip up Logan Canyon
was one of the highlights. The 48 on
this trip were well rewarded by the in-
terpretation, the reading of the land-
scape given by leaders Stanley B. Mu-
laik, Roland Case Ross and Hal L. Mick-
elson. The view of the world's largest
and oldest limber pine was the best at-
traction. Hal Mickelson of the U. S. For-
est Service, Region Four, is president
elect of the Utah Nature Study Society.

Past presidents of ANSS who attend-
ed the meetings were Dr. Clidden S.
Baldwin, Dr. Ruth Hopson Keen, and
Dr. Stanley B. Mulaik.

The 1969 meeting of the eastern
section will be held at Washington State
University, Pullman, Washington, Au-
gust 18-23.

Many ANSS members will recall the
threat made to a college campground
and laboratory for environmental studies
by a proposal to build a Hall of Fame
at Springfield College, Massachusetts.
John W. Brainerd, Professor of Biology
and Conservation at the college sends
thanks to all who helped him with let-
ters and telegrams which were valuable
in changing plans putting the Hall of
Fame elsewhere.

England Considering Wild Plant Protection Bill

Because of the increasing number of
visitors to the English countryside, Par-
liament is considering a Wild Plant Pro-
tection Bill. The bill will provide for
the protection of wild plants throughout
Britain. A small number of extremely
rare plants are listed in the bill, and it
will be an offense to pick or uproot any
of these species. Other plants can be
added to this list by a Ministerial Order.
The bill also itemizes a second and
larger group of plants which it will be
unlawful to pick in quantity for the
purpose of selling. A third provision of
the bill allows local authorities to recom-
mend a Ministerial Order for protection
of specific plants in their community.

Pampered Campers

Although camping is a life style for
millions of Americans today, there are
signs that some outdoor people expect
and enjoy a few modern conveniences
when adventuring into the "wilds." In
an effort to design more durable and
desirable campgrounds for the future,
the Forest Service is conducting research
for better outdoor living.

At Point Campgrounds, near Redfish
Lake in Idaho, a joint recreation study
is being conducted by the Intermountain
Forest and Range Experiment station
and the Sawtooth National Forest. A
variety of new and unique facilities are
provided at this futuristic campground.
Various management techniques are be-
ing tested to identify what combination
of watering, fertilizing, and planting will
benefit vegetation. And perhaps most
unusual—the campground is scheduled
for a day of rest each week. All camp
units are closed and vacated from 2 p.m.
Tuesday to 8 a.m. Wednesday while the
campground is sprinkled.

Vegetation in heavily-used camp-
grounds is difficult to maintain. Eventu-
ally, weakened plants die, and the ex-
posed soil becomes dusty. Privacy is re-
duced through loss of shrubs and bushes
between camp units. To find the best
treatment for plant life, every year the
changes in vegetation within each in-
dividual unit are carefully measured and
compared. Tests will continue until
1975. Although the public will experi-
ence some inconveniences, Forest Ser-
vice personnel are confident that long-
term benefits will outweigh the annoy-
ances. From Intermountain Reporter,

USFS, Ogden, Utah
No. 29, July 19, 1968

The Vermont State Assembly has
passed a bill to abolish roadside bill-
boards throughout the state. According
to a news statement, the business men of
Vermont are backing the measure be-
cause they feel that billboard alleys
along the highways are a threat to
Vermont's chief industry: tourism. The
bill allows signs at places of business as
well as informational signs erected by
the state.

It is not resources which may be used
as a potential for the good life. It is not
the use of resources to create wealth
which might be a measure of the quality
of health or our society. It is the qual-
ity of life itself which must be examined.

Quality Life and Living

Man in recent decades has boasted of his skills in extracting from the environment materials and energy for promoting the elusive climb to higher levels of culture and civilization. While a few voices cried in the darkness pointing to the destruction of the environment, and in the process of consuming resources and energy, created a condition which might make it impossible for man in his present numbers if any, to exist.

The clamor in America for better cars, more highways, color TV sets, boats and reservoirs to float them on, for more and more industries to attract more and more people produces ever widening circles of impact on the resources. The philosophy some hold that we must continually grow, that we must annually increase the gross national product implies infinite space and limitless resources.

Food production is far behind human population growth in spite of our highly praised technological progress. There is wholesale desertion of farms by many millions who enter cities with no cultural understanding of means of coping with city life. The technology has poisoned the air of our cities, it has resulted in the poisoning of the air, water and soil, and the destruction of the beauties of our countryside in many ways. Escape to the cities has only intensified the problem of providing quality environment for quality life.

The technologists in industry, in federal and state services and economists predicted a glorious future for American Society. There are foresters who can't stand the sight of an uncut mature timber stand. There are engineers, who like beavers, can't stand the sight of running water which they feel must be dammed and used for power. There are agricultural "experts" who promote the idea that pesticides broadcast over the landscape will solve our food needs. Road building engineers have only the automobile as their concern forgetting the environment and ignoring people.

Recreation experts too often measure success of the national recreation in terms of the number of tents, the number of campers on the road, and the growth in sales of boats for which they claim there are too few waterways. They stress the number of camping days and have only a vague concept, if any, of what constitutes quality outdoor experiences.

People want quality life. Technology promised to fill their desires, but all that people got was a gadgetry of TV's, pocket radios, stereo, split level living, the picture window looking out on a high rise apartment, polluted air, polluted water, noises unlimited, and free-

ways which got us in a hurry to unimportant places. In addition, technology brought the worship of the gross national product to a high state of efficiency.

You take it from there! SBM

NATURE STUDY readers will recall the excellent TIPS by John Brainerd (Vol. 21, No. 4) in which are recounted numerous uses and values and avenues of promoting bikeways.

The commissioners of Salt Lake County, Utah, have appointed a committee to study feasible bikeways for the thousands who now are forced to use auto-crowded roads. Members are urged to report to the editors of other bikeways in use or on the drawing boards.

Hopeful Viewpoint Raised

W. H. Hunt in a speech delivered to the annual meeting of the American Plywood Association in June, 1968 raises some hopeful viewpoints.

Concerning multiple use he paraphrases Congressman Wayne N. Aspinall who admits that the two federal multiple use acts leave management to an administrator without providing any basic legislative guidance. The acts in effect say only that land should be managed for one or all of a series of uses.

Hunt comments that "without wise new direction, the use of our nation's land will continue as it has since 1900, with very little change.

"Business has a natural and understandable tendency to stress economics rather than ecology when thinking about resources. But land is an integral part of all life; its resources remain part of the environment, and in dealing with them we should carefully blend ecology and economics in our thinking.

"As a people, we are just beginning to understand the full meaning of the word ecology. Let's hope that our understanding of this science relating to our environment already is not coming too late.

"The time has come when we must quickly gain greater awareness of the relationship of all human activity to the life cycles that exist on our planet.

"Until now, each specialized group has striven for its goal regardless of what effect this might have on other groups and on the resources. By now we have the capacity to destroy our environment in ways that stretch from the unimaginable heat and horror of nuclear fire to simple repetitious tread of thousands of feet. Now we must stop to re-examine and reorder our surroundings if we are to preserve or restore what is there now."

Natural Areas For Schools Booming

Dr. John W. Brainerd and William B. Stapp attended the first national SCHOOL SITE AND ARCHITECTURAL PLANNING CONFERENCE held at the Pinchot Institute for Conservation Studies, Milford, Pa., in mid-May. This was the outgrowth of an ANSS recommendation at a conference held there in August, 1966. Twenty outstanding leaders from among school architects, landscape architects, planners, and school administrators from different parts of the U.S.A. were in attendance. Dr. Matthew Brennan of the U. S. Forest Service and Clifford Emanuelson of the Conservation foundation were the hosts.

The three intensive days left participants wanting to think further about natural resources as school sites "for total education" and wishing to put into action as many as possible of the ideas discussed. The people present were true leaders in their fields; what they can initiate will certainly be copied by others.

John Brainerd reports that there are increasing requests coming to his desk for information about natural areas for schools. While that is a good sign, it nevertheless presents an added burden which will necessitate giving John some help.

Mrs. Michael A. Snyder, ANSS member from Brownsville, Penna. and State Bird Chairman for the Garden Club Federation of Pennsylvania, was instrumental in having the first day of spring of each year declared as official Bird Day for her state.

Governor Raymond P. Shafer declared that day in 1967 as Bird Day. Later Mrs. Snyder promoted a bill in the State Legislature, Act 79, which established March 21st as Pennsylvania's Permanent Bird Day.

C. H. Callison, Executive Vice President of the National Audubon Society in a letter of congratulations to Mrs. Snyder said that "The observance of State Bird Day through the years will have significant educational effect in developing citizens who will protect wild birds and help preserve their habitats."

Mrs. Howard S. Kittel, Fort Worth, Texas, compiled and edited *Building in the Present on the Past for the Future* which is a pilot project of the Fort Worth Public School system. This was in the publication Our Vast and Varied Vacationland, Texas Garden Clubs. Mrs. Kittel will give a speech of welcome to ANSS at the Annual Banquet.

"Learning is a link that connects the individual with the totality of his surroundings – nature, art, men and animals, the atom, the earth, the cosmos. As long as we do not know about them, they do not exist for us . . . It is necessary that we receive all possible information, ideas, sentiments, feelings; otherwise our systems will starve in the same way we would starve and die if we ceased to eat and drink. Starvation from lack of information takes longer, but our world is full of living dead because we do not recognize this."

— C. A. Doxiadis from "Learning How to Learn"
Saturday Review, Jan. 1, 1966

"For ourselves and our children the accumulation of a broad nature lore – far more than being a hobby – may be in fact, attainment of wisdom, evidence of having laid hold upon fundamental things. Actually nature knowledge is an approach; an introduction to all the sciences, and to the scientific habit of mind."

— Raymond T. Fuller in Walk, Look and Listen

A NATURE STUDY VIEWPOINT

School Biology Teacher: Doc, what do you want your incoming freshmen to know when they arrive in your freshman course?

College Prof: (1) I want them to know that life is exciting, full of mystery, challenging . . . to sense that life is a give-and-take love affair with the environment, for better or for worse. And that death is a normal and desirable end.

(2) I'd like to have had them care for an animal in captivity and have worried about its welfare and to have been truly responsible — and similarly to have cared for a captive plant for a year or more.

(3) I would wish they had all had a plot of ground outdoors, not necessarily circumscribed and called a garden, to wonder over and to work over for three seasons.

(4) I would like to have had them teach a younger child about life, and as a result to have their own questioning deepened.

If they can run a soil test, band a bird, prune a tree — good. If they can enjoy looking through a microscope for two hours because they can handle it effectively and curiously — fine. If they know the periodic table and can climb the spiral of DNA — excellent. But these things are unimportant compared to items 1 to 4.

School Biology Teacher: How do we teach these four?

College Prof: Equal parts study and sweat; stir with prayer; boil with excitement.

School Biology Teacher: Thanks, Doc; I'll try.

JOHN W. BRAINERD
Springfield College

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